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Key Copenhagen Messages

Climate change has the potential to severely impact societies, economies and human wellbeing. It is therefore crucial to reduce the likelihood of the devastating effects of climate change. Financial instititutions can play a key role in mitigating these effects and in adapting to climate change.

The climate change conference in Copenhagen must be seen as an important milestone in a round of negotiations that will establish the framework for a low-carbon society. There is encouraging momentum for a political agreement in December.

We need a broad consensus to strongly reduce global emissions. In order to achieve this goal we need a clear target of reducing emissions by at least 50% by 2050 compared to 1990. Even more important is the articulation of a series of intermediate targets between now and then within the context of low-carbon growth.

Technology plays an important role. Centres of excellence can encourage R&D collaboration and we need strong institutions to promote technological progress. Feed-in tariff systems can play an important role in achieving deployment of clean technologies at scale since they reduce the risk for investors.

We need to establish efficient carbon markets. Cap-and-trade systems are promising instruments to reach both static and dynamic efficiency. Offsets help improve efficiency, too. Complementary policies are still important as carbon markets get established.

Global financial institutions are integral partners in financing the gigantic investment needs. They can help steer scarce capital into low-carbon companies, they can provide liquidity in the carbon markets, and as capital market intermediaries they can raise debt and equity capital to fund clean tech projects and can give important advice in an uncertain and complex environment.

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Authors
Caio Koch-Weser*
Vice Chairman,
Deutsche Bank Group
+44 20 7545 0494
caio.koch-weser@db.com

*The author would like to thank contributors to the paper: Sabine Miltner, Mark Fulton, Adam Sieminski, Mark Dominik, Tobias Just

Editor
Tobias Just

Technical Assistant
Sabine Berger

Deutsche Bank Research
Frankfurt am Main
Germany
Internet: www.dbresearch.com
E-mail: marketing.dbr@db.com
Fax: +49 69 910-31877

Managing Director
Norbert Walter

Key Copenhagen Messages

Climate change is one of the most important issues of the next decades and has the potential to severely impact societies, economies and human wellbeing. It is therefore crucial to reduce the likelihood of the devastating effects of climate change and to alleviate its negative consequences. Financial institutions can play a key role in achieving these goals and Deutsche Bank is determined to be a leader in this space. We believe that as one of the leading global financial institutions, we need to face up to the climate change challenge – we want to be the trusted partner for clients who take trailblazing action to tackle the inevitable impact of climate change on their business, and a responsible partner for our customers, shareholders, employees and the global society at large in the collective effort of transitioning to low-carbon growth.

Deutsche Bank is determined to be part of the solution to the climate change challenge

To fulfil this role we have been working closely with policymakers and clients in shaping the new framework for a low-carbon future. Now, we are just a few days away from the climate change talks in Copenhagen, where critical elements of the post-2012 climate change policy framework are likely to be agreed. The emerging focus on a strong political agreement is in fact the right prerequisite to the eventual technical legal agreement.

In an ideal world this framework would facilitate limiting global warming to 2°C above pre-industrial levels. This can only be achieved with reasonable probability (>50%) if atmospheric greenhouse gas concentrations stabilize at or below 450 ppm CO_2e in the long term.

Analysis conducted by Project Catalyst (a coalition of climate change experts that provides support to climate change negotiators) indicates that such concentration levels require that technologies be deployed that will reduce emissions by 14 Gt relative to the business-as-usual (BAU) trajectory by 2020. This represents a nearly 25% reduction.

We believe there is much room for innovation that can bring down costs and propel economic growth

Most of this reduction can be achieved with technologies that are commercial or near-commercial today at a marginal cost of under EUR 60/t CO_2e. Given this, there is a great deal of room for additional innovation in low-carbon technologies, that can bring down costs and be a driver of future economic growth.

About one-third of the abatement can be achieved in the developed world, and about two-thirds in the developing world. Agreeing how to achieve the required abatement – and who pays for what – will be critical in the climate change negotiations.

But will leaders deliver a deal?

With the announcement on November 16 by both the Prime Minister of Denmark and President Obama that Copenhagen will aim at a political agreement since achieving a firm legal agreement is not possible in the time left, we need to have the right expectations about the outcome of these negotiations.[1] For starters we should stop thinking about Copenhagen as a “meeting” and start thinking of it as a “round” with discussions continuing beyond the December 18 closure of the event. In fact, the round is likely to last through much of 2010.

[1] See Heymann, Eric (2009). Climate Conference in Copenhagen. Deutsche Bank Research. Current Issues. Frankfurt am Main.

While a final legal agreement is far out of reach by year end, there is positive momentum toward a strong political agreement. In particular, it is encouraging that countries around the world have been stepping up their commitments to address climate change:

Recent national climate pledges are an encouraging sign

— On November 25, US President Barack Obama pledged to cut emissions by 17% by 2020 and by 83% by 2050.

— The next day, China announced that it would reduce energy intensity of GDP by 40-45% by 2020. This is certainly not a coincidence.

— The EU has repeatedly stated its commitment to cut greenhouse gas emissions by 30% from 1990 levels within the context of a global deal, while our research shows that their mandated renewables targets may deliver even deeper cuts.

— Brazil already sources more than 80% of its power from renewables, and has pledged to reduce deforestation by 80% by 2020.

— India's National Action Plan on Climate Change pledged the country to 8 national missions in key areas including solar power, forestry, sustainable agriculture, and energy efficiency.

Unfortunately, even with all of these and other pledged cuts, we will not reduce emissions by as much as we need to by 2020. Recent research by Deutsche Bank indicates that current proposals, if implemented, will still deliver a shortfall of about 5-7 Gt relative to a pathway that might limit global warming to 2°C.[2]

Research by Deutsche Bank suggests that current proposals are insufficient to reach needed climate goals

Thus, the "Copenhagen round" in 2010 will need to deliver much more. When judging the progress, we should be guided by the extent to which the following elements will be present in any Communiqué on December 18:

— **Building on the consensus to limit temperature increases to 2°C should be embraced** (as proposed by the Major Economies Forum in L'Aquila as a global target for emissions reduction of at least 50% by 2050).

— **Articulating a series of intermediate targets for 2015, 2020, and 2030** is a necessary accompaniment to the long-term goal.

— **Developed country caps must be ambitious.** Emissions reductions of 80% or more by 2050 will need to be complemented by binding interim targets and actions.

— **Copenhagen should enshrine low carbon growth plans.** Each country, especially those in the developing world, should develop such plans and actions that describe the country's long-term path toward sustainable, climate resilient growth and development. This leaves open the possibility of these countries adopting caps, voluntarily or more formally, later on.

— **Technology development and sharing is critical in the fight against climate change.** Potential agreements could include a number of centres of excellence to encourage R&D collaboration, specific joint technology development projects, and measures to encourage intellectual property sharing while keeping in place incentives for innovation.

— **Finance is one of the most highly charged issues in the negotiations.** Developed country governments face severe

[2] DB Climate Change Advisors, Global Climate Change Policy Tracker: An Investor's Assessment, October 26, 2009, http://www.dbcca.com/dbcca/EN/investment-research/investment_research_1780.jsp.

budget pressures, yet for developing countries, financing is critical, both to support action as well as for reasons of equity. Research indicates that about EUR 100 bn p.a. in financing will be required from the developed to the developing world to fund the extra costs of climate action. Some of this can be funded through carbon offset markets. But public financing mechanisms, run internationally by the Multilateral Development Banks, bilaterally, or domestically through national development banks and investment agencies, will be necessary as well.

— **Forestry accounts for one-third of the available cost-effective mitigation potential in developing countries by 2020.** A results-based, effective, efficient, and equitable framework for action – known as REDD (Reducing Emissions from Deforestation and Forest Degradation) – should be agreed in Copenhagen along with initial funding.

— **A registry of commitments and actions should emerge from the Copenhagen discussions.** This registry would provide recognition for what each country is doing, help build trust, and enable a global summation to track progress against global objectives.

— **Adaptation is the critical issue for most of the countries in the negotiations.** Pledges of financial support that seriously accelerate action on adaptation will be critical to gaining the agreement of these countries.

— **Robust measurement, reporting and verification (MRV) systems to ensure commitments must be part of any agreement.** Copenhagen can lay out the general framework for such a system.

National actions are not sustainable in isolation and reaching a global consensus remains important

Why should one care about a Copenhagen deal and its various components? Because national action is not sustainable in isolation and in the absence of a global consensus, because national governments are frequently very slow in imposing a cost on carbon on their constituency in the absence of others following suit, and because economic agents – consumers, companies and investors – need a framework within which to operate that offers “TLC” – transparency, longevity, and certainty.

A global deal will not only create a long-term framework to decarbonise the global economy but also accelerate short- and medium-term demand for clean technologies, establish more clarity over the potential market size for these technologies, and establish financing for incentive schemes that will help drive demand for low-carbon alternatives. In other words, it will help set in motion the low-carbon revolution that we need to transform the global economy over the course of the next generation.

Public-private collaboration is a “must”

The private sector has a key role to play in developing and deploying low-carbon technologies. This includes: technology innovation; supply of the relevant technologies to the market at scale; provision of project financing for the development of the technologies; and creating demand for the low-carbon technologies.

Climate change financing flows from developed countries to the developing world must be scaled up to about EUR 100 bn a year on average between now and 2020. Financial institutions have an important role to play in this regard. As asset managers they can offer products to investors that steer capital into low-carbon

companies, as traders they provide liquidity in the carbon market, and as capital market intermediaries they can raise debt and equity capital to fund clean tech companies, and offer holistic advisory on strategy and projects that lead to solutions for all clients who face the inevitable impact of climate change.

Market failures must be met with strong public policies that encourage private responses

The public sector is responsible for addressing the series of market failures that are at work in climate change. The most important of these is the greenhouse gas externality – where a price must be put on emissions, so polluters pay for the true cost of their activities. But the public sector is also responsible for addressing other issues that markets cannot solve by themselves, including network externalities, information asymmetries, path dependency on sub-optimal technologies, principal-agent problems, and the "valley of death" that hinders new technologies from getting to and through the demonstration stage.

We believe that substantial private capital can be unlocked by appropriate incentives

Given the budgetary constraints facing many countries, public policy and public finance regimes that make efficient use of public money and have high leverage ratios – that is, that have the ability to unlock large flows of private capital – are preferred to those with lower leverage ratios. This requires some enabling policies such as creating incentives for technology developers from the developed world to share low-carbon IP with the developing world.

Example of public-private collaboration at work: Germany

Arguably, hundreds of billions of investment dollars, if not trillions, from pension funds, private-equity investors, sovereign wealth funds and hedge funds are waiting on the sidelines – capital that is ready to kick-start a shift to a low-carbon economy and create green jobs in the process. But uncertainty about the regulatory framework has prevented their full deployment. This is true in the United States where there has been a shifting patchwork of regulatory standards, and it is true in many emerging markets to which we look for a rapid scale up of renewable technologies.

Germany provides many elements of the benefits of regulatory clarity and certainty. The comprehensive framework to cut emissions – including the application of feed-in tariffs with an annual degression – has proven to be a powerful incentive to investors and entrepreneurs alike.

Feed-in tariffs create transparent, long-term and consistent payment mechanisms for the deployment of renewable technologies. Based on the German experience, a combined Renewable Portfolio Standard or Renewable Energy Standard with a feed-in tariff has a strong track record. This is because the combined policy structure creates both mandated markets for renewable generators and locks in prices for the power they generate.

At the same time, it is important to design feed-in tariffs with a built-in gradual degression – where payments decline by a pre-established amount for each new vintage of renewable generating capacity. In their design, it is important to avoid undue windfall profits. A sufficient degression encourages efficiency and technological innovation that brings low-carbon power down the cost curve, allowing further deployment at lower costs.

Based on these policies, capital has been flowing into Germany's low-carbon industries. Renewables now constitute 15% of the country's total power production – twice the proportion in America. Germany is a world leader in wind and solar energy as well as biogas. The Federal Ministry for the Environment, Nature

Conservation and Nuclear Safety has now released a new estimate that in 2008 about 280,000 jobs existed in German renewable energy industries – 75% more than in 2004.[3]

The role of carbon markets

Putting a price on carbon is the most important measure that policy-makers should address – and we believe that a cap & trade programme offers the best choice for achieving that goal

As the example of Germany and indeed Europe has taught, putting a price on carbon is the most important element of climate policy. A properly-designed cap-and-trade system can achieve large-scale emissions reductions from large stationary sources within the energy and industrial sectors at the lowest cost in the long run. Cost effectiveness is closely linked to the role of carbon offset projects. Offsets help to improve efficiency across the wider economy, and provided they are fully fungible with allowances for compliance, they are much more effective in containing costs than price floors and ceilings, which can lead to market distortions.

Moreover, linking carbon markets internationally helps to improve efficiency across the broader economy. This is because these links incentivise those projects with the lowest marginal cost of abatement to reduce their emissions. For example, in a forthcoming study of key elements of potential US climate change legislation, our preliminary results indicate that if the volume of international offsets were cut in half, the projected price of carbon would rise sharply, and perhaps double.

International offset mechanisms need to be scaled up beyond the project level to promote large-scale, efficient abatement. While project-level credits will remain important elements of the financial architecture especially from the perspective of compliance buyers, large scale-up will require careful introduction of sectoral and programmatic crediting.

The lesson from the European experience – where free allocations during the early years generated significant windfall profits to utilities – is clear: allowances should be auctioned to covered entities so that prices are determined on the basis of fundamental supply and demand. The proceeds of allowance auctioning can be used by governments to provide financial incentives that promote investments in renewable energy and other clean technologies integral to a low-carbon economy.

Policies to reduce carbon market volatility and allow for the periodic review of compliance benchmarks are critical

As far as the broader regulatory framework for carbon markets is concerned, there are two areas of particular importance:

— Periods of high volatility and low liquidity can discourage investments in clean technologies. This is because volatility drives up the cost of capital, which is critical when financing long-term projects. Hence, cap-and-trade systems could benefit from a marketing board that has discretion, within transparent and narrowly defined parameters, to borrow or lend allowances on a short-term basis to ensure efficient functioning of the market in a manner similar to the actions of a central bank.

— The benchmarks used for setting the starting point for emissions abatement by entities covered under the system can quickly become irrelevant in light of rapid and dramatic changes in macroeconomic conditions. The carbon market regulator should have the flexibility to review benchmarks, according to certain criteria, and to adjust them periodically based on a predetermined formula. Such an approach can ensure that there is a scarcity of allowances in the system that will, in turn, spur a

[3] See BMU (2009). Erneuerbare Energien in Zahlen. Bonn.

minimum level of effort to abate emissions by covered entities. Of course this is a sensitive issue and it must be ensured that this regulator is acting independently, like the European Central Bank does.

— When it is necessary to provide industries with transition assistance, we support the limited allocation of free permits rather than border adjustment taxes. Free allocation should be temporary, and should not be allowed to create long-term trade distortions.

The significance of carbon markets notwithstanding, until these markets have deepened and matured, other incentives and mandates will be needed to help scale up the deployment of alternative sources and energy and other climate-friendly investments. These policies need to be well-aligned to address specific market failures and embedded in an overall framework that delivers TLC.

Complementary mandates and standards have an important role to play

Mandates and standards are especially necessary to unlock the potential of energy efficiency measures, which offer roughly one-third of the abatement potential between now and 2020. This is because principal-agent problems (where, for example, most of the benefits of an efficiency investment made by a landlord would accrue to the tenant), irrationally high discounting by individuals, and information asymmetries hinder the uptake of efficiency measures.

Energy efficiency: an example of voluntary action

Even without currently facing a mandate, Deutsche Bank has long accepted the need to reduce its carbon footprint. Therefore, effective in 2008, the Management Board committed to reduce Deutsche Bank's global carbon footprint by 20 percentage points every year compared to its 2007 base year in order to neutralize the CO_2 emissions of its worldwide operations by 2012. As we approach the end of 2009, we have reduced our footprint by 40% relative to the 2007 baseline.

Deutsche Bank plans to reduce its carbon emissions through sustainable improvements in the energy efficiency of its buildings and technology infrastructure, greater use of renewable energy sources as well as the purchase of emission certificates to offset any remaining CO_2 emissions.

Key initiatives of Deutsche Bank include:

— As of 2008 Deutsche Bank is purchasing 100% of its electricity needs in Germany, Italy, UK, and Switzerland from renewable sources. In January 2009, we added the United States to this list. On a global basis approximately 67% of our total electricity requirements will be met by renewable electricity this year.

— Our Frankfurt headquarters is undergoing a significant renovation. We have incorporated in this EUR 200 million programme a significant investment in greening our Towers to set a new standard both within Deutsche Bank and more broadly for the real estate industry in terms of large-scale green refurbishment.

Bold Visions for 2050: DESERTEC

Exciting initiatives are on the horizon. Large-scale solar projects are now being considered, including the innovative Desertec Industrial Initiative (DII). Deutsche Bank is proud to be a founding member of the Desertec consortium, which has the potential to transform the way Europe sources its power through a development partnership with North Africa. Under the Desertec concept, the goal is to provide 15% of Europe's electricity needs by 2050 with electricity from clean solar (photovoltaic and concentrated solar power) and wind energy sources in North Africa and the Middle East, this will require an estimated investment of EUR 400 bn (based on currently available analyses).The intention is to implement the Desertec project in a multi-phase approach.

The DII consortium consists of 13 founding members: ABB, Abengoa Solar, Cevital, Desertec Foundation, Deutsche Bank, E.ON, HSH Nordbank, M+W Zander, MAN Solar Millennium, Munich Re, RWE, SCHOTT Solar, and Siemens. Additional voting and non-voting shareholders from Europe and MENA will be invited to join the DII. The industrial partnership focuses on four areas: (i) Creation of a suitable regulatory and legislative environment for the implementation of the project; (ii) development of a roll-out plan for the project; (iii) proposal of at least three solar and/or wind pilot projects, each with a capacity of 1,000MW or more; and (iv) commissioning additional feasibility studies to support an executable roll-out plan.

— In 2009, Deutsche Bank announced a global 4-year commitment to deliver eco-efficient IT by 2012. This 8-point plan includes a commitment to realize a 4-fold increase in energy efficiency in our data centres as well as halving the IT energy consumption per headcount in our corporate offices. In addition we will be rolling out industry leading initiatives to further reduce travel and paper while introducing Eco-Supplier management into our purchasing processes including end-of-life recycling.

Caio Koch-Weser (+44 20 7545 0494, caio.koch-weser@db.com)

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