The Road from Copenhagen: Next Steps in Climate and Energy Policy

This paper synthesizes discussions held by REIL in the lead-up to the UNFCCC Climate Negotiations at Copenhagen in December 2009, and discussions post-Copenhagen that have sought to make sense of the outputs of the UNFCCC process. REIL is a group of individuals from diverse backgrounds including finance and investment, technology, regulation, policy and research, who share a common interest in issues relating to climate change and in particular the deployment and financing of low carbon technology. In their discussions on various topics the group has sought to address the key issues at stake in the global effort to reduce greenhouse gas emissions. This account attempts to capture those issues, analyze to what degree the Copenhagen negotiations mark progress, and set out what steps need to be taken, both within and outside the UNFCCC, in 2010 and beyond. Written by James Davey, Martin Devine, and Leslie Parker, April 2010.*

CONTEXT: NEGOTIATIONS WITHIN THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

The emerging shape of a global climate deal and the need to go beyond Kyoto

The Bali Action Plan, agreed at the end of 2007, launched two strands of negotiation under the UNFCCC. One (the ad hoc Working Group on the Kyoto Protocol, or AWG-KP) considers the future of the Kyoto Protocol and, critically, targets for developed countries. The other, the ad hoc Working Group on Long-term Cooperative Action (AWG-LCA) considers what wider measures are necessary to facilitate implementation of the Framework Convention on Climate Change, including emission reductions across all countries (developed and developing).

The rationale behind launching the LCA discussions from a developed country point of view was that the Kyoto protocol does not provide the emissions reductions necessary to address climate change as it contains targets for only a limited set of countries, which account for less than 40% of the global emissions. Action will be required by all countries, or at least all the major economies, which include India, China, Brazil and South Africa, to tackle climate change. Developed countries believe that what is needed therefore is a new framework to incentivise action in developing countries through targets and enhanced support on finance and technology from

*The views and opinions expressed in this paper are the synthesis of a diverse group discussion conducted in a range of fora and do not necessarily reflect the views of the authors, REIL, its members and contributors or any government or organization. See addendum at the end of the article for a list of some of those who were part of this conversation over the past year.
developed countries as well as fair and equitable commitments among developed countries themselves. However, many developing countries would argue that such a framework already exists, namely the Convention, and that it is full implementation of the Convention (with the implication that it is the developed, rather than developing, countries that are not implementing their obligations) that is required, rather than the negotiation of a new agreement.

This situation is further complicated by the fact that the U.S. has not ratified the Kyoto Protocol, nor is it ever likely to do so. This puts the remaining developed countries in a difficult position. They do not want to be seen to ‘kill’ the Kyoto Protocol, but they need the U.S. to enter into an ‘equivalent’ legal instrument, to ensure that the U.S. delivers a quantified emissions reduction target internationally, and by extension, participates in a global carbon market.

From a European viewpoint, a satisfactory outcome would lead to all developed countries (i.e. those currently listed in Annex I of the Convention) taking an economy wide ambitious mitigation commitment, together with some form of legally binding actions from major developing countries, with all commitments (whether economy-wide caps, or mitigation actions) open to international scrutiny and verification. Whether this means a continuation of the KP or not is an issue of secondary importance to the EU. What is critical is that the aquis of the KP (including economy wide targets, a 1990 base year, inventories & registries, and the carbon market) are maintained.

The U.S. viewpoint is less focused on the KP (since it is not a party to it) or numbers, but is concerned about legal form. It has stated it will not be bound by any legal instrument unless China is also bound by the same instrument. The nature of commitments is up for discussion (e.g. U.S. could take an emissions cap, China could commit to ‘actions’) but the legal nature (i.e. bindingness) must be equivalent for all parties.

The Japanese viewpoint is close to that of the U.S. even though it is formally a Party to the Kyoto Protocol. Although Japan is not interested in “destroying” the Protocol which bears the name of its ancient city, it has made its position clear; that Japan would not accept any new legally binding instruments without the active, fair and equitable participation from all major economies, particularly the U.S. and China. While respecting the spirit and achievements made under the Kyoto framework, Japan supports a single legal instrument incorporating all relevant elements of the Kyoto Protocol where the US, EU countries, and all other major economies take commitments based on their capabilities.

Developing countries, in general, see no need for a new legal framework. Their view is that the U.S. should ratify Kyoto and be bound by it, and that developing countries should be supported to take mitigation and adaptation actions supported by the provision of finance and technology.

Throughout 2008 and 2009 the AWG-LCA considered a large number of suggestions and contributions for the text that might form the basis for negotiation at Copenhagen. Fears rose during 2009 that Copenhagen would not lead to a full legal agreement. Too much was left to do. Whilst there is some convergence among Parties

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1 The EU would define ‘ambitious’ in line with the science, which suggests Annex I would collectively have to reduce their emissions by the upper end of the range of 25% - 40% below 1990 levels by 2020 in order to have a reasonable chance to meet the 2 degree objective.
on adaptation and technology, the key issues of mitigation and finance were not progressed as they should have been. Immediately before Copenhagen, therefore, the key question was whether countries would put enough on the table in terms of commitments to reduce emissions, and the provision of finance, in order to reach a critical mass that would allow a strong initial political agreement, followed soon after by a more detailed discussion of numbers and legal text in 2010. We shall consider later whether this outcome was achieved.

**Slow progress – the need for collective action, hampered by the desire to see someone else move first**

Progress towards an agreed solution under the UNFCCC in 2009 was slower than many would have liked. Developing countries wanted to see strong early signals (i.e. emission reduction and finance commitments) on the part of developed countries before committing to any actions for themselves; whilst some developed countries, such as the U.S. and Japan, were looking for clear prospects of action being taken in the developing world before adopting targets at home stringent enough to have a significant impact on climate change. Historically, many developed country politicians have shied away from anything other than grand long term targets, which could only be judged many years into the future – avoiding the need to take difficult action in the short term, but also failing to convince others that action is necessary.

Much of 2009 seemed to be wasted in circular arguments. However, through 2009 commitments began to emerge, such as the UK Prime Minister’s call for climate finance flows to developing countries of $100 billion per annum to be generated by 2020, the Japanese Prime Minister’s pledge for reducing Japan’s emissions by 25% by 2020 and the EU’s offer to move to a 30% reduction by 2020 if others ‘do their fair share’.

**REIL ANALYSIS: CHALLENGES, BARRIERS, AND A POSSIBLE WAY FORWARD**

**Agreeing on public finance – concerns over governance, transparency, timing and origin**

Historically there has been a split between developed countries and the G77 group. The G77 want to see predictable and credible funds for technology, mitigation and adaptation, all under direct control of the UNFCCC, whilst many developed countries want to see a range of vehicles, many of which would not be under the UNFCCC. The centralized technology fund in the G77 model might cover research and development, deployment support and IPR acquisition, but some, recognising that public finances are unlikely to ever be able to cover all of the costs of the transition to a low carbon world, question if such a model can effectively engage the private sector at the scale necessary. The EU counter offer is of a model that contains some public finance, but also a large component of private finance, driven, by mitigation targets, through the carbon market as a means of engaging with the

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2 Compared to 1990 levels.

3 The G77 is the negotiating group that represents the majority of developing countries. Membership, initially 77, now stands at 130.
private sector. Also on the table is the approach taken by the U.S. and others of focusing on a myriad of specific actions and initiatives on the ground. Whilst the EU's offer seems the clearest path to unlocking finance and distributing it in an efficient way, a lack of clarity (particularly on scale, sources of finance, and governance) suggests that the EU and its allies need to do more to sell the benefits of their approach if it is to succeed.

Most of the technology discussions focus on finance, and developing and deploying new technology will be expensive, so finding a solution to this difference in views is critical. A 'good deal' on technology can only be effective if it is complimented by an effective deal on finance. In addition, national action plans are likely to need support to get off the ground, but a critical part of ensuring that plans are forthcoming and ambitious is having the support in place to provide capacity building and technical assistance.

The 2009 Major Economies Forum leader’s statement suggested a multiplicity of financing sources, suggesting some broadening of the G77 position. It is clear that donors want all their financing activities to count, even if they are outside a central UNFCCC fund. In the same way that we can think of emissions reductions being comprised of wedges of different measures, financial support might also be seen as being made up of different forms and modes of contribution.

There likely needs to be a blend of finance instruments that reflects the various different needs. National mitigation strategies for developing countries will likely be grant funded; indeed this can be seen as a political requirement for reaching a deal. Such a capacity fund could be small (hundreds of millions), on a GEF type model using implementing agencies such as the UNDP under a holistic UNFCCC programme. Unfortunately this needed to begin 5 years ago, for countries to have developed plans, identified barriers to technology transfer and deployment and worked out how to address them all, to be ready for 2013 when the money could start to flow – in that light, 2013 is very close. To compound this problem, developed country governments' finances are suffering the effects of the global slump, so it will be harder than usual to find money in 2010 to get the capacity building fund going. But UNEP’s blueprint for a capacity building fund suggests a requirement of around only $300m per year. Such a capacity building fund is not so large as to be unobtainable and so could be the first element of a deal, placed on the table by developed countries.

Such an offer would undoubtedly be a good step forward as it’s needed to build the capacity to allow countries to develop their plans; but it needs to start in 2010 so that developing countries are able to begin to use larger scale finance in 2013. If contributions are reliant on proceeds from emissions trading that won’t begin until 2013 then progress will be hampered.

Official Development Assistance (ODA) funding is another potential source for the capacity building fund, but there are political concerns for the G77, due to previous commitments and pledges remaining unfulfilled which makes talk of the ODA in UNFCCC difficult, and ODA itself remains bound by OECD governance.
The role of public finance – what is the best way to use it to develop private markets?

Companies seek investment opportunities, primarily at the project level. In order to influence the investments that companies make, the equation needs to be rebalanced in favour of low carbon technology. Sometimes these are issues that negotiators don’t think about as they are not running businesses or raising finance.

Questions the private sector are asking when making decisions on renewable technology include: is there a long term market for the power (hence the popularity of renewables quotas and feed in schemes) and is the return enough to pay back in the terms of the finance, i.e. what are you going to be paid and for how long? Is the customer credit worthy? The last question is always important, but often a critical barrier in the developing world.

Technology transfer can only work if there is demand in the target markets and a lack of appropriate policy frameworks to drive demand is a key barrier to technology transfer. It is therefore difficult to separate discussions on mitigation from discussions on technology transfer. If countries are serious about being on the receiving end of technology transfer, they need to ensure that they have the right policy environment; which means not just transparency and rule of law, but also the types of policies that clearly favour low carbon technologies. This is a key element of the EU’s position in the negotiations and it drives their wish to see countries develop national strategies for low carbon tech. But developed countries need to do this too and as yet their potential for renewable energy deployment and energy efficiency is far from realised.

Developing countries need to own their national policies. They can’t just come to UNFCCC and be told what to go home and do to build markets for low carbon technology. There has to be a process of discovery and learning: making a national climate strategy, looking at the cost effectiveness of the measures, prioritising and refining. But this can be accelerated through co-operation and experience sharing, especially between regional groups of countries, as occurred successfully under the Montreal Protocol and there are good examples emerging, such as the Asia Pacific Partnership’s compendium of State and Local Best Practices on Energy Efficiency and Renewable Energy, which seeks to define and share subnational best practices of Asia Pacific Partnership members.

Increasingly the discussions under the UNFCCC are looking at novel approaches to developing low carbon technologies. In part this is driven by the U.S. and others’ desire to throw technology related actions into the mix of commitments under discussion, but has the potential to help achieve the necessary acceleration of deployment and the development of technologies that will benefit new markets in developing and developed countries. The standard model whereby a nation develops a technology for use in its home markets, which might after some years begin to spread globally, will not provide the rapid deployment needed. In addition to the more conventional bi and multi-lateral agreements on R&D, there is increasing interest in developing hubs or centres of excellence for technology development. These may be regionally based or centre on a particular technology or sector.
Experience in the private sector has shown that it is important that such hubs relate directly to markets, suggesting that a technological focus may work well and could result in the investment opportunities that would be needed to see newly developed technologies to fruition.

However technology development is not a silver bullet, in that there is no single technology that will allow U.S. to avoid dangerous climate change, nor does the existence of a range of clean technologies mean they will be deployed. As expressed by one member, “We’ve got the innovation deployment cart and horse backwards. By providing markets, the European renewable energy industry lowered costs by getting scale. We know from the PC industry, where computer chips are ever cheaper and have greater performance, that innovation follows commercialization, not the reverse. Moore’s Law is not an independent law of physics but rests on the role of markets; without a vibrant market into which to sell integrated circuits, the shape of the performance curve would look very different, however, in renewable energy technology, we keep waiting for breakthrough technology that will achieve cost parity with conventional sources before deployment. Because most renewable energy technology is by definition capital intensive, much of cost reduction per unit produced stems from manufacturing scale advantages; these manufacturing scale advantages will rely more on extant manufacturing capabilities in other industries than on fundamental underlying renewable energy technology.”

When we consider development and adaptation too, it’s important to remember that finance only looks at the bottom line. Positive external benefits (clean air, clean water, flood protection) are not part of the revenue stream for power, so get ignored because the market is not designed to capture them. There needs to be a clear value placed on these wider environmental values, then the finance community may take an interest. (Doubtless, this is much further in the future than a value for carbon.) Negotiators need to recognise that investors are not philanthropists (generally speaking) and that the solution is for governments to shape the market in a way that facilitates investment in sustainable activities.

Recognising the scale of the challenge posed by climate change is also critical in moving markets on the right long term path. The shift required to keep emissions down at a level unlikely to push climate change beyond 2°C is seismic and long term, and because of the nature of energy use requires not just technological change, but systemic change in behaviour across society. In developing private markets and encouraging investment, it will be necessary to ensure that short terms targets for the next decade place technology investment on a pathway to long term deep emissions cuts. Whilst much needs to be done to meet 2020 targets, the decades after 2020 are when we need to see very significant decarbonisation of infrastructure to meet long term targets of 80% reduction, especially given the inevitability of continuing emissions from sectors such as agriculture and aviation. The period from 2010 to 2020 will be important therefore, not just to achieve reductions, but set the stage for the further reductions that need to follow.

Renewable energy technology is a long term asset, but in the aftermath of the financial crisis banks are slow to lend to renewable energy projects. Investors have
seen a tightening of terms which does not favour the long return period of renewable energy investments and credit for investments in developing countries is particularly affected (financing terms across the world have shortened with the impact of the global finance crisis and the consequent reduced risk tolerance on the part of banks, from 10-12 years to 5-7 years; terms in the developing world are even more challenging). Governments could play a role here by guaranteeing finance over longer periods and providing reliable subsidies to ensure ongoing revenue. In part this could be done through the carbon market, but that still leaves a gap which feed in tariffs or renewables quotas can fill. In other areas such as long term corporate debt and the mortgage market, bonds have begun to replace bank lending as a source of finance. This has not yet happened for renewables, but with the long term returns of renewable energy projects, often over 20 years or more, this could prove an interesting area for bond markets which are well suited to blending public and private finance over long timescales.

**Carbon finance – a driver for change, but in what form will it exist in the future?**

The contribution of the carbon market is limited at present by uncertainty over the value of carbon beyond 2012. Everyone expects there to be a value beyond 2012, but lack certainty as to what it will be.

There is no clear agreement on CDM at present. India and China see it as vital, but it’s unpopular in the U.S. and there are other approaches, such as sectoral and regional schemes that are also currently being explored. It is likely that there will be some sort of project based mechanism, but it might look different to the current CDM and sit within a suite of other measures.

The EU has provisions in its Emissions Trading Scheme for CDM to carry on post-2012 and envisages a single carbon market architecture, whilst in the US, where is seen as intrusive, the prospects for agreement on joining a fully fledged international market are unclear. It’s possible that we may see a number of different schemes emerging / evolving that could gradually coalesce into a network of linked schemes.

But given the scale of reductions needed and the as yet inadequate numbers put forward by some key developed countries, it would seem that the CDM is the only viable way for such countries to acquire the sorts of volumes necessary to meet the targets being contemplated. At the same time, McKinsey’s report said that two thirds of the reductions that could be achieved for less than $60 per tonne were to be found in developing countries, so there is a clear economic rationale for trade in carbon to make emissions reductions in the cheapest way. Despite the many arguments put forward against carbon markets, there has been no real alternative put forward that embodies the same degree of choice and flexibility or that does not move down the path of autocratically setting limits on emissions. It could be said that the carbon market is akin to democracy: the worst idea, except for all the other ones.

To add a further dimension of complexity and uncertainty to the carbon market picture, forestry is now also being thrown into the mix with as a source of credits.

One possible future for the CDM is to move more towards a programmatic approach based on national policies and programmes. But private investors invest in
companies, products, services and projects – they do not invest in programs or sectors. If the effort to scale-up the response to climate change results in only national or sectoral plans, then the only private investment that will follow will be the service of lending money to governments. Only by translating those national or sectoral plans into incentives for a huge array of individual, investable opportunities – at the company, product/service and project level – will the amount of private capital joining the response to climate change continue to increase. Only by using market rules such as a price on or rights to carbon, to create a space within which private investors will experiment, succeed and certainly sometimes fail, will we spark the innovation and creativity needed to address climate change in a rapid and cost-effective manner.

Institutional and market barriers are still waiting to be addressed with much of the existing low carbon technology not deployed as widely as it could be – why?

The price of carbon and other externalities is not yet properly factored into the price of fossil fuels, and support, in the form of tax incentives and, in the case of nuclear, insurance subsidies, unbalance the playing field for renewables.

But possibly the greatest single problem for low carbon investments is uncertainty. Uncertainty over the return on investments, stemming from transient and fragmented support schemes, portfolio standards and feed in tariffs, means that whilst costs are relatively easy to predict, revenues can be less certain. On the global scale, the lack of clarity over commitments beyond 2012 means that carbon revenues are hard to rely on. On a national and state level the different timeframes, qualifying criteria and returns for the various schemes reduce the ability to assess investments and make it less easy to invest. Where schemes provide an uncertain revenue flow, it is hard to factor them into an investment package, meaning that the incentive they attempt to offer is greatly reduced in value, and often, especially in light of the credit crunch, investors are willing to trade some degree of return for greater certainty. Integration of the various schemes and, most importantly, clear guarantees that such incentives are here to stay, can unlock much of the investment that is willing, but unable, to flow into low carbon technology.

In providing energy for development, especially in countries and rural areas where energy can be very expensive, there is ample technology to provide low carbon solutions; the issue is that price signals and regulations do not provide proper incentives. But it is also important that the basic underlying investment environment is robust enough to attract business. If the private sector wouldn’t make a conventional investment in a country, why would they consider any investment?

Centralized generation infrastructure, that favours neither renewable nor energy efficiency, is often still encouraged by energy regulators, and although states like California and countries like the UK have begun to incentivise investment in energy efficiency measures by energy companies, most still make more money by selling more kWh. In some markets the price of power is artificially low, making it even harder to make renewables cost competitive.
As noted by one REIL contributor: “The infrastructure required to shift to clean energy on a large scale is enormous and not yet in place – from the pipeline network that could allow transportation and storage of carbon from CCS plants to the distribution grids that could take power from renewable sources such as solar in North Africa or the south-west U.S. to centres of population such as Europe or the mid-west cities, whilst accommodating distributed generation and sophisticated time of use pricing – there is a huge gap in what is needed to achieve a low carbon energy system and the current levels of investment or policy support. If countries had an appropriate price for carbon, time of use pricing for electricity, building and appliance efficiency standards and incentives for utilities to invest in efficiency, we would see very substantial capital flows.

Energy efficiency is critically important. The energy problem isn’t production, it’s inefficiency. The U.S. uses more than twice the energy per capita as Europeans and the biggest source of that energy use is in buildings. The built environment generates more than 40 percent of greenhouse gases because our buildings use lots of electricity. Because electricity seems clean as it comes out of the socket, we don’t appreciate that most of our electricity comes from burning coal. More than 90 percent of energy is lost from its conversion to electricity, transmission and inefficiency loss in the building before it is used for heating, cooling and lighting. If we want to solve our energy problems, we need to tackle energy efficiency in buildings. And we don’t need a Manhattan Project to get people to change light bulbs or turn down the air conditioning.

Policy makers understand many of these issues, but in the past have often avoided making hard choices. It’s a lot easier (and cheaper) to fund more R&D on energy scattered around the country than take on the more prosaic, tougher and more expensive problems of figuring out how to build transmission lines across state lines and to tackle electric utility regulatory reform. The current “let the market decide” approach won’t work because market signals are wrong, vested interests are strong, and the scope of the problem requires clearer direction.”

**Trade and politics – barrier or opportunity?**

There are wider issues around barriers to trade in low carbon technology than the price of carbon and feed in tariffs. Tariff barriers such as the U.S. import duty on ethanol, designed to protect the domestic industry, can hamper the development of markets for low carbon tech elsewhere. This is an issue that the UNFCCC cannot address alone and it needs to be raised in the WTO and other economic fora.

Some in the U.S. are seeking an international element to cap and trade legislation which is being developed, but there is resistance to this. Progressive elements were very keen to see a bill on the table in time for Copenhagen but this was not achieved. Fears in the U.S. remain that it will be hard to ‘give money to China’ in the current economic climate and in awareness of a misconception in America that all of China is as developed as a visit to the Olympics or Shanghai might suggest. But strengthening the market for U.S. exports of low carbon tech is a strong counter argument, if it can be deployed.
Much of this is an issue of perception. China sees pledges to reduce emissions substantially by 2050, but little short term action, which makes the pledges seem implausible and invites a cynical interpretation that western governments are using climate as a tool to limit the growth of China. For the US, the move of manufacturing to China is a concern, but all countries are keen to build their capacity in new technologies – from America, to Europe, to Asia.

Addressing these wider issues of trade politics is vital. We want to see a global shift to low carbon, innovations in technology and a development of the capacity to manufacture that technology. This brings with it politically charged questions of job loss and creation which can dominate political thinking and raise the spectre of protectionism. If a transition to low carbon can be achieved consistently in a balanced way then the emergence of winners and losers will be minimized. But whilst countries may fear becoming losers, the possibility of becoming a winner may be an incentive to move towards low carbon; indeed many nations sell the low carbon agenda on the basis that it provides an opportunity to develop a new advantage in technology and manufacturing. Any international framework needs to help balance these tensions if it is to succeed. Politicians in any country, no matter how rich, can’t sell a job loss argument to their electorates.

Unlocking inertia – the role of MEF and other fora?

To unlock the inertia currently dogging the negotiations there needs to be a demonstration of effort by all major economies. Forums such as the Major Economies Forum (MEF) need to do more than simply produce reports and analyses or G8 style reaffirmations of what has already been said, they need to develop flagship initiatives involving collective action that can demonstrate commitment on all sides. In these discussions China is not a recipient, but an equal partner. Such flagship initiatives need to have a significant impact, so might cover things such as: CCS deployment – in both developed and developing countries; deploying 10Gw of advanced solar in less developed countries in the next 5 years; supporting the development of low carbon cities; or, deploying X thousand electric cars. Whatever their precise nature, these would need to provide clear benefits to both sides, beyond carbon reduction, e.g. China and India could both become major manufactures and consumers of low carbon vehicles. Given the need for technology investment to shift onto a long term low carbon pathway, of the kind identified in the IEA’s Blue Roadmap, this kind of intervention from the MEF and others could prove a tool to drive future commitments beyond the next decade, and in the absence of a deal in Copenhagen, the role of smaller groupings such as the MEF could be a last chance for securing action. However at this point in time, key countries, such as China, India, and Brazil do not seem attracted to the idea of making the MEF or G8 these decision making entities.

Developing and deploying new technologies

Meeting the challenge of reducing emissions will require a massive deployment of low carbon technologies across every sector. The metaphor of the Apollo project is often
used to indicate the scale of the task, but low carbon technology may require a different approach. The technologies that emit carbon now are embedded across every part of daily life, and the change needed is not only one of new technology, but also of new behaviours. While the end goal can be readily predicted now, in terms of the total amount of carbon tolerable in the atmosphere, the technologies that will be in place to achieve this decades in the future are less certain. To enable the development of technologies there needs to be quick learning – adopting new technologies, learning from failures and problems, and changing plans when they are proved to be wrong.

In looking at the type of technological change needed, the existing infrastructure for distributing energy and providing basic services presents both a major challenge and an opportunity. Buildings are slow to be replaced and much of the existing stock contains technology that dates back to the start of the 20th Century. Innovative work on intelligent grids that manage power in a much smarter way, scalable local DC grids, and technologies such as LED lighting and energy efficient building design, which offer major savings over their predecessors, are beginning to become mainstream, but face major barriers to achieving full market penetration. In addition to the new technologies there will be a need for new skills and business models (e.g. builders, electricians, energy service companies) to equip and service infrastructure that could operate very differently to today’s.

Such a transformation of our energy systems seems daunting, but there are clear signs that it is beginning to occur. The rate of change in investment in low carbon technology is accelerating already, albeit not yet as quickly as the models of growth and emissions would suggested is needed.

**Intellectual Property – an issue of perception or a real barrier?**

A key concern for many private sector organisations observing the climate negotiations is Intellectual Property (IP). In the negotiations themselves IP is a sticking point, as some view it as an integral part of a deal, whilst others see IP as wholly separate and not something that the UNFCCC should tackle. Some question whether it is an issue UNFCCC is even equipped to tackle, but there is a strong argument that a UNFCCC IP fund, developing new technology, is necessary for political reasons, even if it is unlikely to result in significant new innovations.

A pragmatic approach seems plausible; tackling IP on a project by project basis, with prior agreement on the part of the parties involved to share, or otherwise allocate, any IP resulting. This sort of activity might happen outside of the UNFCCC, but could be seen and counted as part of a wider effort. And it is important to recognise that IP in itself is only part of the equation – the knowledge and know-how to manufacture complex technological products may in many cases be a bigger barrier than IP itself.

Efforts to centrally develop new IP might be more appropriate where there is little commercial market, e.g. technologies for least developed countries and for adaptation technology where there is currently little or no market demand that can drive technological development, often because the people who need the technology are
too poor to pay for it. Equally, the current IP process can be slow and act as a
disincentive for quick dissemination of technology – being able in some way to
overcome the slow pace of IP, for climate technologies at least, would be extremely
valuable. Demonstrating action in this area is particularly important to address the
concerns of developing countries in the negotiations, especially those whose views
may often be overshadowed by the main voices in the G77.

But ultimately it is clear that private companies prefer licensing and protection of
IP to having to hand it over as part of a deal – but it does not matter if the licensing
is financed with public money by bodies such as the World Bank, so long as its paid
for and protected.

**How to best engage with the private sector?**

Much is made of engaging with the private sector, and it is clearly a vital part of
implementing emission reduction, but it’s important to look at the motivation of
whoever from the private sector you are considering. Elements of the private sector,
seeking to preserve the status quo, have in the past done much to hamper progress
and prevent any deal being struck, but increasingly a significant part of the private
sector sees potential change as opportunity rather than threat and can engage in a
constructive way. A key message that comes across consistently from those looking to
invest in low carbon technology is that whilst the detail of any policy that aims to
engage the private sector to facilitate a transition to low carbon is important, the
stability and longevity of that policy is even more so. The greater the risk, the greater
the return that is required in order for business to be able to make the investment.
Stable policy reduces risk and opens the door to being able to finance projects with
lower returns over longer periods of time. This allows the required step change from
speculative short term investment to scaled long term investment that builds the
markets.

Ultimately the investment decisions that will determine future emissions will be
made on much the same basis as any other investment decisions, and this means that
terms of the deal for low carbon technology needs to be on par with the alternatives.

The carbon market is the most convincing mechanism around to translate the
undesirability of those alternatives into the language of investment decision making.
Unfortunately there is no effective carbon market without a framework of multiple
national legislation, whether or not in pursuit of internationally binding targets,
incentivising companies on whom a new regulatory imposition is placed to look
across the world to source their carbon reductions. Despite the efforts of economists
and enthusiasts in the private and public sectors, in most countries there is profound
resistance from much of the industry whose emissions must be limited, either to the
level of regulatory emissions constraint consistent with meeting global targets, or to
any new regulatory constraint at all.

From the perspective of protecting shareholder value, and safeguarding
competitiveness, market share and jobs, the instinctive reaction from these industries
is easy to understand. On the whole climate change still affects future public goods,
which are the concerns of Governments, far more than today’s share prices, which
remain primary motivating factors for businesses. And in addition, Governments seem susceptible to secondary objections to carbon trading, such as objections to foreign sourcing or sourcing from particular processes, that most gave up long ago in other fields as business and industry became globalised.

Faced with these objections, it seems at present to many dispassionate business observers that Governments are crumbling: they do not see enough political advantage to action, in terms of rewards from their voters who seem increasingly uncertain whether the climate problem exists or is important to overcome the natural resistance from their industry. And the lack of support for trading schemes, and the political squabbling over design features, suggests that carbon pricing, whatever its advantages in terms of efficiency, is no more secure against political changes of mind or tack than any other Government scheme intended to skew investment away from normal economic choices, such as support schemes, regulation or tax treatment.

At the same time, however, many businesses are putting much effort into renewable and other energy technologies that have no economic justification until carbon is priced or substantial new regulation and support is assured. This may seem inconsistent; but for some industries the downside of being left back down the track if Governments somewhere in the world really do create major markets for low-carbon investment is too great to ignore. However, transforming that mindset into a willingness among a rather different grouping of industries, to voluntarily accept substantial and costly emissions reduction obligations is a task that at global level largely remains to be done. Until all the industries and businesses involved genuinely believe that Governments collectively are serious, and will not be diverted by lobbying or the prospect of some economic dislocation, progress will be very hard.

Engaging with the private sector has to be seen in this light: it is not sufficient to talk about collaboration on research and technology transfer, since there has to be communication, based on evidence, of worldwide Governmental commitment to early and significant regulatory action, whether that action takes the form of a price and a market, or something else.

**Achieving a global climate deal**

Bringing the above analysis together, we arrive at some interesting conclusions. Ultimately, at the most basic level, there are two parts to a global climate deal.

First there is the political deal needed to deliver an international agreement – to bring both the G77 and the developed countries to the table with mutually (and hopefully environmentally) acceptable commitments and contributions. For many this is, on the one hand, about clear support and political recognition of developed countries’ responsibility manifested in the transfer of resources under whatever governance structure can be agreed upon and, on the other hand, clear commitments by all countries to make significant efforts to reduce or limit the growth of emissions.

Secondly, there is a more complex and organic deal, with the private sector. But the private sector is not a single actor. It is the result of the actions of a myriad of individuals, companies and corporations, each looking for their own opportunity to invest and put their business models into action. The private sector is responsive to
ideas that directly influence the environment for investment – feed in tariffs, loan guarantees, carbon pricing and other things pertinent to specific transactions – so for this element of the deal to work, the international framework needs to promote the sorts of policies and measures that really alter the decision making of the private sector.

The technology needs assessments and national action plans are, in theory, where this all comes together – funded and facilitated by the international framework, but developed by nations for themselves, the success of these will be measured by the extent to which they facilitate private sector investment. Private sector involvement in their development could help to ensure they are successful.

High level negotiations such as Copenhagen are unlikely to be the forum where such specifics are decided – but getting the right deal on public finance (i.e. the transfer of resources from developed to developing countries) will allow deals on commitments which in turn translate into policy frameworks which will engage the private sector and affect investment. So although the public finance component of the overall picture is small, it can be seen as critical in unlocking a deal.

**Some key elements that could be incorporated in a global climate deal**

*Economy-wide emissions caps for developed countries*

Building on those targets established at Kyoto, developed countries should take the lead in delivering global emissions reductions. The Fourth Assessment Report of the IPCC suggest that collectively developed countries need to reduce their emissions by 25% to 40% (measured against a 1990 baseline) by 2020 in order maximize the chances of global mean temperatures not rising by more than two degrees.

*Country-led plans of action*

Developing countries (especially the large emerging economies such as China, India, South Africa and Brazil) need to put forward their own self-designed and country led plans of action, including the implementation of clear policy frameworks to build markets for clean technology. With these in place, finance support can then flow in. However, the effectiveness of this approach depends to some extent on what commitments developed countries are willing to make on the provision of finance. The better the deal on support, the higher the level of ambition in the national plans is likely to be. The recent growth, fourfold globally during 2004-8, of investment in renewable energy, driven by those countries that have strong policy frameworks for renewables shows how vital and effective such frameworks are.

*Technology road maps*

Technology roadmaps that highlight what needs to be done in terms of research, development and deployment, are required in order to push forward the top technologies (maybe 20 or 30 technologies) to be commercially competitive. A lot of this work already exists (e.g. under the International Energy Agency), but needs to be recognised internationally under the UNFCCC. This raises an important point; that the majority of things that are happening, or will happen on the ground in the sphere
of technology, will be outside of the UNFCCC. There needs then to be a mechanism
to identify such initiatives and account for them in the UNFCCC discussions – or to
put it another way, to glue UN ‘blue berets’ on to those initiatives that already
represent part of the solution. This would then facilitate action to address the
identified development & deployment needs and barriers – a point widely accepted
by negotiators.

A research and development fund
The development of technology roadmaps would highlight technologies whose
development is lagging behind others. A relatively small (possibly around $0.5-2bn
p/a) R&D fund under the UNFCCC, which could take the form of a prize fund, a
challenge fund, or just straight out R&D grants, could address the laggards identified
in the roadmap, plugging the gaps in private sector and national government funding.
Models such as the CGIAR programme for agricultural research (which facilitates
collaboration on agricultural technology to develop local solutions) could provide a
template for spurring R&D to develop locally appropriate applications for new and
existing technologies.

A demonstration and deployment fund
A larger pot of money is needed to finance demonstration and deployment of
technologies that are not commercialised, or not present in a particular market.
Figures of $5bn a year have been discussed, but it is acknowledged that such a fund
might start smaller and take time to work up to that level. Such a fund needs to avoid
supporting things that already happen in the market but at the same time needs to be
demand-led. This could be seen as an upgrading of the existing Clean Technology
Fund, but it would likely be a wider range of financial tools than simply grants and/or
loans. The World Bank would seem the logical home for this, but that will require
working through political issues of trust around the World Bank and there is a clear
desire for whatever mechanism emerges to be transparent and open in its governance.
Key to the concept of a deployment fund is that the money should be used not simply
to support the project but to incentivise the private sector to invest. Incentives might
include project insurance, forward purchase commitments or other instruments –
but a critical and unanswered question is ‘what is the most effective way to use public
money to incentivise private sector investment?’ Due to its limited supply, public
money needs to be spent on significant change, not just incremental improvements
and needs to leverage private finance. Some existing initiatives such as the Private
Finance Advisory Network (PFAN) may provide good models here that could be
repeated and scaled up.

The acceleration of deployment, along with research and development is critical.
In other technology fields, such as the micro-processor, innovation has been driven
by increasing market share and economies of scale, not the other way around. But
some technologies, in particular carbon capture and sequestration (CCS), are seen as
both too important and too far from commercialisation to be left without assistance
to support demonstration and deployment. While the contentious nature of CCS
means a big global deal on CSS is unlikely, it could be well suited to government support on a deal by deal basis for demonstration plants.

**Carbon markets**

Ultimately, a global carbon market would be a way to achieve global emissions reduction in a way that reduces overall costs (though it is not the only global approach to pricing carbon – Switzerland, for example, have proposed a global carbon tax, revenues raised by which could be recycled to support mitigation and adaptation).*

One way in which a deal could be seen to have made progress on carbon markets is for it to stimulate (through domestic legislation) the establishment of cap and trade schemes in the US, Japan and other economies that could trade with the EU scheme and buy in credits from the CDM. The role of the UNFCCC in this system would be to set the rules regarding the credits to be traded, ensuring so far as is possible the equivalence of emissions reductions (so-called ‘environmental integrity’) in different schemes.

For an ambitious deal (i.e. one that is compatible with the EU 2 degree target) the volumes of carbon finance flows become very large (several tens of billions of dollars per annum by 2020). It is difficult to see how project-by-project generation of credits through the CDM, as it currently exists, could deal with this volume of trading. Furthermore, the U.S. and EU would want to see the production of many internationally traded commodities (most obviously steel and other metals) treated in a way that did not disadvantage their industry. This suggests ‘sectoral trading’ where, for example, the steel sector in India, China, Brazil etc. entered into a cap and trade scheme compatible with international trading. The advantage, from a developing country perspective, of such an approach is that (in theory) new plant in emerging economies is very efficient, and net positive carbon market flows into these markets could be expected. However, developing countries are understandably suspicious of this – since it involves taking on legally binding emissions caps, even if only on part of their economies. And the promise of ‘finance flows’ looks a rather empty one while the U.S. and Japan have not yet established cap and trade schemes. Nonetheless establishing the principle of ‘sectoral trading’ would be a major achievement in a global deal.

**Negotiating the deal – UNFCCC versus delivery elsewhere**

Other than the country led action plans, the possible elements of the deal set out above are focused on technologies and policies, rather than countries. But, is a forum of 194 countries the best place to try and drive forward R&D? Might it be more effective to leave countries and groups of countries to come together around specific needs? And politically it is not clear that all countries would be willing to put money under a UNFCCC banner, meaning activity will occur outside of the direct influence of UNFCCC, but how can this be reconciled against the need for global action under UNFCCC?
These questions highlight the need for a mechanism to account for wider efforts that are going on now, and in the future, outside of the auspices of the UNFCCC. Any UNFCCC fund envisaged would become a coalition of the willing additional to these efforts, to plug the gaps that exist and not duplicate existing work.

Whilst considering the prospects for a UNFCCC deal it is important to remember that many of the things considered below can be done with or without a deal and on their own merit. In addition to helping meet carbon reduction targets, renewables and energy efficiency provide energy security benefits, cost savings, air quality and other environmental co-benefits and can channel expenditure on energy away from foreign towards domestic enterprises.

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BEYOND COPENHAGEN

December 21, 2009 – The day after

The analysis presented so far largely summarizes thinking within REIL in the lead up to the climate negotiations at Copenhagen. It is clear that, in the light of what actually happened in the negotiations at Copenhagen, it is necessary to reassess this analysis, and consider what future steps can be taken to address climate change – unless of course we come to the conclusion that Copenhagen was such a success that further action is no longer necessary.

There are as many assessments of what occurred at Copenhagen as there are viewpoints on the issue of climate change generally.

From the perspective of an environmental NGO (or Small Island Developing State) Copenhagen was an unmitigated disaster. The EU failed to commit to a KP second commitment period or move from its unilateral offer to reduce emissions by 20% on 1990 levels, a U.S. offer amounting to only a 4% reduction on 1990 levels, no REDD mechanism was agreed, there was no agreement on long-term finance and, above all, a series of national offers were made but no legally binding commitments signed up to.

From the U.S. negotiators perspective Copenhagen can be considered a reasonable success. The Accord, which was their preferred conclusion to Copenhagen, was agreed, China agreed to some form of monitoring, reporting and verification of their emissions and emissions reductions actions, and, critically, the U.S. negotiation team did not find themselves ahead of the Senate (unlike at Kyoto).

Like the U.S., China got what it wanted (principally not being bound by any commitments) but seemed genuinely surprised at the flak it took in the media in the immediate aftermath. It is factually correct to say that China blocked some key elements of a potential deal, including references to global emissions peaking by 2020 and a 50% global emissions reduction by 2050. However, one should also consider what China was getting from any deal on offer at Copenhagen. In terms of concrete offers on finance to assist China, or concrete offers on technology collaboration, the answer is “very little”, which may explain the position they took in negotiations.
If the U.S. and China got key elements of what they wanted, EU did not. While some of the EU’s ideas are reflected in The Accord, the Accord does not reflect EU aspirations for Copenhagen. The EU does not see strong action from the U.S. or China, which makes it very difficult for ambitious voices to push for the EU to move to a 30% emissions reduction, and the failure to agree anything on sectoral trading does not help the carbon market. Worst of all, where the U.S. was seen to speak with one strong voice, and with China effectively dominating the negotiations, the EU was perceived as ineffective and became associated by some with the role of the Danes, who presided as Chair of the negotiations and became a focus for criticism.

From a business perspective, the outcome of Copenhagen is worrying for those with investments in carbon trading. There was no commitment to a second commitment period of the KP (the first will end on 31 Dec 2012), no move to sectoral trading (which may never yet had any real supporters other than the EU anyway), and no sign as to when (or indeed whether) Japan and the U.S. would move to international trading.

At any rate, what mechanisms are used is secondary to the overall demand in the market, which will be quite small given the woefully inadequate level of existing Annex I pledges.

Environmentally, it is clear that Copenhagen does not go far enough, and in that we are all ‘losers’. It is clear that all major emitters, developed and developing, will either have to significantly increase their mitigation ambitions for 2020 beyond their Copenhagen Accord commitments or take very strong mitigation commitments after 2020 in order to achieve the 2 degree C objective. Therefore, those parties or groups that might consider they ‘won’ at Copenhagen may need to re-evaluate this ‘victory’ on the basis of the long-term damage climate change will do to the global economy and the heightened cost of deferring action to the future, as identified by Lord Nicholas Stern and others.

Can we achieve climate stabilization or is the world doomed?

The value of The Copenhagen Accord, as an agreement that drives emissions reductions, depends largely on one’s faith in voluntary ‘pledges’. On the one hand, some very significant offers (including those of Brazil, Indonesia, Japan, Mexico and South Africa) have been tabled. However, one only has to look at the performance of Canada and a number of EU countries since Kyoto, to see that ‘pledges’ are not always met. It would be unfair to say that any of these countries did not take actions to reduce their emissions. But they have found that reducing their emissions is very much more difficult than they had hoped.

Therefore, the Copenhagen Accord is significant, in that it contains pledges from all major emitters to constrain emissions, and signals future ambitious commitments, particularly on finance, and on 2 degrees, that will need further commitments to be delivered. However, the Accord is limited, because it is not clear how these further commitments will be delivered, and it does not set out a timetable for agreeing them.

One thing is clear. A pathway to 2020 and then to 2050 that would see temperature rise stabilized at ‘safe’ levels is needed, and this has not yet been agreed.
**Lessons for future negotiations**

From the somewhat surreal perspective of someone who was at Copenhagen (people who, by definition, have spent far too much time locked in windowless rooms with nothing but piles of negotiation text to look at), Copenhagen is a *contradiction*. A process that ended with recriminations around whether the Accord document represented an accepted outcome because it was negotiated by a non-representative group but which, at the end of the day, was largely dominated by the relationship between only two nations, with all others (even India, and certainly the EU) playing a lesser role in determining the eventual outcome. It is not, therefore clear, that a push towards more ‘open and transparent’ negotiations solves anything.

- The ‘consensus’ approach may prove to be broken, because there will always be a small group of nations willing to block process on any issue.
- An inclusive process does not change the nature of the US/China dynamic. It doesn’t matter if one country, or 100 countries, disagree. If China and the U.S. cannot agree, there will be no deal. However, Copenhagen also shows that agreement between China and the U.S. may be a necessary condition, but it is clearly not a sufficient one. From a scientific perspective, the mitigation offers China and the U.S. tabled at Copenhagen are not sufficiently ambitious in terms of the 2 degree objective.

In short, the challenge that could not be resolved in 1997, when the U.S. Senate rejected Kyoto, remains unresolved in 2009. The US, the world’s largest economy, is not party to a legally binding emissions reductions commitment. And the emergence of China as a world superpower makes the issue more, and not less, difficult to resolve.

At some stage, China and the U.S. will have to make a deal. Both will have to sign up to commitments that they can accept, trusting that the other will make good on its offer. This did not happen at Copenhagen. Rather, China and the U.S. committed, unilaterally, to actions they were already resolved to do for domestic reasons (and in fact, as was true at Kyoto, any U.S. commitment is meaningless until and unless passed by Congress). Neither pledge is, of itself, compatible with stabilization of emissions at ‘safe’ levels, but it should be noted that the U.S. aspiration to reduce emissions by 42 per cent by 2030, and 83 per cent by 2050, would be consistent, broadly, with a 2 degree outcome. It is hard to see a future U.S. administrations delivering this aspiration, however, if Chinese emissions continue to rise post-2020.

**Prospects for 2010**

Can a deal, that proved so elusive at Copenhagen, be achieved at the UNFCCC negotiations in Cancun in December? Probably not – though it’s not out of the question. Economic recovery may make governments more ambitious, but the recovery remains fragile, especially in the developed world. U.S. legislation would certainly change the negotiations, but it is questionable as to whether legislation will pass this year, and cap and trade may not be included in legislation in the short-term.\(^5\)

\(^5\) As one policymaker noted, though, lawmaking is like financial day trading, following it minute by minute can make one insane: A tempestuous process does not negate the possibility of effective legislation at the end of the day.
A U.S. bill without cap and trade, even if it contained fairly ambitious domestic efficiency and renewables obligations, might well weaken the ambitions of others, and would certainly not help the carbon market. And, of course, none of this changes the position of China. They were unwilling in Copenhagen to commit to anything that might imply long-term emission reductions in China. The leadership in China is naturally cautious. A radical change of philosophy as regards climate seems therefore unlikely to occur in a year. However, at the same time, China is increasingly aware of the need to reduce emissions given the impact climate change will have on China. It remains a challenging balancing act.

Copenhagen established a High-Level Advisory Group on climate financing, to be co-chaired by UK Prime Minister Brown and President Meles of Ethiopia this year. This group is to consider a range of approaches to securing $100 billion finance flows for climate change per annum by 2020. It is difficult to imagine, given the history of finance discussions within the UNFCCC to date, that this group will be able to come up with a mechanism that will please both the developed, and developing, countries. Possible options to generate public finance to pay for adaptation, technology and REDD include the auctioning of emissions permits to raise revenues, a banking transaction tax, or a levy on airfares. The difficulties of agreeing any of these are marked. Private finance flows could be considerable, given a fully functioning carbon market, and ambitious emissions caps, but as already discussed, the prospects of achieving this in 2010 are remote, and G77 countries which have been averse to the whole concept of emissions trading would have to agree to reconsider this position.

What does all this mean for the UNFCCC process, and the EU, which has staked so much on it? The nightmare scenario is that 2010 sees the disintegration of the Copenhagen Accord, as negotiations are dominated not by issues of substance, but rather by disagreements about the legal status of the Accord. If such ‘process’ debates dominate proceedings, there is a danger that the UNFCCC could fail as an organization in 2010, thus possibly damaging the nascent carbon market. The EU, in particular, needs to find a narrative which, in the absence of a binding deal that includes China and the US, prevents such a collapse and maintains the relevance of the UNFCCC process, and moves discussions forward. Two challenges present themselves:

- The immediate challenge is to rescue the Kyoto Protocol, the concept of a global carbon market and, by extension, private investment in emissions trading. Carbon markets could be significantly assisted by the introduction of cap and trade legislation in Japan and demand for emissions reductions credits in the US, via trading schemes like RGGI.

- The second challenge is to deliver actions that address climate change. Financing of REDD activities is needed to halt the rate of deforestation, therefore minimizing global GHG emissions. Adaptation actions need to be supported, to demonstrate to developing countries that the developed world is serious about dealing with their climate problems (and not just demanding that they reduce their emissions). And the EU needs to drive a step-change in the way clean technology is developed and deployed,
internally through meeting its own targets (such as the target of achieving 20% of primary energy production from renewable resources by 2020), externally through stimulating international cooperation and ‘technology transfer’. In short, the EU needs to put its money where its mouth is, through demonstrating what each member state will commit on fast-start, and beyond, and convince others to do likewise. Demonstration of real action is far more likely to change the minds of leaders than any amount of pious lecturing and economic ‘models’ highlighting the benefits of trading schemes for all.

**Two possible routes to a global deal**

Two very different possible narratives emerge from Copenhagen, both of which result (eventually) in a global climate deal. These two routes should therefore not be seen as mutually exclusive, since in reality there will be some “cross-talk” between them, and each can strengthen the other. What can be achieved through bottom-up processes can and should reinforce a more ambitious UNFCCC deal; at the same time a UNFCCC deal is necessary to galvanise the bottom-up activities and ensure that they do not dissipate over time.

The narrative where the world fails to take actions to reduce emissions, and emissions grow on a ‘business-as-usual’ path is not reflected, though it has clearly been considered, and found wanting in many ways.

**The UNFCCC deal**

The political climate changes in such a way that China and India are willing to enter into some form of legally binding commitment, and the developed world, led by the US, commits to ambitious, legally binding, economy-wide emissions caps that stimulate real action at domestic level. Major developing countries sign up to sectoral trading, which links their heavy industries to cap and trade schemes in developed countries, resulting in significant investment in clean technologies, globally, thus driving ‘technology transfer’. The global carbon market is overseen by the UNFCCC which ensures environmental integrity and the equivalence of traded units. The developed world agrees to a funding mechanism that can cover the costs of REDD activities, and pay for adaptation for the most vulnerable. The prospect of global decarbonization drives significant investment in innovation which results in the development and global spread of new low-carbon technologies.

**The bottom-up deal**

Progress in the UNFCCC is stalled following the Copenhagen meeting. Domestic efforts in the EU, U.S. and other major economies (both developed, and developing) drive emissions reductions (or at least retard emissions growth). A REDD mechanism is agreed, on the basis that all countries recognize deforestation is a threat, and there is political will on all sides to commit public finance to address it. Adaptation is not dealt with through the UNFCCC, but rather is mainstreamed into the conventional
official development assistance (ODA) process. Investment in renewables significantly increases, driven by domestic concerns around security of fossil fuel supply, long-term sustainability, economic growth and air quality. CCS is demonstrated in the EU and the US. Japan and Australia (although the latter looks increasingly unwilling and it would appear this may be out of the cards till at least 2013,) pass cap and trade legislation, which, together with EU demand for CDM credits, allows the carbon market to survive (if not thrive). These schemes link, since it is economically sensible to do so, and some form of arbitrage system ensues. Eventually, the US, having driven emissions down through efficiency and stimulus measures is able to pass cap and trade legislation (or, alternatively, regional schemes gain critical mass) and links to the other schemes. A global carbon market therefore begins to emerge, at a pace determined both by the political process (i.e. how long it takes to get the schemes in place) and the degree of ambition (i.e. how deep the cuts are). Technology competition gives way to technology cooperation as the impacts of climate change become more apparent, and more severe. This eventually allows all major economies to return to the UNFCCC and commit to a binding deal, which is largely simply a way of putting their domestic efforts into an internationally recognized form. The UNFCCC maintains countries GHG inventories, and thus is able to take an overview of what global emissions are, but otherwise its roles have largely been replaced by domestic, and bilateral, decision making processes.

SUMMARY

Much thinking was done on how to address climate change, particularly around how to reduce global GHG emissions in a practical, and politically acceptable, way. The issues that were considered in the lead-up to Copenhagen have not all been resolved, as can be evidenced by the lack of legislation in the US, the lack of a binding deal at Copenhagen, the low carbon price and, most critically, the continued growth of global emissions. However, Copenhagen at the very least, marked the moment when all major world leaders engaged on the issue of climate change. There are many challenges to be faced over the next decade and this analysis suggests that some of the important ones are

- National policy frameworks will have critical importance in driving emissions reductions – how can these be developed in the most effective way? How can we share best practices and lessons learnt? How can governments use private sector expertise to implement these?
- A step change in investment in clean technologies in developed countries is needed, to bring about changes in infrastructure and drive emissions reductions. How can this be achieved?
- How do we address the systemic barriers to investment in least developed countries?
How can we scale up investment in emerging technologies, such as solar and CCS, in order to ensure these technologies become commercially competitive in the near future?

Perhaps most critically, what steps are needed to change the political dynamics, particularly in the U.S. and China, that could lead to these two superpowers committing to ambitious mitigation actions, and cooperating on clean technology development and deployment?

Negotiators had hoped that Copenhagen might mark the end of a process to address many of these problems, but like Berlin, Kyoto and Bali before it, the process continues, with no end in sight. It is clear that many of these issues will not be resolved through the UNFCCC process, but rather within domestic processes and bilateral agreements. The exact role of the UNFCCC is unclear.

All of this is daunting. But the international community will continue to work on a variety of fronts and in various multilateral and bilateral fora. Forging ahead is critical. As will be good will and generosity of spirit – neither of which has been absent from the process to date, even if they have been obscured by media reporting and the demands of the negotiations.

Finally, if we could make one plea on the future of climate discussions, it would be for a far more intelligent, two-way conversation between decision-makers in government, and (from a climate perspective) the decision-makers who really matter, the ones who build the coal-fired power stations, and air-conditioning units, and cars, and also the wind-turbines, solar panels, insulation, and design the products of tomorrow, in short, the decision-makers in business and finance. A low-carbon future is possible, but only if we invest in it, globally.

Members of REIL belong as individuals and not as representing an organization or entity. Among those who took part in this particular conversation over 2009 and early 2010, besides the authors, are:

Amal Lee Amin, International Climate Change Specialist, Focal Point for Climate Investment Funds, Sustainable Energy and Climate Change Unit, Infrastructure and Environment, Interamerican Development Bank

Brad Gentry, Director, Yale Center for Business & the Environment, Senior Lecturer and Research Scholar, Yale School of Forestry and Environmental Studies

Bruce Schlein, Vice President, Corporate Sustainability, Citi

Bryan Garcia, Executive Director, Yale Center for Business & the Environment

Eduardo Browne, Managing Partner and COO, Green Power Funding Group, LLC; Principal and Director, Power Management Concepts, LLC.
Hank Schilling, Managing Director, Environmental Support, GE Energy Financial Services
Govi Rao, Partner, Pegasus Sustainable Century Merchant Bank
Henry Derwent, President and CEO, International Emissions Trading Association
James Cameron, Vice Chairman & Executive Director, Climate Change Capital
Jennifer Haverkamp, Managing Director for International Policy, Environmental Defense Fund
Jonathan Koomey, Project Scientist, Lawrence Berkeley National Laboratory, Consulting Professor, Stanford University
Jukka Uosukainen, Director General, International Affairs Unit, Ministry of the Environment, Finland
Kevin Walsh, Managing Director and Leader, Power & Renewable Energy, GE Energy Financial Services
Kunihiko (Kuni) Shimada, Principal International Policy Coordinator/Principal International Negotiator, Global Environment Bureau, Ministry of the Environment, Japan
Manik Roy, Vice President for Federal Government Outreach, Pew Center on Global Climate Change
Martijn Wilder, Partner, Head of Global Practice, Baker & McKenzie’s Global Climate Change and Environmental Markets Practice
Melinda Kimble, Senior Vice President, United Nations Foundation
Morgan Bazilian, Special Advisor on Energy and Climate Change to the Director General, UNIDO
Odin Knudsen, Managing Director, JP Morgan Chase
Paul Savage, CEO, Nextek Power Systems; Founding Member, Emerge Alliance
Peter Goldmark, Director, Climate and Air, Environmental Defense Fund
Richard Kauffman, former CEO, Good Energies
Rick Saines, Partner, Head of North American Practice, Baker & McKenzie’s Global Climate Change and Environmental Markets Practice
Steve Sawyer, Secretary General, Global Wind Energy Council
Unmesh Brahme, Head of Sustainability, HSBC India