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AD HOC WORKING GROUP ON LONG-TERM COOPERATIVE ACTION UNDER THE CONVENTION
Third session
Accra, 21–27 August 2008

Agenda item 3 (a–e)
Enabling the full, effective and sustained implementation of the Convention through long-term cooperative action now, up to and beyond 2012, by addressing, inter alia:
A shared vision for long-term cooperative action
Enhanced national/international action on mitigation of climate change
Enhanced action on adaptation
Enhanced action on technology development and transfer to support action on mitigation and adaptation
Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation

Ideas and proposals on the elements contained in paragraph 1 of the Bali Action Plan

Submissions from Parties

Addendum

1. In addition to the 14 submissions contained in document FCCC/AWGLCA/2008/MISC.2, 13 further submissions have been received.

2. As requested by the AWG-LCA, these submissions have been posted on the UNFCCC website.[1] In accordance with the procedure for miscellaneous documents, they are attached and reproduced[2] in the language in which they were received and without formal editing. The secretariat will continue to post on the relevant web page the submissions received after the issuance of the present document.

[1] <http://unfccc.int/meetings/items/4381.php>.

[2] These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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PAPER NO. 1A: AUSTRALIA

Estimation of greenhouse gases and global warming potentials

Submission to the AWG-KP and AWG-LCA

This submission provides the initial views of the Australian Government on the following options being considered for the estimation of greenhouse gas emissions and global warming potential (GWP) values for the post-2012 outcome:

- Updating GWP values with the most recent information provided by the Intergovernmental Panel on Climate Change (IPCC);
- Using different time horizons (20, 100 and 500 years); and
- Applying global temperature potentials (GTPs) as an alternative metric.

These initial views are informed by the following overarching principles:

- Coverage of anthropogenic emissions and removals should aim to be rigorous, robust and comprehensive, while finding an appropriate balance between scientific precision, practicality and policy relevance;
- Approaches should facilitate activities that deliver real climate benefits within a timeframe appropriate to achieve the Convention's goal of preventing dangerous anthropogenic interference with the climate system;
- Methodologies should aim not to restrict the flexibility of policy responses, recognising the need for a comprehensive suite of mitigation measures to achieve required levels of abatement; and
- The AWG-LCA and the AWG-KP should apply the same methodologies and metrics to post-2012 mitigation actions.

Updating GWP values

Australia considers there is a strong case for adopting updated GWP values for the post-2012 outcome. These updated values should use the most recent IPCC assessment, as provided in the Third and Fourth Assessment Reports. These updated values reflect the improved scientific understanding of the international community of the impacts of covered gases. Updating the GWP values need not negatively impact time-series consistency, which can be appropriately managed.

Using different time horizons (20, 100 and 500 years)

Australia considers the 100-year time horizon should be maintained for calculation of GWP-based CO_2-equivalents in the second commitment period. Adoption of a 100-year time horizon for the first commitment period was primarily a policy choice, which sought to balance the need to account for both longer- and shorter-lived GHGs.

In the absence of compelling scientific or policy arguments for alternative time horizons, the 100-year time horizon remains an appropriate and practical approach. In addition, revision of the time horizon would unnecessarily introduce complexities relating to accounting and time series consistency without any appreciable general benefit.

Applying global temperature potentials (GTPs)

Australia considers that GWP remains the most appropriate metric for measuring the relative contribution of various greenhouse gases to climate change. The IPCC's Fourth Assessment Report recommends that GWP remains the metric to compare future climate impacts of emissions of greenhouse gases. Australia notes a number of the assumptions used in calculating GWP apply to other metrics, including GTP. Adoption of GTP would also unnecessarily introduce issues relating to accounting and time series consistency without any appreciable general benefit.

PAPER NO. 1B: AUSTRALIA

Views on the coverage of greenhouse gases

Submission to the AWG-LCA and AWG-KP

This submission provides the initial views of Australia on proposals to broaden the coverage of greenhouse gases under the UNFCCC and the Kyoto Protocol in the second commitment period to include:

- Additional hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) with GWP values, as referred to in the Intergovernmental Panel on Climate Change's (IPCC's) Third and Fourth Assessment Reports (TAR and AR4);
- Nitrogen trifluoride (NF_3);
- Fluorinated ethers with GWP values, as referred to in the IPCC's AR4;
- Perfluoropolyethers with GWP values, as referred to in the IPCC's AR4; and
- Sulfuryl fluoride (SO_2F_2).

Where additional gases have been proposed by Parties for inclusion in a post-2012 outcome, Australia's view is that these gases should be considered where they have been provided a GWP value by the IPCC. Additional gases not provided a GWP value by the IPCC should not be considered for inclusion at this stage, however we would welcome further scientific research and analysis to achieve greater understanding and inform consideration for the third and subsequent commitment periods. Additional gases controlled under the Montreal Protocol should not be considered for inclusion in a post-2012 outcome.

Australia's initial views are informed by the following overarching principles:

- Coverage of anthropogenic emissions and removals should aim to be rigorous, robust and comprehensive, while finding an appropriate balance between scientific precision, practicality and policy relevance;
- Approaches should facilitate activities that deliver real climate benefits within a timeframe appropriate to achieve the Convention's goal of preventing dangerous anthropogenic interference with the climate system;
- Methodologies should aim not to restrict the flexibility of policy responses, recognising the need for a comprehensive suite of mitigation measures to achieve the required levels of abatement; and
- A coordinated approach should be taken across the two AWG processes, given their close interlinkages, to ensure the post-2012 outcome adopts a universal approach towards gases.

Australia considers that there is a strong case for including additional HFCs and PFCs, and also NF_3 (as listed in the IPCC's TAR and AR4). There is generally significant mitigation potential in relation to these gases. Further, a number of these gases have current or projected uses as replacements for ozone depleting substances controlled under the Montreal Protocol and/or gases already covered under Annex A of the Kyoto Protocol. Australia considers that inclusion of the additional HFCs and PFCs is further supported by the principle of maximum coverage, and on the basis that coverage of these families of gases has already been agreed by Parties for the first commitment period.

Current scientific and practical understanding of fluorinated ether and perfluoropolyether use, contribution to climate change, and mitigation potential is relatively limited. Australia considers that achieving greater understanding of these gases is important and would welcome work by the IPCC to

increase understanding of the mitigation potentials for these gases. Australia could support a decision to consider the inclusion of these gases in the third and subsequent commitment periods.

In contrast to the other proposed gases, sulfuryl fluoride has not been reviewed by the IPCC. No consensus exists on the data required to determine its contribution to climate change. In the absence of such information, there is not a good case to include sulfuryl fluoride in the second commitment period. Australia would welcome work by the IPCC to determine the nature and extent of sulfuryl fluoride's contribution to global warming.

Further information on current and projected use, relative contributions to climate change, and mitigation potential for these gases is outlined below, and has informed the above positions.

HFCs and PFCs

HFCs and PFCs are primarily used to replace ozone depleting substances controlled under the Montreal Protocol. HFCs are used for refrigeration, air conditioning, foam blowing, aerosols and fire extinguishing. PFCs result from aluminium smelting and sometimes refrigeration, fire extinguishing and electronics manufacture. The IPCC states that human-made PFCs and HFCs, "are very effective absorbers of infrared radiation so that even small amounts of these gases contribute significantly to the [radiative forcing] of the climate system".[1]

Use of **HFC-245fa and HFC-365mfc** is largely confined to countries that have phased out HCFC-141b in foam blowing applications. HFC use will likely increase as a result of the Montreal Protocol HCFC adjustment in 2007. There is significant potential for mitigation of these gases in the long term through the use of alternatives such as hydrocarbon, CO_2, and methyl formate.

HFCs 152, 161, 236cb, and 236ea do not appear to be components of common refrigerant blends, nor do they appear to be used as common fire suppression gases or foam blowing agents, though they could find future use in these applications.

PFC 9-1-18 has a limited number of medical applications stemming from its use in first-generation PFC-based blood substitutes. Recently, PFC 9-1-18 has been proposed as a carrier of glassified microspheres that contain vaccines as it reduces the need for refrigeration; if adopted, emission rates could rise to the order of 10^3 tonnes year (similar in scale to SF_6).[2]

It is important to recognise that HFCs and PFCs have already been included as families of gases covered in the first commitment period. More comprehensive coverage of these families could be achieved by inclusion of the additional HFCs and PFCs (with GWP values in the TAR and AR4) for the second commitment.

Nitrogen trifluoride (NF_3)

NF_3 is used in the electronics industry (semiconductor and LCD manufacture) for plasma etching and chamber cleaning processes, and is increasingly a replacement for PFCs and SF_6. A recent paper estimates current global production at 4,000 metric tonnes per annum and provides reasonable evidence

[1] AR4, WG1, p. 144.
[2] Shine K.P et al. 2005. Perfluorodecalin: global warming potential and first detection in the atmosphere, *Atmospheric Environment* 39 (2005) 1759–1763.

in support of a possible doubling of global production by 2010.[3] The rapid growth of NF_3 use in semiconductor manufacture is due both to growth in total semiconductor manufacture (with estimated production increases of 15 – 17% per annum[4]) as well as displacement of older PFC technology for new production lines that use NF_3.

Some emission reduction goals have already been established in the semiconductor and LCD industries. Mitigation efforts in the semiconductor industry focus on process improvements/source reduction, alternative chemicals, capture and beneficial reuse, and destruction technologies. Many of these mitigation activities are available to NF_3.

While use of NF_3 as a replacement for PFCs and SF_6 can deliver emission reductions, the relative contribution of NF_3 to climate change is likely to increase as the use of NF_3 grows, particularly if best practice emissions reduction is not employed.

Fluorinated ethers

Only hydrofluoroethers (HFEs) are provided GWP values in the AR4. Currently, the HFEs most widely used by industry are HFE-7200, HFE-7100 (both included in the AR4), HFE-7500 and HFE-7000 (both not included in the AR4), owing to their chemical similarity to HCFC-141b.[5]

The academic literature identifies a number of applications for which HFEs offer potential, in particular as refrigerants, solvents and as heat transfer fluids. The IPCC and the Montreal Protocol's Technology and Economic Assessment Panel suggests that as a result of the relatively low GWPs of some HFEs, their use as a replacement for other gases would "significantly reduce" greenhouse gas emissions.[6] However, as they are currently more expensive to produce than HFC alternatives, there is less commercial interest in their use except in high value sectors such as precision cleaning.

Information does not appear to be readily available on current and future uses for many of the HFEs listed in the AR4. This lack of information makes it difficult to assess the potential for HFEs to contribute to climate change, the scope for mitigation and its costs.

Perfluoropolyethers

Reported uses for perfluoropolyethers (PFPEs) include industrial heat transfer fluids, electronic reliability testing, metal and electronics cleaning, and lubricant applications. Only one PFPE is assigned a GWP value in the AR4. The use and relative contribution to climate change of this gas is not clear. More broadly, there appears to be a scarcity of readily available information on the global warming potentials and extent of PFPE use.

These uncertainties prevent an accurate assessment of the potential for PFPEs (including the PFPE listed in the AR4) to contribute to climate change, the scope for mitigation and its costs. However, achieving greater understanding of this family of gases is important.

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[3] Prather, M. J., and J. Hsu. 2008. NF_3, the Greenhouse Gas Missing From Kyoto. *Geophys. Res. Lett.*, 35. L12810, doi:10.1029/2008GL034542, p. 1.

[4] Robson, J.I., et al., 2006: Revised IR spectrum, radiative efficiency and global warming potential of nitrogen trifluoride. *Geophys. Res. Lett.*, **33**, L10817, doi:10.1029/2006GL026210.

[5] Tsai W.T. 2005. . Environmental risk assessment of hydrofluoroethers (HFEs). Journal of Hazardous Materials A119 (2005) 69–78.

[6] IPCC/TEAP. 2005, Special Report on Safeguarding the Ozone and the Global Climate System. p. 391.

Sulfuryl Fluoride

Sulfuryl Fluoride (SO_2F_2) is used primarily as a fumigant, particularly as a replacement to ozone-depleting methyl bromide, which is partially subject to phase out measures under the Montreal Protocol. SO_2F_2 may also have applications in the semi-conductor industry and as a cover gas for magnesium melt protection.

SO_2F_2 is the only gas currently proposed for inclusion in the post-2012 outcome that has not been reviewed by the IPCC. Available information indicates no consensus on SO_2F_2's GWP and atmospheric lifetime. GWP estimates over a 100 year time horizon range from between 278 and 477[7] to between 500 and 2000[8] and as high as 8000[9]. Atmospheric lifetimes range from less than 4.5 years,[10] to approximately 30 years[11]. Available data suggests, however, that SO_2F_2's current contribution is likely to be small. SO_2F_2 use is expected to rise in the future as pressure increases to reduce the use of other fumigants on efficacy, occupational health and safety and environmental grounds.

Recapture technology for SO_2F_2 is in its infancy and likely to be relatively costly. The scope for mitigation of SO_2F_2 emissions is therefore largely limited to the adoption of alternatives; the technical and economic feasibility of which varies depending on country-specific regulatory, environmental and physical circumstances.

These uncertainties prevent an accurate assessment of SO_2F_2's relative contribution to climate change, the scope for mitigation, and associated costs. Further work to clarify these issues would appear warranted.

[7] KEMI, Kemikalieinspektionen, Sulfuryl Fluoride (PT8), Competent Authority Report, Document III-A7, Exotoxicological profile including environmental fate and behaviour, Swedish Chemicals Inspectorate, Sweden, 2005

[8] Dr Paul Fraser, Chief Research Scientist Centre for Australian Weather and Climate Research CSIRO Marine and Atmospheric Research

[9] Dillon, T., A. Horowitz & J. Crowley, The atmospheric chemistry of sulfuryl fluoride, SO_2F_2, *Atmos. Chem. Phys*., 8, 1547-1557, 2008

[10] Ibid. 7

[11] Ibid. 8 and Dillon, T., A. Horowitz & J. Crowley, The atmospheric chemistry of sulfuryl fluoride, SO_2F_2, *Atmos. Chem. Phys*., 8, 1547-1557, 2008

PAPER NO. 1C: AUSTRALIA

Emissions trading and the project-based mechanisms

Submission to the AWG-KP and the AWG-LCA

This submission provides further Australian views on international emissions trading and the project-based mechanisms as a means to achieve the mitigation objectives of Annex-I Parties, together with initial views on the use of the mechanisms to date.

The flexibility mechanisms have made an important contribution to achieving mitigation at least cost. Australia welcomes consideration by the AWG-KP of possible post-2012 improvements to the flexibility mechanisms, including in the context of the more ambitious mitigation efforts that will be required in the second commitment period. Australia agrees that possible pre-2012 improvements should be addressed by the second review of the Kyoto Protocol.

The flexibility mechanisms are also likely to play a useful role in a post-2012 framework. It is important that they also be considered by the AWG-LCA as not all countries are party to the Kyoto Protocol. The two AWGs will need to ensure that all approaches towards flexibility mechanisms in the post-2012 outcome are harmonious and that these mechanisms are supportive of differentiated commitments. In determining the flexibility mechanisms adopted in the post-2012 outcome, the AWGs should draw on the experiences of the first commitment period of the Kyoto Protocol.

Emissions Trading

Australia supports the continued provision for emissions trading under Article 17 of the Kyoto Protocol. In addressing the global challenge of climate change, an emissions trading system is a leading means by which Parties can achieve cost-effective abatement.

Article 17 has underpinned the development of a number of domestic emissions trading schemes, including Australia's planned Carbon Pollution Reduction Scheme. The design of the Australian scheme will be finalised by the end of 2008, ahead of scheme commencement in 2010. The proposed Australian scheme is designed to support and be a part of an effective global response.

The Australian scheme will be one of the most comprehensive in the world. It will have maximal coverage of greenhouse gases and sectors to the extent that this is practicable. As currently proposed, the Australian scheme will cover stationary energy, transport, fugitive emissions, industrial processes, waste and forestry, and all six Kyoto Protocol greenhouse gases. Forestry will be included on an opt-in basis, and it is proposed that agriculture be included from 2015, subject to a final decision in 2013.

Recognising the importance of working towards a global system, Australia's scheme will be designed to link with others internationally. Australia's preference is for open linking within the context of an effective global emissions constraint.

While the linking of domestic markets is an important step in developing a global response to climate change, decisions as to whether to link domestic schemes should remain the national prerogative of Parties with such schemes.

Flexibility mechanisms

Australia appreciates the efforts of the CDM Executive Board (CDM EB) and the JI Supervisory Committee (JISC) to build stable and credible structures under which projects can operate, particularly given the limited resources to which they have access.

Australia agrees with other Parties that there is scope to improve the efficiency of the approvals process for projects in order to enhance access and effectiveness. Automatic in-principle approval for technical aspects of certain well-recognised technologies may be one approach that could assist in this regard. Australia does not support a full waiver of the additionality test.

Australia welcomes consideration of ways to further improve the operation of the CDM EB and Designated Operational Entities, and the JISC and Accredited Independent Entities. It is important that projects under these mechanisms are subject to independent scrutiny in order to ensure their additionality and environmental integrity. Australia does not favour proposals that could weaken their ability to deliver on these aims.

Differentiation and graduation

The enhanced mitigation actions of the post-2012 outcome should reflect a range of differentiated responses from Parties according to their national circumstances and respective capabilities. The flexibility mechanisms will need to take account of these likely differentiated responsibilities.

For example, it is likely that some current non-Annex I Parties could be expected to take comparable mitigation efforts to current Annex I Parties. If these countries host CDM projects that are effective beyond 1 January 2013, the status of these projects will need to be determined.

Some non-Annex I Parties may decide to take mitigation commitments that include economy-wide policies and approaches. They might also be expected to make distinct national contributions towards the establishment of mitigation projects. It will be important to ensure that the post-2012 flexibility mechanisms can support these new commitment structures. The AWG-KP and AWG-LCA should consider possible models for allowing host Parties to make national contributions towards flexibility mechanism projects.

Geographical uptake

Australia notes that 80 per cent of CERs already issued are from four countries (China, India, Brazil and South Korea). When all projects currently in the CDM pipeline are taken into account, 80 per cent of CERs are expected to come from these same four countries by the end of 2012. Similarly, while only four JI projects have been registered so far, current indications from the JI pipeline are that two-thirds of all ERUs by 2012 could go to one country (Russian Federation).

It is to be expected that CDM and JI projects will be concentrated where there is high potential for cost-effective mitigation. The five countries above have demonstrated a strong ability to host projects.

While the priority of the CDM and JI should continue to be lowest cost abatement, some concerns have been raised about the geographical distribution of projects.

Analysis of the countries hosting CDM projects to date indicates that countries within the same region have had different experiences in their success in hosting CDM projects. For example, the economies of Honduras and Paraguay are similar in size. Honduras has 21 CDM projects in the pipeline while

Paraguay has only three projects. In Africa, Kenya has seven projects in the pipeline, compared with Nigeria with only two projects but with an economy some five times larger than Kenya's.

In considering the future operation of financial mechanisms, the AWG-KP should consider any lessons that successful hosts have learned that could be adopted by other potential hosts. Streamlining some aspects of the approval and verification process should be considered as long as the principles of environmental integrity and additionality continue to be applied with the same rigour.

Sectoral approaches

There is scope for supplementing the purely project-based approach of the CDM with sectoral approaches using options such as benchmarking and no-lose targets. Such additional approaches could deliver broader technology and capacity benefits, as well as larger cuts and deviations from business as usual trajectories. In developing new approaches, care will need to be taken to ensure that principles of environmental integrity and additionality are upheld.

Scope

Technological and methodological improvements since the adoption of the Kyoto Protocol provide new abatement opportunities not currently addressed by the flexibility mechanisms. In particular, there is now scope for measurable, reportable and verifiable abatement through carbon capture and storage and reduced emissions from deforestation and degradation (REDD). Australia supports the inclusion of such projects in the CDM, and welcomes consideration of other abatement opportunities.

Australia considers that there are further opportunities in the LULUCF sector that have not yet been harnessed by the flexibility mechanisms. Australia encourages efforts to ensure that the treatment of removals from LULUCF activities under the flexibility mechanisms is consistent with the treatment of removals from LULUCF in Annex I Parties' national accounts.

The AWG-KP should review the restrictions on access to and use of certain Kyoto unit types, in particular those related to the LULUCF sector. The use of a Tier 3 methodology for the LULUCF sector would deliver greater confidence in the measurability and verifiability of any credits generated under such a scheme, thereby allowing for greater convertibility among Kyoto unit types. There should be no cap for eligible LULUCF activities under the CDM.

HFC-23 projects

The relative merit of HFC-23 incineration projects under the CDM is a particular issue given their potential impact on the achievement of Montreal Protocol objectives. If implemented properly, HFC-23 incineration projects deliver emissions abatement. However if these projects prolong the operation of existing HCFC-22 plants, or lead to the construction of new plants, they could result in adverse climate and ozone impacts in the long-term. The AWG-KP should address the specific matter of HFC-23 incineration activities and make an assessment of the relative merit of these projects. This is a significant issue considering that HFC-23 projects account for one-fifth of all CERs currently in the CDM pipeline.

Sustainable development and co-benefits

Although the flexibility mechanisms should continue to tightly focus on the reduction of emissions, projects should also allow scope to contribute towards sustainable development and other co-benefits. Given that host Parties are best-placed to indicate what constitutes sustainable development, the provision of additional co-benefits should not be made a mandatory criterion in assessing projects.

PAPER NO. 1D: AUSTRALIA

Enhanced action on adaptation

Submission to the AWG-LCA

This submission outlines the initial views of the Australian Government on enhanced action on adaptation, as called for in the Bali Action Plan.

Australia considers that a strong agreement on enhanced action on adaptation should be a core component of the post-2012 outcome. Australia places a high priority on strengthened adaptation support for the Least Developed Countries (LDCs) and vulnerable small island developing States, in particular in the Pacific.

Prioritising Assistance to the Most Vulnerable

The level of national vulnerability to climate change varies greatly between countries. Vulnerability to climate change is a combination of (1) the exposure of individual countries to the physical impacts of climate change that differ greatly on a regional and local level, and (2) the institutional and financial capacity of individual countries to respond to those differing impacts.

The interrelationship between local physical vulnerability and capacity to adapt can be complex. For example, the Netherlands is highly vulnerable to sea level rise, whereas Afghanistan, a landlocked LDC, is not. By contrast, a similar percentage of the populations of the Netherlands and Tonga are equally vulnerable to the physical impact of sea level rise[1], but the Netherlands could be expected to have a greater national capacity to respond.

Australia has a high degree of physical exposure to climate change impacts as our nation has the driest and most variable climate of all the inhabited continents. Australia has a robust national capacity to help adapt to climate change.

Many LDCs and small island developing States also have a high level of physical exposure, but have a more limited national capacity to respond to the challenge of adaptation. Australia will continue to place a high priority on support for adaptation for vulnerable countries in our region.

To prioritise international efforts towards the most vulnerable countries, the AWG-LCA should resolve a general scale of vulnerability for Parties in terms of physical impacts and capacity to respond.

Financing Adaptation

Australia considers it vital to maximize the amount of international financing available to those most in need. The post-2012 outcome should desirably result in (1) the scaling up in the level of international finance availability for adaptation, and (2) clear guidance on the prioritization of the distribution and use of international funds.

In considering this matter, the AWG-LCA should take account of the need for effective donor collaboration and coordination to ensure the maximum possible benefit from available funds. Australia

[1] World Resources Institute, Climate Analysis Indicator Tool. Available at: http://cait.wri.org, accessed on 22 July 2008.

expects the AWG-LCA to apply the principles on aid effectiveness set out in the Paris Declaration on Aid Effectiveness of 2 March 2005. Care must also be taken to not exceed the absorptive capacity of individual recipient countries.

The AWG-LCA should, in due course, address the question of operational management and arrangements for new financing for adaptation envisaged as part of the post-2012 outcome.

The AWG-LCA should also be cognisant that donors do, and will continue, to provide financing for adaptation through a variety of means. This is particularly the case given the requirement for adaptation to be mainstreamed throughout development strategies. Australia's recent announcement of $150 million to support adaptation measures for countries vulnerable to climate change impact within our region is an example of such financing.

To gain a clear picture of the level of existing effort on adaptation, the AWG-LCA should task the UNFCCC Secretariat to provide consolidated and streamlined information on available sources of funding for adaptation. This should build upon survey data provided by the OECD.

Australia has addressed the broader matter of provision of financial resources and investment (1/CP.13 paragraph 1(e)) in a separate submission.

Science and Adaptation

Sound scientific analysis should guide the basis of long-term action on adaptation. A large and growing body of scientific information is available to inform national policy development. For example, the IPCC Fourth Assessment report provides information on the possible scale of future impacts, such as the likelihood of a higher number of serious natural hazards in the South Pacific region.[2]

For its part, Australia has made an important contribution to research on the effects of climate change to improve our knowledge on the impacts, to strengthen our ability to respond and to assist areas of national vulnerability – including in particular coastal zones, infrastructure, the agriculture sector and world heritage and iconic sites. Australia is also supporting efforts to build the capacity of the most vulnerable countries in our region to assess key climate vulnerabilities and risks and to formulate appropriate adaptation strategies and plans.

Mainstreaming Adaptation for Greater Results

Managing the effects of climate change is central to poverty reduction, economic growth and sustainable development. Actions that increase resilience to climate change should become an integral part of national development plans to manage the adverse impacts of projected climate change and variability.

The Pacific Islands Framework for Action on Climate Change 2006 – 2015 is a good example of a regional effort to address the risks and effects of climate change in the context of their national sustainable development strategies.

The National Adaptation Programmes of Action (NAPAs) prepared by LDCs are emerging as a useful way for individual countries to collate and consolidate information on their priority adaptation needs. NAPAs can be a practical means to provide information on adaptation needs to donors.

[2] IPCC 4th Assessment Report, Chapter 3: Observations: Surface and Atmospheric Climate Change, p 307.

NAPAs should be living documents to reflect new and more detailed information and to reflect changes in domestic priorities. While only LDCs have so far developed NAPAs, other countries facing limits on their capacity to respond to climate change should also consider developing NAPAs.

Disaster Reduction

Risk management strategies should be built into current policies and take into account possible short and long-term impacts. Building resilience to climate change often also enhances resilience to disasters. For example, well-designed building codes can provide for buildings that are more resilient against predicted hazards and disasters, including over longer time horizons. Mainstreaming for climate change and mainstreaming for disaster risk reduction, therefore, can be mutually reinforcing. The Hyogo Framework for Action 2005 – 2015 provides a useful basis for the AWG-LCAs discussions on this particular element of the Bali Action Plan.

The UNFCCC

Successful adaptation requires the active participation of many stakeholders at the local, regional, national and international levels. It would not be possible to address adaptation solely under a multilateral setting.

Parties to the UNFCCC should agree policy parameters to guide action to reduce the threat of climate change, rather than mandate specific operational outcomes better formulated at a national level. The UNFCCC Secretariat should provide a link between the different international institutions working in the adaptation field to help coordinate collective action on adaptation.

Parties to the UNFCCC could outline the roles and responsibilities of different actors and agree the principles to guide adaptation action, where possible identifying priority areas through information provided by national governments, regional and multilateral bodies. The UNFCCC could draw on the approach used in the Pacific Islands Framework for Action on Climate Change 2006-2015 for advancing adaptation under the Bali Action Plan. This approach provides an overarching vision, supported by goals and principles, expected outcomes and timelines.

Multilateral and Regional Agencies

There are many international institutions working in adaptation-related fields with a high level of specific expertise and local knowledge. The AWG-LCA could explore the additional value that regional bodies could provide to international adaptation efforts taking into account the specific expertise and scope of existing bodies, in order to identify if, and where, gaps can be addressed.

There are presently several UN institutions and programs working in fields related to climate change adaptation. Australia sees a distinct role for the UN Secretary-General in ensuring that smooth lines of cooperation exist between UN agencies working on adaptation activities, in order to avoid duplication and competition. We look forward to the information note the AWG-LCA requested the UNFCCC Secretariat prepare on adaptation related activities within the United Nations system.[3]

[3] AWG-LCA2, Bonn June 2008. FCCC/AWLCA/2008/8, page 7.

Economic Diversification

Economic diversification is integral to the dual goals of building resilience to climate change and achieving sustainable development. All countries are subject to economic cycles and changing circumstances.

Although climate change impacts are only one factor that may influence economic fluctuations, the UNFCCC can play a role in facilitating analysis and further information on the impacts of response measures and on successful approaches to economic diversification. Given the motivations for building resilience to economic shocks beyond climate impacts, it is ultimately a consideration for countries themselves.

In Australia's case, we will continue to integrate climate change considerations into our macro economic planning in order to build a more resilient economy.

Avoiding overlap

Australia notes the clear linkages between the work of the Ad Hoc Working group on Long Term Cooperative Action (AWG-LCA) and existing work being undertaken by the Subsidiary Bodies to the United Nations Framework Convention on Climate Change (UNFCCC). Where possible, the discussion in the AWG-LCA should build on and not duplicate existing processes. On Adaptation the most relevant work relates to the Nairobi work program on impacts, vulnerability and adaptation to climate change (under SBSTA), and 1/CP.10 (under the SBI).

PAPER NO. 1E: AUSTRALIA

Technology cooperation

Submission to the AWG-LCA

This submission contains the initial views of Australia on the matter of technology cooperation under the AWG-LCA.

The development and diffusion of low emission technologies is a core component of efforts to reduce global emissions. It is in the interest of all Parties to the UNFCCC to facilitate international cooperation in low emission technologies.

The AWG-LCA should address technology cooperation as it relates to policies and measures that encourage investment in research and development, ways to facilitate the key enablers of diffusion in the private and public sectors, and the encouragement of environments that best enable the diffusion of clean technology. Technology cooperation is a separate matter to the challenge of scaling up financing for clean development.

Experience of low emission technologies varies between Parties. While advanced economies can help finance clean development, it is not always Annex I countries whose economies drive low emission technologies. Technology is a global commodity. For some, the development and deployment of advanced technologies form a core part of their economy. Other countries, including Australia, rely heavily on importing technologies from other countries. As a rule, Australia imports wind turbines from China, and not the reverse.

In this regard, it is notable that non-Annex I Parties represent eleven of the top twelve countries with the highest proportion of high-technology exports in 2005 (the measure of technology capability used by the UN Human Development Index) (see Table 1). The three countries in the world with the highest ratio of high technology exports were the Philippines (71% of exports), Singapore (57% of exports) and Malaysia (55% of exports).

Table 1: High Technology Exports
(as a % of manufactured exports)

Rank	Party	%	AI	NAI
1	Philippines	71.0 %		●
2	Singapore	56.6 %		●
3	Malaysia	54.7 %		●
4	Malta	53.5 %		●
5	Cyprus	46.3 %		●
6	Tajikistan	41.8 %		●
7	Papua New Guinea	39.4 %		●
8	Costa Rica	38.0 %		●
9	Korea (Republic of)	32.3 %		●
10	United States	31.8 %	●	
11	Sierra Leone	31.1 %		●
12	China	30.6 %		●
45	Australia	12.7 %	●	
Source: Human Development Report, World Bank data				

And the balance continues to shift. Between 1990 and 2005, non-Annex I Parties grew their high-technology export ratio by more than twice as much as that achieved by Annex I Parties.

The Millennium Development Goals provide three other indicators of technical advancement – internet penetration, fixed line telephone penetration and mobile phone penetration. All three indicators demonstrate that the availability of technology is not well aligned to the current Annex I/non-Annex I categories of the UNFCCC.

The data also demonstrates the dramatic improvements in technology that have been made in non-Annex I countries since 1990. The majority of the countries with the greatest growth in cellular subscribers between 1990 and 2005 were non-Annex I Parties. Every single one of the top thirty countries experiencing growth in fixed line telephone penetration over the same period were non-Annex I Parties.

On average[1], the growth rate of fixed line penetration by non-Annex I Parties was almost double that of Annex I Parties between 1990 and 2005.

This global penetration of technologies is achieved by the market. While public funding is an important source of support for technology development, Governments hold minimal intellectual property or have the capacity to deploy low emission technologies. This is primarily the domain of the private sector, with the market enabling technologies to be deployed globally. It is imperative that the private sector be successfully engaged by Governments globally if the post-2012 outcome is to shape pathways towards global uptake of low emission technologies.

An excellent example of pragmatic technology cooperation that diffuses techniques and expertise among countries are projects under the Asia Pacific Partnership on Clean Development and Climate. Most of these projects are public-private partnerships, whose rollout was facilitated by their voluntary nature.

Role of the Private Sector & International Development Banks

The AWG-LCA should note that technology diffusion occurs at many levels through many actors. We will not be able to achieve the mitigation and adaptation outcomes we desire from initiatives that rely on ad hoc funding from the public sector alone. Discussions under the UNFCCC should take appropriate account of the role of the private sector and of international development banks in technology cooperation.

Given that the private sector is responsible for 86 per cent of global investment and financial flows, it is clear that it will be the principal mechanism for technology diffusion. Intellectual property (IP) is developed and held privately in most countries, including Australia.

Parties should consider ways of improving the environment for technology diffusion, including enhanced regulatory frameworks, fostering positive environments for investment, and incentives for private sector commercialisation of clean development technologies and the associated IP.

The development of clean development technologies is critical given their importance in reducing emissions. Carbon Capture and Storage (CCS) is one such technology. The IEA estimates that world coal consumption will increase by 74 per cent between 2004 and 2030, to 199 quadrillion Btu[2]. Coal's share of the electric power sector is expected to grow to 45% by 2030. It is clear that deployment of CCS technologies will be necessary in order to ensure that emissions from coal are minimised.

Facilitating the growth of other clean technologies is also important. Australia, for example, has introduced a Mandatory Renewable Energy Target that aims at sourcing 20 per cent of Australia's electricity needs from renewable sources by 2020. The development of stable and attractive investment frameworks, including strong property rights and protection for commercial IP, have enabled the development of world class industries.

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[1] Non-weighted compound annual growth rate. Thirty-one non-Annex I Parties have higher rates of fixed line penetration than the lowest ranked Annex I Party. Forty-nine non-Annex I Parties have higher rates of cellular penetration than the lowest ranked Annex I country. Forty-four non-Annex I Parties have higher rates of internet penetration than the lowest ranked Annex I country. One non-Annex I country, the Republic of Korea, has the seventh highest rate of internet penetration in the world.

[2] IEA's International Energy Outlook 2007 Reference case

Similarly, it is important to harness the expertise of international development banks. Such institutions are key enablers of clean technology financing and we should ensure that their expertise is fully leveraged.

Australia would welcome discussion in Accra, and beyond, on ways to best engage with business and with relevant global financing institutions as equal partners in technology cooperation, recognising their role as key delivery mechanisms for UNFCCC objectives.

Given the need to conclude discussions at COP15 in Copenhagen, Parties will need to approach discussions on technology cooperation with renewed vigour. Australia suggests that discussions under the UNFCCC be focused on three key areas:

1. Framework
    - Does the UNFCCC Framework appropriately conceptualise the key processes involved in the development and diffusion of technology? In what areas could it be better focussed?
    - How can the Technology Needs Assessment (TNA) process be improved?
    - Is a different approach needed for adaptation technologies than mitigation technologies?

2. Institutional structures
    - How can the UNFCCC better support technology cooperation, including through engagement with other agents and organisations ?
    - What is the most appropriate role for the UNFCCC and other agents?
    - How can enabling environments be improved to support increased investment flows?

3. Mechanisms

    - How can we better leverage and support the wide range of current mechanisms in order to promote broad based and sustainable investment in technology and related processes and know-how? What gaps, if any, are there in the current international and national mechanisms?
    - How can we increase collaborative R&D on clean technology and processes?
    - What scope exists to pursue innovative approaches to IP licensing arrangements?
    - What lessons can be learnt from previous experiences in promoting technology cooperation (including by Multilateral Development Banks, including the World Bank, the Global Environment Facility, Asia Pacific Partnership on Clean Development and Climate)

PAPER NO. 1F: AUSTRALIA

Enhanced action on financial resources and investment

Submission to the AWG-LCA

This submission outlines Australia's views on the provision of financial resources and investment to support action on mitigation and adaptation under the Bali Road Map.

Australia considers it vital to maximise the amount of international financing available to those most in need. Australia will join with others in taking the lead in this regard. A comprehensive post-2012 outcome should include (1) the provision of additional international financial resources and investment to assist enhanced international action on mitigation and adaptation, and (2) clear guidance on the prioritisation of the distribution and use of international funds.

Given the challenge of climate change, all Parties will need to increase the national resources they dedicate to climate change response measures. In addition to those actions financed through incentives, all developing countries should commit to making distinct national efforts as part of a comprehensive post-2012 outcome.

The private and public sectors have different roles and capabilities in financing the different needs of mitigation and adaptation. The private sector currently accounts for 86 per cent of global investment flows[1] and can be the major driver in lowering emissions and advancing clean development for all Parties. The policies and measures of Parties play a critical role in shaping private investment flows towards achieving low emission and clean development goals. A country's enabling environment, particularly with relation to robust and transparent governance arrangements, will be a critical determinant of attracting investment flows.

The AWG-LCA should be cognisant that Parties do, and will continue to, provide financing for mitigation and adaptation through a variety of means, particularly given the benefits that accrue from mainstreaming climate change actions. Post-2012 support for mitigation and adaptation will continue to utilise the full range of public financial instruments and purpose-built funds like the World Bank Climate Investment Funds. In keeping with the Bali Action Plan, both the provision and use of enhanced financial support will need to be carried out in a measurable, reportable and verifiable manner. Similarly, rules and approaches regarding additionality will need to be clear.

Key Elements for Increasing Financial Flows

Parties should consider the following elements with regard to enhanced action on the provision of financial resources and investment:

1. The architecture of any future financial mechanism/s should contain objective criteria that guide contributions from Parties and non-State actors. Criteria should reflect the capacity of individual countries to contribute to future financial resources in line with their relative capabilities and national circumstances.

[1] UNFCCC (2007).*Investment and Financial Flows to Address Climate Change* paper for the Long-term Dialogue for Cooperative Action on Climate Change.

2. Further consideration should be given to criteria for prioritising the allocation of financial support for clean development, including through maximising the effectiveness of existing funding, including domestic and private sector funding.

3. The coverage of carbon markets should be expanded given the ability of markets to encourage behavioural change and deliver least cost abatement.

Prioritising Financial Support

Most countries have experienced strong economic growth over the almost two decades since the UNFCCC was drafted. This affords the AWG-LCA an opportunity to identify new sources of financial support, including from Parties that have rapidly advanced their economies over the past two decades. It also allows the AWG-LCA a good opportunity to better prioritise support for those Parties most in need.

Under Articles 4.3 and 4.4 of the UNFCCC, Parties listed in Annex II to the Convention agreed to provide financial resources to assist others to better implement climate change policies and measures. The AWG-LCA should recommend expanding the number of countries subscribed in Annex II based on current capacity to provide support.

When Annex II was originally drafted the Party that set the benchmark (in terms of GDP per capita) for inclusion in Annex II was Portugal. Fifteen Parties in 2006 had a higher GDP per capita than Portugal. These Parties were Bahrain, Brunei Darussalam, Czech Republic, Cyprus, Israel, Korea, Kuwait, Malta, Oman, Qatar, Saudi Arabia, Slovenia, Singapore, Bahamas, and United Arab Emirates. Australia would welcome the contribution that these Parties could make towards contributing financial resources for climate change actions in other countries.

Further, many non-Annex I countries have significantly higher rates of economic growth than Annex I countries. Thirty-four of the 35 countries with the highest economic growth rates between 1992 and 2004 are non-Annex I countries (Ireland is the exception).[2] Continued rapid economic development will allow many more Parties than those currently in Annex II to contribute financial resources to support the international climate change response.

Determining who Receives Financial Support

Recognising that individual countries will determine where to direct their support, in particular with respect to bilateral funding, the AWG-LCA should develop objective criteria for determining who receives broader multilateral funding by matching financial resources to needs and priorities. In this regard, the traditional groupings of Parties are not necessarily an appropriate basis for identifying the most vulnerable countries. For example, many of the Parties listed as small island developing States by the UN warrant particular priority by the international community in supporting adaptation to climate change. However, not all small island developing States require this assistance. For example, Singapore, currently listed as a small island developing state, in 2006 had a per capita GDP higher than 35 Annex I countries[3]. The AWG-LCA should to consider a range of appropriate criteria that should determine allocations in support of adaptation.

[2] Figures derived from the World Resources Institute's Climate Analysis Indicators Tool (2008).

[3] Figures derived from IMF World Economic Outlook (2008). GDP is based on purchasing power parity (PPP). IMF does not include data for Lichtenstein and Monaco.

The criteria for supporting mitigation activity should evaluate the relative cost-effectiveness of financial assistance, both in terms of the potential amount of emissions reduced per unit of money spent, and the degree of long-term impact in catalysing the transition to a low-carbon economy. Public financial support for mitigation should be prioritised towards investment in gaps in the carbon market and private sector investment.

To help prioritise support, the AWG-LCA could work to identify a small number of internationally recognised indicators representing economic status, mitigation potential, and vulnerability to climate impacts. One approach that might be useful is to establish a new Annex identifying the most vulnerable Parties, with a graduation mechanism to allow such an Annex the flexibility to continue to prioritise support over time.

PAPER NO. 2: BARBADOS ON BEHALF OF THE ALLIANCE OF SMALL ISLAND STATES

Preliminary views on adaptation

PRELIMINARY AOSIS VIEWS ON ADAPTATION UNDER THE AWG-LCA

26th August 2008

The framework to support, facilitate and implement adaptation actions should address the timely flow of new and additional resources to support immediate and urgent national adaptation activities in particularly vulnerable developing countries, as well as those adaptation activities that need to be implemented over a longer time horizon. The framework must also support, on an ongoing basis, efforts to enhance national capacity to incorporate adaptation concerns into the national development process. The outcomes of the implementation of this framework should enable Parties to:

a. Know what to expect from climate change;

b. Build resilience to the anticipated negative impacts of climate change; and

c. Develop measures to address the impacts for which it is difficult to build resilience.

1. With respect to **National Planning for Adaptation**, the framework should include:

   i. Rapid risk assessments - an institutionalized NAPA-like process for SIDS and LDCs, as countries particularly vulnerable to the impacts of climate change, to enable the prioritization of, and urgent response to, needs at the national level, with timely support for implementation guaranteed under the Convention. This should build on the lessons learned from the review of the existing NAPA process in the context of decision 1CP/10.

   ii. Enabling environments - a process to support the enhancement of enabling environments to support adaptation, through regulatory policies, legislative changes, national capacity building and environmental impact assessments.

   iii. Enhanced systems for the collection, management and sharing of data including through the strengthening of systematic observation networks and improved data management systems.

   iv. Enhanced access to analytical tools to enable scenario generation and current and future impact assessments, and support for the building of endogenous capacity to apply these tools to facilitate vulnerability assessments for use in national planning. These could be achieved through, *inter alia*, the use of regional centres as a means to deliver information and training and the use of web portals and other forms of cooperation.

   v. Provision of financial and technical support for capacity building to enable national planning on adaptation, including for more rigorous V& A assessments, in particular with respect to sectoral impacts; hazard mapping, strengthening of national and regional centres.

   vi. Support for the establishment and functioning of national-level climate change teams. Lessons could be drawn from the experience of the Montreal Protocol.

   vii. Provision of financial and technical support for pilot projects and learning by doing.

2. With respect to **Streamlining and Scaling up Financial and Technological Support,** the framework should include:

   i. New, additional, adequate and predictable resources made available in a timely manner for the implementation of adaptation planning, projects and activities, including priorities identified through the NAPA-like process.

   ii. A Convention Adaptation Fund, linked to GHG emissions, based on polluter pays principle, with criteria established for contributions and for prioritization of resources. A share of the proceeds from auctioning AAUs could be used for this purpose

   iii. An International Insurance Mechanism, to help fund financial resilience to the impacts of extreme weather events

   iv. Solidarity funds to address catastrophic risk and collective loss sharing mechanisms to address the unavoidable impacts of climate change.

3. With respect to **Enhancing Knowledge Sharing**, the framework should address:

   i. Strengthening Regional Centres of Excellence to act as focal points for research and knowledge exchange on a regional basis

   ii. Support for public information and awareness

   iii. Publication of Peer Reviewed Documents/Journals

   iv. Establishment and maintenance of databases and repositories of adaptation-related information

   v. Availability of professional development opportunities, through scholarships, fellowships and other forms of access to training

   vi. Strengthening of Information Networks, e.g. Sidsnet

   vii. Preparation and dissemination by UNFCCC of compilations and syntheses of best practices

   viii. Strengthening Regional Centres to coordinate and disseminate information on best practices

   ix. Study visits and professional exchanges between technical personnel from different countries and regions

4. With respect to **Institutional Frameworks for Adaptation**, the framework should include:

The establishment of an institutionalized structure and process to identify and fund the most urgent and immediate needs of SIDS and LDCs as the most vulnerable countries, and a mechanism for delivering resources and technical support for addressing these priority needs. This will require mutually reinforcing institutional structures at the national, regional, and international levels.

The purpose of this framework is to assist developing countries, in particular the most vulnerable, in identifying and addressing their adaptation needs.

A proposal for this will be submitted at a later date.

PAPER NO. 3: GHANA

Proposal on options for effective mechanisms and enhanced means for technology development and transfer

GHANA'S PROPOSAL ON OPTIONS FOR EFFECTIVE MECHANISMS AND ENHANCED MEANS FOR TECHNOLOGY DEVELOPMENT AND TRANSFER

INPUTS INTO DISCUSSIONS UNDER THE AD HOC WORKING GROUP ON LONG TERM COOPERATIVE ACTIONS UNDER THE CONVENTION

In order to realize the full potential and important role of technology development and transfer in tackling climate change, it is necessary and crucial to address the barriers that hinder the development, deployment, diffusion and transfer of technologies to developing countries.

The Bali Action Plan (decision 1/CP13) provides a strong basis for international action on development and transfer of technologies. Parties will urgently need to reach formal agreement on the creation of an **international framework agreement for technology development and transfer** that addresses both mitigation and adaptation, in order to boost the effectiveness in innovation and investment required around the world to address climate change.

This framework agreement should:

- Be informed by the shared vision for long-term cooperative action, including a long-term global goal for emission reductions, to achieve the ultimate objective of the Convention and the urgent need for adaptation to the impacts of climate change
- Include an incentive package to scale up of development and transfer of technology to developing country Parties in order to promote access to affordable environmentally sound technologies *through creation of additional value and crediting for participation* in technology development, deployment, diffusion and transfer for greenhouse emissions reduction and enhanced resilience to impacts of climate change
- Incorporate an institutional mechanism and tools for supporting, supervising, monitoring and evaluating the effectiveness of the implementation of agreed actions on technology development and transfer;
- Provide for a compliance and enforcement regime for development and transfer of technologies linked to quantified emissions reduction and limitation commitments and increased resilience of communities and ecosystems to the impact of climate change
- Support capacity building and capacity development in developing countries for technology development, adoption, deployment, diffusion and transfer including, inter alia, support for national systems of innovation
- Ensure improved access to new and additional, adequate, predictable, appropriate, equitable and sustainable public-sector financial resources and investments to support mitigation and adaptation and technology development and transfer and technology cooperation
- Promote substantial private-sector participation, finance and investments in technologies for mitigation and adaptation
- Ensure protection of intellectual property rights that guarantees access to and use of technologies by avoiding over-protectionism
- Ensure access to technology information, including in particular the costs and performance of technologies
- Provide for international programme for joint or collaborative research, demonstration and early stage deployment of technologies

- Provide guidance on national/domestic government policies needed to, notably creating a higher level of long-term policy certainty (a) over future demands for low carbon technologies, upon which the private sector including the industry's decision makers can rely and (b) for private financing of technologies for adaptation.
- Pay specific attention to the technology needs of (a) major emerging and big economies, (b) emerging but small developing economies, and (c) least developed countries, and (d) small island developing states; among developing countries
- Promote and finance south-south cooperation
- Support mechanism for early action on sector specific technology innovation, development, demonstration, massive deployment and transfer.

Technology Development and Transfer Vision

A medium to long-term vision for the entire technology cycle from innovation through to application and transfer could be guided and driven by medium to long-term global goals based on:

(a) Level of emission reductions, to achieve the ultimate objective of the Convention
(b) Quantum of technology development, deployment and diffusion required
(c) Urgent need for adapting to the impacts of climate change
(d) Level of finance and investment required
(e) Extent of sectoral coverage, and
(f) Level of participation by all technology development and transfer actors

Incentive Package for Added Value and Crediting

In order to promote access to and use of affordable environmentally sound technologies there is the need to create additional value and crediting for participation in technology development, deployment, diffusion and transfer. International mechanism could be put in place to assess and include an incentive package to scale up the development and transfer of technology to developing country Parties.

The international mechanism could lead to rewards/credits for participation in development and transfer climate friendly technologies through a link with Parties commitment in terms of quantified emission limitation and reduction obligations. Promoting and providing direct incentives for technology programmes such as supporting international technology cooperative development networks, national policies/actions, certify credits for special and priority technology programmes, and managing long-term regulatory risk including forward reductions, etc.

Institutional Mechanism

The urgency and scale of the application of climate friendly technologies require that an international institutional mechanism as well as national institutional mechanisms have to be established. At the international level there is the need to establish a technology development and transfer board with a legal personality to oversee and supervise the entire cycle of technology development in all countries.

The technology development and transfer board shall be a standing body under the Conventions and shall be responsible for the development, deployment, diffusion and transfer of environmentally sound technologies and know-how; and shall have, among others, the following functions:

- Development and adoption of short, medium and long term strategies, programmes and approaches that are informed by the developing country driven technology needs and which have the potential to lead to actual and concrete technology development, deployment, diffusion and transfer to developing countries
- Assessing and supporting the implementation of the technology development, deployment, diffusion and transfer needs of the various regions of the developing countries, taken into consideration the development priorities of the countries within (a) major emerging and big economies, (b) emerging but small developing economies, and (c) least developed countries, and (d) small island developing states
- Promotion of market development and transformation for the early uptake of technologies that are cost-effective and already commercial or nearly so
- Development of strategic programmes to scale up investment in the technology development cycle for technologies with high marginal emission reduction costs in both developing and developed countries
- Undertaking, through expert panels, market assessments to understand the potential for systematic removal of barriers at the national level, and how countries experiencing similar technological needs might be able to collaborate and avail themselves more effectively of support from the international community to grow the markets for the climate-friendly technologies
- Establishing and supervising technology sector platforms and technology expert panels made up of experts from governments, industry, and civil society
- Strengthening and the establishment of national systems of innovation
- Development of technology development and transfer targets
- Assessing Parties compliance to obligations under the technology framework agreement, especially relating to the provision of financing by developed country parties
- Presenting options to the COP as to how Parties, that ensure the actual development and transfer of technologies to developing countries have taken place, could be rewarded through such mechanisms as the technology development and transfer credits
- Development of best practice guidance and global minimum performance standards for technology development and transfer.
- Supervision and management of the multilateral technology fund and shall perform other administrative and fiduciary functions as required to ensure efficient, judicious, equitable and timely disbursement of funds

The technology development and transfer board shall have the powers to decide, advice, and/or make recommendations and also report directly to the Conference of Parties (COP) on scientific, technical, financial and implementation issues related to the development, deployment, diffusion and transfer of environmentally sound technologies to developing countries

International institutional mechanism for technology development and transfer will be most effective if it is linked with effective and robust national institutional mechanisms in developing countries. Consequently any international technology framework agreement reached must ensure that national systems of innovation that are supportive to the technology development cycle are appropriately established and resourced in all developing countries that party to the Convention.

It is needless to say that the presence of effective national institutional mechanisms in developing countries will foster the early uptake of technologies at these countries. These national systems of innovation shall work closely with the technology development and transfer board at the international level to ensure that developing countries also comply with agreed obligations emanating from the international technology framework agreement.

Enhancing Capacity Building for Development and Transfer of Technologies

The extent to which climate friendly technologies can be taken up greatly depends on the capacity of the target region, country, district, community and/or industrial entity. Effective capacity building and development must lead to strengthened national systemic and institutional capacities, as well as, human resource/skill development. The three capacity building/development dimensions are required if any international effort geared towards the promotion and uptake of environmentally sound technologies is to be successful.

The systemic capacity building needs for various stages of technology development cycle, as well as for investment and financing of technology development and transfer, that need to be built, should include legislations, regulations, policies, standards and codes, and enforcement and coordination mechanisms. The presence and functioning of these systemic capacities is a precondition for good economic/market framework. In addition, it constitutes the enabling environment needed for technology development and transfer

Institutional capacity required at the national level is here referred to as the national system of innovation. It is the overall institutional arrangements or organizational and functional capabilities of the institutions that need to be built to ensure any meaningful and effective technology development and transfer and enhanced resilience to the impacts of climate change. Institutional capacity development should address;

(a) The structure – are the institutions/organizations structured efficiently to fulfill the needs for technology development and transfer?
(b) Human resources – are they adequate in the institution/organization, are they adequately qualified and skilled as a whole?
(c) Financial resources – are any available, are they managed efficiently in the institution/organization, are they distributed adequately;
(d) Information resources – is the necessary information available and reliable, and is it distributed and managed efficiently within and outside the organization?; and
(e) Technical resources – are the necessary buildings, facilities, vehicles, computers and specialized equipment available; are they distributed and managed adequately?

The human resource needs refer to the availability of personnel with requisite expertise and know-how (soft technologies) and coping capacities. In addition, it includes the training and skill development needs necessary to adequately respond to the various stages of technology development cycle. It normally should address:

(a) Staff training – do individual people possess the necessary knowledge and skills for their work;
(b) Motivation of the personnel – are people motivated to carry out this work;
(c) Improvement in relationship or cooperation among the staff – do people interact efficiently among themselves and do they cooperate and exchange information with their colleagues?

The analysis and implementation of capacity building/development needs for the various stages of the technology development cycle must be guided by the principle that - capacity building is a dynamic, continuous, progressive and iterative process, (as illustrated in Figure 1) which involves the assessment of needs, prioritization and implementation of prioritized needs (through learning by doing and through demonstration projects, especially those linked to skill and expertise development), monitoring, evaluation and further refinement.

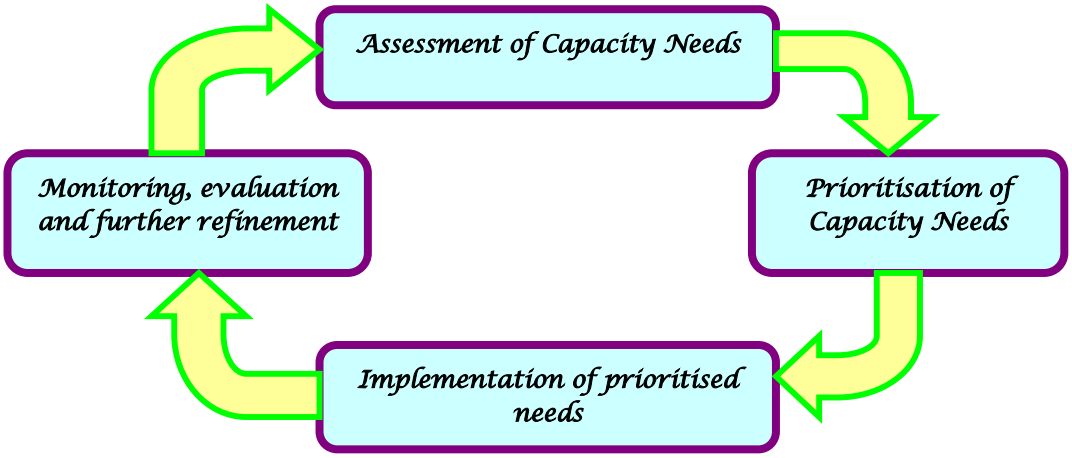


Figure 1 Capacity Building Cycle

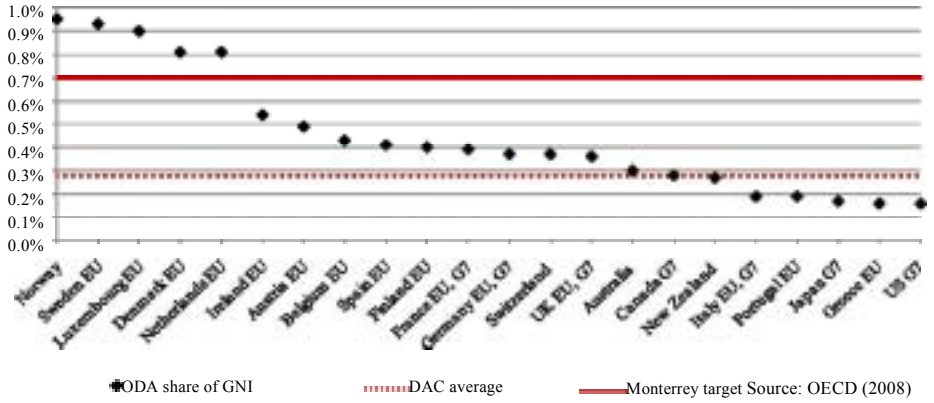
Financing for Technology Development and Transfer

The Convention includes a number of obligations relating to technology development and transfer and finance. It commits developed countries to provide such financial resources, including for the transfer of technologies, needed by developing countries. It further commits the developed countries to take into account the need for adequate and predictable flow of funds and emphasises the importance appropriate burden sharing among developed country Parties. The existing obligations under the Convention require additional efforts in order to ensure their full, effective and sustained implementation.

The IEA ETP 2008, the Stern Review and the UNFCCC F&I Flows reports unequivocally state that the current levels of funding required to deployed the technologies both for mitigation and adaptation are insufficient and that substantial level of financial flows are required. Moreover, all international funding instruments currently under the Convention and the Kyoto Protocol, except the recently operationalised Kyoto Protocol Adaptation Fund are replenished through ODA type bilateral voluntary contributions/donations.

As shown in Figure 2 the level of ODA as share of Gross National Income is well below the 0.7% Monterrey consensus ODA target. This has lead countries like China to suggest that developed countries should commit to an additional 0.5% of GDP for climate change payments to developing countries

Figure 4.2 **2007 ODA as share of Gross National Income (GNI)**



The Conference of Parties at its thirteenth session resolved to establish a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012. It called for an enhanced action on technology development and transfer and provides that nationally appropriate mitigation actions by developing countries are supported by technology, financing and capacity building in a measurable, reportable and verifiable manner.

Technology development and transfer will not take place in vacuum. The major driver for technology development and transfer is the availability and access to financing. Therefore to ensure a well functioning international technology framework agreement, there should be an improved access to new and additional, adequate, predictable, appropriate, equitable and sustainable public-sector financial resources and investments to support both mitigation and adaptation technology development and transfer to developing countries and to promote technology cooperation amongst north-south and south-south.

Ensuring the full, effective and sustained implementation of the Convention through cooperative action now, up to and beyond 2012 requires enhanced technology development and transfer in order to support action on mitigation and adaptation, and to support nationally appropriate mitigation actions by developing countries in the context of sustainable development.

The Ghanaian proposal seeks the setting up of a **multilateral technology fund** that will operate under the authority and guidance of the Conference of Parties and is fully accountable to the COP, have equitable and balanced representation of all Parties within a transparent system of governance, in accordance with the Article 11 of the Convention, enable direct access to funding by developing countries and above all ensures that recipient country involvement during the stages of identification, definition and implementation of relevant technology development programmes or processes.

The multilateral technology fund could have the objectives that are consistent with the decision 3/CP13 to;

- Support the implementation of country driven technology needs assessments;
- Promote joint research and development programmes and activities in the development of new technologies;
- Support technology demonstration projects aimed at bring new technologies to the market;
- Support creation of enabling environments for technology transfer in developing countries;
- Stimulate and provide incentives for private sector participation inn the development and transfer of technologies;
- Promote North–South and South–South cooperation;
- Support the development and enhancement of endogenous capacities and technologies;
- Meet the agreed full incremental costs to developing countries;
- Cover the licenses to support the access to and transfer of low-carbon technologies and know-how;
- Support venture capital fund financing

The technology development and transfer board shall be responsible for the supervision and management of the multilateral technology fund, and shall be fully accountable to the Conference of the Parties

The funding for the multilateral technology fund shall come from Annex II countries, in accordance with their commitments under the Convention as per Article 4 paragraph 3. However, bearing in mind the urgency and scale of financing and investment required, additional sources of funding including market-based mechanisms and private sector financing could flow into the multilateral technology fund.

QUESTIONS FOR AWG-LCA DISCUSSIONS

1) How best can multi-lateral process address the barriers confronting technology development and transfer?
2) Who must take the lead in the removal of these barriers?
3) Has any multi-lateral processes being effective in promoting development and transfer of technologies, and lessons can be learnt from such processes?
4) Would an agreement on a shared vision as part of a multilateral technology agreement framework promote trust and thereby quicken the pace for technology development and transfer?
5) Should developing countries lead the discussions on shared vision for technology development and transfer, and what should be the important elements that need to have to be covered under this shared vision?
6) Will the establishment of technology development and transfer board be beneficial and supportive to the aims of enhanced action on development and transfer of technologies?
7) What specific functions should this board have in addition to what has been proposed in this paper?
8) Should the board be responsible for the supervision and management of the multilateral technology fund?
9) How can Parties accelerate the progress in all stages of the technology process from technology innovation to application?
10) What should be done to promote access to, speed up the diffusion, deployement and transfer of already available technologies with low marginal costs?
11) How can research, development and demonstration of new and innovative technologies be enhanced?
12) Is it feasible to set medium to long term technology development and transfer goals/targets?
13) How would such goals/targets be measured, verified and reported?
14) What are the appropriate ways and means of generating the required level and scale of funding need for technology development and transfer?
15) How can the international community create value for technology development and transfer?
16) Would sectoral approaches be an effective mechanism to enhance technology development and transfer?
17) Should priority be given to sectors where mitigation potential are high?
18) How can international partnership for technology development and transfer be set up and financed?
19) Should any new multilateral technology framework call for differentiation amongst developing countries?
20) How can technology development and transfer be credited?
21) What should be the role of governments, private sector and the civil society in development and transfer of technologies?
22) Should south-south (horizontal) technology development and transfer receive any crediting?

PAPER NO. 2: MONGOLIA

Long-term cooperative action under the Convention

Accra Ghana, August 22, 2008

At the outset my delegation wishes to commend the important climate change talks in Accra to convene this thematic negotiations on harnessing the work of the UNFCCC and Kyoto Protocol in addressing the climate change.

Over the last decade Mongolia has been actively engaged in exchanging views and ideas on the necessity of taking urgent action, on the importance of forging partnerships and alliances, and on how best to streamline the comparative advantages of various cooperative action under the Convention in common battle against the formidable challenges of climate change.

Mongolia supports establishing "Long-term Cooperative Action under the Convention" to reduce the GHG emissions as common goal of all, but with clear timeframe, financial mechanism, and strategic vision of adaptation and mitigation measures in different responsibilities among the Member States, big and small, affluent and poor, all face a host of different challenges in our home countries and respective regions.

Since it's well-known that there is ample evidence, both scientific and factual, that climate change is a reality. It is time to engage our actions in cooperative manner in the long-run. In other words the climate is becoming less stable, more volatile and warmer: global mean temperature is rising, establishing "Long-term Cooperative Action under the Convention" will be a vision overall. In this regard, current project based financial mechanism and procedure of CDM registration need to be changed into more accessible and avoid continuing uneven distribution of funding in developing countries.

Yet, GWP is increasing and it might create further avoidable catastrophic situation around the globe, countries like Mongolia still lacks neither the financial resources nor the technological capabilities to act and respond the climate change. Therefore, "Long-term Cooperative Action under the Convention (AWG-LCA)" is required and important to promote the political will to cooperate in long-term. Climate change also calls for a change in our mindset, doing away with "business as usual" mentality. Now, it is the time to display genuine political will necessary for building international consensus for stronger post-2012 action through Accra and Poznan, and on to Copenhagen.

Speaking of sectoral approach, Mongolia recognizes that it's an opportunity for us to know how and scale up national industries on existing market with introduction of BAT/BP. But it should be a country-specific and affordable to implement. It is also not only for climate change, it will be complimentary to sustainable development. Because challenges of wide-spread poverty, food insecurity, under-developed infrastructure, and severe financial constraints of countries with economies in transition have been extended in inadequate capability and institutional performance in general with addition to climate change. For instance Mongolia, especially the most vulnerable ones to be able to adapt to the devastating effects of climate change despite having contributed the least to causing the problem in the first place.

Thus, the continued need to steadfastly enhance the Art 4.1 (c) of the Convention using the methodology of sectoral approach concerning market mechanism (incentives), cost-effectiveness, and country-specific and respecting the principle of common but differentiated responsibilities to meet

national strategy of emission reduction. Furthermore, ensuring policies and processes related to sectoral approach under “Long-term Cooperative Action under the Convention (AWG-LCA)” would be optional mitigation effort towards achieving the sustainable development goals of both developed and developing countries. In further, it needs to serve as internationally agreed development tool for realization of the MDGs. It contributes full and immediate implementation of the commitments under the UNFCCC and the Kyoto Protocol, especially those on financing for mitigation, adaptation, technology transfer and capacity-building.

Beyond “Long-term Cooperative Action under the Convention (AWG-LCA)” global strategy for adaptation would still be essential as the world today is already engulfed into further warming because of the inertia and the delay between mitigation and outcome. In the long-run, Adaptation Fund should be an essential player of international financial mechanism for achieving integrated global adaptation strategy. It needs to focus on increased financing capability and assistance in capacity-building of developing countries. Here, the financial mechanism of the Convention and the Kyoto Protocol’s Adaptation Fund ought to be substantially scaled up. The impact of increased climate variability on ecosystems, as well as desertification, drought and food insecurity warrant high priority in many countries.

Mongolia, for one, is keen to develop its national adaptation strategy to climate change along with in-depth vulnerability and risk assessment research in collaboration with relevant bilateral and multilateral development partners.

To address these challenges posed by climate change Mongolia launched its National Action Program on Climate Change in 2001 in accordance with the principles of the UNFCCC and the Kyoto Protocol and has endeavored to integrate climate change concerns into its national development strategies, including the MDGs-based National Development Strategy up to 2021, recently approved by the Parliament.

In conclusion of “Long-term Cooperative Action under the Convention (AWG-LCA)” Mongolia has a submission to promote synergistic implementation of the inter-linked multilateral environmental conventions in general and in order to effectively address climate change we need to forge effective partnerships with all stakeholders. Such a partnership has to be built at local, national, regional and international levels.

In this regard, I am pleased to inform you that Mongolia has offered to host a Northeast Asian Summit on Climate Change in next year in Ulaanbaatar. We do hope that such a high level event would help forge regional partnership on climate change thus contributing to larger global efforts.

PAPER NO. 3: PHILIPPINES ON BEHALF OF THE GROUP OF 77 AND CHINA

Financial mechanism for meeting financial commitments under the Convention

G-77 and China
Proposal

Financial Mechanism for Meeting Financial Commitments under the Convention

Objective
The G77 and China proposes the operationalisation of an effective financial mechanism under the COP. This mechanism is to ensure the full, effective and sustained implementation of the Convention, in relation to implementation of commitments for the provision of financial resources. This is mandated under Articles 4.3, 4.4, 4.5, 4.8 and 4.9 of the Convention in accordance with Article 11 defining the financial mechanism.

Principles
The following are principles for enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology development and transfer. The mechanism shall:

1. Be underpinned by the principle of equity and common but differentiated responsibilities
2. Operate under the authority and guidance, and be fully accountable, to the COP;
3. Have an equitable and geographically-balanced representation of all Parties within a transparent and efficient system of governance (Article 11.2);
4. Enable direct access to funding by the recipients; and
5. Ensure recipient country involvement during the stages of identification, definition and implementation, rendering it truly demand driven.

The goal is to bring about coherence in the global financial architecture for financing under the authority and governance of the COP.

Elements
Elements for enhanced financial resources provided under the Convention include the following:

Aims

1. The mechanism will recognise, promote and strengthen the significance of engagement at the country level, in order to give effect to the principles of a country-driven approach, and direct access to funding and enable the implementation of this.
2. The mechanisms should enable a shift from a project-based approach when dealing with proposals for funding, to a programmatic approach, where appropriate, in order to make optimal use of the full range of means of implementation available and to allow for implementation at scale.
3. The mechanism would facilitate linkages between the various funding sources and separate funds in order to promote access to the variety of available funding sources and reduce fragmentation.
4. The mechanism would maintain consistency with the policies, programme priorities, and eligibility criteria adopted by the decisions of the COP and all "activities (including those related to funding) relevant to climate change undertaken outside the framework of the financial mechanism" consistent with Decision 11/CP.1, op. para 2(a).

Sources of Funding

5. The main source of funding will be through the implementation of commitments under Article 4.3. The funding will be "new and additional" financial resources, which is over and above ODA. The major source of funds would be the public sector.
6. Any funding pledged outside of the UNFCCC shall not be regarded as the fulfilment of commitments by developed countries under Art. 4.3 of the Convention, and their commitments for measurable, reportable and verifiable means of implementation, that is, finance, technology and capacity-building, in terms of para 1.b (ii) of the Bali Action Plan.
7. It should be ensured that there be predictability, stability and timeliness of funding.
8. The resources shall be essentially grant-based (particularly for adaptation), without prejudice to certain concessional loan arrangements in appropriate form, to meet the needs of a specific programme.
9. The level of the new funding can be set at 0.5% to 1% of the GNP of Annex I Parties. Quantified commitments by developed countries to adequate and predictable funding for mitigation and adaptation must be addressed. The portion of funding that must be allocated to adaptation and mitigation and their respective means of implementation shall be decided by the Board and periodically reviewed, taking especially into account the historical imbalances in and the urgency of funding for adaptation.

Activities to be funded

10. The mechanism will fund the agreed full incremental costs for the implementation of developing countries' commitments under Art. 4.1, including:
    a) Mitigation
    b) Deployment and diffusion of low-carbon technologies
    c) Research and development for technologies
    d) Capacity-building
    e) Preparations of national action plans and implementation
    f) Patents
    g) Adaptation in accordance with Arts. 4.4 and 4.9
11. The mechanism will fund the agreed full costs for the preparations of national communications.
12. In accordance with Art. 4.3, developing country Parties are to be provided with new and additional financial resources, including for the transfer of technology, to comply with their obligations under Art. 4.1 of the Convention. The funds can be used for (i) adaptation and its means of implementation; and (ii) mitigation and its means of implementation. Meeting these two funding objectives may include technology development, deployment and transfer, capacity building and risk management, including insurance, etc. It will cover financing the implementation of action programmes developed under the Convention, such as the NAPAs and TNAs.

Design and Structure:

1. The COP is the supreme decision-making body of the Convention, under whose authority and guidance the mechanism will operate. The COP shall decide on the policies, programme priorities and eligibility criteria.
2. The COP will appoint a Board, which shall have an equitable and balanced representation of all Parties within a transparent and efficient system of governance. The Board shall be assisted by a Secretariat of professional staff contracted by the Board.
3. The COP and Board shall establish specialized funds, and funding windows under its governance, and a mechanism to link various funds.
4. Funds would be administered by a Trustee or Trustees selected through a process of open bidding.

5. Each of the separate funds may be advised by an expert group or committee, which could also be supported by a technical panel or panels addressing specific issues addressed by the fund.
6. To ensure transparent and efficient governance, other possible components of the structure include a consultative/advisory group of all relevant stakeholders, and an independent assessment panel.
7. Modalities for the determination of the role of existing funds and entity/ies for the operation of the financial mechanism will have to be worked out.

PAPER NO. 6: SOUTH AFRICA ON BEHALF OF THE AFRICAN GROUP

Adaptation and means of implementation

AFRICAN GROUP PAPER
ADAPTATION AND MEANS OF IMPLEMENTATION: 26 AUGUST 2008

A consolidated work program on adaptation must:

- Facilitate a shift in focus from vulnerability assessment to the implementation of the adaptation
- Be based on a much improved assessment of the costs of adaptation for developing countries, particularly in Africa
- Be based on the effective use of projection scenarios, early warning systems, vulnerability mapping, and risk assessment to identify priorities, for short term and long term adaptation.
- Facilitate access to means of implementation (financing, technology and capacity building) for adaptation at a regional and national level
- Facilitate assessment and exchange of lessons learned and build on the knowledge base for adaptation
- Distinguish between, and balance the needs for (i) adaptation to short-term climate shocks, due to increasing numbers of extreme events; this includes adaptation to the impacts of unavoidable climate change (ii) adaptation to long term shifts in climatic conditions.
- Distinguish between and balance the needs for finance for adaptation programmes that are (i) integrated with development planning; (ii) standalone programmes, and therefore agreed full cost additional to development planning programmes.
- Facilitate appropriate use of the knowledge base on adaptation, from the Nairobi Work Program, as well as new research on identified gaps
- Include an African regional adaptation implementation initiative, based on Africa's adaptation priorities, providing a coherent and scaled package of financial, technical capacity building and institutional support for adaptation in Africa. This should include the establishment of a network of African Centres of Excellence on climate change, and a regional information system on short, medium and longterm climate change risks in Africa.

Technology support for the consolidated workprogram must:

- Recognise that adaptation technology is sector specific
- Address the need for research and development on appropriate technologies for adaptation
- Address the need for technology transfer and diffusion, including capacity building
- Cover full costs for technology for standalone adaptation projects

Financing for the consolidated workprogram must:

- Be massively scaled-up (by 2 or 3 orders of magnitude) and must redress the historical inequity in allocation of funds for adaptation
- Go beyond the integration of adaptation into the development process, and include standalone adaptation projects
- Include the mobilization of new resources, beyond the existing funds under the Convention and its Protocol

Capacity building for implementation of adaptation programmes must be a central element of the consolidated program and must:

- Include a package of assistance to support implementation of the NAPAS including financial, technical, capacity building and institutional support
- Include a 3-year pilot phase of "Adaptation Activities Implemented Co-operatively" should be launched, to catalyze rapid learning about adaptation "good practice" by supporting enhanced

implementation of demonstration projects, programs and policies in vulnerable countries and communities.

The **institutional framework for the implementation of adaptation** must:

- Facilitate access to means of implementation (finance, technology and capacity building) for adaptation, at regional and national level
- Promote coherence in the way that adaptation issues are addressed under the UNFCCC.
- Facilitate linkages with other international, regional and national bodies and stakeholders that are are implementing adaptation and related activities

PAPER NO. 7: SWITZERLAND

Funding scheme for Bali Action Plan

Ad hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA)

August 2008

Funding Scheme for Bali Action Plan
A Swiss Proposal for global solidarity in financing adaptation

Switzerland would like to submit a proposal on a funding scheme for the Bali Action Plan, in particular for financing adaptation. Switzerland would like that this proposal be part of the discussion on the approaches for financing the implementation of the Bali Action Plan, in particular adaptation. Furthermore, Switzerland would like to make use of existing institutions – such as the Adaptation Fund of the Kyoto Protocol and the Global Environment Facility – for the management of the funding of the Bali Action Plan in order to avoid a proliferation of the institutions in this field. We remain open to the dialogue with the other Parties on their proposals.

Situation

Scientific evidence confirms that climate change will continue even if mitigation policies are successfully implemented as proposed by IPCC.[1] Therefore, adaptation measures must complement mitigation, if damages are to be kept from growing to truly catastrophic levels, especially in vulnerable countries of the developing world. According to UNFCCC and World Bank estimates, the global financing needs to adapt to climate change will lie between USD 10 and 40 bn. per year. Neither the adaptation fund under the CDM of the Kyoto Protocol nor other pledged funds can provide financing of such orders of magnitude. Thus, the issue of financing the necessary measures remains unresolved.

This is why the Swiss Delegation at the twelfth Conference of the Parties of the UNFCCC in Nairobi in 2006 and later at the Bali conference in December 2007 proposed a global carbon levy to cope with the adaptation financing chasm that became more and more apparent at the time. The proposed establishment of a funding scheme shall be based on the principle of common but differentiated responsibilities and on the polluter pays principle, with a low levy on CO_2 emissions, to cope with these financing bottlenecks. The proposal presented here develops this idea further and illustrates possible designs of a revenue and disbursement model. The proposal is herewith submitted to the AWG-LCA for international discussion and further development. Such a discussion shall also serve in the coordination with similar and complementary proposals made by other countries such as Japan, Mexico, Norway, etc.

Objectives and principles

The overall goal is to strengthen the capability of the Parties to UNFCCC to address the challenges of financing climate change policy programmes and measures – especially for adaptation in vulnerable developing countries.

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[1] 50% reduction of year 1990/2000 global greenhouse gas (GHG) emissions by 2050

In pursuit of this goal, a global burden sharing system, based on the principle of common but differentiated responsibilities, and legally binding to all nations, is established for overcoming barriers for financing implementation of effective climate policy measures in particular for adaptation to a warming climate. The revenue for this proposal is to be raised according to the polluter pays principle through a *uniform* global levy on carbon of 2 USD/t CO_2 on all fossil fuel emissions. This leads to a burden of about 0.5 US cents/litre of liquid fuel.

The funding scheme proposes a basic tax exemption of 1.5tCO_2-eq per inhabitant, to take into account the principle of common but differentiated responsibilities. This free emission allowance relieves the low-emission countries while countries with higher-emission levels make a higher contribution to the fund. Further, countries with high levels of per capita incomes contribute a larger share of the revenues of the CO_2 levy to the funding scheme than countries with lower incomes. Through these design parameters, the free emission level and the differentiated shares of payments to and revenues from the fund, the proposed funding scheme leads to a considerable net transfer of resources from rich to poor countries.

The funding scheme also reflects the polluter pays principle as all countries assume a fair share of their responsibilities for addressing climate change issues in accordance with their share of responsibility for the problem of climate. A global and uniform CO_2 based levy reflects the need to address the climate change problem on a global scale.

The economic rationale for this initiative is as follows: Following the Stern Report on the Economics of Climate Change (2006), we have to acknowledge that climate change "*is the greatest market failure the world has seen."* From an economic point of view the best theoretical solution to correct for this market failure would be to introduce an optimal carbon price[2] in order to set adequate incentives to decarbonise the economy in the long run. Today we apply a variety of strategies and efforts to implement a carbon price (tax or trading system) in different regions and a number of countries. Nevertheless, on a global scale we are far away from an optimal carbon price. Therefore this proposal targets at a second best solution: The CO_2 based levy is designed as a low level financing tax. The revenues are assigned to finance the provision of a public good, i.e. efficient pro-active mitigation and adaptation activities. Climate change related social cost shall be reduced.

Furthermore, the architecture of the revenue and disbursement models shall be designed considering the different shares of responsibility between industrialised and developing countries for the problem of climate change and in terms of different economic capacities to contribute to the solution.

Overview of proposal

The proposed funding scheme is designed to support the Bali Action Plan, including financing, governance and allocation of revenues (Figure S-1). The revenues are to be raised through a uniform global levy on CO_2. Of the total revenue collection 18.4 bn USD shall be allocated to a multilateral regime. The share of revenues which are deposited to the multilateral regime depends on the economic situation of the countries. The share of contribution from the

[2] Through a carbon tax or a carbon emissions trading system.

industrialized countries to this fund is 76%. The payments from the multilateral regime are used for financing of adaptation policies and measures. The proposal is complementary to other funding proposals made under the AWG-LCA such as the Mexican Proposal..

OVERVIEW OF SCHEME COVERING THE ENTIRE BAP PIPELINE OF ACTION

Figure S-1: BAP = Bali Action Plan.

The revenues generated under this proposal in each country are partly channeled into a National Climate Change Fund (NCCF) for financing national climate change policies according to the country's specific needs and legal frame covering adaptation, technology transfer or mitigation measures.

A share of revenues differentiated according to groups of countries formed on the basis of the per capita GDP shall flow into a global Multilateral Adaptation Fund (MAF). The MAF part of the funding is to be spent on two different themes ('Pillars'), namely[3]:

- *(i) Prevention Pillar*: Climate change impact (risk) reduction through appropriate policies and measures.
- *(ii) Insurance Pillar*: Climate impact response: relief, rehabilitation, recovery.

Industrialised countries deliver a significantly larger fraction of their tax revenues to the MAF than developing countries. In contrast, developing countries keep the largest share for their national policies and deliver only a small fraction to the MAF. Medium income countries (GDP USD 15-20'000/Cap) take an intermediate position. Figure S-2 shows the financial flows and shares contributed to the MAF and the NCCFs, respectively. The proposed parameters are illustrations for the purpose of discussion only.

[3] In the context of this proposal the terms 'preventive adaptation' and 'curative adaptation' are used. But for reasons of terminological non-proliferation and comparability with the disaster management language, the following terms may be used: 'adaptation' or 'impact reduction' for the former, and 'impact response' for the latter.

CO2 BASED LEVY- AND FUNDING SCHEME

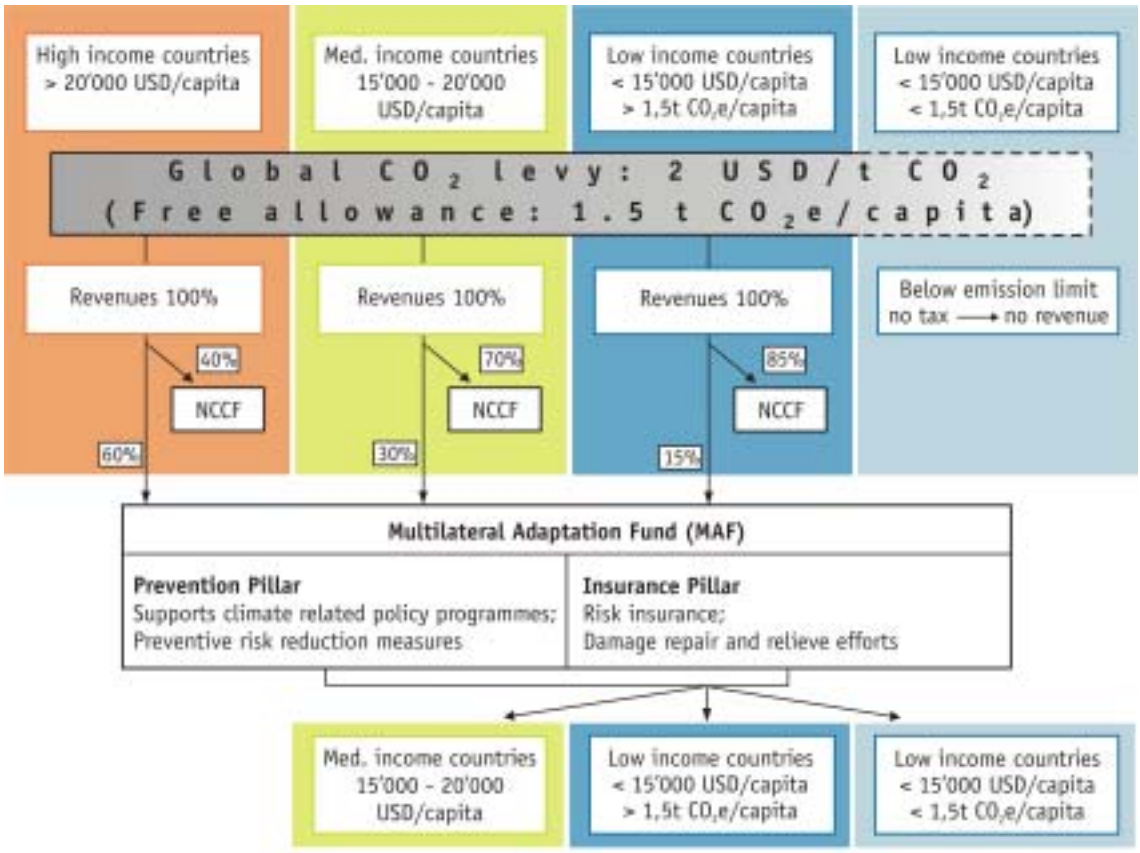

Figure S-2: This figure illustrates the leading idea of a CO_2 based levy- and funding scheme. Based on GHG emission projections and data from UNFCCC National Communications, the total revenues for funding the global MAF amount to USD 18.4 bn, of which USD 15.2 bn come from high income countries, and USD 3.2 bn come from medium/low income countries. These resources are proposed to be engaged in financing the implementation of adaptation policies and programmes in vulnerable medium and low income countries. High income countries feed their National Climate Change Funds (NCCF) with 12.2 bn USD/a, and medium and low income countries theirs with 17.8 bn USD/a. Total revenues worldwide amount to 48.5 bn USD/a (based on data of 2010).

National Climate Change Funds

Each country which decides to participate in the scheme shall autonomously operate its own NCCF. These national funds shall also operate as partner institutions to the Multilateral Adaptation Fund (MAF) and are encouraged to address the priorities of national climate change programmes and to closely coordinate with other national climate policy financing facilities depending on the national circumstances such as vulnerability to climate change and economic development. These NCCFs are seen as complementary vehicles to the project based disbursement through implementing agencies as they are operating under the GEF or under the funds established under the Marrakesh Accord. NCCF funds can be used according to national priorities for adaptation as well as for mitigation measures such as improving the energy- and climate efficiency of buildings, cars, electrical equipment, or power plants and promotion of renewable energy.

Possible examples for existing national climate change funds or guidelines for designing such funds are the China CDM Fund and the Green Investment Schemes (GIS) developed between Russia and potential AAU buyers, respectively.

Multilateral Adaptation Fund (MAF)
The Multilateral Adaptation Fund is to assist low and medium income countries in financing their adaptation policies. It is proposed to become part of the financial architecture developed under the Bali Action Plan. While by far the largest contributions come from industrialized countries, adaptation policies/programmes and measures in vulnerable developing and medium income countries are funded only. This reflects the special overall responsibility of the ICs for the climate change problem.

The World Bank and UNFCCC estimate the financial needs for adaptation in non-industrialised countries at 10 and 40 bn USD/year in 2030, while the financial flow under the Marrakech Accord merely provides some 0.1–0.2 bn USD/a. This illustrates the urgent need for further funding.

The MAF releases its funds of some 18.4 bn USD/a within a legally clearly defined governance framework. It shall be able to operate efficiently and complementarily to other similar facilities such as the GEF trust fund, the funds established under the Marrakech Accord, the World Bank's Climate Investment Funds or development assistance operating basically on a project by project basis.

Prevention Pillar
The MAF shall co-finance climate proof policies relevant from a climate change adaptation perspective including disaster risk reduction measures. The disbursement model operates in the form of contributions to the programme – rather than funding individual projects. It is assumed that the operations of the MAF will create the capacities and institutions for the implementation of this disbursement model. This enhances efficiency in line with the OECD Paris declaration on aid effectiveness. The supported policies can include risk responsive planning and design of settlements, infrastructures and of land use.

Insurance Pillar
This pillar aims at investing financial resources into safeguarding public goods, which in particular comprises to insure climate related risks, which are not covered by private insurance companies because premiums are not affordable for local insurance takers (low probability, high consequences risks). The focus is on vulnerable institutions, enterprises and segments of population in medium and low income countries. Insuring the rehabilitation of core infrastructure of an affected area, or compensation of lost assets of the most vulnerable groups shall have priority. Furthermore, the Insurance Pillar will develop pilot projects for weather risk insurances (e.g. for agriculture) at sub-regional levels. Also, a small amount of the budget can be used for developing the data basis required for such schemes (technical assistance).

An optimal form of private public partnership with the insurance sector must be developed, while guaranteeing the interests of affected groups in vulnerable developing countries. One possibility to be evaluated is assistance to the countries in the form of payment of special

insurance premiums. This would correspond to the principles of subsidiarity and efficiency, and allow for a lean and efficient administration of the MAF.

Impacts and Implementation

Table S-1 shows an overview of the impacts in terms of financial flows between regions. The last column of table S-1 illustrates the total receipts from both the NCCF and the MAF in the different regions. The transfer of finances from industrialised to developing countries is shown in the second-to-last column, showing the positive net payments from the MAF for developing countries. This is additional to resources for technical cooperation and based on multilateral agreements.

INDICATIVE FINANCE FLOWS BETWEEN PARTICIPATING REGIONS						
	Total revenue of tax	Revenue going to MAF	Payments obtained from Prevention Pillar	Payments obtained from Insurance Pillar	Net payments to and from MAF	Net receipts from NCCF plus contributions from the MAF
United States	11551	6'930.69			-6930.7	4620
Canada	1224	734.48			-734.5	490
Australia, New Zealand	890	533.89			-533.9	356
Japan	2154	1'292.33			-1292.3	862
OECD Europe	7532	4'519.16			-4519.2	3013
Total High income group	*23351*	*14011*	*0*	*0*	*-14011*	*9340*
South Korea	907	272.07	96.3	268.0	92.2	999
Russia	3236	970.92	137.5	142.3	-691.1	2545
South Africa	962	144.34	74.2	85.3	15.1	977
Mexico	753	112.95	111.0	136.6	134.6	888
Non-OECD Europe & Eurasia	2019	302.80	293.2	319.2	309.7	2328
China	9571	1'435.68	1996.4	2800.3	3361.0	12932
Middle East	2711	406.63	212.2	181.9	-12.6	2698
Brazil	704	105.61	194.5	181.8	270.6	975
Other Central & South America	1282	192.32	281.9	260.2	349.8	1632
Non-OECD Asia	2143	321.39	1594.4	1858.8	3131.7	5274
India	315	47.19	2324.0	2045.6	4322.4	4637
Other Africa	0	0.00	1409.5	702.2	2111.7	2112
Indonesia	535	80.18	476.2	219.4	615.5	1150
Total Low and Medium income group	*25137*	*4392*	*9201*	*9201*	*14011*	*39148*
Total World	48488	18403	9201	9201	0	48488

Table S-1: Net annual financial flows of the MAF between participating regions; total receipts from MAF and NCCF (data basis year 2010). The first and last columns show the total tax revenues collected in, and the total resources flowing into a region, respectively.

A financial flow analysis as depicted in Figure S-3 shows that the average contributions of industrialised/high income countries are much higher than in medium- and low income countries although their tax rate only differs on the basis of the application of the free emission level of 1.5 t CO_2eq/capita. The receipts from the MAF show the same pattern, so that the funding scheme leads to a considerable net transfer from high-income to low income countries of about 14 bn USD equivalent to 76% of the funding under the multilateral regime.

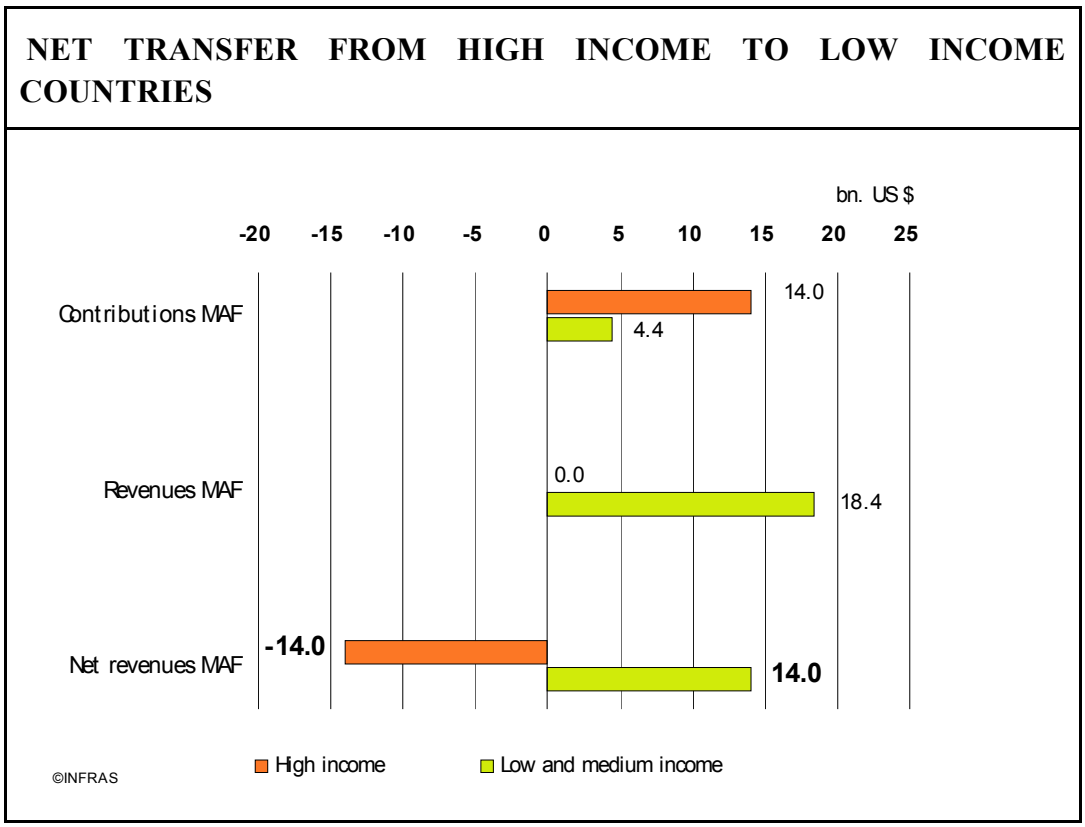

Figure S-3: How many USD per year does a country from the high income/medium income/low income group contribute to, and receive from the MAF? High income countries contribute 14 bn USD, but do not receive any funds. Medium and low income countries contribute 4.4 bn USD and receive 18.4 bn USD.

As only a low CO_2-based levy is introduced, it can be assumed that this will not have any noticeable negative effects on economic growth and GDP in industrialised countries. Also, in emerging and developing countries with low- and medium GDPs, negative economic impacts are not likely due to the tax free emission level of 1.5 t CO_2-eq/capita. Furthermore, the funding scheme can lead to positive economic impacts in developing (DC) and least developed countries (LDC), as adaptation measures are expected to reduce the potential GDP damages caused by climate change.

Implementation issues need to be studied carefully to meet the challenge of administrative efficiency. One issue is how to collect the CO_2-based levy. The tax free emission level of 1.5 t CO_2-eq/capita exempts a significant number of countries with low institutional capacity from establishing a system to collect the CO_2 levy. Furthermore, it alleviates the problem of lack of economic capacity of least developing countries (LDC) to contribute to the Multilateral Adaptation Fund. Experience in several countries suggests that an upstream approach is most

feasible: Levies are charged at the points of import and production rather than at the consumer level. By applying an upstream approach only a small number of subjects needs to be levied.

Further steps

This proposal outlines cornerstones of a climate change financing scheme, primarily for adaptive policies in low and medium income countries. At this stage, the level of consultation and investigation is only limited. Hence this proposal presents a leading idea and a toolbox of instruments for refinement and discussion. Examples of open questions which do need further investigation and consultation are:

- How to ensure an effective governance taking into account the operation of the Kyoto-Adaptation Fund for CDM, and the World Bank Climate Investment Funds?
- How to best modify the proposed design parameters such as the levels of taxation?
- How to best design the Insurance Pillar, especially the form of public private partnerships?

A document presenting this proposal in detail can be found under:

http://www.bafu.admin.ch/klima/index.html?lang=en&download=NHzLpZig7t,lnp6I0NTU042l2Z6ln1ad1IZn4Z2qZpnO2Yuq2Z6gpJCFeH15gGym162dpYbUzd,Gpd6emK2Oz9aGodetmqaN19XI2IdvoaCVZ,s-.pdf

PAPER NO. 8: UKRAINE

Long-term cooperative action

Ukraine's submission on long-term cooperative action

Ukraine consistently supports goals and principles set forth in the United Nations Framework Convention on Climate Change and the Kyoto Protocol to it.

Welcoming any national mitigation and adaptation measures Ukraine believes it necessary to reach a common international understanding of economic and legal concept of the mitigation and adaptation measures, and to set up a relevant international institutional system, based on such understanding.

Taking the above into consideration, Ukraine suggests the following integral approach:

Absence of the common interpretation of economic and legal concept of the commitments on greenhouse gases emission reductions, and so of carbon units as such, restrains its free circulation and prevents from attracting financial resources and investment to support mitigation and adoption actions. Therefore, we think that:

I. **GHG emissions reduction commitments of the countries are the direct debt liability of every single country and the humanity as a whole to the Nature.**

Ukraine believes that **absolute** reduction of the greenhouse gases emissions and enhancement of absorption by all Parties are a sole mean of reducing greenhouse gases concentration in the atmosphere, therefore commitments have to be of absolute nature only.

II. **The basis for accounting the commitments shall be the level of the GHG emissions in 1990.**

Ukraine supports the introduction of common long-term targets on greenhouse gases emission reduction with each Party having to have an individual short-term benchmarks plan.

III. **The reduction of common emission of greenhouse gases may be 20% by 2020, and 50% by 2050.**

To ensure the international regulation of the commitments fulfillment process and to agree individual plans of the Parties it is suggested to set up:

IV. **The International Climate Fund – a special agency, designated to regulate carbon-credit relations between the Parties and to provide credits in carbon units in case of a temporary carbon budget deficit of the Parties.**

V. **Common carbon registry to be maintained by the UNFCCC Secretariat.**

VI. Each Party shall designate a sole independent body for transactions with the national carbon units and cooperative actions with the International Climate Fund.

Ukraine believes that the existing flexible mechanisms have to be continued in the next commitment periods of the Parties. They shall be extended and complemented by involving national, regional and international trading systems and mechanisms to be complied with the principles and goals of the United Nations Framework Convention on Climate Change. Thus:

VII. **Commitments of the Parties on greenhouse gases emission reduction can be used for both domestic and international trading.**

To unify reporting and accounting of commitments fulfillment by the Parties it is suggested to consider that:

VIII. **Fulfillment of the commitments by the Parties to be performed through "greening" of carbon units. Greening is achieved through the implementation of projects on emission reduction or enhancement of greenhouse gases absorption.**

Ukraine believes that access of the Parties to the international project mechanisms should be based on the compliance of each Party with the requirements of their application. Thus:

IX. **For greening each Party shall have an equal access to all project mechanisms of greening.**

Ukraine believes that application of market mechanisms is the only fair way of estimation of the national adaptation and mitigation measures. Therefore:

X. **The price for each national carbon units to be defined on the basis of market search of the current demand and supply balance point.**

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