

Paper 10

ENGINEERING A TRANSITION TO BENEFIT HUMAN DEVELOPMENT

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Executive Summary

Building on the exploration of ethical issues, impacts and responses to climate change in Paper 3 (*Fairness in a post-carbon society*) and Paper 6 (*Transition to a post-carbon society*) in this series, this briefing paper explores a range of options with the common goal of significantly reducing the risk of catastrophic climate change. These options include both those already under discussion, and approaches that are more novel. The AGCC suggests that these options could be articulated within a Global Climate Community (GCC) framework, operating in a way that is complementary and supportive to a post-2012 agreement.

The key criterion addressed is the degree to which these options might benefit human development, creating a climate community that attracts developing nation participation beyond initial partners (i.e. India and Europe). Four key questions have been identified for discussion. They seek to answer the question of how to create a GCC that is attractive to all parties. In doing so they tackle some of the potentially perverse or regressive outcomes of climate change policy *such as* carbon leakage, and laundering and dumping, and social and economic hardships. These questions include:

- a) how much responsibility should developed nations accept;
- b) how much assistance should developed nations provide;
- c) how should this obligation be shared-out among developed countries; and
- d) how should assistance be raised?

Developing countries will suffer significant climatic and economic impacts from global warming, whether or not the international community leaves greenhouse gas emissions on their current trajectory, implements the Kyoto protocol, adapts a different framework, or pursues additional innovations such as a GCC. However, the economic impacts of different climate agreements on poor countries is much less well understood. Patterns and volumes of global production, trade and consumption will almost certainly change in the face of climate change and peak oil, independent of which policy course is taken. For example, demand for energy-intensive goods and services to produce and use is likely to drop dramatically. Conversely, any framework which includes an element of emissions trading may provide a mechanism for a substantial transfer of resources to poorer countries with lower overall and per capita emissions.

The overall aim of a post-carbon societies, working on scales from the local, to the national, regional, and global should be to live within the limits of the planet's biocapacity (i.e. one planet living). Essential building blocks include social justice, maximisation of well being, resilient economies that are resistant to exogenous shocks. This must be fashioned into a transition process that permits human development. This briefing paper concludes with suggestions for the essential characteristics of a successful climate agreement post-2012, and the basis for an attractive and equitable GCC framework to help facilitate the transition to a post-carbon society.

Introduction

We begin with the premise that no solution to achieve the necessary cuts in greenhouse gas emissions is either morally acceptable, or practically workable if it fails to accept the logic that everyone has an equal claim to the global commons of the atmosphere. This is the logic of the discussion in *Fairness in a post-carbon society* (henceforth Briefing Paper 3) and the original basis of the UNFCCC since its inception in 1992.

The Kyoto Protocol

Currently, under the Protocol most developed nations (Annex 1 parties) are committed to reducing their emissions below a certain level compared to a baseline year of 1990. Although specific targets vary from country to country, overall, developed nations are required to reduce emissions of six greenhouse gases by 5.2 per cent over the first commitment period of the Kyoto Protocol, which runs 2008–2012. These targets are not science based, but merely what could be agreed politically.

The Kyoto Protocol does not include commitments from developing nations (non-Annex 1 parties) as the international agreement was for rich countries to act first. As described in Briefing Paper 3, in general, although rising, developing countries have lower per capita emissions than their richer global neighbours. This means that a post-2012 agreement needs to go above and beyond the current Kyoto Protocol.

Requirements of the post-Kyoto (post-2012) climate framework

Engineering a transition to a post-carbon society ultimately requires global participation. Without universal - or at least buy-in from the vast majority - it is impossible to cap global emissions, and therefore impossible to control climate change. From a practical and scientific point of view, this, then, must be the basis of a post-2012 global climate framework. The post-2012 agreement will also have to fulfil the United Nations Framework Convention on Climate Change's (UNFCCC's) commitment to avoid dangerous climate change (defined as exceeding an average surface temperature of 2°C). The most recent climate negotiations held in Bali in November 2007, however, fell short of agreeing a sufficient post-2012 emissions reduction target.

To keep the risk of exceeding 2°C by 2100 even in the range of 17-36 per cent, which is, by current progress, very ambitious, would involve concentrations peaking in 2015 at around 425ppm (470ppm CO₂e), and falling at a rate of 6 per cent per year up to 2050, reaching total cuts of around 80 per cent.¹ Unpredictable feedbacks, however, make even this scenario optimistic. The global cap discussed, but not agreed in Bali (450 ppm) still, though, presents a risk of 26–55 per cent risk of exceeding 2°C, and would still require emissions to decline at a rate of 3.4 per cent per year.²

The targets discussed in Bali involved capping emissions at approximately 50 per cent below 1990 levels by 2050. This would involve developed nations cutting emissions by 25–40 per cent by 2020 and 60–80 per cent by 2050. And, while developing nations will also be required to cut their emissions, no specific target was discussed or agreed.

The USA in particular has been pressing for major developing country emitters to commit to emission reductions in the post Kyoto commitment period (post-2008–2012). Developing nations led by India have, however, stated that their participation in an agreement will depend on support to alleviate poverty through significant investments in adaptation and renewable energy, and by supporting their sustainable development through greater flexibility in the rules governing the global economy on issues like trade, finance and intellectual property.

The additional benefit of a Global Climate Community

The ambitiousness of the post-2012 agreement will not be known until COP-15 in 2009. But, it is unlikely that the agreement will be anywhere near as ambitious as is required, or fair to the extent discussed in Briefing Paper 3. Given this, Action for a Global Climate Community's (AGCC) proposal of a 'climate community' – with a legally binding framework for managing greenhouse gas emissions, potentially provides the opportunity for additional emission reductions by Northern and Southern states without detracting from negotiations under the UNFCCC. These can be achieved within a framework which has the principles of justice and equity at its heart. Quantifying the added benefits of such a framework will, however, not be possible until the post-2012 agreement is formalised. There will be, though, issues that need to be considered in more detail. For example, how would the GCC engage with non-members in a way that does not make a community less and less attractive to join with time? One solution might be to have an 'open-chair' policy, meaning that states wishing to join at a later stage are not deterred by a mounting bill of emission reductions. But, this would need to be achieved in a way that does not give away benefits of membership.

What would make a global framework attractive and inclusive to developing nations?

In late 2004, nef and Indian NGO, TERI, organised a joint, high-level seminar in London, to assess the implications of various policy measures (and the need for further analysis) on a wide range of factors.

These factors included *domestic effects*, such as technological change, energy markets, non-fuel energy production, income/growth, prices, balance of payments, and fiscal effects; and *international effects*, such as trade patterns, capital flows (private (FDI, portfolio) and public (aid, non-concessional loans)), cost of capital, structure of global production (location of business, etc), transfer of technology, and macroeconomic policy responses in Annex 1 countries.

A wide range of senior representatives from academia, senior civil servants, director-level international NGOs, intergovernmental organisations, the European Commission and research organisations, including the head of the Intergovernmental Panel on Climate Change (IPCC) attended. What emerged from the meeting was a consensus that large developing countries will be reluctant to accept commitments to reduce emissions for a variety of reasons. These ranged from concerns about, and a lack of understanding of what would be the economic impacts on development, to a lack of leadership from the North, and fears about 'free riders' taking advantage. All of this makes for a climate of distrust.

But, it was also felt that large developing countries would be willing to take appropriate actions and measures to reduce emissions in a scheme that is equitable, improves energy security, guarantees local benefits, offers the right incentives, allows for differentiation of commitments and/or actions, and is rooted in technological solutions. Technology transfer and an equitable international trade regime were seen as key factors in achieving emission reductions in developing countries. The need to ensure additional funds from international development aid and appropriate private sector finance was also stressed.

The discussions at the meeting underlined the need to develop further alternative scenarios and pathways for developing country participation in emission reductions.

Political participation

In addition to the factors listed above, the logic of equity also applies to political participation. A constant stream of political process is necessary to formalise a climate agreement. As discussed

in Briefing Paper 3, the historic 'trust deficit' between rich and poor countries undermines full and willing participation. This deficit is, in part, fueled by the balance of political power at conferences and negotiations. Since representation and participation are proportional to national income levels, countries able to afford large delegations of scientists, economists and legal experts have been able to assert far greater power over and through policy-making.

Mistrust is further fueled by missed aid targets, and the lack of impartiality in processes and institutions through which money is distributed, including donor conditionality. Then there is how agreements are served and disputes are resolved. The attractiveness of a climate change agreement will therefore be dependent on the equal distribution of political power within the negotiation process.

A recent analysis showed that the single best predictor of environmental treaty ratification is related to the number of NGOs in a country.³ This was found to be an indicator of strong domestic institutions (democracy), which is in turn related to the nation's placing within the world system. Conversely, the study found that nations that tend not to ratify environmental treaties tend to be fragile, authoritarian and often with corrupt economic structures that are dependent on the export of a narrow range of goods. While the authors argue that there may be an upper limit to participation by developing nations, their findings also make the case for greater development assistance.

How much responsibility should developed nations accept?

Developing nations in general view the statement in Article 3.1 of the UNFCCC 'differentiated responsibilities and respective capabilities' as an acknowledgement that the North must cut its emissions and pay for its carbon debt – discussed in Briefing Paper 3. Historically, the North has made a more selective interpretation of the UNFCCC statement. Promises of extensive technology transfer have not been honoured, and the current framework has avoided taking up the issue of responsibility. Thus, so far, the UNFCCC has failed to establish a burden-sharing scheme that would ensure an adequate and predictable flow of technological and financial resources from developed countries to vulnerable developing countries.

The UNFCCC notes 'that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs...'. Given mounting pressure in particular from the United States on countries like China and India to make commitments on emissions reductions before the USA itself is prepared to act, it is easy to forget that Article 3, Principle 1 of the UNFCCC clearly states that 'the developed country parties should take the lead in combating climate change and the adverse effects thereof'.

How should responsibility be distributed among developed nations?

The latest figures show that CO₂ emissions have been accelerating at the global level from an annual growth rate of 1.1 per cent between 1990 and 1999 to a growth rate of more than 3 per cent between 2000 and 2004.⁴ At the same time, recent research from the Global Carbon Project shows that, globally, there are no signs of emissions growth slowing down; there has been a constant or slightly increasing trend in the carbon intensity of energy over recent years, in both developed and developing regions.⁵

The growth rate of emissions is strongest in rapidly developing economies, particularly China. But, although developing and least-developed economies (forming 80 per cent of the world's population) accounted for 73 per cent of global emissions *growth* in 2004, they only accounted for 41 per cent of *actual* global emissions in the same year. And, cumulatively, since the mid-eighteenth century, developing and least-developed economies have only accounted for 23 per cent of global emissions.⁶ This illustrates the degree of responsibility the North holds – but even this is an extraordinarily conservative estimate due to the methods employed to monitor emissions. In 2001, approximately 5 billion tonnes of CO₂ were embodied in international trade of goods and services, most of which flowed from non-Annex 1 countries to Annex 1 countries – 5 billion tonnes excluded from Annex 1 inventories.⁷

Aspirational model – a climate policy based on domestic consumption

The UNFCCC emissions reporting guidelines are based on a 'production-based perspective'. This means emissions are only associated with indigenous emissions and exports, while those associated with imports are excluded from the national accounts. Because this method does not take into account 'embodied carbon' of imports, the consumer of the product has no responsibility. This methodology, therefore favours high consuming nations in the North, and fails to consider actual driving forces of emissions – typified by the Kaya Identity*. As such, a policy decision to monitor emissions from a production perspective is more likely to result in an increase in emissions rather than mitigation. This has been illustrated by a number of analyses.

In the context of the UK's own emissions, as a loose analogy for other wealthy industrialised nations, an investigation published in the journal *Ecological Economics* implies that if UK greenhouse gas emissions were monitored using this 'consumption-based' method, the UK's progress towards its Kyoto emission targets of 12.5 per cent below 1990 levels disappears. Instead, over the period 1990–2004, the UK's emissions have climbed by 8 per cent above 1990 levels. A more recent analysis by Dieter Helm published towards the end of 2007 supports these findings.⁸

Using a similar consumption-based method, Helm identified a 19 per cent increase in the UK's emissions rose over the period 1990–2003. The differences between the two estimates presented here are mainly due to data uncertainties. The overall intention of this research, however, was to highlight the importance of considering the implication of international trade and supply chains when considering national emissions monitoring.

To overcome this problem, and to calculate a more realistic inventory of greenhouse gas emissions, progress should be made to develop a monitoring methodology to measure the consumption-based perspective. This would account for all the emissions attributable to the consumption activities of the nation, and is therefore a more equity-based approach.

There are five key advantages associated with a climate framework that assigns responsibility of emissions by using a consumption-based methodology. These include:

- a) coverage of greater emissions with limited participation;
- b) attractiveness to developing nations – the framework could still provide incentives for large-scale mitigation options in developing nations, without directly capping their emissions;
- c) increased mitigation options and incentives to invest in cleaner production technology;

* The Kaya identity is an equation that describes the factors that determine the level of anthropogenic impact on climate, in terms of CO₂ emissions. It asserts that total emission level depends on the product of four inputs: population, GDP per capita, energy use per unit of GDP (energy intensity) and emissions per unit of energy consumed (carbon intensity of energy).

- d) reduced concerns relating to competitiveness – emissions would be allocated according to the consuming nations; and
- e) strength of the carbon market – carbon trading would become a central part of the consumption-based emissions accounting.

This model is not without problems, however. If such a method was employed, it would significantly change our current political economy – substantially shifting responsibilities and creating a bigger challenge to Northern states. This could, however, be ameliorated by the evolution of a robust carbon trading mechanism.

Since exports do contribute to a nation's GDP, it has been argued that the exporting nation should be responsible for some of the emissions associated with the production of goods. Exports are driven by demand, however, and often only a proportion of export value is accrued in country. For example, one study showed that for every \$1000 of Chinese exports to the USA in 2002, only \$386 was accrued in China. As such, it is reasonable to argue that this is a fair approach, likely to encourage the participation of countries such as India and China.

Certified carbon reductions (CCRs) from verifiable investment into efficient lower-carbon technology could be traded in a similar way to Certified Emission Reductions (CERs) created by the Clean Development Mechanism (CDM). While the detail of such a market is discussed later on in this briefing paper, it is noted that this instrument may also overcome some of the sovereignty issues surrounding technology transfer and also permit an economy-wide carbon market – contrary to the EU Emission Trading Scheme (ETS) which covers just under half of the emissions within the economy. Because of the high degree of cooperation required, this system naturally lends itself to a long-term partnership such as the proposed GCC.

Another problem at present relates to the poor quality of data. There are a number of errors and uncertainties associated with the consumption-based method. And, it has been calculated that the uncertainty of such greenhouse gas inventories has a range of ± 5 –20 per cent.⁹ Indeed, in a recent report, the UK's National Audit Office considered the potential of a 'consumption-based' emissions inventory for the UK's domestic climate policy.¹⁰ While the report recognised the deficiency of the 'production-based' methods, it found that calculation of emissions on a 'consumption' basis would involve too many uncertainties and cannot currently provide a robust, internationally agreed basis for reporting. While these data uncertainties are currently an obstacle, it is recommended that research is financed to decrease the uncertainties such as, ways to improve the monitoring and disaggregation of trade data, for example.

Aspirational model – trade measures against non-compliance

Enforcement mechanisms for any multilateral environmental or social agreement are notoriously weak. Given this, historically, alternative approaches based on economic sanctions have been considered to encourage compliance. Indeed, trade measures against non-compliance have been used successfully in the context of international agreements such as the Convention on International Trade of Endangered Species (CITES) and the International Whaling Convention (IWC).¹¹ Currently, however, no trade measures explicitly deal with climate change; although measures such as border tax adjustments (BTAs) applied to nations failing to ratify the Kyoto Protocol have been considered.

At the time of the Earth Summit in 1992, the European Commission was in the process of considering the introduction of a climate change tax. The precedent cited to support this was the US Hazardous Substances Trust Fund, popularly known as Superfund. Superfund is geared towards the clean-up of domestic toxic sites and is paid for by taxes levied on petrochemical

industries. Higher rates of tax are levied against imports of petrol and chemicals. This means that a direct trade measure is being used to pursue clear environmental objectives.

At the time of its introduction, Superfund was contended by the European Community. Its complaint was considered by a GATT (General Agreement on Tariffs and Trade) Dispute Settlement Panel. The panel decided that the tax was consistent with Article III of GATT and that the effective BTA was not an unacceptable restraint on trade. Examples of the application of unilateral trade measures like this raise the possibility of legitimate trade measures being used to pursue the goals of the UNFCCC and any agreement recognised within this framework. More orthodox trade measures may also be applied if non-ratification of the Kyoto Protocol, a post-2012 agreement or a GCC can be shown to create its own trade distortions, in which non-compliance is shown to create an effective subsidy.

In addition, Article XX of the GATT, which was used in the Shrimp-Turtle decision¹² in 1998 exempts certain measures from other World Trade Organization (WTO) obligations if, under Article XX (b), they are ‘...necessary to protect human, animal, or plant life and health...’ or under Article XX (g) they relate ‘...to the conservation of exhaustible natural resources’. The WTO’s Appellate Body also pointed to references to sustainable development in the 1994 WTO agreement, and the fact that other international conventions used the term ‘natural resource’ to embrace both living and non-living resources. Given this precedent, trade measures could be considered as a vehicle for non-compliance by a GCC, or a bilateral India-European Treaty.

In 2003, nef (the new economics foundation) published a report which proposed that trade measures such as a BTA could be used to pressure the USA over climate change and its non-compliance with the Kyoto Protocol.¹³ At the time of publication, Pascal Lamy the then European Commission for Trade, now the Director-General of WTO admitted that that the EU would be within its rights to pursue this recommended course action. In early January 2008, the president of the European Commission, Jose Manuel Barroso, caused shockwaves by stating publicly that trade sanctions against the USA was a possible course of action for the EU.¹⁴

How much assistance should developed nations provide?

Rich countries have pledged some funds to facilitate low-carbon development and adaptation measures in developing nations. But, just as the North has failed consistently to meet its foreign aid commitments since the 1970s, so too has it reneged on commitments to mitigation and adaptation funds.

Financial contributions under the UNFCCC and Kyoto Protocol are managed by the Global Environment Facility (GEF), a body positioned between the UN Development and Environment Programmes and the World Bank. GEF oversees funds donated voluntarily by developed nations to preserve biodiversity, to protect the stratospheric ozone and mitigate climate change. In the context of climate change, the facility oversees several funds intended to support action on climate change in developing countries, and is the largest source of multilateral financing for low-carbon technologies.

Currently, there are four operational GEF funds available for climate change projects. These include: the Least Developed Country Fund (LDCF), the Special Climate Change Fund (SCCF), and the Strategic Priority on Adaptation (SPA) under the GEF Trust Fund, and the Adaptation Fund (funds come from a 2 per cent levy on carbon credits generated under the CDM). The purpose of these funds is to help capacity building and the dissemination of clean technology.

Over the period 2006–2010, GEF is supposed to distribute just over US\$3 billion for low-carbon investment and for adaptation to climate impacts in developing countries.¹⁵ But, wealthy governments have failed to honour even these small pledges. By the end of 2007, under the Bonn agreement – an adaptation agreement made at a UN meeting in 2001 – these nations should have contributed \$1.2 billion into the facility, around \$410 million a year.¹⁶ But, accounts presented to a GEF council meeting in September 2007 showed that GEF's three operational climate change funds had only received \$177 million.

The *Stern Review* estimated the low-carbon investment (mitigation) necessary in developing nations to be between \$20 and \$30 billion per year. In addition, funds necessary to pay for adaptation to climate change have been estimated to be between \$10 - \$100 billion[†], and the total cost endured by developing nations has been put at \$130 billion per year. It is clear that there is an enormous gap between this figure and current financial pledges.

How should assistance be distributed among developed countries?

Adaptation and payments for low-carbon development, it is argued, should be needs-based and given on a basis of historical responsibility. One way of distributing assistance, could be through an objective index that considers ability to pay, population size and cumulative historical emissions. A recent suggestion for a new global climate framework titled the 'Greenhouse Development Rights' (GDR) addresses this.¹⁷

GDR is a burden-sharing system that would take into account the fundamental rights to human development. The GDR shares responsibility for the costs of mitigating climate change worldwide according to three key principles: a country's historical emissions; the size of its population; and its capacity to pay. Using this methodology, the authors estimate that the USA is responsible for approximately one third of the burden of dealing with climate change, whilst Europe should make a contribution of one quarter. Nations such as China and India would be expected to make contributions of less than one fifteenth and one three hundredth respectively.

Oxfam developed a similar objective burden sharing methodology for adaptation payments – the Adaptation Financing Index (AFI).¹⁸ The AFI aims to give an indication of what fairness in adaptation requires. The index is based on four principles: responsibility; equity; capability (i.e. a country is considered to be capable of assisting if they have already achieved a high level of human development); and simplicity (i.e. the capability of a nation to finance adaptation is translated into a single index). Both responsibility and capability are given an equal weighting.

According to the AFI, both the USA and the EU should contribute over 75 per cent of the finance needed, with over 40 per cent from the USA and 30 per cent from the EU. Japan, Canada, Australia and the Republic of Korea should contribute a further 20 per cent.

New and additional fundraising?

Aspirational model – AdMit: revolutionising the voluntary carbon market

Orthodox voluntary carbon offsets have been likened to a vehicle for neo-colonialism and criticised for both their lack of scientific, environmental integrity and their ability to excuse 'business as usual' responses to climate change.

[†]For annual adaptation requirements, the World Bank estimates 'climate-proofing' in developing countries equates to US\$10 – US\$40 billion per year, Oxfam estimates around \$50 billion per year and more if emissions are not cut immediately; and Christian Aid estimates a figure of US\$100 billion per year.

AdMit is a fundamental alternative to conventional carbon offset products. AdMit looks like an offset product in that a payment is made in lieu of carbon emissions. But, instead of promising to neutralise the emissions via offsetting – something which, scientifically is almost impossible to completely guarantee – AdMit is more like a compensation payment. It is made in respect of the inevitable harm caused by unsustainable greenhouse gas emissions. Payments are then targeted at the poorest global communities most vulnerable to climate change to assist in their adaptation. Clearly, a significant amount of revenue could be generated through a project such as AdMit; given that the healthy voluntary carbon market was worth €62.6 million in 2006.

Aspirational model – strengthening the carbon market within the GCC

The CDM is one of three mechanisms in the Kyoto Protocol that allow emission reduction activities to be implemented jointly. It was established as a means of encouraging participation of developing nations, who are not included under the Kyoto Protocol. It works by paying developing nations to adopt lower-polluting technologies than they otherwise would, and has the intention of creating sustainable development benefits for developing nations. The scheme is based on the assumption that it is economically cheaper to build clean infrastructure from scratch, than it is to modify or replace existing technology in developed nations. The emissions savings made by employing cleaner technology in developing nations, once verified, can be sold as carbon credits – which can contribute towards a nation's Kyoto Targets.

An analysis of the existing projects, however, shows that over two-thirds of the emission reductions involve neither CO₂ nor energy production. This is a problem because the CDM was supposed to incentivise developing nations to invest in low-carbon infrastructure. And, while reducing all greenhouse gases is important, due to its huge presence in the atmosphere and long atmospheric lifetime, it is CO₂ emissions that need to be drastically cut.

Almost 30 per cent of the total CDM market comes from capturing and destroying HFC-23, a greenhouse gas that is thousands of times more potent than CO₂ and is a byproduct of the manufacture of refrigerant gases. Due to carbon market prices, manufacturers of HFC-23 can make almost twice as much from carbon credits than they can from the gas.

The CDM has also been criticised for its highly complex system of certification and verification by UN bodies. Given the lengthy bureaucratic process and the high transaction costs (estimated to be around 25 per cent higher than the voluntary market), the CDM is an extremely inefficient method of emission reductions. Not only was it revealed last year that over 20 per cent of the CERs circulating in the carbon market were faulty (emission reductions were overstated), Roger Pielke Jr a Fellow of the Cooperative Institute for Research in Environmental Sciences, at the University of Colorado at Boulder recently commented that the cumulative emissions prevented by CDM projects up until 2012 (assuming that all projects listed with the UNFCCC were implemented with 100 per cent success) would result in a total reduction of 176 million tonnes of carbon, or 35 million tonnes of carbon per day.¹⁹ This is equivalent to a 6.5-day delay in reaching the expected emissions concentration in 2012.

To avoid future 'lock-in' of carbon-intensive energy infrastructure in developing nations, it is necessary to address this failure. Particularly as recent research into Norway's carbon footprint by the World Wide Fund for Nature (WWF) showed that the largest part of its carbon footprint is related to the electricity production of its trade partners. Investment into energy infrastructure could be achieved by awarding carbon credits for CO₂ reductions only i.e. CCRs. Or, for example, members within a GCC could sign a moratorium on non-CO₂ carbon credits. In addition, there is a real need to move towards a climate-trade policy that does not simply result

in cheap carbon credits for Europe, but instead encourages the export of clean technologies to developing nations. The carbon market should aim to foster capacity building; joint research and development programmes; and collaborative innovation which includes more than just technological solutions but also approaches to low-carbon lifestyles, such as decentralised low-carbon energy systems or low-carbon farming methods.

As described earlier, CCRs could also be awarded for investments made to reduce the carbon intensity of traded goods, particularly if the GCC assumed a 'consumption-based' emissions monitoring process. Additional funds could be raised through a levy on traded CCRs – similar to the 2 per cent levy on CDMs that raises revenue for the Kyoto Protocol's Adaptation Fund. Since 2006 the compliance market was worth €20 billion, a levy could raise considerable funds.

An alternative model of economic development

What does development look like in a carbon-constrained world? The objective of development should not be to maximise growth and income as cold statistical goals, but rather to engender sustained and sustainable improvements in people's lives within global environmental limits. For the majority of the world's population – this means the fulfilment of their basic economic and social rights.

The requirement of living globally within environmental limits means it will be likely to be accompanied by a contraction in the incomes and consumption amongst the non-poor in high-income nations. In Briefing Paper 3, however, it was shown that such a contraction would have little or no impact on well-being.²⁰

According to David Woodward, economist and architect of the alternative (rights-based approach) to economic development, the model has three key implications:

- a) It focuses attention on people, and particularly on their basic human needs.
- b) It implies a shift of focus from arbitrary poverty reduction targets – for example, the Millennium Development Goal of halving poverty by 2015 – to eliminating shortfalls from standards consistent with economic and social rights. This means that goals are absolute, such as poverty eradication, as opposed to mere poverty reduction, and universal access to health rather than merely wider availability.
- c) It implies moving away from considerations of the overall level of income to a *broader concept of well-being*.

Several authors who worked on the most recent IPCC report (AR4, 2007) argued that 'development pathways...societies choose today may be as important, possibly more important, as the climate measures they take'. It is habitual for developing nations to push for industrialisation, however, despite the perverse outcomes that are associated with this type of development. Therefore, compensation and assistance will be paramount in making transition to a more sustainable paradigm attractive.

A mechanism for recognition and protection of environmental refugees

The growing phenomenon of environmental, or 'climate' refugees was highlighted in Briefing Paper 3. A recent report by EU Foreign Policy Chief, Javier Solana and the Executive European Commission warned that climate change could amplify or trigger mass migration within and between countries, due to climate and resource stresses.²¹ The report warns that the increased migration could spark increased conflicts in transit and destination areas. It states that 'some

countries that are extremely vulnerable to climate change are already calling for international recognition of such environmentally induced migration’.

Aspirational model – enhancing international law to deliver explicit protection for ‘environmental’ and ‘climate’ refugees

Currently, the Geneva Convention, which defines and serves to protect refugees, does not include those displaced by environmental degradation. It came into being in Europe as a result of the Second World War and was designed to deal with issues of war, ideology and religion. Due to global environmental crises, however, it is in need of an urgent overhaul to cope with the new refugee problems.

Steps to expand the Geneva Convention to incorporate a new category of ‘environmental persecution’ could begin with a global commission, sponsored by the UN, reporting to the UN Security Council and the General Assembly on the implications of the growing number of environmental refugees. This should also examine the threat posed to nationhood by environmental problems such as global warming.

Other suggested changes include:

- a) *Updating the Geneva Convention:* Granting environmental refugees proper status under the convention will provide them with internationally assured protection, independent of and separate from the actions of their own governments. Often these governments do not have the resources or the will to help; sometimes they are themselves directly culpable.
- b) *Writing a new convention:* An alternative to an amended Geneva Convention is a new convention specifically focusing on people whose way of life is being destroyed by a lost, ruined or degraded environment.
- c) *Compensating for ecological debts:* The world needs to establish an internationally agreed measure of ecological debt, focused initially on the biggest issue, climate change, and the use of fossil fuels. This would clarify the financial and environmental obligations of ‘over-polluting’ countries, particularly the contribution they should make to climate-related problems, such as the growth in environmental refugee numbers.

Technology transfer and intellectual property rights

Despite the need for rapid transfer of low-carbon technology to developing nations, due to commercial competitiveness, it has become something of a political challenge. It is argued that technology transfer can affect the commercial interests of technology developers and owners, and the relative economic wealth of supplier and recipient countries.²²

Intellectual property rights (IPR), are believed to place a fundamental restriction on the faculty of developing countries to develop their own technological capacity. While IPR is upheld as means of encouraging innovation by providing a commercial return on investment there is a growing concern that it is not working effectively to facilitate technology transfer to developing nations and diffusion within nations. For example, Third World Network has expressed concern that patents on new technologies may be keeping prices too high and restricting access by developing nations. In response to this issue, the European Parliament recently proposed a research programme, which will look into the feasibility of amending the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) in order to allow for the compulsory licensing of ‘environmentally necessary’ technologies.²³

Given this, internationally collaborative approaches to low-carbon-technology research and development may have an important role to play in overcoming IPR issues in the future, while at the same time contributing to building technological capacity in developing countries.²⁴

A recent report by the Institute for Public Policy Research calls for the development of novel technology transfer mechanisms.²⁵ And, there are multiple examples that information-sharing initiatives, such as the UNFCCC programme TT: CLEAR, have an important role in overcoming technology transfer barriers.²⁶

Limits to technological solutions?

If tipping elements discussed in Briefing Paper 6 were included in climate policy, it would imply that the concept of both mitigation and adaptation would have to go beyond incremental efforts. Current climate mitigation policies, however, are very much focused on technological solutions. Yet, technological solutions can only have incremental impacts and are dependent on speed of uptake, which is in turn dependant on structures of organisations, and IPR. But are technological solutions really the only way to approach the climate change problem?

Recent research into the potential of social capital (roughly defined as the connections within and between social networks that hold collective life together) found that informal networks of social capital are especially valuable in responding to unexpected shocks. The study found that informal social capital networks which were familiar to the imperative of adaptation could attain reflexive adaptation, defined as self-organised and critical approaches to adaptation where the goals as well as the mechanisms for adaptation are reviewed and may be changed.

Social capital is particularly valuable in changing public perception and behaviour to environmental problems. Researchers identified that social networks, rather than the form and volume of information as a key variable explaining whether people pay attention to climate change and enter into behaviour change, that is adaptive or mitigative.²⁷ This makes the case for a long-term partnership which not only encourages participation internationally, but also creates the space for participation of civil society groups and encourages their interaction at the international level.

A Global Climate Community framework that benefits human development

The need for any climate framework to guarantee both environmental integrity and a workable, global political solution points to any deal having to display certain characteristics. Based on the scoping of issues in Briefing Papers 3, 6 and 10, these characteristics include the following, as a minimum:

- a) Setting a formal greenhouse gas atmospheric concentration target. While the formal target of 2°C has been set, efforts are needed to keep temperatures as far below 2°C as possible, as even a 2°C target will have lasting consequences. A growing scientific consensus now suggests that this concentration should be between 350 and 450ppm.
- b) Delivery of a fair, effective and equitable agreement beyond 2012 that deepens reduction targets in industrialised countries, allows greater mitigation contributions from some of the larger developing countries, and ensures a strong focus on adaptation. Wealthy industrialised countries need to do their fair share by setting a legally binding, annual, constantly contracting 'carbon budget', which plots a course, year on year, towards an emissions cut of at least 80 per cent on 1990 levels (the benchmark year identified in the Kyoto Protocol, and coinciding with the date that climate change began to be considered as

a serious issue) by 2050. This must include that there are less than 10 years before global emissions must start to decline.

- c) Innovation of an alternative development paradigm, capable of delivering real poverty reduction in a carbon-constrained world, through an extensive dialogue and the participation of Southern states, as well as appropriate assistance and compensation for the transition.
- d) The recognition of forced displacement – in the form of environmental or ‘climate’ refugees due to global warming – within the Geneva Convention, including appropriate flexibility in immigration policy, protection of displaced people and a compensation fund for those affected.
- e) An expanded framework needs to revive the original intent of the UNFCCC for developed countries to take leadership by reducing emissions at home. It must also provide the opportunity for poor countries to escape poverty through massive investments in adaptation and renewable energy and by supporting their sustainable development through greater flexibility in the rules governing the global economy on issues like trade, finance and intellectual property.
- f) Technology transfer, especially energy technology, is also important. Adaptation funds under the UNFCCC and Kyoto Protocol need to increase in size by several orders of magnitude, to match the costs of unavoidable adaptation and to pay for clean energy substitution.

With these characteristics in place, there remains hope that runaway climate change could be averted at the same time as real gains are made to improving human health and well-being. Without these characteristics at the heart of the next incarnation of the international climate agreement, many hard-won human development gains will be swept away, along with the prospects of current and future generations. The AGCC argues that a long-term, legally binding partnership, that is complementary to and parallel with the post-2012 agreement could be an insurance policy against such outcomes.

Endnotes

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