"The Mid- to Long-Term Global Vision for Challenges against Global Warming"
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<Keynote Speech>
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"EU Measures to Mitigate Global Warming"

European Energy Policy has many facets that should be strengthened by the Lisbon Treaty that now awaits only the signature f the Czech President Vaclav Klaus – a confirmed Euro-skeptic. Article 176a of the new Treaty gives a broad legal basis for energy policy that did not exist in the Treaties of Rome. Up until now the Commission has relied for its energy policy authority on articles spread around the Treaties. How much new legal authority is conferred on the European Union by the specific mention of Energy will be determined in policy struggles over the next years. But the Lisbon Treaty will not change the basic focus of European energy policy which includes the following:

Market reform – Since the first liberalization package in 1996, the EU has been seeking to promote a true single, fully competitive and transparent internal energy market. The most recent liberalization package submitted in September 2007 was finally agreed in December 2008.

Energy Security has recently risen to the top of the European Commission's list of priorities. The Russian cut-off of gas in January of this year was a shock to European consumers and governments who realised that Russia was indeed prepared to use energy trade as a political and commercial weapon. The dramatic increase in interest in LNG as a means of diversifying European gas imports away from Russia will have implications for world LNG markets. The slow progress in reaching agreement on alternative gas pipelines from the Caspian to Europe has led may European countries to conclude that if they want greater security of gas supply, they will need greater access to world LNG markets.

Security is serving as an impetus to market reform as Europeans are learning that the greatest protection from gas supply disruptions whether political, commercial, technical or terrorist-related, is a better integrated internal market. Greater interconnection, more cooperation between gas shippers and more North/South pipelines to change the pattern of East/West gas flows.

The security of electricity with the greater deployment of intermittent sources of renewable energy is also putting pressure on the European Commission to accelerate market reform. There have already been incidents where difficulty integrating large flows on wind power into the grid have caused blackouts that spread from Northern Germany, across France and Spain to Morocco.

The Energy Security agenda also includes considerable energy diplomacy with major suppliers and consumers. The Commission has bilateral discussions with India and China amongst others as well as among the countries of the Gulf, Russia and Latin America.

Nuclear Energy is a third policy objective in Europe as a major component of any sustainable long term energy mix. Only two reactors are currently under construction, but there is a significant shift in public attitudes about nuclear power as the nuclear option is view (albeit grudgingly) by many environmentalists as an increasingly attractive part of a sustainable power mix strategy. This will almost certainly increase as clean electricity becomes more of an option in de-carbonizing transport. Attitudes towards nuclear power in the UK, Italy, Sweden, Belgium and possibly even Germany under its new coalition are making plant life extensions, power upgrades and new build all the more probable. Only Austria and Ireland remain implacably opposed to nuclear power.

A major new feature of the European energy landscape in the Emissions Trading System for carbon dioxide. From its inception the ETS has been a learning process. A number of mistakes were made in its early phases when many seemingly poor decisions were driven by political realities. Some of the same problems are being encountered by the US in drafting the carbon cap and trade mechanisms in the Waxman-Markey bill in the House of Representatives and the Boxer-Kerry bill in the Senate and some of the same political compromises were necessary. The Commission is still improving many aspects of the EU-ETS to provide greater security for investors in energy infrastructure.

Energy Efficiency has long been a cornerstone of European Commission policy and absolutely central to achieving its environmental goals. I will take this topic up in a bit more detail in the next slides.

Renewable Energy is the favorite son of green politicians and the object of political targetry. The 2001 and 2003 targets for renewables for 2010 will not be met, but new targets have been established for 2020 in the context of the current European objectives known as 20-20-20 in 2020. I will return to renewables later in my remarks.

Carbon, Capture and Storage has been assigned a high priority by the Commission in recognition that society cannot abandon fossil fuels fast enough to achieve the reductions in carbon necessary to attain the UNFCCC 450 ppm scenario of a 2-2.5 degree temperature rise. CCS is designed to de-carbonize the fossil fuels necessary to bridge the gap to low carbon alternatives. The issue here is to deploy the financing necessary to demonstrate multiple technologies to identify those that are – or can be made - economically viable. This is a world-wide effort that is stimulating more political rhetoric than hard cash. CCS should be eligible for CDM.

With this quick overview of European energy policy priorities as preamble, I would like to try to bring some clarity to EU emissions reductions targets. I am afraid this will necessitate getting into a bit of detail about how to interpret what is being said.

The EU has two sets of targets. The first in the context of the Kyoto Protocol is a global EU commitment of the 15 older members to cut their collective GHG emissions 8% by 2012 from the baseline emissions of 1990. Within this global target, national efforts are differentiated with some countries being allowed to increase their emissions. Now with the EU at 27 members, 8 of the 12 new member states have individual targets under the Protocol. The base year of 1990 is for CO2, methane and NO2.

The second set of objectives set by the European Union was unilateral and concerns all 27 current members. Here the intent is to reduce the same three greenhouse gases emissions by 20%, improve energy efficiency by 20% and increase the share of renewables in energy consumption by 20% all of this by 2020 from a 1990 base-line. Needless to say, 2020 is not very far off and the 1990 baseline is already nineteen years behind us. It would be reasonable to ask whether the EU is two thirds of the way to their target of 2020. And how do these 20-20-20 targets compare with the Kyoto commitments?

But first a look at the base-line scenario for European energy consumption that these targets intend to change.

Slide 3 – Total Primary Energy Supply of Europe

Showing a pattern similar to global forecasts – Europe's baseline future is a fossil fuel world. Oil, gas and coal will dominate well beyond 2030. New renewables are insignificant and hydro remains flat. The most significant differences in EU energy numbers have come from the adhesion of 12 new members in the past few years. Bulgarian and Romanian numbers don't yet figure in most statistical studies of the EU. These projections do not take into account the intended effects of Community targets.

There was a sharp reduction in solid fuel consumption in the period 1990 to 2005 of some 133 MTOE as a result of a number of structural changes, mostly related to the collapse of industrial activity in East and Central Europe but also reflecting a sharp move to gas in power and industry The projection period expects 2.2% economic growth on average and a 1.7% annual improvement in energy intensity, with a much more modest improvement in carbon intensity.

Beyond the dramatic increase in GHG emissions implied by this scenario is the fact that Europe becomes much more energy import dependant – increasing by 41% between 2005 and 2030 - especially for oil and gas from much more distant and uncertain sources.

So how does the EU see their emissions evolving as they seek to achieve both their Kyoto and unilateral targets?

Slide 4 – Actual and projected Emissions for 27

This is a little confusing, but the baseline projection for EU 27 emissions is the line at the top and the 20% unilateral commitment is the line second from the bottom. The 20% reduction is not by the "EU 27 Additional Measures". The 30% reduction challenge to other countries is the line at the bottom with even less idea how it could be attained.

The magnitude of these unilateral targets is addressed in the agreement reached among member countries in December 2008 on a Climate and Energy Package. The package is composed of four legislative acts

1 – a Directive amending the EU ETS
2 – a Decision on allocating emissions reductions between those covered by the EU ETS and those not
3 – a Directive ordering national level targets for renewable energies
here the 10% bio-fuels target for transport was changed to 10% renewables recognizing the impact bio-fuels production was having on agricultural commodities and food.
4 – a Directive designed to promote geologic storage of carbon
national authorities will decide on CCS siting

The vast majority of responsibility here resides with Members

Also noteworthy in this set of decisions is that 80% of the overall GHG reductions effort may be met by external offsets such as the Clean Development Mechanism and Joint Implementation. Also, if no credits are available internationally for afforestation or reforestation, members can use reduced emission in their own "land use, land use change and forestry" to meet their obligation.

So how are the Europeans doing in their efforts to reduce GHG emissions?

Slide 5 – GHG Emissions trends in EU 1990-2007

The top line says EU emissions have dropped 9.3% since 1990. These data are all current year minus 2.

You'll notice that these emissions did not follow a continuous downward trend. They were already at a reduction of 9.2% back in 2000. Actually a good bit of the earlier decline had been due to the economic slow down and de-industrialization of the 10 new members included in this graph. EU 15 emissions became relatively flat once the emissions from the five East German Laender absorbed into a re-united Germany stabilized at lower levels in the late 1990s.

In this slide on overall EU 27 emissions, even though the new 12 members of the EU only represent 20% of total EU 27 emissions, the drop in their emissions was the main driver in the drop in EU 27 emissions. This is what some call "hot air" since the emissions were not due to pro-active climate-related policy efforts.

But if we look at this same data set in terms of the gases covered by the Kyoto commitment -

Slide 6 – Main GHG Emissions Trends

We find a much more modest decline in CO2 across the economy of just –4.8%. The greater declines in methane and nitrous oxide are contributing nearly half of the overall decline of 9.3%.

What this reveals is a more troubling aspect of our efforts to reduce GHG emissions

Slide 7

Which is the resilience of the carbon intensity of our economies. In both the older 15 members of the EU and even the newer 10 members, once the economic shock and adjustment from the transition from Soviet Bloc command and control societies to open economies was over by 1995, the carbon intensity of the economy does not change much. The fact of a rapidly growing GDP and improving energy intensity of the economy does not necessarily translate into lower carbon intensity. You can see the emissions in MT of CO2 equivalent are flat even as energy intensity improves.

So taking the analysis a step further, we have adjusted the Commission's 2020 growth scenario under the new growth assumptions provided October 1, 2009 by the IMF previsions for the recovery of economic activity drawing on the patterns of carbon and energy intensities to project EU carbon and energy intensities to 2020.

Slide 8 – energy intensity

Predictably, energy intensity continues to improve as economic restructuring continues.

Slide 9 – Carbon intensity

But the carbon intensity of final energy consumption is stubbornly flat unless something is done to bend that schedule more sharply downward.

There may not be time in these initial speeches to address how to bend that schedule, but the options are fairly limited and are found in the directions of energy policy I cited at the beginning of my remarks – efficiency, CCS, nuclear power, renewables and accelerated work in R&D to bring on new possibilities.

But here I would like to get inside EU aggregate numbers in a different way before turning to whether EU can hope to achieve its political targets.

Slide 10

Among the EU 27 there are 6 large emitters. Five in the old EU 15 – Germany, United Kingdom, Italy, France and Spain, plus one major emitter in the new group of 12 – Poland which accounts for only 8% of EU 27 emissions, but 41% of the new 12 EU members.

Germany and the United Kingdom experienced reductions in greenhouse gas emissions of 21% and 17% respectively between 1990 and 2007. In Germany, the causes were greater power plant efficiency and the effects of the economic integration and restructuring in the five new Laender – with

the economic decline of these Laender providing the majority of Germany's reduction. The UK, meanwhile was liberalizing its markets and experienced a very large shift from coal and oil to gas in electricity. Poland too experienced a significant shift downwards in its emissions as a result of considerable economic restructuring.

You can see the flexibility that German, UK and Polish emissions reductions provided the EU in rearranging emissions within a European bubble in the context of the Kyoto target. This allowed some countries' emissions to grow while others shrank.

So how are these various developments contributing to the EU ability to achieve its political commitments?

Looking first at the –8% reduction in emissions promised in the Kyoto Protocol.

Slide 11

Kyoto is the bottom line here. This concerns only the 15 older member states that existed when the Kyoto Protocol was signed. The EU 27 does not have a Kyoto target, although the new countries other than Malta and Cyprus have individual targets. For the EU 15, the base year of 1990 has been established for CO2, methane and nitrous oxide.

The UNFCCC has now fixed base year emissions for the EU 15 at 4,265.5 MT of CO2 equivalent. Using data from the European Environmental Agency (EEA) for 2009, the EU 15 would only have had to reduce its emissions a total of 341 MT CO2 from the baseline of 1990 for a new total of 3,924.5 MT to achieve their 2012 Kyoto target. According to these data, as of 2007, the EU still needs to reduce emissions by another 127.5 MT to reach their 2012 target. Among the five EU 15 large emitters only Spain and Italy have not already met their targets. As the 2012 target is so close and as economic recovery from the 2008-9 crisis will be gradual, there is likely to be a sufficient downward shift in all GHG emissions to bring the EU 15 in on target.

But the EU is acutely aware that the collapse of another Berlin Wall, a flight to gas and a world recession may not be available for any second budget period. Much of that low hanging fruit will not happen again.

Now looking at the upper line.

According to the EEA data again, the EU 27 emitted 5,564 MT of CO2-eq in 1990. The 20% reduction target decided by the European 2007 Spring Council now implies a collective reduction of 1112.8 MT by 2020 from the 1990 baseline. This means the EU 27 must lower emissions from 2007 by another 594 MT by 2020. That is roughly the equivalent of the total emissions of France in 2007.

Surprisingly, the EU did not use any modeling to set the initial 2020 target, but it was in retrofitting models (Primes and Gain) to the already announced political commitment - in search of a burden sharing formula, that the EU decided to differentiate between the scale of reductions expected in sectors covered by the ETS versus those outside. The final decision was that sectors covered by the ETS should achieve a level 21% lower than the new baseline of 2005. Non-covered sectors would only be subject to a 10% reduction

These differentiated reductions for ETS covered and non-covered sectors were calculated against a 2005 baseline because 2005 were the most current data available when the Commission was doing this burden sharing work in 2007.

I apologize for all of this detail, but it is necessary for the policy maker to sort out the reality of emissions reductions rhetoric from the various interpretations offered by politicians and journalists.

Here is a summary table of what is yet to be done to achieve the EU 27 2020 emissions reduction target.

Slide 12

These numbers will be revisited when the Commission does its review to incorporate aviation and new gases and sectors being included in the ETS. This target looks a lot harder to achieve than the Kyoto target.

Slide 13

Let me finish this segment with a slide from an IEA presentation that looks only at CO2 emissions from the energy sector. Only eight countries actually lowered there absolute emissions in the 17 years since the 1990 baseline. This picture has to change dramatically if we are to answer the climate change challenge.

In closing, it might be useful to take a quick look at some of the strategies essential to bending that carbon intensity curve so that real aggregate carbon emissions begin to fall. I think these issues are better seen in the aggregate so I will draw on a recent IEA publication that was put before Ministers at the IEA Ministerial meeting of October 14 and 15.

Some brief thoughts about efficiency

Slide 14 IEA 25 Recommendation

First a global view across IEA countries. This slide gives some idea of how the 28 countries of the IEA are doing in implementing a set of 25 efficiency recommendations agreed by their Ministers and at G8 Summits. Implementation is running well behind rhetoric. And these 25 recommendations alone could save over 8 GT globally by 2030.

Slide 15

The EU did experience a phase of improving energy efficiency and is still expecting its energy intensity to decrease. The IEA has done an analysis of how much more energy the EU would be consuming in 2006 if it had not been for improving energy efficiency since 1971. The EU 25 would have been consuming 1,000 MTOE more in 2006 or about 45% of consumption – here the savings are called Nega-Joules – and could be characterized as the single largest contribution to meeting European energy demand.

The IEA estimates that another 27% of European energy consumption in the 2020 base-case could be saved by a rigorous implementation of energy efficiency measures.

Slide 16

This illustrates the role of natural gas in this phase of de-carbonization. You can see the rapid penetration of natural gas in many of our economies – in particular yours. Each vertical line is a 100% increase in gas use in the economy. Gas penetration was due to a number of things: fuel diversification; getting oil out of burners; lower carbon content; smaller incremental power units; popular resistance to coal and nuclear; and increasing availability. But in the European context, gas has contributed substantially to the de-carbonization of power.

Slide 17 – Nuclear power

We could see a renaissance in nuclear power growth in Europe and the US. Recent trends in Italy, UK, Sweden, Belgium and possibly Germany suggest a growing contribution from nuclear power. The US

is moving toward incremental new build that will be coming on as some older capacity is retired. More needs to be done in the US.

Slide 18 – Renewables

There is considerable hope for renewables to increase substantially its role in the energy mix. But expectations have to be kept to scale given the very low base upon which new renewables builds

Slide 19 – Power Plant efficiency

I choose this slide because the de-carbonization of the power sector is among the least expensive sources of carbon savings. But this graphic of fossil fuel power plant efficiencies shows how slowly capital stock turns over in the power sector. Coal plants will run for the better part of a century before a new more efficient technology will be deployed. An average of 35% in coal is well below the potential of new technologies.

Slide 20 – R&D

I am afraid this is an old story that just gets longer. Even though government spending has picked up marginally in the past 10 years, energy r&d still lags at a third of what it was after the Iranian revolution. Surely climate change is more of a threat than the Iranian revolution was 30 yeas ago.

And a last slide that shapes the entire debate before Copenhagen

Slide 21

Today's papers are full of our debates with the major emerging economies about burden sharing between the future and the past. What kind of emissions trajectory should emerging countries be able to enjoy? Who will finance the necessary technology deployment? What can be done about an emissions per capita disparity between 44 tons of CO2 per capita and 0.01?

I hope we can take up some of these issues in our discussion in the next part of our program.

Thank you.