

Tackling emissions growth

The Role of Markets and Government Regulation

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THOUGHT LEADERSHIP SERIES



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The Copenhagen Climate Council Thought Leadership Series are inspirational, concise and clearly argued essays from global thought leading investors, scientists, city designers, entrepreneurs, experts, CEO's and policy makers on elements important when developing a new global climate treaty. Communicating potentials and opportunities inherent in tackling climate change, the Thought Leadership Series aims to enhance the public and political awareness of solutions promising significant impact on global emissions growth.

The essays will each provide input to the World Business Summit on Climate Change on 24-26 May 2009 that will send a strong message to the 2009 UN Climate Change Conference (COP15) in Copenhagen. The message will include how to remove barriers and create incentives for implementation of new solutions in a post-Kyoto framework. This event is hosted in cooperation with the following key partners: UN Global Compact, World Business Council for Sustainable Development, World Economic Forum, 3C and Climate Group.



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The reaction to the credit crisis has shown that an internationally coordinated, bold response to a global challenge is possible. By providing trillions of dollars to financial institutions in a matter of weeks, governments moved quickly and decisively, in a collective manner, to intervene in an attempt to restore order to the markets. The threat of climate change requires equally bold action across an even broader range of sectors and countries. However, faced by the prospect of a prolonged economic downturn, there is a risk of some countries backing away, even from existing less ambitious commitments to reduce greenhouse gas emissions.

Unlike the credit crisis, climate change is a long-term problem requiring a long-term response. Why is it so critical to act now? First, delaying the point when countries reduce emissions below 1990 levels will result in higher atmospheric greenhouse concentrations and greater climate and economic impacts. Secondly, there is an inevitable time lag between finalizing any international climate agreement and its effective implementation. Finally, capital investment decisions are being made today that will have implications for decades to come. The International Energy Agency estimates that just within the next eight years, an additional 800 gigawatts of power generating capacity, equivalent to the total built in Europe since 1945, will be commissioned globally. Investors need longer-term visibility about the targets, incentives and the regulatory context of these

investments. Therefore, it will be vital that a common vision for the future is agreed to steer choices over the coming years and decades. An agreement in Copenhagen will need to state clearly the level of ambition to start to build a low-carbon economy in the next five to ten years.

What is needed is a combination of internationally co-ordinated measures which can be tailored for national circumstances. This includes:

- Well regulated carbon markets. Building on the European Scheme and other cap and trade programs planned in the United States, South East Asia and Australasia, carbon markets need to be broader (i.e. include more sectors and countries), better linked and more ambitious in terms of setting deeper, longer-term emissions cuts.
- Effective government regulation. Governments should complement market measures with non-market regulations, such as stricter standards on fuel and energy efficiency in transport and homes, and encourage more sustainable practices.
- Large scale direct government investment. More direct government investment, through public-private partnerships, is required to support the development and early stage demonstration and deployment of clean technology, such as carbon capture and storage.

Responding to a crisis

“It’s worse than we thought.” “The consequences could be catastrophic.” “We need to break the deadlock.” These phrases, heard so often in the heat of the global credit crisis as politicians, central banks and regulators reacted to the upheaval seizing the financial markets in 2008, sound a familiar echo with climate change concerns.

The worrying observation on the events of the credit crisis is how both governments and leading financial institutions first, provided the policy and economic context (such as low interest rates and poor monetary policy) which made the credit crisis almost inevitable, and secondly, consistently underestimated the ramifications of the collapse of the credit markets. As recently as April 2008, the heads of major investment banks said to varying degrees that the worst of the crisis was over.

The impact of the credit crunch for markets, businesses and the public alike has been destruction of value, disruption of business and distress. The rules and regulatory frameworks will certainly change and remind us that there will be an increased focus on adequate financial regulation. Politicians and central banks refrained from significant internationally coordinated intervention until the collapse of Lehman Brothers prompted a scramble to a response. However, when they did witness rapid and synchronized actions from leaders in major economies, with deep and serious commitments to ‘rescue’ the financial systems. Like the collapse of major financial institutions, specific extreme events in the climate system, such as hurricanes or heat waves (rightly or wrongly attributed to climate change) have prompted calls to move beyond the Kyoto Protocol and agree bold and coordinated government measures to step away from business as usual.

THE EVOLUTION OF CLIMATE POLICY

1992

Earth Summit, Rio, UNFCCC.

1995

Conference of Parties (COP) 1.
Berlin Mandate agree to strengthen commitments to reduce GHG emissions.

1997

COP-3. Kyoto Protocol enables emissions trading, JI and CDMs.

2001

EU Green Paper.

2002

Canada ratifies Kyoto.
EU Countries ratify Kyoto.

2005

Phase 1 EU ETS launched.

2006

Montreal Climate Exchange.

2007

Carbon market valued at US\$64 bn according to World Bank States and Trends.
First global carbon contract traded at Nordpool.

2008

1000th CDM registered.
US Elections.
COP-14, Poznan.
New Zealand Emissions Trading Scheme.

2009

Annual Meeting WEF, Davos.
COP-15, Copenhagen.

2010

Australia Federal Greenhouse Gas Emissions Trading Scheme.
Canada Emissions trading Scheme.

2012

Copenhagen Protocol?

Why we need to act now

When it comes to climate change, 'business as usual' would be a disastrous option. The Intergovernmental Panel on Climate Change's (IPCC) report from 2007 concluded that evidence for climate change is "unequivocal"; it is "very likely" (90 percent certain) that it is caused by human activity and that "anthropogenic (human caused) warming could lead to some impacts that are abrupt or irreversible." New evidence of the effects of climate change, such as the loss of arctic ice or the expansion of the tropical zone, indicate that the consensus of the Intergovernmental Panel was conservative in its assessment of the potential impacts of climate change.

If the goal is to avoid dangerous interference in the climate system, the recent scientific evidence suggests a global commitment will need to be very strong with ambitious emission reduction targets. The current global concentration¹ of greenhouse gases is around 430ppmv (parts per million by volume) CO₂e. Through deforestation, agriculture and our use of fossil fuels, we have reached levels of carbon dioxide that the earth has not experienced since the cycle of the ice ages began some three million years ago.²

Even in the optimistic case of limiting atmospheric concentrations to around a 450 ppmv CO₂e, we could expect significant economic impacts resulting from an increase in average global temperatures of around 2-3 degrees Celsius and a rise in sea levels of up to 1.9 metres. To achieve a concentration of 450ppmv, countries would have to start reducing global emissions below current levels by as early as 2012. To keep concentrations from exceeding 550ppmv, we have until 2020 before we must start reducing emissions. According to the World Energy Outlook (2007), if we conduct 'business as usual' – i.e. no change in economic growth or energy mix other than indicated by current trends – we can expect significant increases in CO₂ emissions from energy use alone. Emissions would nearly double by 2030 compared to 2000 levels and the rate of increase from 2030 onwards would be even higher. The need for urgency is underscored by the

¹ CO₂e is an abbreviation of 'carbon dioxide equivalent' and is the internationally recognised measure of greenhouse emissions, which allows for comparing the greenhouse impact of a variety of greenhouse gases. The atmospheric concentration levels of greenhouse emissions are measured in terms of parts per million by volume (ppmv).

² From Sir David King article, FT, 30 May 2008. Sir David King is former chief scientific adviser to the UK government and director of the Smith School for Enterprise and the Environment, Oxford.

fact that the emissions targets set out in the Kyoto Protocol extend only as far as 2012 and that there is an inevitable delay between adoption of a treaty and its implementation by countries. It is difficult for businesses making long term investments in low carbon technologies in the absence of a clear regulatory framework. However, even with the acceleration in extreme weather events – heat waves, floods – and the associated economic costs, there has been no call for credit crunch-style 48 hour weekend crisis talks.

Commitment to a combination of measures

The big question facing all of us is how the world can take on the challenge and reduce emissions in the best way. The lessons of the credit crunch may or may not enhance the likelihood of a clear and common response. Regardless, the onslaught of the financial crisis, with its history of ignored warnings, highlights the risks and dangers of doing nothing. As the Stern Review (2006) showed, the potential impacts of climate change could reduce consumption by 5-20% (depending on how the risks and impacts are considered). It also stated that addressing the issue early, with the expenditure of 1% of GDP, could substantially reduce these risks.

We believe it will be vital to put a clear and real price on carbon dioxide emissions that can steer choices of consumers, businesses and governments over the coming years and decades. The United Nations Climate Change Conference in Copenhagen in December 2009 (Copenhagen Summit) needs to establish the basis for building a low-carbon economy through the decades leading up to 2050. Deep long-term cuts in emissions, long-term certainty about the targets, clear incentives and effective regulatory mechanisms to achieve them are urgently needed to enable businesses to make the substantial investments that will be necessary.

During the period from the Rio Earth Summit in 1992 through Kyoto to Bali in 2007, practical experience of emissions trading has provided valuable lessons for negotiators as they prepare for the Copenhagen Summit. The cap and trade mechanism has proven to be a cost-effective tool for reducing emissions and its application should be extended from a series of national or regional schemes to a more globally integrated market. Therefore, at Copenhagen, policymakers need to increase the breadth of the carbon

market by including more sectors and countries, make the caps more ambitious, scale up participation by developing countries, provide longer-term policy visibility and build the institutional capacity needed to regulate a well-functioning carbon market.

One thing is clear: there is no single policy approach – a combination of internationally co-ordinated measures is needed. Carbon markets can support the deployment of new technologies, but may not provide the targeted investment required for highly capital intensive solutions, such as carbon capture and storage, or promote change from those not directly subject to the emissions cap. Other measures needed include energy efficiency and demand-side management, major investments in clean coal technology and cleaner energy sources – and both indirect and direct regulatory mechanisms³. Some will be the object of negotiations in Copenhagen and some will need to be dealt with in other policy arenas. Some measures need to be internationally co-ordinated, and agreed at Copenhagen; others will be implemented at the national level and therefore tailored to national or local circumstances. What is common for all measures, however, is that they influence markets – whether industry, energy, agriculture, transport or construction. The right regulatory framework will contribute to aligning the many individual investment decisions of market actors with the greater societal goal of fighting climate change.

The growth of carbon markets

Carbon markets have a key role to play in helping to achieve the required scale of reductions in global emissions by 2050. The critical importance of ‘the market’ is that it reveals the price of carbon and drives investment in low carbon technologies and practices whether they are energy efficiency measures, fuel switching, renewables, or carbon capture and storage. This price fluctuates as a result of expectations of the supply and demand, which is initially determined by the imposition of an emissions cap by a central authority (this could be at the global, regional or national level). Cap and trade schemes provide the flexibility for participants to

³ These measures are consistent with those advocated by leading organisations. The World Business Council for Sustainable Development (WBCSD) promotes four priority building blocks for policy developments, including energy efficiency and demand-side management, technology, carbon markets and financing, and sectoral approaches. Other building blocks include adaptation and land use change and forestry.

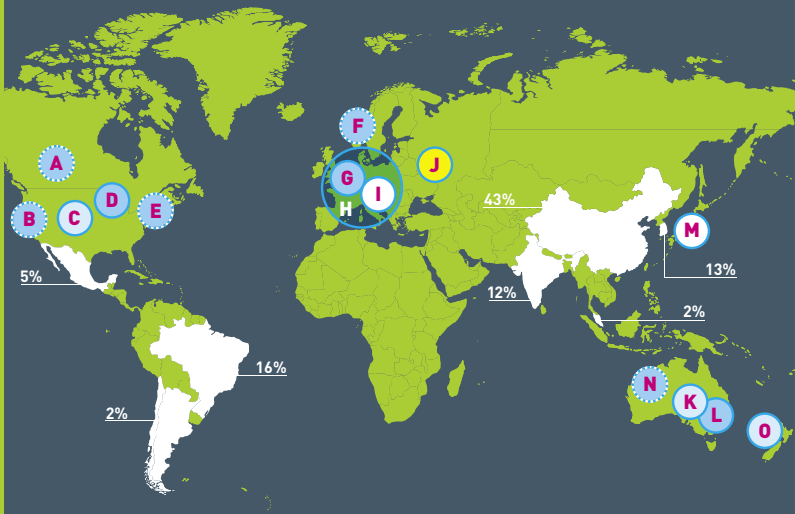
trade their emissions allowances which help to lower the overall cost of reducing emissions, as it encourages those who find it cheaper to cut their own emissions to do so, and make money by selling any surplus credits. Participants who are not able to reduce emissions at a cost below the market price of CO₂ can meet their obligations through buying these credits. Assuming reasonable liquidity, this process should create an efficient and cost-effective mechanism for the reduction of emissions to a required level.

The two key building blocks of the carbon markets are cap and trade schemes and project-based mechanisms. A project-based credit represents an emissions reduction below a hypothetical business as usual baseline. In spite of the significant challenge of demonstrating 'additionality', i.e. that the project reduces emissions below the business as usual baseline, the number of projects generating these types of carbon credits has grown rapidly; the primary Clean Development Mechanism (CDM) market is currently valued at \$7.4 billion. Most cap and trade schemes (either existing or proposed) allow participants to meet their emissions obligations through the use of 'offset' credits generated by projects in sectors or countries not covered by an emissions cap. This both stimulates investment in low carbon projects and lowers the overall cost of meeting the emissions cap.

The development of carbon markets is an area where there is now a great deal of experience across the world. In 2007, the carbon market was valued at US\$64 billion, with nearly 3 billion carbon credits traded; the EU Emissions Trading Scheme (EU ETS) makes up over 75% of this market. Emissions trading is also nothing new for the US, which pioneered such mechanisms to cut the emissions of pollutants, such as sulphur dioxide and nitrogen oxides in the 1990s. Many other countries, including Australia and New Zealand, are adopting emissions trading as a key regulatory mechanism. While China and India may be some way from implementing their own cap and trade scheme, they are active participants in the project-based markets and the Executive Secretary of the UN Framework Convention on Climate Change, Yvo de Boer, has observed: "There is now, I believe, a global consensus that cap-and-trade is the way to go."⁴




⁴ US emissions trading waits for Bush to go, Financial Times, 27 May 2008.



THE STATUS OF CARBON MARKETS



- A. Canada large emitters
- B. California & West Coast Governors; California Climate Action Register (CCAR)
- C. US renewables
- D. Chicago Climate Exchange
- E. RGGI
- F. Norway ETS
- G. EU renewables

- H. EU ETS
- I. EU CDM/JI fund
- J. Russia, Ukraine, Bulgaria, Romania
- K. Australian Renewables Scheme
- L. NSW GHG Abatement Scheme
- M. Japan CDM/JI fund
- N. Australian Emissions Trading Scheme
- O. New Zealand Emissions Trading Scheme

-  Main sources of CDM credits. Expected average annual CDM credits (%)
-  Main CDM Buyers
-  Emissions Trading Schemes (full line = existing) (dotted line = proposed)

-  Main sources of JI credits
-  Renewable obligation/trading schemes

The impact of carbon trading

As noted earlier, the largest cap and trade scheme is the EU ETS, which commenced in 2005. Evidence suggests that this led to growing levels of investment in emissions reduction and abatement technology. In a recent survey⁵, 14 percent of European utility companies were prompted to reduce emissions by improving operational efficiency or maintenance in Phase I of EU ETS. Some two-thirds also reported an increase in investment in renewable generation.

Importantly, allowing the use of CDM credits in cap and trade schemes in industrialised countries has helped mobilise investments in developing countries. In China, the CDM has boosted initiatives to increase renewable energy capacity, especially in wind and hydro power. The capacity delivered by wind energy projects has achieved the government's target ahead of schedule and arguably prompted the Chinese government to revise its target upwards⁶. Although the CDM promoted carbon flows of over \$7billion in 2007, Lord Stern estimates that climate stabilisation would require annual carbon flows of US\$20-75billion by 2020 and up to US\$100billion by 2030⁷.

⁵ Energy and efficiency – The changing power climate, Utilities global survey 2007, PricewaterhouseCoopers Energy, Utilities & Mining.

⁶ Indeed wind power generation is already double the original target of 5GW by 2010. The government subsequently revised its target to 10GW.

⁷ Stern (May 2008) Key elements of a global deal on climate change.

The future of CDM in China

An active market and continuous capacity-building

The boom in CDM projects in China is likely to continue in the near future. The Chinese are becoming more adept as project developers and many more projects are likely to come on stream in the foreseeable future. There are many workshops and seminars on CDM-related subjects taking place in China. The number of renewable energy projects is expected to continue to grow rapidly, but from an abatement perspective, industrial gas projects may well continue to dominate for a while longer (the large HFC23 projects have mostly been snapped up). In the longer term, assuming the post-2012 regime is resolved soon, the next wave of large-scale CDM projects in China may well be methane capture from coal mines and untapped seams.

High-level support for CDM

The Chinese government, numerous developed countries' governments (including the G8+5), the UN, and various international agencies, such as the UN Development Programme (UNDP) and the World Bank, are in regular consultation on climate change issues and implementing the CDM agenda. The World Bank has a special clean development fund that provides loans to projects which reduce greenhouse gases in developing countries, and China has received a major portion of the loan portfolio in 2005 (73%) and 2006 (about 60%). The UNDP has developed a programme – MDG Carbon: Carbon finance for achieving millennium development goals in China – along with China's Ministry of Science and Technology, to link carbon emission reductions under the Kyoto Protocol and carbon trading schemes to achieve sustainable development. Under this programme, some type of carbon exchange is envisaged.

Need for certainty post-2012

There is considerable urgency for the post-Kyoto regime to be resolved in order to give certainty to the market that the flexible mechanisms will continue beyond 2012.

The main question remains however on whether the proliferation of CDM projects in China has undermined the need for China's politicians to join a global cap and trade regime.

Making carbon markets fully effective

The 'sum of the parts' of today's carbon markets will not be sufficient to deliver the deep cuts in emissions that are required because, simply put, too much of the world's emissions remain outside the cap. An effective carbon market needs depth, breadth, liquidity and transparency, but to deliver the savings that are required it also needs scale. It will be important that by the time of the Copenhagen Summit, a framework is established for an efficient global carbon market that allows substantial links between national or regional programmes, including those in developing countries.

Increase market breadth and liquidity

Including more gases and more sectors increases the prospect of finding low-cost emissions reductions. As it stands, the EU ETS covers only around half of emissions, so there are potentially more cost-effective abatement measures available from the rest of the economy, particularly in the transport and housing sectors. However, the benefits of increasing the breadth of carbon markets would need to be balanced against the potentially high administrative costs (monitoring, verifying and trading) of including very large numbers of small point sources under the emissions cap. One option could be to move the obligation upstream and require the providers of fuels to include the cost of carbon in their product which would force consumers to include this cost in their consumption decisions.

Long term policy visibility

Policy visibility and stability should be an essential feature of any agreement reached in Copenhagen which should set out legally enforceable, scientifically informed targets for the medium and long term. Without such signals, business leaders simply cannot plan investment effectively. The timeframe for planning many major capital projects can be five to 10 years yet, even in Europe where politicians have been pro-active in setting policy, there is no certainty on what happens in four years' time when phase 2 of the ETS ends. Leaders from major economies need to show their willingness to act, by setting medium and long-term targets which are backed by concrete plans of action.

Scaling-up developing country participation

As climate change is a global problem, it is vital that all countries participate in a new global deal. This should help to minimize the potential for 'carbon leakage' i.e. the shift of carbon intensive industries from countries with emissions caps to those without them. The inclusion of emerging economies will need to balance the need to limit emissions growth with the imperative of economic growth. The CDM has been effective in engaging developing countries and building capacity in both governments and businesses to tackle emissions growth. It also establishes a common project-based currency that can link isolated emissions trading schemes.

However, the CDM has not been without its flaws. Capacity constraints at the Executive Board and verification teams have caused a substantial bottleneck in the registration of new projects. It is also challenging for companies to prove that the project is 'additional' i.e. it reduces emissions below a hypothetical baseline. While the CDM does provide one avenue to link the developing countries to the carbon markets, it also illustrates the level of institutional capability needed to ensure the integrity of the carbon market. This includes defining methodologies, baselines and standards; measuring, monitoring and verification; appointing oversight panels and experts; and managing the operational burden. So, in addition to new investment in emissions reduction projects, scaling-up developing country participation will require investment in institutional and business capacity.

More importantly, the CDM provides a transition phase for developing countries to participate in global carbon markets, before eventually joining the developed world in establishing their own cap and trade programmes. However, some commentators have noted that it has inadvertently become an incentive for developing countries to remain outside the emissions cap and shift the burden of funding emissions reductions to developed countries. A new framework needs to encourage greater participation in the carbon markets from unrepresented regions, and set out the path for participating CDM countries to transition to a binding emissions cap.

Institutional requirements and capacity building

Establishing a global carbon market will be a difficult and expensive ambition. Linking segments of carbon markets will necessarily require more co-operation and co-ordination among many different institutions. A fully fledged carbon market presupposes strong and effective institutional and market structures that are simply lacking in many countries. These institutions would need to be consistent, reliable, and deliver a high standard of performance so that the market as a whole is built on sound foundations. This underlines the need for substantial planning to ensure that the foundation is laid by the time government leaders arrive at Copenhagen in late 2009.

Industry Perspective: the energy sector

Only a few years ago, many viewed alternative energy as synonymous with alternative lifestyles. Today, renewable energy sources are a necessary part of any balanced energy strategy. Renewable energy sources can help slow the overall growth of carbon emissions, though they are unlikely to replace coal-fuelled power plants in the near future. Most countries still need to rely on nuclear, hydro and fossil fuels, notably coal, for a reliable electricity supply.

However, the climate challenge requires emissions from baseload power plants to be reduced substantially while renewable generating capacity is scaled-up and brought online. Greater energy efficiency and gateway technologies such as clean coal and carbon capture and storage (CCS) will drastically reduce the emissions profile of coal.

Governments should work to create favourable conditions for the faster development of carbon-reducing technologies. Governments will need to provide long-term regulatory certainty combined with flexible policy mechanisms, such as the use of appropriate subsidies and the development of a robust carbon market, that favour the deployment of short-term emission-reducing solutions while fostering investment in transformative

technologies. For carbon markets and subsidy systems alike, long-term stability is necessary to provide investors with a stable and secure payoff on their investments.

Evolutionary changes are also needed for the electricity grid. The high-emitting energy infrastructure needs to be replaced with a “smart” power grid to help optimize energy efficiency and to permit the integration of more renewable energy. For instance, since wind availability can be unpredictable, power stations and the transmission system will require greater flexibility in order to respond to fluctuating supply and demand.

Sourcing renewable energy can also prove problematic, as the most efficient sources for harnessing wind power, for example, are often in remote areas far from energy consumers. Regulators should encourage the development of more transmission capacity and allow the cost recovery mechanisms associated with that expansion.

Energy companies in the developed countries face similar challenges and therefore share ample opportunities to work together. This would all lower the combined costs of deployment. Many developing countries are still in the process of developing a full-fledged national grid system and a transfer of knowledge and technology from developed to developing countries can assist developing nations in preparing for larger quantities of alternative energy sources in the energy system.

Investments in renewable energy sources will be vital for reducing emissions on power generation but for many years to come, fossil fuels will continue to be the main source of power generation; however, the impact of fossil fuel power generation on the climate can be reduced through:

1. Enhanced energy efficiency
2. Use of clean coal technologies, including CCS, and
3. Expanded, modernized transmission system.

To this end governments play a key role. The right regulatory framework will be vital for reducing emissions from power generation and providing sustainable energy sources for the future.

Government regulation and direct investment

One of the advantages of cap and trade schemes is that they can embrace and stimulate a wide range of initiatives. However, carbon markets are not well-suited to some sectors where there are very large numbers of small point sources, as their application would be particularly costly, for example in building construction and land transport. Other forms of government regulations tailored to national circumstances, such as setting fuel economy standards, are needed to supplement market initiatives.

Setting standards and sector-specific measures

Setting energy efficiency standards is a simple but effective regulation to encourage abatement. The signals sent out to the market are clear, direct and immediate; so are the responses. For example, revamping energy efficiency standards in building codes is a relatively straightforward way to ensure that future developments meet low-carbon standards; the UK Government has proposed that by 2016 all new homes should meet a “zero-carbon” standard.

The difficulty, however, is getting consistent efforts internationally. Having consistent emissions standards across participants within specific sectors can reduce concerns about competitiveness and carbon leakage. On the other hand, an international agreement needs to be sympathetic to national and local circumstances to garner support. Energy efficiency levels in different countries start from different bases, and expecting harmonisation of standards will demand more efforts from some than others.

The automotive industry is a good example of how regulation has forced changes in some parts of the world to the benefit of both the business models of car companies and the environment. Varying regulations in different parts of the world, however, have resulted in a wide disparity in energy efficiency and emissions standards. In Europe, average fuel economy now stands at around 45mpg, with a target of over 50mpg by 2012 and average emissions levels of 130g/km of CO₂. Japan has also achieved fuel economy of around 45mpg, China’s average is 35mpg, but the US trails at 25mpg, as major US manufacturers have continued to resist the introduction of tougher emission standards. By some estimates, if the US were to adopt and implement the

current European standard, equivalent to 45mpg, it would reduce required oil refining capacity by over 20%. This would support both energy security and environmental goals.

Standards need to be updated regularly so that they are realistic and attainable, as well as being motivational. Setting standards that are too high or too low render them meaningless. Setting 'reasonable' standards helps provide incentives for laggards, while timely review and revision of standards helps leaders continue to improve in order to differentiate themselves.

Although standards are often sector specific, in many situations, they could be linked to carbon markets. For example, agreeing sector-wide targets has been recommended as a potential reform to the project-by-project approach of the CDM. The use of standards would remove the requirements to demonstrate additionality as companies outperforming the standard could earn carbon credits without having to develop a hypothetical baseline.

Direct investment

The cost of carbon will be a vital incentive in the wide-scale deployment of cleaner technologies. However, carbon price signals may not be enough to spur some of the large capital-intensive technology investments that will be needed or may not come early enough for such technologies to be deployed in time. Direct government intervention in enabling the research, development, demonstration and deployment (RDD&D) in technologies that will have a critical impact on greenhouse gas stabilisation, notably carbon capture and storage (CCS), will be needed in addition to the incentive provided by carbon markets. In Australia, for example, a proposed safety valve feature in their federal emissions trading scheme means that the price for carbon is unlikely to rise to the levels experts deem necessary for the rapid development and deployment of CCS. The government has, however, allocated A\$500 million (US\$ 470 million) to the development of a National Clean Coal Fund, which has levered in investments worth \$1.5 billion in cooperation with the industry and others, with CCS as one of the key initiatives.

Trying to include developing countries in a concerted effort to reduce emissions will also require substantial technology transfer. Technology diffusion has been unprecedented through the spread of multinational corporations, but many developing countries still lack the capacity and capability to absorb the technology. A Copenhagen framework that accelerates RDD&D would be vital. One particular aspect would be establishing agreement on technology licensing issues, i.e. the transfer of intellectual property rights (IPR) in return for payment to the technology owners. Currently, IPR agreements are worked out on a case-by-case basis, and such a contractual negotiation process can be costly and time consuming. The new climate framework in Copenhagen, among other things, could help lower these transaction costs by developing some core contractual principles for businesses engaging in clean energy technology licensing in developing countries, to ensure that IPR are protected in law and in practice⁸.

Behavioural Changes

The same difficulty of responding to carbon price signals applies at the household level where carbon reduction initiatives, such as the installation of better insulating materials or more efficient appliances, are too expensive or have a pay-back period that is too long for many households. Governments can help households adopt low carbon or energy efficient practices by providing a range of benefits including tax credit or subsidised loans. Other initiatives supporting behavioural changes in consumers also need to be supported by government. Setting fuel economy standards in vehicles, for example, would lower the carbon emissions per mile travelled, but not the number of miles travelled. In a world where private mobility is a strong signal of economic development and well-being, the demand for private transport from emerging economies is forecast to continue to grow dramatically. Awareness campaigns and other forms of consumer education and engagement are all parts of the strategy to address the demand side of the equation.

⁸ This echoes one of the many recommendations in the "CEO Climate Policy Recommendations to G8 Leaders, July 2008" jointly produced by the WBCSD and the World Economic Forum. Another recommendation to support technology transfers include developing strategic climate investment funds by multilateral development banks (MDBs) or other international finance agencies that support the payment of technology licenses on behalf of developing countries.

Conclusion

Timing is critical. The world cannot afford the long time-tables that have followed previous climate initiatives. It wasn't until 2001 in Marrakech, four years after Kyoto that the rules for the CDM were more clearly defined, and it was several years later before the CDM markets were truly operational. The Green Paper on greenhouse gas emissions trading within the European Union was published in March 2001, and it was 2005 when the three-year EU ETS pilot phase commenced. However, it was only in 2008 with the start of phase 2 of the EU ETS that the overall cap effectively constrained emissions from those covered. A similar delay between an agreement at Copenhagen and implementation of measures to tackle emissions would undermine confidence in the carbon markets and could delay the investment needed to reduce emissions. Policy-makers need to factor in time for consultation and potential pilot phases (of emissions trading schemes, in particular) of the new measures to address emissions growth.

Returning to the credit crunch, that crisis has stimulated an important debate on the role of regulation, corporate oversight and the need for stronger and more transparent accountability. The impact of the credit crunch was on the world's financial systems. The impacts of climate change, though, will be of a different order affecting water availability, biodiversity and our built infrastructure, with potentially an even greater economic cost than the credit crunch. The volume of greenhouse gases already in the atmosphere means that there is limited time in which to act. The period running up to Copenhagen and the decisions reached there will be vital for agreeing to a framework in which everyone – business, governments and individual citizens – can play their part.

Unlike the toxic loans at the heart of credit crunch, the emissions growth problem that the world needs to tackle is not concealed or hidden away. It is well understood. There is the potential for a new international agreement at Copenhagen and good experience of the market and non-market mechanisms that need to be put in place. This agreement should include deeper long-term targets and better linked international markets, supported by the institutional capacity required to deliver these objectives. But

carbon markets have limitations, which is why a range of other instruments is needed. More effective non-market initiatives, such as tougher standards, and more investment in low carbon technologies is required. Negotiators in Copenhagen need to show the same level of urgency and boldness as witnessed in the response to the credit crisis.

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*Chair of Environment Business Australia and board member
WWF International*
- Sir Crispin Tickell,
former British Ambassador to the United Nations

About the Copenhagen Climate Council

The **Copenhagen Climate Council** is an international initiative that brings together leading authorities on climate change, including the world's most renowned scientists, business leaders and diplomats, who are dedicated to turning the challenges of climate change into new opportunities.

The goal of the **Copenhagen Climate Council** is to create a constructive and positive global dialogue based on effective solutions to climate change. The recommendations of the Council are delivered directly to the Danish government, which will take them forward to the UN COP15 Climate Summit in December in 2009. This gives business a voice at the negotiating table and the opportunity to help build a workable framework to tackle climate change.

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About the founder: Monday Morning

Monday Morning, the **leading independent think tank in Scandinavia** and founder of the Copenhagen Climate Council, facilitates the ongoing work of the Copenhagen Climate Council.

Monday Morning (www.mm.dk) was founded in 1989 and is based in Copenhagen. Its main objective is to enable decision makers to successfully navigate an increasingly fragmented and competitive global society.

Transforming the most important news and trends into strategically useful knowledge, Monday Morning publishes numerous reports and papers, including weekly magazines in Denmark and in Norway, and facilitates key networks for Scandinavian decision makers.