

Introduction

At the 2007 UN Climate Change Conference the Bali Road Map was agreed. It foresees to adopt a new agreement by COP15 at the end of 2009 in Copenhagen reflecting a shared vision based on reinforced mitigation commitments on the side of developed countries through mid-term targets, as well as enhanced collaborative action on mitigation and adaptation with the support of technology and finance for developing countries.

Following up on in its Communication "Limiting Global Climate Change to 2° Celsius: The way ahead for 2020 and beyond" and the EU Spring Council conclusions from March 2007, the European Commission seeks detailed views of stakeholders on the different building blocks of the Bali Road Map that would enable the world to limit global warming to no more than 2°C above pre-industrial temperatures and based on the key principle of common but differentiated responsibilities and respective capabilities. As a result, developed countries shall continue to take the lead and commit to significant and absolute emission reductions by 2020 whereas a substantive deviation of greenhouse gas emissions from business as usual by developing countries, and notably by emerging economies, will also be needed. Part of this enhanced contribution will need to be supported by the global carbon market as well as other positive incentive schemes, together with further access to technologies and finance. The agreement will also need to ensure that appropriate action is taken to reduce emissions from international air and maritime transports as well as deforestation and forest degradation. Furthermore, already with an increase of temperature up to 2°C there will be significant adverse effects of climate change necessitating enhanced action on adaptation.

The aim of this consultation is to gather views on a number of critical issues related to the global post-2012 climate change agreement.

1. Background information

Please answer following questions about your profile

The House of Bishops' Europe Panel is a sub-committee of the House of Bishops of the Church of England. It acts as a point of reference for items affecting the Church of England's relations with Europe and the European Union institutions. The House of Bishops' Europe Panel welcomes the opportunity to contribute to the consultation, *Towards a comprehensive and ambitious post-2012 climate change agreement.*

2. The climate change challenge - a shared vision for the 21st century development

The Bali Action Plan agreed on a shared vision for long-term cooperative action, including a long-term global goal for emission reductions, to achieve the ultimate objective of the Convention, stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The EU determined already in 1996 its long term goal of limiting the global average temperature increase to no more than 2°C above pre-industrial levels. To achieve this, in 2050 global greenhouse gas emissions should be reduced by at least 50% compared to 1990 levels.

- Would this aspirational long term goal be appropriate in the light of the 2007 IPCC reports and latest scientific knowledge? (max 4000 characters) (optional)

The fundamental ambition of the Church of England is the flourishing of the world as 'the theatre of God's glory'. This is reflected in the seriousness with which the Church takes the threat that climate change poses to the integrity of creation. Consequently, for the Church of England, the only acceptable level of ambition is one that is consistent with the Convention, namely "stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

It follows that we support the EU's drive to keep global average increases as far below 2°C as possible. We are therefore concerned at the apparent inconsistency between this position and the EU's associated policies and subsequent targets. Focusing efforts, as the EU has done, around a concentration target of 450ppmv is a high risk approach with only a 50% probability of not crossing the 2° threshold.

The EU needs to review the 450ppmv target in light of recent scientific evidence on stabilization scenarios as agreed at AWG4. The evidence suggests that for stabilization at 450ppm carbon dioxide equivalent, developed countries will need to cut their emissions between 25-40% by 2020 and 80-95% by 2050. Obviously, there is greater likelihood of attaining the EU's long term aspirational goal if emission reductions were at the top rather than the bottom end of these ranges.

- Is there a need for other elements to be part of the shared vision in order to ensure the transition to a sustainable low carbon economy? (max 4000 characters) (optional)

As a Church, we hold that the transition to a sustainable, low-carbon economy needs to be grounded in a shared understanding of social justice and environmental integrity. In so doing it is necessary to recognize explicitly the interconnected and interdependence of God's creation and humanity's relationship with the wider environment. This position informs our understanding of the UNFCCC's foundational principle of "common but differentiated responsibilities and respective capabilities".

We recognise, however, that the post-2012 negotiations are taking place in the context of an ongoing development crisis and what the Global South perceives as a pattern of

Northern callousness and opportunism in matters of international political economy. This sense of injustice is compounded when wealthy nations appear to flout environmental treaties by failing to cut emissions, resist limits on their conspicuous consumption, fail to transfer promised technology and environmental assistance and seemingly undermine developing countries right to development in the short and long-term.

Breaking the long term stalemate on climate change will require imaginative approaches to global policy development and negotiation. Heavily industrialized countries have to take the lead in cutting emissions. They carry the burden of historic responsibility for the climate change problem and have the financial resources and technological capabilities to initiate deep and early cuts in emissions. This historic responsibility also requires them to provide the necessary resources for developing countries to realize their development goals, but in a way that is consistent with the transition to a low carbon economy.

3. Mitigation commitments by developed countries

The EU is of the view that developed countries should continue to take the lead by committing to collectively reducing their emissions of greenhouse gases by 30 % by 2020 compared to 1990. They should do so also with a view to collectively reducing their emissions by 60 - 80 % by 2050 compared to 1990.

- What should be the criteria for allocating emission reduction efforts among developed countries, considering also the need to ensure the "comparability of efforts" as agreed in Bali? (max 4000 characters) (optional)

The overarching aim must be to fulfill the UNFCCC objective of “prevent[ing] dangerous anthropogenic interference with the climate system”. As stated in response to Q1, any level of ambition that has a high probability of not being consistent with the 2°C limit is unacceptable and in need of revision. It is for this reason that we believe that developed countries should collectively commit to Kyoto style emission reduction obligations of 25-40% by 2020 and 80-95% by 2050.

Within this equation consideration should be given to allocating emission reduction efforts among developed countries on a GDP per capita basis. Using GDP per capita adjusted for purchase power parity would strengthen the equitable basis of the target allocations, but at the cost of adding complexity, particularly when economic circumstances are likely to change. This approach would therefore need to be re-examined each commitment period.

4. Mitigation actions by developing countries

The EU recognises the need for enhanced contribution by developing countries, whereby economically more advanced developing countries contribute adequately according to their responsibilities and respective capabilities.

- What type of mitigation actions should developing countries undertake? How should these be measured, reported and verified? What should be the scale and legal nature of these actions? How should differences in responsibility and capability of different developing countries be taken into account? (max 4000 characters) (optional)

We recognize that a targets-only approach is not politically feasible in the post-2012 timeframe, not least because most developing countries remain opposed to quantified emissions limits. Their long-standing resistance to binding targets is rooted in fundamental issues reflected in the Framework Convention and the provision for common but differentiated responsibilities - developed countries need to “take the lead in combating climate change”, but for developing countries, “economic and social development and poverty eradication are the first and overriding priorities”. This aside, economy-wide targets may be technically impractical since to accept a binding target a country must be able to reliably quantify its current emissions and project its future emissions. This is a capacity that few if any developing countries currently possess.

Against this background, we hold that a flexible post-2012 framework in which some countries have binding targets and others have different commitment types would be consistent with the principle of “common but differentiated responsibilities”. This would allow developing countries alternatives to quantified emission limits. One option would be the further exploration of policy based commitments, where developing countries promote national policies of their choosing as contributions to the global climate effort.

Policy based commitments could vary widely in scope and form, from economy-wide energy efficiency goals to sector-specific standards or reforms. They are more likely to be accepted and fulfilled if they emanate from national contexts and when they are tailored to meet domestic needs, priorities and policy cultures. A policy based approach can encourage national governments to identify ways that emissions mitigation or avoidance fits or advances national priorities such as economic growth, energy security and public health.

In the post-2012 context, however the question remains whether these types of voluntary policy actions can be translated in time into binding commitments that other parties accept as adequate and reliable. Research undertaken by the Pew Center on Global Climate Change (2007) illustrates a pathway for their evolution and development. Governments putting forward policies as commitments, for instance, might be expected to project their likely emissions impacts so that other parties can assess relative levels of efforts. Governments might also be required to report periodically on the implementation of their policies, subject to some form of review or enforcement. The willingness of developing countries to assume policy based commitments in a post-2012 framework will depend in part on the incentives offered. In this respect linking policy commitments to a crediting mechanism, which would grant tradable emission credits for policy-driven emission reductions, could provide a strong based incentive for countries to assume and implement policy commitments.

- To what extent and how should those actions be supported by technology and financial assistance from the developed countries? What kind of supporting tools could be developed at the international level to support domestic action and should there be respective roles for the public and private sector, including the carbon market? (max 4000 characters) (optional)

For developing countries to stay within a 450ppmv CO₂-eq trajectory, emissions in developing countries will need to deviate substantially from their baselines. Ecofys and the Wuppertal Institute (2008) estimate that emissions reductions of at least 5.7Gt will be needed by 2020 compared to business-as-usual.

Developing countries will be able to achieve 50% of this reduction through no-regret and co-benefit mitigation measures. But developed countries will need to support the other 50% of emissions reductions through proactive MRV finance and technology transfer. Such support is vital if developing countries are to participate in the carbon market or to put in place robust GHG reducing policies and programmes. Developed country support will need to be quantified, binding and in addition to their own domestic emissions reductions.

Market mechanisms have an important role to play in assisting clean development pathways in developing countries. The current mechanism for doing so, the Clean Development Mechanism (CDM), will continue post-2012 and with appropriate circumscription it can help to deploy energy efficiency and clean technologies in many countries. To date CDM has been largely used to off-set the emissions of developed countries. To be effective, however, it is vital that the CDM yields real, additional, net reductions in global emissions, whilst strengthening sustainable development.

- How should technology and financial assistance by developed countries to developing country mitigation and adaptation actions be measured, reported and verified and should they be compared? (max 4000 characters) (optional)

A range of mechanisms should be considered for measuring, reporting and verifying the technological and financial assistance provided by developed countries to support developing countries mitigation and adaptation actions. First, a 2020 or 2030 target needs to be set for financial flows required to support mitigation in developing countries. This target would be in addition to domestic emissions reduction targets. To aid transparency MRV support could be expressed in terms of tons of CO₂ avoided. Assistance given by Annex II countries should relate to GDP per capita and historical emissions.

Second, each developed country will need to report financing and technology transfer in Annex I national communications in order to make transparent measurable, reportable and verifiable progress towards the targets. With regard to technology, part of MRV will include funding, commercialization, diffusion and transfer. This could be strengthened by the use of the performance indicators for technology transfer developed by the joint SBSTA/SBI contact group;

Third, given that capacity is a key issue, a facilitative mechanism will be needed to build the capacity of institutions to deliver adaptation and mitigation programmes, at the scale required. This mechanism would also help, in part, to determine accurate emissions baselines.

5. Carbon market

- How should the existing Clean Development Mechanism and Joint Implementation be improved in order to increase their environmental integrity and effectiveness? (max 4000 characters) (optional)

A 2007 report by Lehman Brothers, *The Business of Climate Change: Challenges and Opportunities*, indicates that by mid-2007 EU member states had committed to investing 7.5 million Euros by 2012 under CDM and JI, with the promise of a reduction of more than 2 billion tonnes of carbon dioxide. It is clear, therefore, that CDM is able to provide a source of technological transfer to assist developing countries to introduce cleaner energy. However, it does so at the risk of merely enabling developed countries to meet their international commitments rather than genuinely enabling developing countries to establish low carbon economies.

It is not clear that all CDM projects to date are environmentally or socially sustainable. In addition, as with JI, it is generally not possible under CDM to demonstrate that an investment would not have taken place under business-as-usual conditions. JI will need to be progressively replaced by domestic cap-and-trade emission trading systems in all industrialized countries. To prevent projects with high social and environmental costs from being registered under future mechanisms, it will be necessary to adopt international sustainability standards, and procedures for stakeholder consultations, including full and prior informed consent of local communities. In addition, CDM needs to move from an ad hoc project-by-project methodology to more comprehensive policy-based or sectoral approaches.

- What new market mechanisms could be developed to improve the effectiveness of carbon market? (max 4000 characters) (optional)

A carbon market is only as effective as the institutions that oversee it. If as expected the post-2012 agreement leads to the progressive emergence and subsequent linkage of regional cap-and-trade systems, then some mechanism will be needed to manage this process to maintain the integrity of the market. We have argued previously, in relation to the European Commission's proposals on the future of the EU-ETS, that just as the European Central Bank is mandated with the responsibility for controlling inflation within the Euro-zone, so a European Carbon Bank could be tasked with taking whatever steps are considered necessary to create and sustain a transparent and efficient carbon market.

We continue to believe that the absence of a strong central and independent authority threatens to undermine the long term effectiveness of the EU. An independent body

comprising technical, economic and financial expertise charged with managing the scheme's operation would be preferable to current arrangements. It is difficult to conceive how current arrangements are sustainable long term when the EU-ETS is linked with other trading systems. Further thought needs to be given to what type of regulatory body – both regional and international - will be necessary to oversee the development of a truly global carbon market.

6. Carbon leakage

- How could the delocalisation of emissions from developed countries with binding emission caps to other parts of the world be minimized? (max 4000 characters) (optional)

Research undertaken by the Carbon Trust demonstrates that except in a few sectors (steel and cement), the threat of companies moving to countries with less stringent rules is exaggerated. The Carbon Trust estimates that just 1% of EU emissions will be off-shored by 2020 as a result of the EU-ETS. Securing an international framework at Copenhagen should aid this situation.

7. Sectoral approaches

- What type of sectoral approaches could effectively contribute to global emission reductions? (max 4000 characters) (optional)

Where developing countries lack the capacity to adopt economy-wide approaches, a sectoral approach to mitigation may be appropriate. Nonetheless sectoral actions need to be implemented with the same rigour and transparency as those at a national level. This would include capacity building, monitoring and verification of emission reductions. Such sectoral actions are likely to need support from developed countries, above no regrets measures. Other emission reductions measures that could be considered include policy based commitments and National Mitigation Action Plans. All of these approaches should be encouraged and should be supported by substantial MRV financial and technology support from developed countries, over and above their own commitments to domestic emissions reductions.

8. Emissions from international air and maritime transport

- How could emissions from international air and maritime transport be effectively addressed? (max 4000 characters) (optional)

Between 1990 and 2005, EU aviation emissions increased by 100%, whilst EU shipping emissions increased by 80%. It is vital that aviation and maritime emissions are addressed in the international regime, whilst respecting the UNFCCC principle of common but differentiated responsibilities. The recent inclusion of aviation emissions within the EU's climate change package is to be welcomed. This unilateral action was an important signal to the wider international community that aviation's emissions can not be excluded from the equation.

For developed countries, emissions from international aviation are relatively simple to monitor and address. A value for emissions could be allocated at the point where fuel is purchased and then included in a national aviation emissions statement. The non-carbon dioxide effects of aviation emissions upon the atmosphere could be calculated in accordance with the IPCC's report on aviation. It may also be preferable for the administrative responsibility for abating aviation emissions to be transferred from the remit of the International Civil Aviation Organisation and accounted for under the UNFCCC like all other emissions, except those from international shipping.

International maritime emissions may be less easy to address. It is relatively easy for shipping companies to register their ships under flags of convenience and because 'tankering', where ships refuel at the cheapest port, is common practice. We hold that these issues are best resolved through a sectoral approach. It will be important that developing countries, especially small island nations, are not disadvantaged unfairly by such an agreement.

9. Emissions from deforestation and forest degradation

- What should be sources of financing emission reductions from deforestation and degradation? (max 4000 characters) (optional)

The Stern Commission estimates that approximately US\$10 billion per annum will be required to negate the drivers of deforestation and forest degradation. We believe this matter is best addressed through the creation of a specific deforestation fund under the auspices of the UNFCCC. The scale of the finance envisaged by Stern is best provided by hypothecated auction revenues.

- How financing of emission reductions from deforestation and degradation should be monitored taking into account non-permanence, leakage and liability issues? (max 4000 characters) (optional)

To minimize leakage, any REDD (Reducing Emissions from Deforestation and Degradation) regime needs to be nationally based and monitored. [This would not preclude states from choosing to develop their own domestic carbon markets]. Such a national approach should eradicate sub-national leakage, if not international leakage. International leakage may be less a matter of concern, subject to the cause of deforestation. Subsistence farmers dependent on 'slash and burn' are very unlikely to relocate from one country to another, whilst Oil palm plantation owners are internationally mobile. All REDD programmes therefore need to as inclusive as possible.

National regimes are also likely to be less troubled by non-permanence than would be project-based approaches. Amazonas is probably too large to burn to the ground overnight whereas a group of trees within a small project might. Even so non-permanence needs to be brought into consideration.

Inadvertent forest loss could be addressed by holding some forest 'credits' in a reserve. Nonetheless a way needs to be established to factor out natural phenomena (perhaps including human-induced climate change). Recent work undertaken by the Hadley Research Centre suggests that in Northeast Brazil a large area of rainforest is likely to dry out due to climate change. The Brazilian government has questioned how such an issue would be handled by a REDD regime, as it is clearly powerless to stop the forest loss. This particular loss would not be directly due to deforestation, but it would represent a significant loss of carbon stock.

The question of liability raises several difficulties. Although the PNG proposal is for a sectoral 'commitment', the meaning of the word 'commitment' is unclear. Brazil, in particular, is reluctant to enter into a commitment of indeterminate duration. In part, this is why they propose the creation of a fund which does not bind them to action, but which rewards them for tangible reductions in deforestation.

10. Adaptation needs and support for most vulnerable countries

- What mechanism should be used to finance cost-efficient adaptation action in the most vulnerable countries, in particular LDCs, SIDS and African countries? (max 4000 characters) (optional)

At its heart climate change is an issue of justice. Developed countries are responsible for approximately 70% of greenhouse gases in the atmosphere. The vast majority of emissions are produced by the wealthiest billion people in the world, but the impact will be felt hardest by the poorest 2-3 billion people. These groups also have the fewest resources to adapt to climate change, the weakest system for managing natural disasters and live in areas of the world most vulnerable to social conflict and crisis over scarce resources. The growing political visibility of this tension is exemplified by the 2007 Human Development Report, entitled *Fighting Climate Change: Human Solidarity in a Divided World*, which framed stabilisation at 2 degrees celcius as "the most pressing moral challenge of our time".

Leaving the world's poor to sink or swim with their own meager resources in the face of the threat posed by climate change, is, as the former Archbishop of Cape Town, Archbishop Desmond Tutu noted, "morally wrong". This explains why, in a joint letter, November 2007, to the President of the European Commission, the Chair of the EKD Council, the Archbishop of Canterbury and the Archbishop of Sweden stressed that adaptation funding ought to be seen as compensation rather than aid, complementary to existing Official Development Assistance (ODA).

It follows that there is both a moral and a political imperative to ensuring that the mechanism to finance adaptation leads, as the Bali Action Plan states, to sustainable, predictable, equitable and adequate funding. We believe that in this respect the UN's Adaptation Fund provides a unique funding mechanism. Unlike other UN climate change

funds, the Adaptation Fund, which was set up under the Kyoto Protocol to support adaptation measures on the ground, particularly in very vulnerable countries, does not rely exclusively on voluntary donations. Instead it is funded mainly through a 2% adaptation levy on the credits generated by CDM projects carried out primarily by the private sector of both developed and developing countries.

The adaptation levy is thus akin to an international tax on certain worldwide private sector activities. Because it does not flow through national treasuries, the money raised will by definition be additional to any ODA. We believe that the AF could, if properly managed and developed, potentially dwarf the amounts of money likely to be made available through bilateral donors. One development might include the extension of the adaptation levy to the other mechanisms of the Kyoto Protocol – possibly at a higher rate – and the inclusion of bunker fuel based emitting activities, such as air and maritime travel.

- How should the effectiveness of adaptation measures be monitored and assessed? (max 4000 characters) (optional)

Part of the difficulty in determining the effectiveness of adaptation measures is the broad definition of the term itself and the scope of activities now labeled as such. Adaptation covers a host of issues from ensuring that climate data and predictions are fed into agricultural and health planning to responding to the predicted rises in sea levels by either improving coastal defences or moving large settlements further inland. Adaptation measures can be of different types, from the purely technological (such as sea defense construction), through behaviour changes (such as shifts in choice of food or recreation), managerial (such as changes in farming methods) and policy (such as planning regulations). Adaptation thus encompasses national or regional strategies as well as practical steps taken at a community level or by individuals. Adaptation measures can be anticipatory or reactive and can apply to natural as well as to human systems. The first challenge therefore is to reach an adequate definition of 'adaptation' under the UNFCCC.

What is clear, however, from the range of activities listed above is that adaptation is context specific. It very much depends upon climatic and socio-economic factors as well the nature of the local (probably multiple) vulnerabilities. There may also be cultural issues governing what type of adaptation would be appropriate. The uncertainty of climate predictions, particularly over short time periods, means that adaptation inevitably involves an element of provisionality. Funding programmes for adaptation will need to take this into account. The concept of 'learning by doing' will be key in developing guidance for the future, as well as part of the process of helping those communities and countries already facing severe impacts of climate change.

In view of this uncertainty, and the need for prior clarification, we suggest that the effectiveness of adaptation measures should in the first instance be assessed against general principles of 'good' practice. Amongst other things, this might include the degree to which the measures focus on the most vulnerable, their level of transparency and the degree to which they involve relevant stakeholders. Progress should be monitored and

learning captured through oversight of a UNFCCC body. By developing guidelines and existing information on adaptation, this body could assist developing countries in the preparation and implementation of integrated and holistic National Adaptation Plans.

- What should be the catalyst role of the UNFCCC, considering notably the role and contribution of other relevant international organisations addressing the impacts of climate change on their area of competence? (max 4000 characters) (optional)

Current discussions of climate change adaptation tends to focus on technological and infrastructure solutions, framing this area as essentially an apolitical branch of standard development policy. All too often climate change adaption is seen as just good development. As the implications of climate change become more noticeable so our understanding of what adaptation might necessitate will develop. Both the impact of climate change and the policies to address it will raise intense political conflicts over the allocation and control of resources and territory. In some instances, where governance is weak and resource management already politicized, encouraging effective adaptation will be far from problematic. At the same time, while it is important to maximize the potential to adapt to climate change, its limits must also be acknowledged. Even at moderate levels of climate change, it will not be technically possible, or cost effective, for many countries in areas affected by drought, floods and sea level rise to remain where they are.

Within this expanding matrix there are several and, as yet, unexplored roles for the UNFCCC. On the one hand there is a clear role to help coordinate the work of other international organizations, perhaps through an enhanced Nairobi Work Programme which manages to both stimulate and disseminate research findings on particular aspects of adaption. Progress could be facilitated by the establishment of a permanent adaptation body under the Convention with the task of resourcing adaptation across the globe. The body could take a variety of forms including an adaptation implementation expert group, an adaptation committee or a similar institutional form. This coordination could be underpinned by regional adaption centres which could assist governments in building effective integrated analysis and strategic long term responses in this area. Regional adaptation centres could play an important role in assisting in the modernization of traditional resource management systems, which are likely to be made redundant by a changing climate. Given the complexity of the area, providing generic information is unlikely to result in effective adaption, but the existing deficit in knowledge could be partly compensated by the UNFCCC providing funds and technical support/expertise for the development of integrated National Adaptation Plans for developing countries.

11. Technology cooperation

- Is there a need for specific support schemes for the development, demonstration or deployment of certain technologies? If so, for which ones and how should these be structured? (max 4000 characters) (optional)

The International Energy Agency estimates that the world will need to invest some 21 trillion dollars in the energy sector between now and 2030 and that the bulk of this money

has to flow in the direction of low carbon and energy efficient investments. Developing effective carbon pricing through cap-and-trade system will help stimulate investment in innovation. It will not, however, be sufficient to ensure the commercialisation of new technology such as Carbon Capture and Storage (CCS).

CCS is an essential and pragmatic solution in a world that by 2050 will need to have cut greenhouse gas emissions by at least 50% from current levels and yet will remain dependent on fossil fuels due to rising energy demands. China alone plans to build 500 major coal power stations over the next ten years. If all the planned fossil power stations in the US, India, China and the EU are built by 2030 then their lifetime emissions will exceed all previous emissions from the use of coal.

The critical contribution of CCS has been identified by the IPCC for its potential to reduce global greenhouse gas emissions substantially. Global energy forecasts which limit global warming to 2 degrees Celsius are based on large scale deployment of CCS starting in 2015-2020. By 2050 fossil fuel power plants throughout the world will generally have to operate with CCS.

With a more active programme of public-private investment aligned with effective carbon pricing, CCS technologies could be developed and deployed more rapidly. We remained concerned that the recent rise in oil prices and growing energy insecurity has led to an explosion of interest in new coal-fired power stations and in coals-to-liquids technology to preserve energy security.

- [How to strengthen enabling environment for the deployment of the many existing clean technologies?](#) (max 4000 characters) (optional)

It is important that any technological advances are shared broadly across the international community. OECD governments need to allow developing countries and emerging economies to manufacture patented clean technology so as to help address existing energy shortages and to avoid the problem of rapidly rising emissions in these countries as their economies grow.

An aggressive approach to climate mitigation will require a concerted effort to develop low-carbon technologies (eg Carbon Capture and Storage) with fast industrialising economies such as China and India. This presents genuine opportunities for new models of technological co-operation which will require changes to the existing intellectual property rights regimes and trade rules to take account of the public goods of these technologies.

China has already called for a new Climate Technology Fund to buy patented technologies and to make them freely available. It has also advocated a redefinition of the intellectual property rights regime for these technologies to make them more widely available. These and other similar proposals need to be re-examined. We recognize,

however, that this will require a shift in political positions which go against the current rise in protectionist sentiments in the OECD countries.

To decarbonise the global economy effectively, the world will need OECD countries to come up with the technological innovations that are then manufactured by China. This will lower the cost of compliance in the OECD, as Chinese power equipment is typically 30-60% cheaper to purchase, but such a move would help drive China's low-carbon transformation.

Facilitating the transition to a low-carbon future also requires removing tariff and non-tariff barriers to trade in low-carbon, energy efficient and environmentally friendly goods and services. It would be self-defeating to continue to use systems under the Kyoto Protocol, which subsidizes the use of low-carbon technology in industrializing countries, while simultaneously raising the cost of access to the best of these technologies and restricting trade in low-cost solutions.

12. Finance and investment

- How should additional public support be organised and which should be the three top priority areas for financial support in developing countries? (max 4000 characters) (optional)

To secure the necessary levels of adaptation, developing countries will need significant external financial assistance. There is a growing consensus that the cost to the public and private sector could be in the range of tens of billions of dollars per year. The World Bank estimates the global cost of adaptation for existing investments in the developing world at between US\$9-41 billion dollars a year. UNDP's 2008 Human Development Report estimates that additional adaptation finance needs will amount to US\$86 billion annually by 2015. Oxfam puts the price tag at US\$50 billion a year, and the UNFCCC puts it at US\$28-76 billion by 2030.

This investment is needed to fund clean development, technology transfer and alternatives to deforestation in the Global South. The majority of this investment will come from the market, but a significant proportion will be public funding. Adaptation is no substitute for development or even an add-on to development. Adaptation cannot be financed from existing development funds. New financial compensatory streams need to be developed.

Progress to date in securing the necessary levels of funding has been hazardously slow. Several financial mechanisms already exist under the UNFCCC and the Kyoto Protocol including the Least Developed Countries Fund, the Special Climate Change Fund, the Adaptation Fund and the Strategic Priority on Adaptation. Combined these funds contain a little over US\$310 million to date, which when allied to the several bilateral funding arrangements offer less than one half of what the German State of Baden-Wurtemberg allocates to strengthening its own flood defences.

This patchwork of multilateral and bilateral mechanisms delivers small amounts of finance with very high transactions costs. With the World Bank's Climate Investment Fund and the EU's Global Climate Change Alliance soon to be operationalised, bringing convergence to these mechanisms and drawing out key lessons will be critical to the coherent, efficient and effective support for adaptation to climate change.

We understand that four broad categories of funding mechanisms exist that could generate additional resources to support adaptation. First, financial pledges via general expenditure by national governments, without a specifically identified funding source. Second, auctions of emissions allowances as cap-and-trade systems emerge, by either pre-announcing some of the revenue from permit (Assigned Amount Units, AAU) actions as funding source, or pre-assigning a portion of AAUs. Third, levies on the carbon market such as an extension of the levy on Clean Development Mechanism credits (currently funding the Adaptation Fund) to e.g. Joint Implementation. Fourth, through the introduction of a global carbon tax mechanism, such as that proposed by the Swiss government.

We have argued in previous submissions regarding the reform of the EU-ETS that AAUs offer a number of attractive features which need closer attention. AAUs would help to mobilize the scale of funding that is required, but in a way that is both predictable and sustainable. It would also reflect the polluter pays principle and if extended to a wider cap-and-trade system it would ensure that such a system empowered the development of many of the poorest countries rather than contributing to their further marginalisation. Wherever the additional finance originates from, further attention needs to be given within the scope of the UNFCCC to developing a more coherent approach towards financing adaptation.

- How could private sector be involved in mobilising additional finance? (max 4000 characters) (optional)

Government action alone will be insufficient to address the challenges posed by climate change. We will not be able to achieve the mitigation and adaptation outcomes necessary to combat climate change from initiatives that rely on ad hoc funding from the public sector alone. Discussions under the UNFCCC should therefore take appropriate account of the role of the private sector and of international development banks in technology co-operation. Given that the private sector is responsible for 86 per cent of global investment and financial flows, it is self evident that the private sector will be the principal mechanism for technology diffusion.

Achieving a global agreement on climate change is likely to require large fiscal transfers to China through carbon markets and public investment. The Stern Review estimated additional Chinese investment needs to be in the order of \$19-25 billion per annum by 2015. It is striking that European companies have already spent billions of Euros buying carbon credits in China, and China has created a \$2 billion Green Energy Fund just from the windfall profits of these transactions.

As noted in response to the preceding question there are two major market based approaches for mitigating climate change: cap-and trade and carbon taxes. These two approaches, in isolation or combined in some fashion, will certainly be a key element in moving forward with a global approach to mitigate climate change.

One of the attractions of the cap and trade system, over and above a carbon tax is that the resource transfer happens directly from the private firm to the investor in the developing country. For a number of reasons this has major political and practical advantages in that it bypasses public budgets. The revenues of carbon taxes would naturally accrue to the public sector requiring developed countries having to pass budgets in parliament allowing quite large transfers to developing countries.

It is obviously important to ensure the effective regulation of any global carbon market, but a cap-and-trade system does represent an innovative market mechanism that will become an essential part of the solution. It is therefore crucial, that any agreement made in Copenhagen in 2009 creates as predictable and reliable investment environment for the private sector as possible. Beyond setting clear long term and mid term visions for emissions reductions, negotiating parties also need to establish a new Technology Cooperation Mechanisms to assist and incentivise developing countries in creating enabling conditions for clean and sustainable investments.

Further consideration also needs to be given to what mechanisms could be introduced under the UNFCCC to increase collaborative R&D on clean technology and processes. We find it somewhat surprising that despite the present political preoccupation on energy and climate change, that public and private R&D spending has fallen significantly since the 1980s. Europe, for instance, which is a global leader in the deployment of low carbon technologies, is spending only a quarter of what it did in the 1980s (Euro 2.5 billion in 2006) and it is increasing the Community energy research budget by only 50% for the next 7 years, to Euro 886 million. A similar pattern is identifiable elsewhere, with public R&D in the US and declining by 50% and Japan's public R&D budget remaining static. This discrepancy has not, however, been compensated by private sector R&D, which has been static or falling in real terms in most regions.

13. Compliance and enforcement of the new agreement

How should it be ensured that countries will comply with their commitments? (max 4000 characters) (optional)

The question of compliance and enforcement has been addressed by our responses to questions 3 and 4 of this submission.

14. Other suggestions

N/A

Please enter any other suggestions that were not covered by previous questions (max 4000 characters) (optional)

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