Combating Climate Change: An International Framework Beyond 2012 v.6 June 2007

1. Introduction

This paper was commissioned at the GLOBE G8+5 legislators' meeting in the US Senate, Washington DC, in February 2007 for discussion among participants at the GLOBE forum in Berlin on 3-4 June 2007. It reflects discussion with G8+5 legislators and business leaders and also draws on much existing work including the Pew Centre on Global Climate Change's Pocantico Dialogue① and on BASIC's "Sao Paolo" proposal②. The paper is set out in four sections: first the principles that might underpin a post-2012 framework; second the possible elements that such a framework might include; third the links to existing international processes; and finally a section on next steps. Explanatory annexes are attached to the draft paper.

2. Principles for a post-2012 framework

There are a number of key principles that might underpin a post-2012 international framework:

2.1 **Critical Mass** – all countries, particularly the least developed, are vulnerable to the effects of climate change. But only 25 countries account for 83% of global greenhouse gas emissions. Participation by these countries is critical.

2.2 **Equity** – agreement on a post-2012 framework on climate change will be possible only if each participating country believes it to be equitable. This assessment is ultimately a political one but each country will judge equity in terms it believes it can defend both to its own people and to the global community. A post-2012 framework must recognize historical and per capita emissions of greenhouse gases, and the differing economic circumstances of developed and developing countries.

2.3 **Flexibility** – a post-2012 framework should allow different types of commitments to accommodate different national strategies and circumstances. There should be a "menu" of options from which to choose how to achieve a country's share of effort.

2.4 **Urgency** – action is urgently needed to: achieve immediate cost-effective emission reductions; assist development and deployment of breakthrough technologies to achieve deeper reductions in the future; and strengthen resilience to the adverse effects of a changing climate. This action needs to be guided by a common vision (ie a **long term goal**).

2.5 **Sustainable Development** – there need be no incompatibility between actions that serve development goals and actions to combat climate change. Climate change should be addressed within the framework of sustainable development to seek economic development and poverty reduction and change the unsustainable pattern of consumption to harmonise economic growth and environmental protection. Action in developing countries will be most successful if complemented by assistance, investment and access to clean technologies.

2.6 **Adaptation** – the world is already locked into a certain degree of climate change due to historical emissions of greenhouse gases. These impacts are falling

most heavily on those least able to cope. Mechanisms are needed urgently to assist all countries, in particular the poorest, to adapt to climate change.

3. Possible elements

Taking into account the principles outlined above, the following elements could form the basis of a post-2012 framework that would enjoy broad support from the international community.

3.1 **Long term stabilisation goal**

A shared vision is needed to reach the ultimate objective of the UN Framework Convention on Climate Change – to prevent dangerous climate change while safeguarding ecosystems, food production and economic development – and to give all sectors of society sufficient confidence to make long-term carbon investments in a low carbon economy. This vision could take the form of a long-term goal to be expressed in terms of a temperature target (such as the EU's 2 degrees), concentration of greenhouse gases in the atmosphere (eg the GLOBE 450-550ppm CO2e statement from Washington) or in terms of emissions reductions (eg 80 per cent reduction from 1990 levels by 2050). Latest science suggests that stabilising greenhouse gas concentrations at 450ppm CO2 equivalent would give a slightly less than 50 per cent chance of limiting global warming to 2 degs C. Stabilisation at 550ppm CO2e reduces the probability of staying below 2 degs C to less than 20 per cent. *See supporting note from John Schellnhuber, scientific adviser to Chancellor Merkel for the G8 presidency at Annex B.*

3.2 **Creation of a global carbon market**

The most efficient and powerful way to stimulate private investment in research, development and deployment of low carbon technologies is to adopt policies establishing a market value for greenhouse gas emissions in the long term. A post-2012 framework should build on the existing Kyoto mechanisms (CDM, JI and International Emissions Trading) and aim to link the EU's Emissions Trading Scheme (EU ETS) with planned schemes in the US, Australia and elsewhere, with the overall aim of creating a global carbon market, including broader participation and the involvement of more sectors. Other mechanisms such as taxation and mandatory measures (eg a ban on incandescent light bulbs, minimum energy efficiency standards) may be appropriate for other sectors such as transport or construction.

3.3 **Commitments**

Action to combat climate change must take account of the circumstances of economies at different stages of development, recognising the need for economic growth and access to energy to alleviate poverty. But climate change is a global issue and there is an **obligation on all countries to take action**, in line with their capabilities and historical responsibilities.

3.3.1 **Commitments for developed countries** (and other willing countries)

Ambitious absolute emission reductions for developed countries must form a central part of a post-2012 framework. These commitments should take into account all net emissions. Hard targets create demand in the carbon market, providing incentives for innovation and investment into low carbon energy sources, products and services. Other commitments such as financial payments to fund technology and/or adaptation) or sectoral emissions reduction targets could also form part of a package of commitments for developed countries.

3.3.2 **Commitments for developing economies**

A post-2012 framework should support and encourage **equitable contributions** from developing economies. Such contributions could include incentives for new and flexible types of commitment to reduce greenhouse gas emission intensity of economic development, eg incentives to reduce deforestation and strengthen other carbon sinks, sustainable development policies and measures or voluntary or sectoral emissions reduction targets (see Annex C for an explanation of sustainable development policies and measures – SDPAMs - and sectoral schemes).

3.3.3 **Timeframe for commitments**

One of the weaknesses of the current Kyoto framework is the lack of certainty beyond the 5-year timeframe, with the need to negotiate new targets every 5 years. To increase long-term certainty and remove the need for substantial new negotiations every 5 years, there should be an **automatic annual extension** of developed country commitments, in line with an aspirational long-term goal and medium-term targets, with compliance at five-year intervals.

3.4 **Technology**

The aim of the measures outlined above is to drive the research, development, diffusion and deployment of the technology that is essential for combating climate change. The International Energy Agency estimates that, under business as usual, CO2 emissions will be two and a half times the current levels by 2050. But the IEA's work also demonstrates that, by employing technologies that already exist, and developing new technologies such as carbon capture and storage, the world can be put onto a more sustainable path. A post-2012 framework should:

- double global financial support for Research and Development
- create a **new technology fund** to support deployment of existing technologies, including renewable energy, and capacity building in the developing world
- support the development and deployment of new technologies such as carbon capture and storage (CCS) to reduce the emissions associated with burning fossil fuels; and address Intellectual Property Rights (IPR) issues
- promote a global technology agreement to increase international cooperation on product and fuel efficiency standards

3.5 **Adaptation**

Enhancing efforts to address **adaptation** should be a key component of a post-2012 framework. Policies could be taken forward in three main areas: under the UNFCCC (the Adaptation Fund and five-year adaptation programme); integrating adaptation into the full range of development aid; and through "climate insurance" eg committing stable funding for an international response fund or to support insurance-type approaches covering climate-related losses.

3.6 **Extending participation beyond national governments**

A post-2012 framework might go beyond the scope of the Kyoto Protocol, to promote the participation, via Memoranda of Understanding, of sub-national governments, for example States or Districts (where national governments do not join), specific sectors whose emissions cross national boundaries (eg the **energy intensive sectors** such as cement and aluminium), or organisations with the legal authority to limit emissions outside the boundaries of countries (eg **international aviation and maritime**). A single policy for some sectors, across national boundaries, may well be more effective in reducing emissions in energy intensive sectors such as cement or steel.

3.7 Strategies for reducing deforestation

Action on deforestation, which is responsible for around 20 per cent of global emissions of greenhouse gases, will be an essential part of the framework. Policies on deforestation should be shaped and led by the nation where the forests stand but there should be help from the international community, including investment in afforestation and reforestation, which benefits from their actions.

4 Links with international processes

To support a post-2012 framework, climate change should also be considered in relevant existing international processes. Examples include trade policy negotiations, including the WTO, and the Montreal Protocol.

5. Next Steps

In order to avoid a gap between the first commitment period of Kyoto, which expires in 2012, and the international framework that follows it, negotiations will need to be completed by 2009 at the latest, given the length of time needed for national ratification. This means that inclusive negotiations, involving all of the world's major economies, should begin at the UNFCCC Conference of the Parties in Bali in December 2007. The path to agreement in 2009 could, therefore, include the following milestones:

- COP 13, Bali, Dec 2007: all major countries agree to launch inclusive negotiations on a comprehensive post-2012 framework with a view to completing those negotiations by 2009 at the latest.
- G8 Summit, Japan, summer 2008: G8 and +5 governments inject further momentum to the negotiations.
- COP 14, Dec 2008: negotiations enter final phase
- G8 Summit, Italy, summer 2009: G8 and +5 governments to send a clear signal to Copenhagen COP that negotiations must be completed at COP 15, Dec 2009.
- COP 15, Copenhagen, Dec 2009: completion of negotiations on a comprehensive post-2012 framework

Footnotes:

①The Climate Dialogue at Pocantico was convened by the Pew Center on Global Climate Change to provide an opportunity for informal discussion among senior policymakers and stakeholders from 15 countries on options for advancing the international climate change effort. The group of 25 included policymakers from developed and developing countries, business executives, experts from the Pew Center, The Energy and Resources Institute (India), and the World Economic Forum. Dialogue members participated in their personal capacities.

②The BASIC Project is a capacity strengthening project that supports the institutional capacity of Brazil, India, China and South Africa to undertake analytical work to determine what kind of climate change actions best fit within their current and future national circumstances, interests and priorities.

Annex A: Explanatory notes

Long term stabilisation goal: Article 2 of the UNFCCC states that the ultimate objective of the Convention is "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". Identifying a quantifiable long-term goal, with medium term goals along the way to guide us towards achieving this objective, would allow us to ensure that the collective mitigation efforts deliver the required global emission reductions.

Carbon market: The Kyoto Protocol flexible mechanisms (Joint Implementation, Clean Development Mechanism, International Emissions Trading), along with domestic implementation measures such as the EU's Emissions Trading Scheme (EU ETS), provide the bedrock for the development of a global carbon market. Allowing emissions units to be traded internationally and across sectors ensures that emissions reductions are effected at least cost. Emerging trading schemes are starting to develop across the globe eg. within North-East America (RGGI), California and between Australian states. These systems should be compatible with existing schemes so as to provide the potential for linking, thus creating a more liquid market.

In developing a post-2012 framework, it will be important to build, and expand, on the existing Kyoto mechanisms with the overall aim of more emissions trading, broader participation and involvement of more sectors

Commitments: developed countries. Commitments for developed countries in terms of emissions reduction targets could be converted into a combination of:

- an absolute emissions limit;
- new and additional funding.

Unlike the Kyoto Protocol, which specifies only absolute commitments, each developed country could choose to convert its annual commitments into any combination of absolute limits and, up to a limited percentage, financial payments. For example, a country could decide to convert its annual commitments to 80% absolute and 20% financial.

For financial payments, the COP/MOP would need to establish a value per tCO_2e to be used to establish the annual emissions equivalent of the financial payment in 2013. The value should be roughly equal to the current international market price for compliance units.

Any financial payments could be put towards the Adaptation Fund or a new Technology Funding Mechanism.

GDP intensity targets could form an additional commitment for developed countries but should not be seen as an alternative to absolute targets.

Commitments: developing countries. Many developing countries have taken unilateral action to reduce greenhouse gas emissions, despite not having commitments under the Kyoto Protocol. For example, Brazil and China have implemented policies to reduce greenhouse gas emissions by an amount that is, by 2010, projected to be greater than that achieved under the US's voluntary carbon intensity reduction goal. Under a post-2012 framework we need a system that recognises and encourages unilateral actions by developing countries and provides

incentives for more expensive reduction opportunities that are not likely to be pursued unilaterally.

There are many ideas for how we can encourage more parties to undertake commitments to tackle climate change which are not necessarily a first step in taking absolute binding targets. Sectoral crediting mechanisms or "no lose" targets could involve setting a benchmark of emissions intensity within a particular sector. If the benchmark is exceeded the party is able to sell the carbon credits generated, thus creating a positive incentive to reduce emissions (see Annex C for more detail).

Timeframe – automatic extension: one of the limitations of the current Kyoto system is that it works on a single 5-year cycle with renewal uncertain unless a new arrangement is negotiated at the end of that period. The result is a limit on the investment of the private sector into low carbon infrastructure, products and services due to a lack of certainty about a value of carbon beyond the current commitment period. One way to overcome this would be to automatically extend the commitments on an annual basis (eg 2019 commitments would be determined in 2013, 2020 commitments in 2014 and so on). Annual commitments would always be known five years in advance and would be predictable within a relatively narrow range for the following years. This approach would help to avoid the uncertainty and political deadlock inherent in the current Kyoto structure, which means countries must negotiate new reductions every five years.

An allowance could be made for countries who have experienced economic hardship during a given year, such that any country whose real GDP has declined could request a compliance exemption for that year.

A review could be held every 5 years to ensure that the process is collectively delivering emissions reductions in line with the long-term goal.

Technology: Under Article 4.1(c) UNFCCC all Parties made a commitment to "Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices, and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases". Moreover, under Article 4.5 UNFCCC, the developed countries made a commitment to "take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the convention".

Stern identifies the need for policy to support innovation and the deployment of low-carbon technologies, along with a price for carbon and improved energy efficiency and education for consumers, as necessary for an effective global response to climate change. International technology cooperation between developed and developing countries has a vital role to play both in scaling up public and private investment in existing low carbon technology as well as in driving innovation and the development of new technologies. Intellectual Property concerns must be addressed to ensure the confidence of the owners of technology.

Stern further suggests that technology cooperation is a key element of a future international framework: informal co-ordination as well as formal agreements can boost the effectiveness of investments in innovation around the world; globally, support for energy R&D should at least double, and support for the deployment of new low-carbon technologies, together with substantial capacity building, should

increase up to five-fold. International cooperation on product standards is a powerful way to boost energy efficiency.
Energy efficiency is by far the most efficient way to improve security of energy supply, reduce greenhouse gas emissions, increase competitiveness and stimulate development of cutting edge market for energy efficiency technologies and products. In the EU alone, research suggests that 20 per cent of energy is wasted due to inefficiency. The cost of this is estimated to be 100bn Euros annually by 2020. If the EU succeeded in cutting out this inefficiency it could save around 780 Mt CO2e, more than twice the reductions required by the EU under the Kyoto Protocol by 2012.

Adaptation: while our best mitigation efforts will reduce the need for adaptation in the future, we must recognise that we are already committed to some level of climate change and we must continue to develop effective adaptive capacity to minimise those impacts. Already, vulnerable ecosystems are suffering damage from climate change, due to rising sea-levels, accelerated deforestation and desertification, decreased ice cover, and reduced availability of water, with resulting threat to life and indigenous ways of life and loss of biodiversity. Climate change impacts will be felt by all countries, but they will be felt most strongly by the vulnerable and it is here that real efforts need to be made in order to develop appropriate adaptive capacity. Under Article 4.4 UNFCCC, developed country Parties made a commitment to "assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects". Adaptation policy could be taken forward in three areas: under the UNFCCC where there is already an Adaptation Fund and a 5-year adaptation programme; integrating adaptation with the full range of development aid through measures such as mandatory climate risk assessments for projects financed by multilateral support; and through "climate insurance" ie committing stable funding for an international response fund or to support insurance-type approaches covering climate-related losses and promoting proactive adaptation in vulnerable countries.

Expanding the scope: Currently there is no scope for a sub-national government to join the Kyoto Protocol. Similarly, emissions from aviation and maritime transportation are not included in the Kyoto framework.

An MOU could be negotiated with one or more sub-national governments (in the absence of national ratification) or a specific sector. Emissions due to international aviation and shipping could be addressed by negotiating a MOU with a suitable entity, such as the International Civil Aviation Authority (ICAO) or the International Maritime Organisation (IMO). Sectoral or industry agreements to limit emissions, such as a global agreement with the aluminium, cement or steel industries, would also be possible.

Decision 2/CP.3 recalls that under the revised 1996 Guidelines for national Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change, emissions based upon fuel sold to ships or aircraft engaged in international transport should not be included in national totals, but reported separately; and urges the Subsidiary Body for Scientific and Technological Advice to further elaborate on the inclusion of these emissions in the overall greenhouse gas inventories of Parties.

Discussion so far on this topic is mainly taking place within ICAO (International Civil Aviation Authority) and IMO (International Maritime Organisation). Within ICAO the Emissions Trading Task Force is currently drafting guidance on the inclusion of aviation into mandatory trading schemes and the UK, together with other EU Member States, are pushing to include aviation in the EU Emission Trading Scheme from 2008 or as soon as possible thereafter.

Within the UNFCC, discussion on how to include international transport emissions in national inventories has been blocked by several states.

Deforestation: The Stern Review says that around 18% of global greenhouse gas emissions come from deforestation, and highlights the importance of reducing deforestation as part of the global effort to combat climate change. The Review says that curbing deforestation, combined with afforestation and reforestation, is a highly cost-effective way of reducing greenhouse gas emissions and indicates that the opportunity cost to preserve forests in 8 countries responsible for 70 per cent of emissions from land use, could be around $5-$10 billion annually, initially, although over time marginal costs would rise.

The Stern Review recognises that policies on deforestation should be shaped and led by the nation where the forests stand but there should be help from the international community, which benefits from their actions. There is much work ongoing among Governments including Brazil, Papua New Guinea, Costa Rica and the Coalition of Rainforest Nations, with Germany as Presidency of the G8 and the EU, and with the World Bank, to explore ways of mobilising international resources to assist developing countries in sustainable forestry management. Reform of the CDM rules in respect to forestry is needed to encourage investment. Reducing deforestation is an essential element of a post-2012 framework.

Annex B: note from John Schellnhuber, scientific adviser to Chancellor Merkel, on climate stabilisation

By far the most important human influence on the climate are the emissions of fossil CO2 emissions. Since pre-industrial times CO2 concentrations have risen to 379ppm in 2005, with a warming influence of about 1.66 W/m2. Currently this CO2 warming influence closely matches the net warming influence, that takes into account all other warming greenhouse gases and cooling aerosols, which amounts to about 1.6 (0.6 to 2.4) W/m2 (IPCC, 2007). This is the net warming influence – equivalent to roughly three bicycle tail light bulbs (0.6W) for every square metre of the Earth's surface. This net warming influence can be expressed in CO2 equivalence concentrations, which are the CO2 concentrations that exert the same radiative forcing as all human influences on the climate taken together. In this case the current CO2 equivalence amount to 374ppm CO2e. If only the long-lived greenhouse gases, namely carbon dioxide, methane, nitrous oxide and the halocarbons were considered, the CO2 equivalence concentrations are already substantially higher, namely 454ppm CO2 or 2.63 W/m2 with an uncertainty range of 433 to 477ppm.

When stabilising at 450ppm CO2 equivalence concentrations, the Fourth IPCC Assessment Report concludes that the best-guess warming is 2.1 degs C with a likely range between 1.4 degs C and 3.1 degs C above pre-industrial temperature levels. **Hence a stabilisation at 450ppm CO2e will result in a slightly less than 50 per cent chance of keeping below 2 degs C in the long term**.

Given the already substantial concentrations of greenhouse gases in the atmosphere, stabilisation levels that will prevent climate change impacts beyond 2 degs C will have to be reached "from above". Thus, after an initial peaking of CO2e concentrations at levels above the ultimate stabilisation level around the mid-21st century, emissions will have to be reduced to sufficiently low levels to allow the atmospheric concentrations of greenhouse gases to fall again towards the end of the 21st century, if climate impacts above 2 degs C are to be avoided. **Depending on the carbon cycle feedbacks, these global emission reductions are roughly 50 per cent below 1990 levels by 2050 in order to stabilise at 450ppm after an initial peaking at roughly 500ppm CO2e**. A higher likelihood (about two-thirds) for keeping below 2 degs C, for example by peaking concentrations and returning to a 400ppm CO2e stabilisation level, will require more pronounced emission reductions.

Annex C: Sustainable Development Policies and Measures (SDPAMs) and a possible sectoral approach

Sustainable Development Policies and Measures (SD-PAMs)

A Sustainable Development Policy and Measure (SD-PAM) would be a commitment to implement a policy or measure that makes the development path of a country more sustainable, with the co-benefit of lowering GHG emissions. A register of declared SD-PAMs could be created, registering progress made by developing countries in meeting the objective of the policy or measure. Funding to assist such progress could come from climate and non-climate sources and from public as well as private investment.

A Possible Sectoral Approach (based on research by the Center for Clean Air Policy)

Voluntary "No Lose" Pledge

Under this proposal key developing countries would pledge to achieve a voluntary sector "no lose" greenhouse gas intensity target (e.g. greenhouse gas / ton of steel) in the energy intensive industry sectors (e.g. electricity, cement, steel, oil refining, pulp/paper, metals, etc). The inclusion of the top 10 largest greenhouse gas emitting developing countries in each sector would insure coverage of 80-90 percent of developing country greenhouse gas emissions in each of the selected sectors.

Emissions reductions achieved beyond the "voluntary pledge" would be eligible for sale as emissions reductions credits to developed countries. However, failure to meet the "voluntary pledge" level would not involve any penalties or any requirement to purchase emissions reduction credits from other countries.

To encourage developing countries to pledge to meet a more aggressive sector "no lose" intensity target, developed nations and international financial institutions would provide a Technology Finance and Assistance Package. This program would support specific commitments for the deployment of advanced technologies, development of small and medium-sized enterprises to assist in technology implementation, capacity building, and support for pilot and demonstration projects, including those in the LULUCF sector. It would be designed to leverage increased private sector investment by writing down the cost and mitigating the risk of advanced technologies and political risk to levels that would ensure competitive returns for private sector investors in these technology deployments and rural investment.

How "No Lose" Targets Succeed

While the voluntary nature of the program does not guarantee emissions reductions would be achieved, two key features should ensure success. Firstly, through the establishment of targets that countries feel confident they can achieve because they are based upon accurate, bottom-up assessments, countries are more likely to achieve the desired levels. Secondly, a mix of incentives including the Technology Finance and Assistance Package and the receipt of emissions reductions credits in the event a nation exceeds its voluntary pledge provide **positive incentives** for emissions reductions. Assuming that developing countries live up to their agreed

commitments on the Technology Finance and Assistance Package, there is certainty that at least the agreed investment in technology or practices (and likely the expected emissions reductions) would occur. Further, since countries would only be able to receive emissions reduction credits when they exceed the target, there exists a positive economic incentive to go beyond the target level.

Application to Developed Countries

A benchmarking effort, (similar to that of developing countries), would be undertaken for developed nations to determine a consistent level of effort that their industrial sectors should make toward meeting the national greenhouse gas emissions reduction target. The final targets for developed countries would be hard, aggregate, economy-wide targets built upon the initial sectoral analyses. In contrast, final targets for developing countries would be carbon intensity targets that place no limits on growth in a given sector as long as carbon intensity is improved. Thus, absolute greenhouse gas emissions in the participating sectors of developing countries could grow, while in developed countries the growth in these sectors' greenhouse gas emissions would be limited. In developed countries, these sectors could offset their growth through the purchase of greenhouse gas emissions reductions from other sectors or the international market.

Impact on Industrial Competitiveness

A principle goal of the sector-based approach is to promote the use of best practices in internationally competitive industries worldwide. In practice, it is aimed at achieving a level playing field and at encouraging technological innovation. This approach tackles head-on the conventional wisdom that industrial facilities in developing countries are usually less efficient and more carbon intensive than their counterparts in developed nations. The data on major internationally competitive industrial sectors tells a different story (e.g. the U.S. is the second most carbon intensive cement producer in the world), one that should appropriately be reflected in the targets set in the next round of international negotiations on climate protection for the post-2012 period.

This approach may also offer a useful basis to resolve the continuing arguments in the European Union's Emissions Trading System over the fairness of individual Member State allowance allocations to individual companies as a result of the different implementation of sector targets between countries. By developing consistent benchmarks in major industrial sectors, it could move the allocation process within the European Union toward allocation of allowances based, in part, on such benchmarks.

Improvements on the Current International Structure

Under the Sectoral Approach, developing country pledges for greenhouse gas emission reductions would constitute new contributions to the reduction of atmospheric concentrations of carbon dioxide - this marks an important departure from the current international architecture for emissions reductions. While there are a number of examples of current unilateral efforts by developing countries to reduce greenhouse gases (e.g. China's tough greenhouse gas emissions standards for new cars, Brazil's alcohol fuels programs, etc.), the Sectoral Approach could create explicit recognition and quantification of those efforts as well as of new ones.

The new Technology Finance and Assistance Package would encourage the development and transfer of new climate-friendly technologies and practices in

developing countries, precisely the technological innovation and change to land use that are required if the world is to achieve stabilization of global carbon concentrations at safe levels. It would build into the international process an explicit negotiation on technology finance between developed countries and key developing countries. Lastly, it would mobilize new public resources to leverage private investment, a portion of existing resources from the World Bank, other international financial institutions, and export credit agencies for the promotion of technological innovation, improved use of agricultural and forest land and GHG emissions reduction.

Annex D: Kyoto compliance mechanism (from the UNFCCC)

The Compliance Committee is made up of two branches: a facilitative branch and an enforcement branch. The facilitative branch aims to provide advice and assistance to Parties in order to promote compliance, whereas the enforcement branch has the responsibility to determine consequences for Parties not meeting their commitments. Both branches are composed of 10 members, including one representative from each of the five official UN regions (Africa, Asia, Latin America and the Caribbean, Central and Eastern Europe, and Western Europe and Others), one from the small island developing States, and two each from Annex I and non-Annex I Parties. The Committee also meets in a plenary composed of members of both branches, and a bureau, made up of the chairperson and vice-chairperson of each branch, supports its work. Decisions of the plenary and the facilitative branch may be taken by a three-quarters majority, while decisions of the enforcement branch require, in addition, a double majority of both Annex I and non-Annex I Parties.

The enforcement branch is responsible for determining whether a Party included in Annex I (Annex I Party) is not in compliance with its emissions targets, the methodological and reporting requirements for greenhouse gas inventories, and the eligibility requirements under the mechanisms. In case of disagreements between a Party and an expert review team, the enforcement branch shall determine whether to apply adjustments to greenhouse gas inventories or to correct the compilation and accounting database for the accounting of assigned amounts.

In the case of the enforcement branch, each type of non-compliance requires a specific course of action. For instance, where the enforcement branch has determined that the emissions of a Party have exceeded its assigned amount, it must declare that that Party is in non-compliance and require the Party to make up the difference between its emissions and its assigned amount during the second commitment period, plus an additional deduction of 30%. In addition, it shall require the Party to submit a compliance action plan and suspend the eligibility of the Party to make transfers under emissions trading until the Party is reinstated.

In the case of compliance with emission targets, Annex I Parties have 100 days after the expert review of their final annual emissions inventory has finished to make up any shortfall in compliance (e.g. by acquiring AAUs, CERs, ERUs or RMUs through emissions trading). If, at the end of this period, a Party's emissions are still greater than its assigned amount, the enforcement branch will declare the Party to be in non-compliance and apply the consequences outlined above.

Compliance System: see
http://unfccc.int/files/kyoto_mechanisms/compliance/application/pdf/comp_schematic.pdf

Annex E – The role of international institutions (note to follow from Ian Johnson)