Climate change

Regional & Global Issues

1 CLIMATE CHANGE AND THE ROLE OF CIVIL SOCIETY ORGANIZATIONS IN THE ARAB REGION

2 THE EQUITABLE SHARING OF ATMOSPHERIC AND DEVELOPMENT SPACE

ARAB NGO NETWORK FOR DEVELOPMENT





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The Arab NGO Network for Development (ANND) is a regional network including 7 national networks and 27 non-governmental organizations from 11 Arab countries. ANND's program work focuses on advocating social and economic rights in the Arab region. The network works in three main areas:

(1) Development policies.

(2) Social and economic reform agendas and the role of international and regional organizations.

(3) Economic and trade liberalization policies and its social and economic implications.

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ANND's Work on Climate Change Issues:

Within its program strategy, ANND capitalizes on the added value of building interaction and inter-linkage between the work of civil society organizations (CSOs) and that of academics and researchers. ANND believes that such cooperation is a significant tool to enhance the effectiveness of advocacy work, aiming towards equitable and sustainable development in the Arab region.

Within this context, ANND approaches the discussion on climate change with two main objectives:

1. To inform the discussions around climate change, and highlight the specific concerns related to the Arab region, with a focus on the interface between climate change implications and progress on realizing social and economic rights.
2. To present a space for concerned CSOs to come together, enhance their common positions, and promote cooperation among themselves and with concerned groups from outside the region, in addition to academics and media.

The necessity of research on climate change in the Arab region is clear and vital. The objective of the paper between your hands is to support CSOs' advocacy work on climate change related policies, and to set the scene for future work on developing policy propositions in this area. For those purposes, the paper focuses on (1) description of climate change implications in the Arab region (2) description of policy positions of key Arab countries on climate change and (3) discussion of CSOs' role in this area and their issues of concern in the run up towards the Copenhagen Summit and afterwards.

During 2009, ANND had organized with several partners from across the region multiple spaces for discussions on climate issues. These included a roundtable in which a draft of the current paper was discussed (June 2009, Beirut), in addition to a wider forum in collaboration with the Arab Organization for Administrative Assistance (ARADO), the League of Independent Activists (IndyACT), and the Arab Climate Alliance, entitled "Climate Change Crisis and the Role of National Governments and Civil Society in Facing the Challenges" (August 2009, Beirut).

For more information on these activities, please check ANND's website: www.annd.org





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Regional & Global Issues

1

Climate Change and The Role of Civil Society Organizations in the Arab Region

A review of the impacts of climate change, related policy discussions, and the role that civil society can play in the Arab region

This paper was originally prepared for ANND by the League of Independent Activists– IndyACT, which was established in Lebanon during the summer of the year 2006. The organization focuses on individual activism and cooperation with international networks and organizations. IndyACT's campaigns include the Arab Climate Campaign, Save our Seas Campaign, and Zero Waste Campaign [contact details: Rmayl, Nahr Street, Jaara Building, 4th floor; Tel/Fax: +961-1-447192; P.O.Box: 14-5472, Beirut, Lebanon; website: www.indyact.org].

The current version is substantially revised and updated to incorporate material and point of views related to the post-Copenhagen Summit period. This work was undertaken by ANND staff members working at ANND secretariat- Beirut.

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(First published: 2010)

Contents

Glossary of Terms

A1	Annex I countries
AFDC	Association for Forest Development and Conservation
AISD	Arab Initiative on Sustainable Development
ANND	The Arab NGO network for development
AOYE	Arab Office for Youth and Environment
AR4	Fourth Assessment report of the IPCC
AR5	Fifth Assessment report of the IPCC
ARADO	Arab Organization for administrative development
BAU	Business as Usual
CAMRE	Council of Arab Ministers Responsible for the Environment
CAN	Climate Action Network
CCS	Carbon Capture and Storage
CCU	Climate Change Unit
CDM	Clean Development Mechanisms
COP	Conference of Parties
CSOs	Civil Society Organizations
CSP	Concentrated Solar Power
DNA	Designated National Authority
EEAA	Egyptian Environmental Affairs Agency
EEC	Energy Efficiency Council
EIB	European Investment Bank
EMP	Euro-Mediterranean Partnership (known as the Barcelona Process)
FAO	Food and Agriculture Organization
HRC	Human Rights Council

GCC	Global Climate Campaign
GGCA	Global Gender and Climate Alliance
GEF	Global Environment Facility
GHG	Green House Gases
ICZM	Implement Integrated Coastal Zone Management
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
IndyAct	League for independent activists
KP	Kyoto Protocol
ME	Middle East
MENA	Middle East and North Africa
MENAREC	Middle East North Africa Renewable Energy Conference
MNSSD	Sustainable Development Sector Department
MOP	Meeting of Parties
MRV	Measurable, Reportable, Verifiable
NA1	Non-Annex I countries
NAMA	Nationally Appropriate Mitigation Action
NGOs	Non-governmental Organizations
NICs	Newly Industrialized Countries
LAS	League of Arab States
LCA	Long-term Cooperative Action
LDCs	Least Developed Countries
LFED	Lebanese forum for environment and development
OAPEC	Organization of Arab Petroleum Exporting Countries
OHCHR	Office of the High Commissioner for Human Rights
OPEC	Organization of Petroleum Exporting Countries

PA	Palestinian Authority
PANE	National Action Plan for the Environment
PMC	Program Management Committee
SIDS	Small Island Developing States
TREC	Trans-Mediterranean Renewable Energy Cooperation
UNDP	United Nations Development Program
UNESCO	United Nations
UNEP	United Nations Environment Program
UNEP-ROWA	Regional Office for West Asia
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization

1. Introduction

Climate change is the expression of the multi-dimensional crisis that the world is witnessing. While internal changes within the climate system play a role in triggering climatic changes, the unequivocal warming in the climate system arrived to in our world today is the result of extreme man-made interventions. These are rooted in the global system and its economic, financial, trading, social, and cultural models that peoples around the world had acquired. Indeed, over the past two hundred years, burning fossil fuels and over-consumption of energy depleting resources led to an abnormal increase in greenhouse gas (GHG) concentrations in the atmosphere. The mean concentration of carbon dioxide, the primary greenhouse gas, rose from pre-industrial level of about 270 parts per million (ppm) to approximately 385 ppm in 2008[1]. This increase in greenhouse gases prevented excess heat from leaving the planet's atmosphere and is leading to the rise in the earth's temperature.

According to the 2009 Arab Human Development Report (AHDR)[2], the Arab region will be heavily impacted by climate change. The report indicates that the lack of democracy, knowledge society, and law development had substantially contributed to the increase of poverty ratios, unemployment, and social marginalization in the region. In the same manner, the lack of democracy prevents proper engagement by various stakeholders from the region in an effective debate about the root causes and needed solutions to the climate change challenges. Moreover, it limits the space for civil society to actively participate and advocate for policy change in this area.

Although the region does not emit more than 4.7% of the global greenhouse gas emissions, the AHDR explicitly highlights that various countries of the region will be affected to different levels. It particularly specifies Egypt, Lebanon, and Sudan as the countries to be most impacted by climate change. Moreover,

1 R. F. Keeling, S. C. Piper, A. F. Bollenbacher and S. J. Walker, Carbon Dioxide Research Group, Scripps Institution of Oceanography (SIO), University of California, available at: http://cdiac.ornl.gov/ftp/trends/co2/maunaloa.co2; and "Arab Region State of Implementation on Climate Change", report by ESCWA and League of Arab States, available at: http://www.un.org/esa/sustdev/csd/csd14/escwaRIM_bp2.pdf .

2 Available at: http://www.arab-hdr.org/ .

certain Arab countries indirectly share part of the responsibility for climate change due to their role as major producers and exporters of oil.

This paper explores the impacts of climate change on the Arab region, the role that Arab countries play in the climate change debate and the engagement of civil society groups- both regionally and globally- on influencing this debate. The scope of the paper is limited by its aims to present a preliminary revision of governmental and civil society positions on climate change in the Arab region. It starts with mitigation and adaptation potential, and then proceeds to highlight the kind of policies and institutional initiatives related to climate change that are undertaken by Arab governments. The paper presents a brief on the climate change policy of international bodies active in the Arab region. The last sections of the paper focus on the engagement of CSOs in climate change discussions and campaigns.

2. Climate Change as a Global Crisis

It is a well known fact that planet earth is getting warmer. The ten warmest years in history have occurred after the 1980s. In fact, the decade between 1998 and 2007 was declared the hottest decade on record with the global mean temperature in 2007 estimated at "0.41°C above the 1961-1990 annual average of 14.00°C" (World Meteorological Organization - WMO, Dec.2007). The most recent science of climate change is clear; it notes that there is a pressing need for countries to stabilize GHG gases well below 350ppm CO2 eq (carbon dioxide equivalent), as soon as possible in order to avoid catastrophic climate change impacts. According to the Inter-Governmental Panel on Climate Change (IPCC)[3], this means that emissions need to peak around the year 2015 and be reduced by more than 80% by the year 2050, in order to keep the global temperature increase below 2°C as far as possible, with a certainty higher than 75%.

Global warming leads to the modification of other climatic factors, like precipitation, wind, air humidity, and snow cover. Extreme meteorological events, such as spells of high temperature, heavy storms, floods or droughts are happening more frequently. The impacts of climate change such as droughts and water scarcity, heat waves, desertification, floods, hurricanes and rising sea levels are causing sporadic disasters around the world and are expected to increase to irreversible levels. These impacts raise the possibilities of food insecurities, crop stress, famine, mass extinction of animal and plant species, deaths of thousands, displacement of populations, as well as submergence or disappearance of coastal cities and islands. Within this context, developing countries with limited resources, among which are most Arab countries, will be the most impacted countries.

3 The IPCC is the leading scientific body for the assessment of climate change, established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences. For more information, please check: www.ipcc.ch

Indeed, climate change is already harming people and ecosystems. This makes the aim of avoiding catastrophic climate change a priority on the global policy agenda, coupled with reversing the situation to a sustainable and equitable context of co-existence. Thus, equity and economic and social justice are at the core of such a process of change. Countries have common but differentiated responsibilities in facing this crisis, a concept that has been integral to the 1992 United Nations Framework Convention on Climate Change (UNFCCC)[4]. Acknowledging the historical responsibility of developed industrialized countries and their resulting liability to climate debt is core to operationalzing the concept of common but differentiated responsibilities.

Since burning fossil fuels is the main source of GHG, many countries and non-governmental organizations (NGOs) call for limiting the dependence on coal and oil as the main energy source. They highlight the need for adopting new production and consumptions patterns, relying on sources of renewable energy and energy efficiency policies and technologies. The underlying advantage of renewable energy is that it would be abundant and inexhaustible. For example, the total amount of energy irradiated from the sun to the Earth's surface is enough to provide for annual global energy consumption 15,000 times over[5]. The benefit of renewable energy is not only limited to climate change, but also environmental protection, economic growth, job creation, and diversity of energy supplies.

Climate change is a global challenge, and can only be solved through a global agreement. At the end of 2007, government parties to the UNFCCC had initiated a two-year process to draft a new agreement to combat climate change. This agreement was supposed to be established in December 2009, in Copenhagen. The Copenhagen summit marked the conclusion of the two-year negotiating process launched in Bali at the Conference of Parties (COP13) in December 2007[6], to enhance international climate change cooperation and extend the Kyoto Protocol commitment period[7], which is integral to the UNFCCC. The summit itself brought an extraordinary attention by the public and media. However, the Summit failed to arrive at a new international convention on climate change. Outcomes of the

4 The international political response to climate change began with the adoption of the UNFCCC in 1992. The UNFCCC set out a frame-work for action aimed at stabilizing atmospheric concentrations of greenhouse gases in order to avoid «dangerous anthropogenic interference» with the climate system. Controlled gases include methane, nitrous oxide and, in particular, carbon dioxide. The UNFCCC entered into force on 21 March 1994, and now has 189 Parties. Website: http://unfccc.int/2860.php .

5 Source: http://www.greenpeace.org/international/solargen/about-solar-energy.

6 The "Bali Action Plan" provided a roadmap for the negotiations to conclude in Copenhagen and recognized some of the shortcomings of the Kyoto Protocol (UNFCCC 2007).

7 The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions .These amount to an average of five per cent against 1990 levels over the five-year period 2008-2012. The Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh in 2001, and are called the "Marrakesh Accords". The major distinction between the Protocol and the Convention is that while the Convention encouraged industrialized countries to stabilize GHG emissions, the Protocol commits them to do so. (http://unfcc.int/kyoto_protocol/items/2830.php).

Copenhagen Summit had been watered down to a non-binding Accord, that does not answer to the calls issued by millions around the world and over 30,000 delegates and constituency representatives that flood the streets of Copenhagen during the time of the Summit[8]. This result, which has been judged as a failure by a lot of civil society groups around the world, lacks a common understanding and shared vision of the climate crisis. Without such common platforms of understanding and vision, humanity will witness the lack of commitment and political will to implement any agreement that can be concluded on paper.

At the center of the interface between developed and developing countries within these negotiations were issues of defining and implementing concepts of <fair-shares> in both atmospheric and development space, and realizing an equitable burden sharing between Northern and Southern countries and within each. Negotiated issues included recognizing the historical responsibility, making available the financial and technological resources needed to address climate change- including technology transfer from the North to the South, payment of adaptation compensation and climate debts, in addition to preserving and strengthening the commitments of developed countries under the Kyoto protocol.

3. Impacts of Climate Change in the Arab Region

Typically any change in the climate will incur changes to the physical status and cycles on earth that would impact natural systems, therefore life and subsistence. These impacts are expected to naturally vary from minimal to devastating extents, some of which are already being observed around the world. According to the IPCC, while many natural systems are currently being affected by climate change, particularly temperature increases, there is “medium confidence that other effects of regional climate change on natural and human environments are emerging” (IPCC 2007). These include effects of temperature on water resources, agriculture production, and forestry, as well as human health expressed in heat related mortalities.

In the Arab region, impacts of climate change are expected to vary given the variance in the nature of climatic circumstances across the twenty-two Arab countries. Indeed, among them, 15 are water stressed countries, while Djibouti, Sudan, Jordan, Syria, Somalia and Morocco suffer from extreme weather events such as droughts and flooding. In addition, flash floods are experienced in Algeria and the Arabian Peninsula, while arid and semi-arid regions are abundant in West Asian countries and those parts of the Sahara, such as Mauritania.[9].

The arid climate of the Arab countries is specifically characterized by severe lack of water resources and mismanagement when they exist. Indeed, arid climates are especially vulnerable to climate change.

8 As of July 2010, 137 have been listed as agreeing to the Accord (based on UNFCCC data at http://unfccc.int/home/items/5262.php - visited July 23, 2010).

9 This information is referenced from the “Arab Region State of Implementation on Climate Change”, report by ESCWA and League of Arab States, page 8.

Temperature variations and changes in rainfall patterns are expected to affect water resources and the food production capacity in Egypt, Sudan, Morocco and others[10]. This reflects in the region's increasing lack of vegetation, and its inability to support the growth of animal and plant life. In such environment, climate change will cause further desertification and a yet more severe decrease in water availability, a situation that could lead to increased conflict in the region.

These observations have been noted as well by the IPCC's vulnerability assessment, which highlighted that impacts of climate change on the West Asia region will be mainly on grasslands, livestock and water resources because they are located mostly in marginal areas (IPCC, 1997). In addition, water shortages are expected to exacerbate, leading to increase in water stress and decrease in agricultural productivity (World Bank, 2008). Coupled with water shortages, projected land degradation due to climate change will threaten food security of countries and impact human health (IPCC, 1997). Coastal zones in general, and the Arab region low-lying coasts in specific, are highly vulnerable to sea level rise (World Bank, 2008). Coasts of countries such as Qatar, Bahrain, Kuwait, the United Arab Emirates (UAE), and Egypt are particularly under threat. Even though sometimes overshadowed by water scarcity, effects of climate change on agriculture, dry land ecosystems, public health, human settlement, and others can be equally drastic and important.

Besides the direct impacts of climate change that have been either witnessed or predicted, one of the major indirect impacts of climate change on the region is related to the relevance of fossil fuels as a major economic driver. The energy sector in the Arab region has been playing a crucial role in the socio-economic development of Arab countries. The latter highly depend on oil and gas, which represent the largest economic sector in most of the Arab countries, especially in the Gulf region. Oil proceeds have been used to modernize infrastructure, create employment, and improve social indicators[11]. Yet, given the role that fossil fuels play in fuelling climate deterioration, it is evident that countries need to start moving away from fossil fuel dependency to channeling more investments into alternative sources of energy technologies. Thus, one of the impacts of climate change that is needed to be seen in the region is a quick re-adjustment of energy policies to increasingly incorporate more alternative energy sources and less dependence on oil production and exports. More regional and south-south cooperation is needed and expected in this field.

10 Ibid. page 14.

11 See the “Arab Region State of Implementation on Climate Change”, report by ESCWA and League of Arab States, page 3, and UNEP/ GEO3 report, 2003, referenced by the report. It is worth mentioning that the Arab countries hold 61% of the world oil reserves, and 26 % of the world gas reserves. They produce nearly 30 % of the oil production, and 11 % of the world gas production.

Vulnerable sectors and examples of the possible impacts of climate change in selected Arab countries[12]

Selected vulnerable sectors and possible impacts of climate change	Country
- Low-lying areas of the country's islands vulnerable to sea level rise.	Bahrain
- Sea level rise and potential adverse effects on coral reefs and their consequences on the tourism industry.	Comoros
- Losses of agricultural land as a consequence of sea-level rise and adverse effects on fisheries due to changes in temperature and loss of productive habitats. - Negative impacts on terrestrial ecosystems, including forests, mangroves and rangelands.	Djibouti
- Reduced productivity of crops and increased water requirements. - Increase vulnerability of the heavily populated Nile Delta to sea level rise. - Negative effects on aquaculture, adverse effects on fisheries and increased vulnerability of human settlements, tourism and biodiversity - Increase in incidence of water and vector-borne diseases and those related to water contamination.	Egypt
- Possible impacts on Tigris-Euphrates steam flow and increasing irrigation demand.	Iraq
- Increasing irrigation demand with possible rainfall decrease and stress to already scarce water resources.	Jordan
- Low coastal areas vulnerable to sea level rise. - Storm surges affecting costal oil production.	Kuwait
- Increased stresses in water resources. Shift of arable area to more arid climate zone. - Negative impacts on citrus, olive, apple, and sugar beet production.	Lebanon

12 This information is collected from various sources including: IPCC special report on the regional impacts of climate change: an assessment of vulnerability, Middle East and Arid Asia 1997; "Arab Region State of implementation on Climate Change by ESCWA and League of Arab States"; Sudan's National Adaptation Program of Action, 2007; First national communication of Saudi Arabia to UNFCCC secretariat, Lebanon's first national communication to UNFCCC secretariat, IPCC (2007b); Bahrain's initial communications to UNFCCC secretariat; the Food and Agriculture Organization of the United Nations 2008 report.

Selected vulnerable sectors and possible impacts of climate change	Country
- Possible losses of agricultural land as a consequence of sea-level rise through inundation and salination. - Increase in incidence of water and vector-borne diseases as well as those related to water contamination	Mauritania
- Potential decrease in water resources and effects on food production capacity due to temperature variations and changes in rainfall patterns.	Morocco
- Seawater intrusion into freshwater aquifers and storm surges affecting coastal oil production. - Decreasing groundwater level.	Oman
- Increasing water stress and heightened storm possibilities affecting coastal oil production.	Qatar
- Water stress increasing due to warmer temperature.	Saudi Arabia
- Decrease in precipitation and increased temperature and evaporation. - Reduced groundwater recharge and increase in water stress. - Projected decrease of millet and sorghum and increase in incidence of water and vector-borne diseases.	Sudan
- Possible impacts on Tigris-Euphrates stream flow. - Increasing in irrigation demand.	Syrian Arab Republic
- Sea-level rise. - Vulnerability of human settlements, tourism and biodiversity	Tunisia
- Seawater intrusion into freshwater aquifers. - Storm surges affect coastal oil production.	United Arab Emirates
- Risk of desertification. - Increasing irrigation demand.	Yemen

4. Climate Change Mitigation and Adaptation Potential in the Arab Region

The IPCC has developed a number of adaptation and mitigation measures to climate change impacts. The collective efforts of countries on adaptation and mitigation fronts ought to present steps towards establishing new development and economic paradigms.

4.1 Climate change adaptation in the Arab region

Adaptation necessitates introducing significant changes in the production and consumption models adopted in the Arab region. Adaptation is interlinked with the economic, trade, and investment models that the Arab countries adopt. Adaptation includes the need to adopt sustainable models, to rationalize the use of natural resources, and to implement environmental friendly measures and regulations.

In their declaration of December 2007, the Arab Ministers responsible for the Environment had noted that adaptation measures "shall be fully consistent with economic and social development and in such a way so as to achieve sustainable economic growth and eradication of poverty"[13].

Several adaptation measures can be applied in the region, particularly those addressed to minimize the impact of climate change on water availability, agriculture, human health, and energy. These measures should be promoted and implemented regionally, thus benefiting from regional cooperation and strengthened capacities of Arab countries to undertake such changes collectively.

Adaptation strategies are needed in the agriculture section, in coastal zones, as well as on human health, forests, tourism, fisheries, human settlements, biodiversity and wildlife. Such adaptation actions require improvement of water management and irrigation systems and of water infrastructure, including reinforcement of flood and drought preparedness programs, water conservation, and desalination. In addition to water conservation strategies, new public investment policies regarding water resources need to be deployed. Better forest management policies and the use of improved technologies for forest protection and ecosystem, as well as crop management strategies are also among the adaptation measures that should be taken to combat climate change. Strengthening environmental legislation and implementation mechanisms, in addition to promotion of nature conservation, fall among the necessary adaptation measures.

Limitations in finance, as well as capacities to identify, evaluate, and implement adaptation measures remain the most evident challenges facing the progress of Arab countries in this area.

4.2 Climate change mitigation in the Arab region

On the other hand, studies indicate that there is much evidence and agreement on the mitigation potential of climate change impacts or the mitigation of global GHG emissions over the coming decades. This is believed to offset the projected growth of global emissions and reduce them below current levels. The IPCC has developed potential mitigation measures per sectors that can be applied by individual countries and globally to offset climate change impacts.

Mitigation actions may include measures to enhance economic diversification, policies for strengthening

13 Statement available at:
http://www.boellmeo.org/download_en/Arab_Ministerial_Declaration_on_Climate_Change_English.pdf .

sustainable development including the development of rural areas, encouraging agriculture, as well as optimizing consumption of services and energy. It may also include development of renewable energies, improving energy supply, enhancing the use of integrated fuels, and recycling of material. Additionally, mitigation actions may include improvement of forests, livestock, and crop management.

It is vital that the Arab countries acknowledge that in the longer term, climate change impacts will exceed the capacity of natural and human systems to adapt; therefore, extensive mitigation is required to reduce impacts of climate change. At the core of the mitigation discussion is the question about the means to preserve the right of developing countries, including Arab countries, to achieve the economic growth that allows them to address poverty and development challenges while taking account of climate change implications. In this regards, there is a need to understand and acknowledge the historical responsibility of developed countries in regards to the over-use and exploitation of atmospheric space in their process of growth and industrialization, which led to the current climate crisis. From the lens of this responsibility, developed countries will have a role in freeing up atmospheric space for developing countries to use in their process of achieving development and securing economic and social rights of their populations. Thus, developed countries have the responsibility to take deep cuts in their emissions. In addition, there is a need for closer cooperation and collaboration among developed and developing countries in the transfer of development processes towards more sustainable paths. Thus, transfer of technology necessary for adaptation and mitigation and related finances has been center to discussions and negotiations under the UNFCCC umbrella. According to the World Bank, there are currently no universally accepted estimates of the resources that developing countries will need in the future years and decades to adapt to or mitigate climate change. However, many researchers and non-governmental think tanks following the UNFCCC negotiations have indicated that there is a need for at least 500 billion USD a year for developing countries to undertake mitigation action[14].

In regions such as the Arab region, where there are significant discrepancies in the capacities and resources available to countries, there exists an added value in enhancing regional cooperation in the process of moving towards more sustainable paths through mitigation and adaptation measures.

5. Issues related to climate change policy undertaken by some Arab governments

The year 2009 witnessed a heightening of focus on climate change and related issues; most countries and major organizations around the world have refocused their agendas in this regards. Every region in the world has been developing positions, discussing options, and engaging in the negotiation process to ensure the survival of its people. Unfortunately, the Arab region has not fully engaged the negotiation process at the global level. However, the Arab region, as other developing region, can have a role in initiating national and regional plans and actions based on their current capacities and capabilities. Such

14 Martin Khor; Interview with Democracy Now, posted on http://www.youtube.com/watch?v=03ogXcobtiY (last visited December 24, 2009).

steps are essential in order to transform the region to production and consumption patterns that allow needed growth and still provide space for effective mitigation and adaptation of climate change.

The Council of Arab Ministers Responsible for the Environment (CAMRE) adopted in December 2007 a Ministerial Declaration on Climate Change. In it, the ministers expressed their intent to adopt regional and national mitigation and adaptation action plans that do not contradict the right to develop and efforts for economic growth and poverty eradication. Moreover, the declaration noted that mitigation efforts should use cleaner energy and improve energy efficiency, thus "diversifying energy sources in accordance with the prevailing economic and social conditions". The declaration also stressed that any new global agreement should consider the interests of developing countries, especially oil producing, taking into account the effects of action on climate change on their economies. In 2009, CAMRE adopted in its meeting in Cairo a suggestion presented by Jordan to establish a monitoring team of experts that will produce a detailed report describing the observed and potential impacts of climate change on the Arab countries, which is expected to be used as a decision-making tool for Arab negotiators in the UNFCCC negotiations[15].

Arab governments do realize the importance of comprehensive policies that address adaptation as well as mitigation efforts to face the challenge of climate change, as well as the diversification of energy towards cleaner sources. However, they often fall short of undertaking the overall responsibility to look beyond the interests of oil-producing sectors and towards addressing the wider common good of the region and the global community in facing the climate challenge.

Some Gulf countries are undertaking new initiatives for renewable energy deployment; yet these projects are not being reflected in comprehensive policies. Gulf countries of the Organization of Petroleum Exporting Countries (OPEC) pledged a total of USD750 million to a new fund, which will mainly fund carbon capture and storage (CCS) research. Kuwait, the UAE, and Qatar pledged USD150 million each for the fund, in addition to USD300 million from Saudi Arabia. Although CCS could be playing a role in climate change related policies in the future, there is significant critique of its ability to effectively address climate change. Indeed, such technologies do not help in shifting the focus of economic activities from dependency on fossil-fuels, like coal and oil that are considered a primary cause of GHG emissions, towards introducing renewable energy and increasing energy efficiency. Such focus on CCS technologies could reflect a limited willingness by oil-exporting countries to focus on investing in the significant potential of renewable energies. The latter necessitates commitment to research and development programs in this area, which secures the transfer of the Arab region towards sustainable development paths and contributes to building a competitive position for Arab countries in this emerging market. Moreover, more emphasis would be needed on mitigation action through deployment of renewable energy technologies and policies for enhancing energy efficiency.

15 A blog submission by Minister of Environment in Jordan on the occasion of the 2009 Blogging Action Day on Climate Change, available at: http://www.arabenvironment.net/archive/2009/10/955694.html.

Arab countries have significantly different capacities to participate in the negotiations related to climate change at the global level. Among them, oil producing and exporting countries have clearer positions and better financed capacities to participate in global and regional negotiations. They have played a more active role in shaping the climate policy in the Arab region and among major institutions active there, including the League of Arab States (LAS), the Organization of Arab Petroleum Exporting Countries (OAPEC), and the Organization of Petroleum Exporting Countries (OPEC). Given this context, there is significant added value for Arab countries to work more closely under the umbrella of the League of Arab States, in order to arrive at regional policy outcomes that serve the differentiated developmental needs and capacities among them. They also have significant stakes in contributing more actively to coherence-building within the group of developing countries under the United Nations (i.e. the Group of 77 plus China).

5.1 Climate change policies and institutional structures in Egypt

Egypt established a Climate Change Unit (CCU) within the Egyptian Environmental Affairs Agency in 1997; it is a special unit solely responsible for climate change issues. The CCU represents the national focal point for climate change and is entailed with the management of all national and international climate change activities, including the clean development mechanism (CDM)[16]. Furthermore, the National Committee on Climate Change is headed by the Chief Executive Officer of the Egyptian Environmental Affairs Agency and consists of a wide range of governmental and non-governmental stakeholders, from the private sector, the scientific community, and international organizations. The Committee's aim is to:

- - Coordinate on a national level Egypt's status in the UNFCCC.
- - Develop an overall picture of the Egyptian policies and strategies.
- - Review the National Action Plan for Climate Change.
- - Follow-up the implementation of the obligations under the UNFCCC.

It is worth noting that in 1995, Egypt initiated the development of a National Climate Change Action Plan. Currently, this action plan includes a National Energy Efficiency Strategy and a National Strategy for Solid Waste Management; it defines the roadmap to manage climate change activities in Egypt (Egypt National communications to the UNFCCC). In addition, as Egypt is a party to the Kyoto Protocol, and being a non-Annex I country[17], it has established a number of CDM projects. A total of 24 projects are

16 The CDM allows emission-reduction (or emission removal) projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one ton of CO2. These CERs can be traded and sold, and used by industrialized countries to meet part of their emission reduction targets under the Kyoto Protocol. The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction limitation targets. More information on: http://cdm.unfccc.int/about/index.html.

17 Egypt is not obliged to undertake commitments under the Kyoto Protocol as it falls under the developing country group and not the industrialized countries that are obliged to specific commitments under Annex I of the Kyoto Protocol.

in the pipeline covering all major sectors, mainly renewable energy, energy efficiency, fuel switching, waste, forestation, and industry.

On the other hand, there are several other organizations currently involved in climate change related activities in Egypt, including energy related organizations (i.e. the Organization for Energy Planning, the Egyptian Electricity Authority, the New and Renewable Energy Authority), research centers (i.e. the Agriculture Research Center, and the National Research Center), universities (i.e. Alexandria University, Cairo University, and Zagazig University), governmental organizations (i.e the Central Laboratory for Agriculture Climate, and the Soil Water and Environmental Institute), and non-governmental organizations (including Habi Center for Environmental Rights, Association for health and environmental development, Integrated Rural Technology Center for Training and Production, the Productive Cooperative of Basaisa, the Arab Office for Youth and Environment, and 200 other NGOs that work on environment and are initiating related climate campaigns).

Other important institutional initiatives to consider in Egypt are the 'Climate Change Capacity Building, which focuses on assessing technology needs for adaptation measures for coastal zones, agriculture, and water resources. Another initiative is the 'Energy Efficiency Council' (EEC), which is a consortium of public and private agencies associated with the energy sector. The Council works on guiding the energy efficiency practice in Egypt and oversees the development of a National Energy Efficiency Strategy. In addition, it is noteworthy to mention that in 2007, a Program Management Committee (PMC) was established under the UN framework. It consists of UNDP, UNIDO, IFAD, UNESCO, FAO, UNEP and four Egyptian ministries (Ministry of Environment, Ministry of Agriculture, Ministry of Water Resources & Irrigation, and the Prime Minister's Office) to overlook climate change issues.

As such, it is observed that the institutional structure for climate change related issues in Egypt is, to a far extent, already in place. It is a multi-layer climate change institutional arrangement that involves different stakeholders, who could effectively lead the way in integrating climate change issues in the national agendas. However, it is important to note that there exist other major stakeholders in Egypt that have not been effectively integrated in these formal structures. These include the local peoples and groups in areas most impacted by climate change, of which are the agriculturalists, farmers, pastoralists, fishermen, and the coastal and deltas inhabitants. It is worth mentioning that several NGOs have started connecting to such local groups in an effort to build up a more comprehensive grass-roots mobilization on climate change in Egypt[18].

18 It worth noting that the climate change negotiations undertaken under the United Nations umbrella incorporates the perspectives and positions of indigenous people through the UN Permanent Forum on Indigenous Issues. For more information, visit: www.un.org/esa/socdev/unpfii/en/climate_change.html.

5.2 Climate change policies and institutional structures in Lebanon

Concern about climate change has been gaining more momentum in Lebanon, in both the public and private sectors. As such, the stakeholders following the climate change debate nationally are gradually increasing. Currently, the Ministry of Environment is the governmental body closely following and managing climate change related policies. The Ministry has launched the process of decreasing GHG emissions and issued the first national report on climate change in 1998. Other major governmental stakeholders include the Ministry of Energy and Water, particularly the Directorate of Water Resources and the Ministry of Agriculture. However, it is unfortunate that the three ministries do not closely cooperate, particularly in the absence of an inter-ministerial committee on climate change.

In addition, there are a number of governmental and non-governmental research institutes that are working on climate change issues. Such projects include several funded and/or administered by the United Nations Development Program (UNDP), the World Bank, as well as other international and regional organizations. On the civil society front, there is currently a significant number of organizations that address environmental issues in general with a few initiating climate change related work (these include groups like IndyACT, Green Line Association, Lebanese Forum for Environment and Development, Association for Forest Development and Conservation, Issam Fares Research Institute at the American University of Beirut, and others). The scope of stakeholders' engagement in climate change campaigning can be expanded and enhanced significantly.

5.3 Climate change policies and institutional structures in Bahrain

Plans to reduce GHG emissions in Bahrain focus on increasing energy efficiency, through using energy efficient technologies and power generators and using methane from landfills for power generation. Bahrain's plans include as well the objective of better utilizing existing renewable energy systems for power supply and expanding the use of solar energy technologies. Bahrain is well endowed with solar energy, with an annual average solar insulation level of about 400W/m2. This is projected to cover 5% of demand when upgrading or replacing existing inefficient power stations.

On the demand side efficiency, Bahrain plans to change light bulbs, make buildings more energy efficient through better insulations, and use more efficient air-conditioning systems, etc…This would be promoted through public awareness campaigns. Furthermore, Bahrain works towards reducing emissions from the transport sector through promoting vehicles running on alternative fuel. Such projects have not yet been implemented due to the low cost of electricity, and non-availability of all needed alternative technologies.

The implementation of these plans is proposed to be led by national institutions, including the 'National Climate Change Committee' at the General Directorate for the Protection of Marine Resources, Environment, and Wildlife. The latter is the authority that is in charge of environmental affairs in Bahrain; it

has a broad mandate, and works as an implementing and coordinating agency among various ministries and institutions. The agency is required by law to coordinate environmental issues among ministries, and follow up environmental development at regional and international levels[19].

5.4 Climate change policies and institutional structures in Jordan

The Ministry of Environment in Jordan, established in 2003, is responsible for the coordination of climate change activities through the country's climate change unit[20]. Jordan is looking to act on climate change and reduce emissions through a series of proposed projects, of which are increasing energy efficiency in major industrial sectors and fuel switching to natural gas, bio fuels, and other renewable energy sources. Such projects are proposed to cover 5% of national demand. The country has also put forward plans to reconstruct the water supply network making it more efficient, and to increase vehicle fuel efficiency and improve public transport to reduce greenhouse gas emissions.

Additionally, the country is seeking to decrease GHG emissions through afforestation, desertification control, and forest management projects, in addition to capture and reuse of methane from landfills. The proposed actions are to be coupled with public awareness for national domestic energy reduction.

5.5 Climate change policies and institutional structures in Morocco

Climate change issues in Morocco are followed by the governmental Department of Environment, which was set up after the Rio Summit in 1992. Several administrative bodies have been set up to specifically follow climate change, especially after the ratification of the UNFCCC by Morocco in December 1995. These bodies include a climate change unit, in charge of coordination and follow-up of Morocco's commitment vis-à-vis the Convention, a National Committee for Climatic Change (CNCC) set up in 1996 and made up of representatives of ministerial Departments and national institutions involved in climate change issues, an Information Center on Sustainable Energy and Environment (CIEDE) set up in 2000, a National Scientific and Technical Committee set up in 2001 and made up of national experts, as well as a Unit in charge of CDM[21]. Moreover, several national centers and institutions support this work and related research effort. Consolidation and enhancement of the capacities of these bodies is necessary in the process of facing climate change challenges and developing an adequate and effective climate change policy.

19 Information based on Bahrain National Assessment Report on Implementation of the Mauritius Strategy of Barbados Program of Action – November 2009- available at: http://www.sidsnet.org/msi_5/docs/inputs/Bahrain-MSI_2009-Report.pdf.

20 Jordan's 2nd Communication to the UNFCCC 2009, available at: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

21 Morocco's national communications to the UNFCCC, available at: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

Morocco adopted a National Action Plan for the Environment in 1995. It specifies the objectives for the years between 2005 and 2020 as well as the priorities for environmental action. Programs in the sectors of water and soil resources, forestry, watersheds, energy, coastal areas, and oases have been specifically developed as part of this action plan. Alongside that, scientific research and awareness campaigns are being implemented. Two programs have been the focus of special attention since 1996, including the Action Program for the Protection of Biological Diversity and the Action Plan for Combating Desertification. These programs have been elaborated within the framework of the related Conventions.

Furthermore, Morocco plans adaptation actions in the area of water resources, including savings in irrigation, limitation of perimeters to protect potable water facilities, treatment of effluents from drinking water production facilities, establishment of sanitary landfills and collection and use of storm water. Morocco plans work on sea water desalination and restructuring and development of oases. Adaptation projects include as well extension of olive oil plantations, research on the climate change impacts on water and agriculture, and establishment of a climate databank[22].

On the mitigation front, Morocco plans actions related to energy management including rationale use of energy in the industrial sector and administrations and public buildings and spreading the use of enhanced boilers in socio-economic sectors. Morocco works towards increasing the use of alternative fuels, including natural gas use in the industrial sector, as well as renewable energies such as support of decentralized rural electrification projects, development of solar energy use to heat water, desalination of seawater using wind energy, and increasing the number of hydro-electrical power plants. Mitigation plans include as well development of forest formations, biogas recovery from waste, and building materials substitution[23].

5.6 Climate change policies and institutional structures in Tunisia

Institutionally, environment protection in Tunisia is centralized in the Ministry of Environment and Regional Development. The Ministry is assisted by some more specialized structures, such as the Environment Protection National Agency, the Drainage National Office, the International Center of Environment Technology of Tunisia, the Coasts Development, and the Protection Agency, the Tunisian Observatory of the Environment and the Development, and the National Agency of the Renewable Technologies. Besides, other parties support this work, including the General Department of Forestry, which operates under the Ministry of Environment supervision.

In its 2001 communication to the UNFCCC, which is the only communication presented so far, Tunisia noted the need for institutional strengthening in the area of environment and climate change policy

22 Ibid.

23 Ibid.

specifically. It indicated the efforts towards the establishment of the National Climate Change Committee and a permanent national unit working on climate change. This Unit will ensure a permanent follow-up of the climate change process at the national and international levels, including the implementation and follow-up of the commitments associated with UNFCCC and monitoring the implementation of the national climate change action plan.

Environmental actors in Tunisia work specifically on projects related to energy conservation, protection against petrol pollution and industrial pollution, and waste management projects in both the industrial and domestic arenas. Work is also being undertaken on nature and biodiversity preservation and on forest protection through the General Department of Forestry in the Ministry of Environment.

In the area of mitigation, Tunisia undertakes action in the agricultural sector, including the improvement of the productivities of animals and of the management of farm manure. In the area of forestation and reforestation, Tunisia works towards reforestation of degraded areas and improvement of forest management among other interventions. Mitigation measures include as well action on waste management and used wastewater treatment. These measures are undertaken within the framework of a National Action Plan to reduce emissions between 2001 and 2020.

5.7 Climate change policies and institutional structures in the United Arab Emirates (UAE)

The climate change related interventions remain managed by the Ministry of Energy in the UAE, which prepared the second national communication submitted to the UNFCCC in 2010. Within this context, the UAE proposed several implementation and coordination arrangements across national institutions, agencies, and stakeholders, in order to implement a national climate change action plan. These arrangements include developing observation networks, establishing mechanisms for assessing GHG emission reductions and pursuing adaptation strategies, in addition to enhancing awareness and capacity building across all impacted sectors of the economy[24].

The UAE has put forward action plans in different sectors to combat climate change. The country is planning to make buildings more energy efficient through developing and implementing thermal guidelines. This conserves heat and reduces emissions from cooling and heating. In addition, plans include promoting solar energy in building regulations for water heating, and applying stricter new appliance standards to reduce emissions. In transport, plans to reduce GHG emissions include implementing a fuel economy standard for light duty vehicles, through ensuring that all new vehicles meet an agreed-upon efficiency standard. Investment in a metro system that can simultaneously relieve urban congestion and reduce emissions falls in the same line.

24 Based on the UAE second communication to the UNFCCC 2010; available at: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

In the electricity sector, the UAE is looking to join the electric grid of the Gulf Cooperation Council (GCC), which includes Saudi Arabia, Kuwait, Bahrain Qatar, and Oman. The project is proposed to link the above mentioned countries in one electric grid thus increasing electric energy efficiency. The UAE is also planning to reduce emissions through the use of solar energy to power desalination plants and to generate electricity.

The UAE has been reducing country emissions through 'planned land-use changes'. The newly planted areas act as sinks for over 7% of the country's total emissions. Reduction of emissions from landfills through methane capture for electric generation has also been identified as a possibility for action on climate change, in addition to the introduction of an integrated waste management system that includes recycling, composting, and land-filling.

"Masdar" will be the first zero-waste and zero-carbon city in the UAE. Construction of the city commenced in April 2007 and is expected to be completed in 2015. All energy sources in the city will be from sustainable and clean energy such as desalination, bio-fuels, sustainable transport, water recycling, waste water management, solar cooling, sustainable irrigation, and others[25].

6. Climate Change Policy of International Bodies for the Arab Region

International attention to climate change policy in the Arab region has been rather limited. The more active interventions have been undertaken by the European Union through its partnership initiatives with eight countries of the Arab region, the United Nations Development Program (UNDP) and the World Bank (WB). Below is a brief description of the kind of interventions undertaken by these and other institutions.

It can be noted that different institutions have focused on different dimensions related to climate change, such as security, conflict, agriculture, economy, health, and trade, among others. However, interventions remain dispersed, mainly due to the lack of adequate linkages to an effective regional policy and strategy to face climate change in the Arab region. Indeed, the existing regional structures and plans, mainly the Council of Arab Ministers Responsible for the Environment (CAMRE) and the Technical Secretariat of the League of Arab States (LAS), have not undertaken an effective central role in developing and implementing a comprehensive climate change strategy in the region.

While the engagement of international institutions in the region could create an added value, there is a

25 For more information on Masdar, refer to: www.masdar.ae. The city is expected to create (1) 10,000 new high-quality jobs in the clean energy and sustainable technologies sector in Abu Dhabi (2) 800 full-time Master>s and Ph.D. students at the Masdar Institute specializing in clean energy and sustainable technologies (3) a multi-billion dollar expansion of the Abu Dhabi non-oil economy (4) host a world-class scientific and research hub which is currently non-existent in the Gulf region. Such a hub can become the core of other knowledge-based activities and industries in addition to clean energy.

need to highlight possible concerns with certain aspects of climate change related interventions, especially those related to climate finance. Indeed, while finance was a major issue on the table of negotiations in the Copenhagen Summit, the issue is not free from complexities. Civil society concerns have been increasing regarding the engagement of the WB in climate finance through the Climate Investment Funds (CIFs)[26]. These are mainly due to the fears from linking these funds to policy conditionality. Moreover, many are questioning the lack of civil society participation in the processes related to these funds and their top-down structure[27]. Alternatives to the Bank have been promoted, such as finances channeled through the UNFCCC adaptation fund and the Global Environment Facility (GEF), which is a multilateral environmental fund.

6.1 About the Intervention of the European Union (EU)

The EU has long been at the forefront of international efforts to combat climate change and played an active role in the development of the 1992 UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol agreed in 1997. In the year 2000, the European Commission launched the European Climate Change Program and introduced a second version in 2005 as the Commission's main instrument to discuss and prepare the EU's climate policy.

Concerning the Arab region, the EU has various initiatives addressing the environment and climate change; which overall is linked to the partnership policies with countries from the region, mainly through the Euro-Mediterranean Partnership (EMP- also known as the Barcelona Process), the European Neighborhood Policy, and the Union for the Mediterranean. It is therefore closely connected to security concerns. The paper from the High Representative and the European Commission to the European Council, entitled "Climate Change and International Security", which was presented in March 2008, highlighted this linkage and warned that "existing tensions over access to water in the Middle East are almost certain to intensify leading to further political instability with detrimental implications for Europe's energy security and other interests".

Moreover, the European Investment Bank (EIB) has been involved in studying climate change in the Arab region. The report issued by the EIB in 2008, and entitled "Climate Change and Energy in the Mediterranean", takes an economic focus. According to the study, the Mediterranean, and more especially the Southern and Eastern rim, is and will be more affected by climate change than most other regions of the world in the course of the 21st century. The general conclusion of the study notes that "impacts of the rise in temperatures, the decrease in rainfall, the multiplication of the number and

26 The Climate Investment Funds (CIFs) were designed by developed and developing countries and are implemented with the Multilateral Development Banks (MDBs) to bridge the financing and learning gap between now and a post-2012 global climate change agreement. Source: http://web.worldbank.org/

27 "Resistance to the Bank's Role in Climate Finance as Alternatives Gain Traction"; Bretton Woods Update Number 71; June / July 2010

intensity of extreme events and the possible rise in sea level amplify the already existing pressures of anthropogenic origin on the natural environment"(EIB report, 2008). The Report highlights the region's potential for renewable energy, including sun and wind energy. But it also emphasizes the costs of a change to a low carbon sector. The lack of economic prioritization of renewable energy, together with a lack of co-operation among the various concerned sectors represents the biggest challenge for the region to enhance its reliance on and production of renewable energy. Within this context, the EU generated several projects to strengthen climate change policy in the region. Nevertheless, it does not consider it a priority region for achieving a global agreement on climate change.

Environment falls under the third pillar of the EMP, that of Sustainable Development. This pillar complements the Economic and Social dimensions. Although substantial financial resources are being channeled into the EMP, less than 1% of these resources are directed towards climate change related efforts. Within the EMP process, a forum for Energy Ministers of the Mediterranean was established, but the forum has so far failed to deliver strong actions and decisions.

During 2008, the Union for the Mediterranean was initiated as an attempt to infuse a new vitality into the EMP and to raise the political level of the strategic relationship between the EU and its southern Mediterranean neighbors. The Union has identified six priority projects which are at the heart of the Partnership's efforts, of which three projects are of relevance for climate change issues, including the de-pollution of the Mediterranean Sea, civil protection initiatives to combat natural and man-made disasters, and a Mediterranean solar energy plan.

6.2 About the Intervention of the UNDP

The Human Development Report 2007/08[28] issued by UNDP reported that the Arab region is the most vulnerable to climatic change in the world, with predicted impacts ranging from increased droughts, land degradation, and desertification. The UNDP supports Arab countries in capacity development to ensure that environmental concerns and sustainable development are taken into account in drawing up and implementing national development policies, strategies, and programs. Given the particular needs of the region, UNDP's work has focused on the following:

- - Combating desertification through the UNDP Dry-lands Development Centre, which assists the Arab states in fighting poverty and encouraging development in the drier parts of the region.
- - Improving water management through the Regional Water Governance Program. UNDP provides technical and policy support, capacity building and seed funding to promote the effective use and management of scarce water resources in Arab countries.
- - Mobilizing funding through the GEF, whereby grants support projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.

28 The UNDP Human Development Report 2007/08 source: http://hdr.undp.org/en/reports/global/hdr2007-2008/

These regional initiatives are complemented by specific and targeted programming at the national level. Such national initiatives are implemented within the framework of the strategies of Country Offices, and in collaboration with national and international partners including governments, civil society, and other United Nations agencies.

6.3 About the intervention of the WB

The Bank recognizes the Arab region as one of the most vulnerable to climate change, on accounts of the highest level of water scarcity in the world, a significant dependence on climate-sensitive agriculture, the concentration of populations and economic activity in flood-prone urban coastal zones, and the presence of conflict-ridden areas in which climate induced resource scarcity could escalate violence and political turmoil even beyond the region's boundaries.

The Bank also considers that while the Arab region's share in overall GHG emissions causing climate change is as low as 4.5%, the region has the second largest volume of emissions per unit of gross domestic product (GDP), and one of the fastest rates of growth in emissions. According to the WB, both are largely due to a relatively inefficient use of energy, which will hamper the region's competitiveness in the long term. In addition, the high carbon content of the Arab region's energy mix and the high energy intensity of its growth result in a number of negative externalities, such as air pollution and traffic congestion that have high social and economic costs.

The WB has proposed a regional strategy called "Middle East and North Africa Region (MENA) Sustainable Development Sector Department (MNSSD); Regional Business Strategy to Address Climate Change"[29]. The strategy proposes to put climate change at the center of the dialogue that the Bank holds on the overall development agenda with countries of the region. These include governments, civil society, and the donor community. The strategy's overall objective includes support to Arab countries in their adaptation and mitigation efforts, by fully integrating the objectives of reducing climate change vulnerability and greenhouse gas emissions into the Bank's development assistance to the region. The bank considers that in addition to the ordinary constraints limiting the Arab region development process in general (i.e limited institutional capacity, weak accountability etc), climate change poses new challenges related to the cross-sectoral nature of the effects, the need to balance urgency against uncertainty, and the sheer magnitude of the financing needs.

The WB works with developing countries in addressing the climate challenge through a variety of analytical tools and financial services, including the CIFs. Moreover, the Bank offers support to the region on both national and regional levels. Among the more specific projects, it supports the development of a better public traffic sector in Lebanon, Tunisia, Egypt, and Morocco.

29 Available at: http://siteresources.worldbank.org/INTCLIMATECHANGE/Resources/MENA_CC_Business_Strategy_Nov_2007_Revised.pdf (last visited December 24, 2009)

6.4 About Interventions by Other Institutions:

The United Nations Environmental Program (UNEP-ROWA/ Regional Office for West Asia):

In response to the challenges facing the region, ROWA maintains close cooperation with the Council of Arab Ministers Responsible for the Environment (CAMRE) and the Technical Secretariat of the League of Arab States (LAS). It focuses its program on responding to the needs of the region as outlined in the Arab Initiative on Sustainable Development (AISD). The majority of program activities in the region are carried out in partnership with CAMRE, and through members of ROWA's Steering Committees1. It is through these steering committees that the majority of programs are identified, developed and implemented, taking into account the priorities defined by UNEP's Governing Council as well as those of CAMRE. ROWA also responds to the needs of individual member states in the development of their own national strategies for the environment.

The Middle East North Africa Renewable Energy Conference (MENAREC):

Supported by the Ministry of Environment of Germany, the League of Arab States and UN-ESCWA, MENAREC is organized periodically. It is a conference that addresses renewable energy development in the region. Usually the Ministers of Environment attend the end of this conference and issue declarations on promoting renewable energy. The declaration of the fourth and latest MENAREC underlined the need to diversify energy resources and recognized the role that renewable energy can play in sustainable development.

The Desertec Foundation:

The Desertec Foundation is a regional initiative that aims to transfer renewable energy from the Arab region to Europe. This project is focused mainly on Concentrated Solar Power (CSP) technology, whereby huge CSP plants are proposed to be built in the deserts of the MENA and energy transported through trans-Mediterranean electrical connections to Europe. CSP technology is considered by many as the primary clean technology of the future.

7. The Role of Arab Civil Society in Global Climate Change Initiative

7.1 Global climate change campaigns

Globally, civil society has been engaged in the debate on climate related issues since the beginning of the 1990s, more clearly since the active engagement in the Earth Summit that was held in Rio de Janeiro in 1992 followed by the Summit in Johannesburg ten years later. The movement that mainly included environmental groups engaged different and much wider constituency in the run up towards the Copenhagen Summit. Indeed, groups from the fields of development, economic justice, debt, social and economic rights and human rights overall, women's groups, youth groups, indigenous groups, and

social movements played a core role in the heightening of activism around the Copenhagen Summit and the UNFCCC process.

The role of these groups have been essential in various areas, ranging from raising awareness of the public on climate change issues, informing the media, following the official negotiations process, monitoring and challenging the governments and the international institutions, and holding them accountable to their commitments and declarations. They also played a role in informing governments and analyzing issues at the core of developing countries' concerns. Among this range of mobilizations and activism, groups have often had different approaches to climate issues being addressed on the climate change agenda and thus understandings and strategies of action.

Some groups perceive the challenge as a systemic problem, rooted in the existing globalization schemes and the market-oriented policies dominating economic development policies. These groups put equity, the right to sustainable development, and social and economic rights at the center of the climate change debate. On the other hand, another approach, often promoted by environmental groups, has focused on the right to survival and climate security. They gave priority in their messages to the technical and scientific aspects of the discussion, thus focusing on climate as a scientific and environmental issue, more than a developmental issue.

Yet, both approaches agree to the fact that developed countries hold the major responsibility in leading to the climate crisis. They call for reform in governmental policies to achieve a global goal on climate, encompassing measurable goals on technology transfer, finance, adaptation, and specific obligations for developed countries on mitigation through the Kyoto protocol. They stress the necessity of political will to achieve a reallocation of resources through which countries, both developed and developing, can undertake the adaptation and mitigation measures necessary to face climate change.

In the framework of campaigns and mobilizations held in the run up to the 2009 Copenhagen Summit[30], groups focused on the call for a fair climate solution that will help remedy the crises that the world faces in development and economic paradigms. They called for equity while focusing on the core scientific indicators around climate change. They tried to maintain a balance between the right to survival and the right to economic development and equity, thus stressing that equity should be at the center of the climate deal after the acceptance of the science.

Groups made the link between the need and the right to development and growth to tackle poverty in the developing regions, and making available the needed finances and technology that will allow such growth with minimal emissions. Furthermore, they linked this consideration to the responsibility of developed countries to make available the finances and technology needed by developing countries to make such a leap. These issues were elaborated within the framework of the 'climate debt' concept; i.e.

30 Please see the Annex for a brief review of civil society's reactions post the Copenhagen Climate Conference.

the debt that developed countries hold towards developing countries due to their unfair exploitation of atmospheric space over the history of their development and industrialization.

In addressing the need for technology to face the climate challenge, several groups worked on challenging the agreements of the World Trade Organization (WTO), calling for revisiting the flexibilities under the WTO, especially the agreement on Trade Related Intellectual Property Rights (TRIPS), for they currently do not respond to the needs of access to such technologies. In the same line, they called for rethinking the intellectual property regime related to climate technologies.

Besides, many groups focused on the Kyoto protocol, highlighting that it does not expire in 2012; for it is only the first commitment period that will end in 2012. They campaigned for a second commitment period by developed countries under the Protocol, and called upon the United States to join the Protocol and undertake commitments similar to other developed countries. The Kyoto Protocol is the only treaty which binds the developed countries. While there is a need to enhance several aspects of the Protocol, it is also important to sustain it. Indeed, many climate campaigners focused in their messages on avoiding a gap between the first commitment period (that ends in 2012) and the second commitment period. Their slogan was “mind the gap”.

In addition, and facing tendencies to divide the developing countries within the negotiations process under the UNFCCC, some civil society groups focused on advocating the maintenance of one coherent position among the developing countries, represented by the Group of 77 and China.

Civil society worked as well on linking the climate change processes and campaigns to concerns of various regions, constituencies, and social movements. Groups worked on developing the linkage between advocacy at the UNFCCC negotiations level on one hand and the local grassroots and people’s movements on the other, including anti-poverty and human rights struggles and demands. Furthermore, many groups developed their visions for campaigning that extend beyond the Copenhagen Summit.

7.2 The role of civil society groups in the Arab region: the road leading up to and beyond Copenhagen

Civil society groups in the Arab region have been active in following global environmental and climate related policies since the first Earth Summit held in Rio and later in the Johannesburg Summit. They have worked on lobbying governments and the League of Arab States seeking for the adoption of national plans and targets in this field.

In the run up towards the Copenhagen Summit, the role of civil society groups was important in raising climate-related concerns to the public’s awareness and in disseminating important information on the various issues covered by the negotiations process. An interactive dynamic resulted from these efforts, which enhanced the debate and accelerated the engagement of different stakeholders on climate issues.

Within this process, civil society groups organized forums and discussion seminars at the regional and national levels. They also launched coalitions focusing on the issue of climate change and linking global efforts to the regional and national mobilizations in the region.

Yet, the Arab region remains a hard place to campaign due to restrictions on freedom of expression in most of its countries, daunting bureaucracy, and weak civil society. CSOs often do not extend their work to campaign activities of regional dimensions. Accordingly, there is a need for capacity building of civil society actors to follow the climate negotiations more effectively. The role of civil society groups in the region need to cover the advocacy on Arab governments in the process of their participation in global negotiations on climate policy and the drawing up of related policies at the national levels. This needs to be complimented by a longer term vision, which links climate work to other civil society campaigns active in the region.

The main bottle neck to be overcome is that climate change is not a priority on most Arab governments' agenda. A fast shift in the sense of urgency on climate change is needed. Direct communication with key governments and politicians is necessary, as well as mobilizing active youth and regional media. Furthermore, there is a need to extensively increase the number and strength of public events with high media profile.

Within this context, civil society groups in the Arab region can benefit from joining efforts at the regional level, in addition to joining campaigns of climate change at the global levels. Such collaborations could help groups make more efficient use of the limited resources available to them. Furthermore, this ought to include closer cooperation among various kinds of groups, including grassroots, non-governmental development groups, lobbying groups, research centers and think tanks, as well as academic institutions and individuals. It is essential in this respect to work with different local and international experts and academics. Such collaboration adds credibility to the work of the civil society.

Moreover, civil society groups ought to play a supportive role for other sectors and institutes whenever the opportunity arises, such as the public administrations working on climate policy. Such collaborations help bridge the gaps between decision makers and local CSOs. Moreover, monitoring the policies of institutions active in the region, such as the Arab League, United Nations Agencies, and other governmental and intergovernmental institutes.

While working with the media presents an important challenge, it also presents a big potential for the impact that civil society can achieve through climate campaigning. Indeed, media have played a major role in the run up and through-out the Copenhagen Summit. Working with local media in order to achieve concentrated coverage on certain climate stories to impact the public opinion ought to be complemented by working with regional media groups to achieve the widest media impact possible. Furthermore, there is an added value in utilizing new media techniques, which are proliferating exponentially in the Arab region, especially among Arab youth, including pod-casts and cyber-activism (blogging, u-tube,

facebook, etc.). In addition, specific focus needs to be invested in documenting and communicating climate impacts from the Arab Region. While communicating the problem, CSOs should also highlight the solutions and the alternative actions required. They also ought to bring these solutions close to the Arab public; for example by showing the great potential of solar power in North Africa.

A comprehensive approach is necessary within the climate campaigning. Most NGOs and institutions working on the climate change in the Arab region have been focusing their effort on promoting renewable energy. This is of specific importance given the potential that renewable energy can have. Yet, a more comprehensive approach is needed, one which addresses the various dimensions of the crisis, including its linkages to the economic policies, agriculture and food security, energy policies, conflict and security, and overall rights and development issues. Specific focus in climate research could address the impacts on seawater level rise, and fresh water and agriculture, which are highly sensitive topics in regards to the region.

7.3 Climate change, human rights, and gender; issues of specific significance for Civil society climate campaigning

The climate campaigning, especially in the run up towards the Climate Summit in Copenhagen attracted involvement from a variety of civil society groups including social movements, groups working on gender, human rights, youth, trade, indigenous rights, debt, equity and justice, among others.

Beyond civil society's interventions, the linkages between climate and human rights have been evidently pursued in the work on UN human rights bodies. During the tenth special session of the Human Rights Council (HRC) convened during March 2009, the Council adopted a resolution (A/HRC/10/L.30) specifically on human rights and climate change[31].

Furthermore, a Report by the Office of High Commissioner on Human Rights (OHCHR), informed by 30 submissions of member States and over 32 submissions of other relevant international organizations, intergovernmental bodies, and non-governmental organizations, advocated a human rights-based approach for climate change mitigation and adaptation. Such approach promotes the empowerment of individuals and groups as active agents of change and not as passive victims. The report stresses the importance of effective participation and highlights the impact of climate change on those already living in vulnerable situations due to poverty, gender, age, minority status, and disability.

In regards the framework of the interface between climate change and human rights, gender issues take a special dimension. In the run up towards the Copenhagen Summit, groups worked on promoting gender

31 In its resolution, the Council "decided to hold a panel discussion on the relationship between climate change and human rights at its 11th session, and welcomed the decision of the Special Rapporteur on adequate housing as a component of the right to an adequate standard of living to prepare and present a thematic report on the potential impact of climate change on the right to adequate housing".

considerations in the context of climate change discussions, including promoting gender language in the negotiations on mitigation, adaptation, technology transfer, and gender and climate change financing.

This work has been triggered by alarming studies on the disproportional effect of climate change on women. Indeed, studies show that ratios of women casualties due climate disasters were much higher than men's, including in the heat waves in Europe. Much of the reasons behind this reality relate to gender and cultural constraints. Furthermore, in the aftermath of climate disasters, there appears to be higher levels of women's rights being violated, including through rape and violence.

Within this context, various dimensions of the gender and climate change linkages ought to be addressed, including the reality that the development impact of climate change pause particular challenges for gender equality. Thus, related funding cannot be isolated from social and cultural frameworks and considerations, including gender dimensions. Within this framework, engendering the transformation to low carbon economies necessitates directing funds and finances to address these purposes, while taking gender issues into consideration. If the aim is transforming the economies towards low carbon processes, the implications on the productive sectors such as agricultural and fisheries, and related impact on gender equality and poverty reduction programs, should be addressed. Gender related choices need to be made on food sufficiency, access to health and sanitation, and other programs in which often there is gender based discrimination. Accordingly, distribution of resources between men and women remains at the core of this discussion[32].

Groups advocating these considerations reference the Convention on the Elimination of all forms of Discrimination against Women (CEDAW), the Beijing Action Plan, the Economic and Social Council (ECOSOC) definition on gender, the third Millennium Development Goal, and Agenda 21 (Chapter 25). Groups have been relying on these reference documents to call upon the UNFCCC to take gender dimensions into consideration. Indeed, the UNFCCC has an obligation to implement these principles, especially given "equity" is an integrated principle in the UNFCCC mandate, and the provision of equity necessitates gender aspects to be taken into consideration.

Within this context, civil society groups have been highlighting the inter-twine between gender equity and women's empowerment and the success of the UNFCCC objectives. They stress the necessity for addressing women empowerment in the flow of projects and resources related to climate change; indeed the climate-related processes and mechanisms must be conducive to women empowerment goals. Yet, till date, there has been under-representation of women in these processes, leading to increasing gender gaps in the financial markets, both in allocation of resources and access of women to resources. Thus, climate-related financial instruments ought to address women's access to resources. However, the focus on market processes within the climate discussions causes further marginalization of gender dimensions.

32 Much of this material in the current and following paragraphs is based on a summary of discussions among civil society groups held at a gathering organized by the Third World Network, July 2009.

Accordingly, the leadership of women's groups, women parliamentarians and decision-makers is urgently needed to bring a gender perspective into the climate negotiations. In the Arab region, the room for gender mainstreaming as a cross cutting issue is evidently limited. There is limited analysis on the effects of climate change and gender issues. Engagement of women's groups and activists in addressing climate impacts and its interface with their missions and visions is core to furthering gender equity and justice in the region.

8. Concluding Notes

The impacts of climate change on the region are too fundamental to be ignored. Despite contributing to less than 5% of global CO2 emissions, the Arab region has the fastest growth in emissions and the second largest volume of emissions per unit of GDP and remains to be one of the most heavily impacted areas by climate change. Sea water intrusion being one of the numerous impacts on the Delta and Gulf region and other coastal areas, in addition to increased drought, will turn millions of people into environmental refugees. "Yet efforts in the Arab countries to confront the effects of these changes do not match the gravity of the threat" (Arab HDR, 2009). Economic diversification and clear policies for integrating more renewable energies in production and consumption patterns of Arab countries are core in the process of facing climate change. To achieve their potential in renewable energies, Arab countries need to commit to research and development programs in this area, which secures the transfer of the Arab region towards sustainable development paths and contributes to building a competitive position for Arab countries in this area.

As noted by the paper, the Arab region has not fully engaged the negotiation process at the global level. Thus, governments in the Arab region need to enhance their engagement with the UN negotiations process in addressing global policy-making on climate change. Moreover, addressing climate change cannot remain an ad hoc process, but should become a national priority integrated in national policies and strategies and entrenched in a practical regional policy. Accordingly, climate change ought to be set as a priority issue on the agenda of the Arab governments, nationally as well as regionally.

Developing an effective and implementable regional policy and strategy to face climate change is also essential. Indeed, a more active role is needed from the side of the existing regional structures, mainly the Council of Arab Ministers Responsible for the Environment and the Technical Secretariat of the League of Arab States. Among their tasks should be the coordination of a regional climate change strategy that serves the differentiated developmental needs and capacities in the region and allows effective mainstreaming of the interventions by international organizations and partners. Among the political fora in which the Arab countries should pursue issues of climate change, the Group of 77 and China is a priority place for building strong alliances and common positioning with other developing countries.

Besides enhancing political will, consistent grassroots activism is core to securing the needed changes on environmental legislation and policies in the Arab region. Indeed, there is a deer need for a more active role by CSOs in addressing climate issues in the Arab region. Civil society groups have significant added-value given their capacity to move fast enough in adjusting their agendas and building the needed pressure in this policy area. This could be further strengthened through more integrated cooperation and action among academics, activists, and policy-makers. Such interventions ought to be well coordinated, strategic, and focused on creating the public awareness and engagement as well as the political will.

The post-Copenhagen period necessitates a longer term strategy that is consistent and that integrates the work on climate change with the struggles for development, and economic and social justice in the Arab region. Within this process, conscious gender related choices need to be made on food sufficiency, access to health and sanitation, and other programs in which often there is gender based discrimination. The leadership of women's groups, women parliamentarians and decision-makers is urgently needed in this area.

ANNEX

Brief Review of Civil Society's Reactions Post the Copenhagen Climate Conference

The following article includes a briefing of the post-Copenhagen reactions undertaken by civil society organizations (from various regions) and their perspectives on the outcomes of the Copenhagen Summit and the Copenhagen Accord[33].

The climate change negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) process has attracted substantial civil society engagement, bringing groups from across the spectrum of civic activism and across the regions of the world. These groups not only include environmental organizations but also grass roots, human rights, youth, development organizations, and justice campaigns. The urgency to face climate change and to arrive at a just climate change deal pushes CSOs to extend their interventions from mere focus on the Summit to engagement in the post-Copenhagen period.

For CSOs following the climate negotiations, the UNFCCC, including the Kyoto Protocol and the Bali Action plan of (2007), do constitute a multilateral process to arrive at a new climate conventions, even though much more work need to be accomplished on each front. CSOs percieve that the two track process (Kyoto and the Long-term Cooperative Action) should be the basis for continuing negotiations. Indeed, the Chair's reports from these working groups were the ones adopted in Copenhagen, unlike the Copenhagen Accord[34].

While certain CSOs have expressed great concern, even outrage, following the chaotic organization of the Copenhagen Summit and the undemocratic emergence of the Copenhagen Accord[35], others

33 This section has been developed based on material collected and developed by Omar Jayyusi, Bihter Moschini, and other ANND staff members. For more detailed information please check the UN Non-Governmental Liaison Services Civil Society Observer-March 2010 available at http://www.un-ngls.org/spip.php?article2237 and the analysis prepared by Dr. Gregor Wolbring and Seyyed Ghaderi entitled "Reactions after the Copenhagen Conference" available at: http://www.hydrocarbonmetagenomics.com/files/Copenhagen%20Conference%20in%20a%20Glance.pdf

34 Ibid.

35 "Act now to Meet The Post-Copenhagen Climate Emergency" 21st Feb 2010 www.tebtebba.org/index.

have tried to embrace the positives whilst remaining critical. Overall, there is no disagreement that the pledges made by heads of states after Copenhagen were unsatisfactory.

Post the Copenhagen Summit, groups have expressed their frustration with the results, calling for the rejection of the Copenhagen Accord "if the world is to survive"[36]. Furthermore, many civil society voices stressed the importance of resuming the UNFCCC negotiations in order to arrive at a global climate deal that "must be based on a different model that is environmentally sound, globally just, and promotes the rights of local communities and the poor"[37].

A further major flaw and criticism that civil society groups pointed out was the failure to achieve a fully transparent multilateral process for negotiating a global agreement on climate change. According to the Third World Network[38], during the final hours of the Copenhagen Climate conference, after a decision to "take note" of the resulting Copenhagen Accord, developed countries attempted to stretch the meaning of "taking note" into forming some kind of plurilateral agreement. A plurilateral agreement would imply that member countries have the choice to agree to new rules on a voluntary basis. This obviously contrasts with multilateral agreements, where all members are party to the agreement. Plurilateral agreements are seen by some as undemocratic, illegitimate and lacking transparency. A plurilateral agreement will furthermore rule out a "large number of countries, the vast majority of those whose lives and livelihoods are already being affected by climate change and those who will be least able to defend their communities."[39]

The South Centre[40], in a special bulletin dedicated to elaborate on the outcomes of the Copenhagen Climate Conference noted that the latter failed to deliver not because there was no final full agreement, and not even because there was no "legally binding" political declaration on which a future agreement can be built, but because the Presidency of the Conference and Western political leaders tried to hijack the legitimate multilateral process of negotiations that had been taking place before Copenhagen and at Copenhagen itself. They elaborated that the Copenhagen Accord itself is only three pages in length and what is left out is probably more important than what it contains. The bulletin highlighted that Copenhagen represented a complete breakdown of trust among the parties. To build trust up again, under the shadow of the Copenhagen accord, is immensely challenging.

NGOs such as Greenpeace, whilst not necessarily calling for an outright rejection of the Copenhagen Accord, were still very critical of it. According to Greenpeace, the "Accord … was no more than a

php?option=com_docman&task=doc_details&gid=507&Itemid=27.

36 Ibid.

37 Ibid.

38 www.twnside.org

39 "Act now to Meet The Post-Copenhagen Climate Emergency" 21st Feb 2010.

40 http://www.southcentre.org/index.php?option=com_content&task=view&id=1232&Itemid=1

cynical public relations exercise allowing governments to recycle existing pledges and dress them up as effective action…..This is no substitute for the fair, ambitious and legally binding treaty demanded by millions of people who are concerned about climate change or are being affected by its impacts."[41]

Oxfam international have also been very critical of the Copenhagen talks, noting that "the Copenhagen Accord is hugely disappointing but reveals how the traditional approach to international negotiations is both unfit for pursuing our common destiny and downright dangerous."[42] Oxfam urged world leaders to effectively break the impasse and reignite delegates' negotiations, calling for more ministerial meetings to be held under the UNFCCC process. In addition, Oxfam called for more support to least developed countries in order to ensure that the negotiations bring a deal that is acceptable to all.

WWF[43] stressed the need for a legally binding treaty and not just merely a political agreement, in addition to the need for a commitment initiating a quick science review to assess whether country emission pledges are sufficient for averting dangerous climate impacts. This science review could be tied to the Intergovernmental Panel on Climate Change (IPCC), which is the international scientific body for climate change. Such a review would serve as an indicator as to whether nations are fulfilling their obligations or are on track to doing so.[44] WWF's climate campaigner noted that «the biggest challenge, turning the political will into a legally binding agreement, has moved to Mexico»[45].

Stating that Copenhagen was "a tragedy for millions of people in poor countries", Christian Aid[46] stressed that the failure was the inevitable result of rich countries refusing adequately and fairly to shoulder their overwhelming responsibility for global warming.

Open Democracy[47] highlighted that negotiations at Copenhagen saw hostility to compromise, ill will and many controversies. They pointed that leaked documents, a lack of transparency, a disorganized, unclear and undemocratic process, an unwillingness to move out of a conditional mode to converge on an agreement, and a lack of regard for the work achieved since 2007 by the two ad hoc working groups launched in Bali - all these characterized the fortnight-long negotiations. A lot of precious conference time was wasted discussing process, how to conduct consultations, what text(s) should be used as a basis for final negotiations.

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41 Statement by Bernard Obermayr of Greenpeace, available at: www.greenpeace.org/international/press/releases/copenhagen-accord-recycles.

42 Statement by Antonio Hill, Oxfam's climate change adviser, available at: http://www.oxfam.org/?q=en/pressroom/pressrelease/2009-12-21/un-climate-negotiations-overhaul-avoid-4-degrees.

43 Keya Chatterjee, the WWF's Acting Director for the WWF's Climate Change program.

44 Ibid.

45 http://www.earthtimes.org/articles/show/300089,analysis-the-copenhagen-accord--worth-the-paper-it-came-on.html.

46 http://www.christianaid.org.uk/pressoffice/pressreleases/december2009/copenhagen-tragedy-for-millions-in-poor-countries.aspx.

47 http://www.opendemocracy.net/olivia-sage/from-copenhagen-to-flopenhagen-through-hopenhagen.

The lack of justice in the Copenhagen outcome was highlighted by several NGOs. In this respect, the Chair of Friends of Earth International stated that «Copenhagen has been an abject failure and justice has not been done».

The Institute for Ethics and Emerging Technologies[48] stated five reasons for considering Copenhagen as a failure, including (1) nation-states being far too self-serving (2) democracies being too ill-equipped and irresolute to deal with pending crises (3) isolationist and avaricious China (4) the role of the powerful corporatist mega-structures and (5) the weak consensus on the reason for global warming.

Climatico-Independent Climate Research Group[49] pointed that the COP15 hasn't delivered the deal the world was hoping for, which is a legally binding treaty with emissions cuts for developed counties, They noted that the success of COP15 may be better judged at the end of 2010, when it is expected that both developed and developing countries will have presented their pledges for tackling climate change, and the world may be closer to the possibility of a legally binding treaty developed from the Copenhagen Accord. However, the likelihood of taking this weak agreement to a stronger legal treaty is likely to be a challenging path full of hurdles and saboteurs.

Center for European Policy Studies (CEPS)[50], pointed out that the Summit outcome is generally seen in a more favorable light in the US than in Europe due to different expectations and perspectives. The CEPS study added that "judging from the high rhetoric heard before the Copenhagen meeting, urging parties to complete negotiations on a new international agreement on climate change to follow the Kyoto Protocol, the results must be seen as a failure. This fact, however, should not be allowed to belittle the significant progress has been made in at least three areas: financing, deforestation and adaptation".

The Funders Network on Trade and Globalization[51] argued that the Copenhagen Accord allowed for unequal power dynamics and noted that in order to resolve the global climate crisis, the world must move from a competitive to a cooperative style of international relations.

The Campaign against Climate Change (CCC) has also been particularly critical of the Copenhagen talks. They argue that regardless of great steps taken to build the global campaign for action and justice on climate, the talks were still a massive failure.[52] As part of their proposals, CCC demanded the creation of one million climate jobs through a Green Energy revolution, "with massive investment in renewable energy, insulation programs, and improved public transport…"[53].

48 http://ieet.org/index.php/IEET/more/dvorsky20100110/.

49 http://www.climaticoanalysis.org/wp-content/uploads/2010/01/post-cop15-report52.pdf.

50 http://www.ceps.eu/book/copenhagen-accord-first-stab-deciphering-implications-eu.

51 http://www.fntg.org/news/index.php?op=read&articleid=7643.

52 www.campaigncc.org .

53 Ibid.

Climate finance is a further concern under the UNFCCC negotiation. Civil society groups highlighted that there are no assurances that the needed funds be allocated to poor countries for adaptation purposes will not come from existing aid commitments. Oxfam argued that there is need for "guarantee that the money is delivered to the right people in the right places at the right time"[54]. At the Climate Conference in Copenhagen, there was broad agreement that an effective response to climate change will require new investments and other expenditures on a massive scale for decades to come. It was also agreed that developing countries would require substantial additional assistance to meet the challenges they face. The 2007/ 2008 review on financing climate change that was conducted by the UNFCCC Secretariat noted that the additional investment and financial flows needed by 2030 are between 0.3% to 0.5% of the global domestic product and 1.1% to 1.7% of global investments. This is a small amount in the overall global figures but large compared to the currently available public and private financial resources for climate change (including the ones available under the UNFCCC and its Kyoto Protocol).

Some individuals, concerned with the climate change issue have argued for the bottom up approach, not only in terms of local or individual action, but in the sense of action coming from countries that globally have traditionally been at the bottom of the heap.[55] However some participants of the Copenhagen Summit questioned whether a bottom-up approach, with individual countries offering cuts and then aggregating them to measure the global change, rather than one global target would ever lead to sufficient cuts.[56] Participants at a roundtable organized by the Carnegie Endowment noted that progress was made in Copenhagen despite significant shortfalls, stressing that work should continue both within the UN universal forum as well as among small groups, particularly large emitters. Some discussants "prioritized the former for reasons of legitimacy and inclusiveness, while others highlighted the latter on considerations of effectiveness."[57]

54 http://www.oxfam.org/?q=en/pressroom/pressrelease/2009-12-21/un-climate-negotiations-overhaul-avoid-4-degrees.

55 http://larvatusprodeo.net/2010/01/05/after-copenhagen-iv-what-sort-of-climate-change-activism .

56 http://www.carnegieendowment.org/events/?fa=eventDetail&id=2802 .

57 http://www.carnegieendowment.org/events/?fa=eventDetail&id=2802 .

Climate change

Regional & Global Issues

2

THE EQUITABLE SHARING OF ATMOSPHERIC AND DEVELOPMENT SPACE: SOME CRITICAL ASPECTS

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1 Executive Director of the South Centre. Grateful acknowledgement is made to Vice Yu (also of the South Centre) for many of the tables and charts, and for contributing to the ideas. The responsibility for the paper is with the author and not the institution he works for.

2 The South Centre (the Centre) is an intergovernmental organization of developing countries established by an Intergovernmental Agreement (Treaty) which came into force on 31 July 1995 with its headquarters in Geneva. The Centre works to assist in developing points of view of the South on major policy issues, including trade, investment, global governance, and climate change. For more information, please check http://www.southcentre.org

Contents

1. INTRODUCTION

In the quest for an international agreement on actions to address the climate change crisis, three aspects have to be the basis simultaneously:

- The environmental imperative, to prevent the climate from changing to the extent that would have disastrous consequences.
- The developmental imperative, in that developing countries have the needs and goals of eradicating poverty and providing jobs, fulfilling basic and human needs of the population, and
- The equity imperative, as a global agreement that works have to be based on an equitable sharing of responsibilities and rights towards meeting the environmental imperative, and be based on the understanding of the developing countries' development needs.

This EDE formula requires that the different pieces of the climate negotiations be seen and addressed as a whole, in a holistic way.

Thus, it is important to fix environmental goals, relating to limiting global warming to a certain temperature rise threshold, and to a corresponding target for global emissions reduction. However this has to be done simultaneously with an understanding on how this is to be done, particularly on the distribution of the tasks as between developed and developing countries. This will require an agreement on what is a fair division of the responsibilities between these countries in terms of their reduction or reduction of growth of emissions.

This raises the question of the historical responsibilities and the different capacities of the countries.

In the UNFCCC, the developed countries have accepted that due to their being the main cause of much of the Greenhouse gases in the atmosphere, that they have to take the lead in mitigation, while also assisting developing countries through finance and technology transfers to take their climate actions.

In the UNFCCC talks, the main issues are mitigation, adaptation, finance, technology and “shared vision”, including a long-term global goal for emission reduction. These issues are inter-connected. It is

important to see their inter-connections and to take this into account in the negotiations, as pieces of a jigsaw puzzle that have to be pieced together.

In particular, setting the global goal for emission reduction has to take account of the environmental imperative, and also deal with the emission reduction of Annex I and non Annex I parties. A global carbon budget of how much more emissions should be allowed between now and 2050 should be fixed, and also how that budget should be allocated especially between developed and developing countries. Should a global goal and an Annex I goal only be fixed, a goal for developing countries is also being fixed, although implicitly and perhaps not known to many. The issues must be clear and transparent and the parts of the equation should be known and discussed in the thorough manner they deserve.

Developing countries have also agreed to take mitigation actions, and these are indeed important as a needed contribution to the global effort. However, the efforts of developing countries to avoid emissions during their development process are tied to the availability and level of international financing and technology transfer, since these countries want to maintain their economic goals.

Thus a fixing of a temperature target and of a global emissions reduction goal must be accompanied or preceded by a paradigm or framework for the equitable sharing of the atmospheric space and the development space. The sharing of the mitigation efforts, and the support that must accompany this sharing, is a most critical piece of the jigsaw puzzle.

This paper aims to contribute to the discussion on the issues of environment, development and equity that are at the centre of the climate, development and equity nexus.

The paper begins with some equity considerations in the UNFCCC, then summarises the climate challenge with estimates of the carbon budget (what has been emitted in the past and what space is left to absorb further emissions). It examines the historical emissions and compares these with the “fair share” as represented by population ratios. The paper then discusses the concept and estimation of carbon debt, the sharing of the remaining carbon space and implications of these for the question of emissions reduction goals and the sharing of responsibilities for these.

The paper briefly discusses the issue whether “equal per capita emissions” is an adequate principle that meets equity and development criteria. The multiple tasks of developing countries in achieving both development and environment goals are briefly touched on. The paper then discusses at some length the issue of finance needed by developing countries both as a means to discharge the carbon debt as well as to support and enable developing countries' climate actions. Estimates of the scale of financing required are given. Finally the paper discusses some implications of these issues for the UNFCCC negotiations.

2. SOME EQUITY CONSIDERATIONS IN UNFCCC

The UN Climate Convention recognises the equity principle specifically and also in the shaping of the provisions and the content of many of them.

The Convention recognises that the developed countries are mainly responsible for the climate problem in that most of the addition to the stock of carbon and other Greenhouse gases in the atmosphere were from these countries. The Convention then accepts that these countries make take the leadership both in their own mitigation actions and in assisting developing countries to take their climate actions, through the provision of finance and technology.

The Convention also recognises that developing countries have development imperatives, which they must pursue as a priority. Their ability to undertake climate actions depend on the extent of support they receive from the developed countries.

In view of this, the Convention distinguishes between the mitigation “commitments” of developed countries and the mitigation “actions” by developing countries, in the understanding that the extent of developing countries' actions depends on the extent of the developed countries meeting their finance and technology commitments.

Binding commitments to reduce emissions are undertaken under the Convention and the Kyoto Protocol by the developed countries. Developing countries do not have to take binding commitments on emissions reduction, although they also agree to take mitigation actions.

Some of the important provisions relating to the above points are as follows

Preamble: Noting that the largest share of historical and current global emissions of GHG has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs.”

Article 3.1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

Article 4.3. The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1.

They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the

international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.

Article 4.5. The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

Article 4.7. The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

(See Annex 3 for more relevant provisions of the Convention that relate to equity considerations}

3. THE CLIMATE CHALLENGE AND CARBON BUDGET ESTIMATES

Before the industrial revolution, there were already carbon dioxide and other greenhouse gases in the atmosphere. The CO2 concentration in the atmosphere was 280 ppm. Since the industrial revolution, emissions caused mainly by human activity has increased the concentration to 384 ppm in 2009. (CDIAC 2009).

Between 1850 and 2009, about 1,280 Gigantism of C02 was emitted, thus adding to the stock of CO2 in the atmosphere. Of this, 650 Gt was emitted in 1850 to 1990 while the remaining 630 Gt was emitted in just 20 years from 1990 to 2010 (Sivan Kartha).

Since 1800, there has been global warming by 0.8 degrees Celsius. The IPCC warns that a high-emission path will lead to warming by 2100 of 3-7 degrees from pre-industrial level, while a low-emission path will lead to 2-3 degrees warming.

To achieve a 67% probability of limiting temperature rise to within 2 degrees, CO2 emissions in 2010-2050 must be kept to around 750 Gt, with only a small amount being emitted post 2050. To achieve a 75% probability, the carbon budget for this period would be 600 Gt. (WBGU 2009, p 15, 25). This is seen to correspond to around 450 ppm concentration. At current emission rates this CO2 budget will be exhausted in 25 years, and sooner if emissions continue to rise.

To reverse this trend, global emissions if they peak by 2010 would have to go down by 50-85% by 2050 vis-a-vis 1990. If the peaking year is later, the global reduction would have to be steeper, by 5% a year (relative to 2008) if peaking is at 2015 and 9% a year if peaking is at 2020. (WBGU 2009).

Recently some prominent scientists including J. Hansen have warned that global warming should be limited to below 1.5 degrees and concentrations below 350 ppm. To attain this safer limit, the carbon budget allowed for 2010 to 2050 would have to be significantly below the already stringent budgets of 750 Gt that was estimated to give a 67% probability or the 600 Gt budget with a 75% probability for a 2 degree limit. One estimate is that the 350 ppm carbon budget would be around 400-450 Gt for this period.

The above figures are extremely sobering and demonstrates the great challenge for humanity to take effective action to prevent climate disaster or catastrophe.

In order to share the responsibilities of action equitably, the historical record of the sources of emissions is important.

4. HISTORICAL AND CUMULATIVE EMISSIONS AND CARBON DEBT AND CREDIT

This section deals with the historical situation. It looks at the total global emissions of CO2 in 1850-2008. It estimates the fair share of this total for Annex I and non Annex I countries, based on the proportion of each to their average share of world population in this period. It estimates the actual emissions during this period of each group of countries. The difference between the fair share of emissions and the actual emissions provides the estimate of carbon debt or carbon surplus. The situation is shown in Table 1.

Table 1

Fair Carbon Shares and Actual Emissions of CO2: 1850-2008 (Gigatons of CO2)

Group	Actual cumulative emissions CO2	Actual share in total cumulative emissions CO2 1850-2008	Fair share for cumulative emissions based on population share	Over-Use/Under-use of Share in Total Cumulative Emissions (1850-2008 emissions and 2008 population share)	% Over-use/ Underuse - cumulative emissions over proportional share 1850-2008
Annex 1	878	72%	310	568	184%
Non-Annex 1	336	28%	904	-568	-63%
World	1,214	100%	1,214		

Cumulative global emissions have totalled about 1214 Gtons in 1850-2008. Of this total:

- Annex I countries accounted for 878 Gton or 72% of the total. Since their share of world population was about 25% in this period, their fair share of emissions was 310 Gton. Therefore their overuse of their fair share was 568 Gton. This overuse was 184% above the fair proportional share.
- Non Annex I countries accounted for 336 Gton or 28% of the total. Their fair share of emissions was 904 Gton (given their share of total population of 75%). Therefore the under-use was 568 Gton or 66% below their fair share.

The carbon debt of Annex I countries was thus 568 Gton for the period 1850-2050. At present these countries are still accumulating debt because their actual emissions as a group in 2009 still exceeds their fair share. It is important to conceptualise how this debt is to be discharged, preferably before or by 2050, because after that year there would be little or no “carbon space” left to allow further emissions in the world.

Table 2

Cumulative Emissions. Fair Shares and Carbon Creditors and Debts: Selected Countries 1850-2008

Country	Cumulative CO2 Emissions 1850-2008 (in billion tons or Gigatons)	Cumulative Fair Share CO2 Emissions 1850-2008 (in billion tons or Gigatons)	CO2 Debt or Credit As of 2009 (in billion tons or Gigatons)	
Australia	13,7	3,8	9,8	Debtor
Bolivia	**0,3**	**1,5**	**-1,2**	Creditor
Brazil	**9,9**	**30,5**	**-20,6**	Creditor
Canada	25,5	6,4	19,1	Debtor
China	113,8	265,5	-151,7	Creditor
France	32,9	16,5	16,4	Debtor
Germany	81,1	23,7	57,4	Debtor
India	**33,2**	**193,1**	**-159,8**	Creditor
Japan	45,9	30,1	14,9	Debtor
Tanzania	**0,1**	**4,7**	**-4,5**	Creditor
United Kingdom	69,8	17,2	52,6	Debtor
United States	343,1	61,8	281,3	Debtor
Annex I	878	310	568	Debtor
Non-Annex I	**336**	**904**	**-568**	Creditor
World	**1214**	**1214**		

* Countries in bold are developing countries.

** Carbon debt refers to the amount by which the country's cumulative emissions exceeded what its cumulative fair share of emissions (based on its population) should have been for the same period 1850-2008. Carbon credit refers to the amount by which cumulative emissions are less than the cumulative fair share for the same period.

The analysis of carbon debt or credit can be done for individual countries. Table 2 shows the position of a few countries regarding their cumulative emissions (1850-2008), their fair share of emissions and their debit or credit position. Some illustrative cases:

- The United States is the largest over-user of carbon space, having emitted 343 Gton in 1850-2008 compared to its fair share of 62 Gton, causing a debt of 281 Gton by 2009. Other developed countries also have large debts: Germany 57 Gton, United Kingdom 53 Gton, Canada 19 Gton, France 16 Gton, Japan 15 Gton.

- On the other hand, developing countries have used less than their fair share and are climate creditors. China has a cumulative fair share of 265 Gton in 1850-2008 but used 114 Gton, and has a 152 Gton credit as at 2009. India has a fair share of 193 Gton and only used 33 Gton, so it has a 159 Gton credit. Brazil has a credit of 21 Gton. Tanzania, an LDC, has a fair share of 4.7 Gton but its cumulative emission is 0.12 Gton and thus has a credit of 4.5 Gton.

These estimates of national positions are useful in illuminating the contribution of individual countries to the stock of CO2 in the atmosphere and in the possible allocation of rights and responsibilities for future emission scenarios and plans.

5. SHARING THE REMAINING CARBON SPACE

There is very limited stock of "carbon space" left in terms of emissions that should be allowed in 2010-2050 if the global mean temperature rise is to be within 2 degrees and especially 1.5 degrees.

The carbon debt/surplus situation as at 2009 should be an important parameter when determining the allocation or distribution of emissions and the quantum and rates of emission reductions, particularly as between Annex I and Non Annex I countries.

It is important to recognise two important distinct though related concepts:

- The allocation of carbon space as according to rights and responsibilities, that is linked to the equity principle and fair shares in the carbon budget, and the implications of this for the obligations in terms of the sharing of emissions reductions (for example by 2050).
- The actual carbon budget (and related physical emissions reduction schedule) that countries eventually put forward as what they can physically undertake.

This distinction and the calculations should be made especially for Annex I and Non Annex I countries as a whole.

There could be a difference between the allocation of responsibilities and rights, and the actual emissions reduction or related budgets. Therefore:

- Countries that are allocated a responsibility to limit their future emissions within a certain budget or limit but are unable to physically undertake the task fully can compensate for this unmet part of their obligation.
- Countries that are allocated rights to their share of the global carbon budget, and do not make full use of these rights, can benefit by obtaining the adequate means (from UNFCCC funds) to improve their economic performance while developing a low-emissions pathway.

In any calculation of the sharing of remaining carbon space, the carbon debt owed by Annex I countries at the end of 2009, i.e. 568 Gton of CO2, should be taken into account. Similarly the credit that developing countries have (the same amount of 568 Gton) should be factored into the calculations.

Table 3.1
Allocation for 2010-2050* (in GT CO2)

Group	1850 – 2050			2010 – 2050×	1850 – 2050	2010-2050*
	Fair share emission budget	Actual emissions	Cumulative emission debt	Fair share emission budget	Fair share emission budget	Allocated budget**
Annex 1	310	878	568	120	430	−448
Non-Annex 1	904	336	−568	630	1534	1198
Total	1214	1214		750	1964	750

* Assuming a global budget of 750 GT CO2 (corresponding to a 67% chance of not exceeding 2 degrees C by 2050) and a 16% average share for Annex 1 of the global population from 2010-2050
** Taking into account cumulative emission debt from 1850-2008

Table 3.2
Allocation for 2010-2050* (in GT CO2)

Group	1850 – 2050			2010– 2050×	1850 –2050	2010 –2050×
	Fair share emission budget	Actual emissions	Cumulative emission debt	Fair share emission budget	Fair share emission budget	Allocated budget**
Annex 1	310	878	568	96	406	−472
Non-Annex 1	904	336	−568	504	1408	1072
Total	1214	1214		600	1814	1814

* Assuming a global budget of 600 GT CO2 (corresponding to a 75% chance of not exceeding 2 degrees C by 2050) and a 16% average share for Annex 1 of the global population from 2010-2050

** Taking into account cumulative emission debt from 1850-2008

Thus in the 2010-2050 carbon budget:

- If a total budget of 750 Gton is taken, and Annex I population ratio to world population is 16%, then

the Annex I fair share is 120 Gton. However to fully discharge its carbon debt (568 Gton) as at 2009, its allocation for 2010-2050 is a negative budget of 448 Gton.

- Developing countries with an average population ratio of 84% would have a fair share of 630 Gton of the total 750 Gton budget. However since it has a credit of 568 Gton in 2009, its allocation for 2010-2050 would be 1198 Gton.
- Using the same methodology, a similar calculation can be done for any other total carbon budget is decided on. For example, for a 600 Gton global budget, and with the same population ratios:
- Annex I fair share would be 96 Gton and the allocation after taking into account 568 Gton debt would be – 472 Gton.
- Non Annex I fair share would be 504 Gton and its allocation would be 1072 Gton.
- Both Annex I and Non Annex I have a smaller budget because of the more stringent total budget of 600 Gton but the reduction is equitably shared using this method.

One method of discharging the debt or part of it is to work out and agree to a methodology of payment or compensation into a Fund, which can be used for developing countries for mitigation actions.

For example, the debt of 568 Gton of CO2 as at 2009 could be given a value (for example $40 a ton) and the total amount could be contributed in installments of a number of years into the Fund. This is further discussed in a later Section of this paper.

6. IMPLICATIONS FOR EMISSIONS REDUCTION AND ALLOCATION OF RESPONSIBILITIES

The allocation of responsibilities and rights in the global carbon budget has implications for the distribution of global emissions reduction as between Annex I and Non Annex I countries.

Depending on the choice of the global emissions cut by a certain year (e.g. 2050) and certain assumptions (about the peaking year, etc), a global carbon budget for a period (e.g. 2010-2050) can be worked out.

Using the equity principle (fair shares according to population ratio) the emissions cut for Annex I and non Annex I for that period can be worked out, taking into account also the cumulative emissions and debt/credit.

The methodology would be as follows:

1. Take a goal for limiting temperature rise, e.g. 1.5 or 2 degrees.
2. Take a corresponding carbon budget for the period 2010-2050, e.g. 500 or 600 or 750 Gton (depending on the range of probability to be agreed on to achieve the chosen temperature goal).

3. Choose a global peaking year (e.g. 2015, 2020).
4. Work out the global emissions pathway for 2010 to 2050, giving the percentage reduction of global emissions by 2050.
5. Taking into account the carbon debt (of Annex I) and the carbon surplus (of non Annex I) as of 2009, and their fair shares of the chosen global carbon budget for 2010-2050, work out the allocation of emissions for Annex I and non Annex I and their corresponding emissions pathway, with their end-points in 2050.

It should be noted that the allocated pathways for emissions reduction for Annex I need not and probably would not be the actual pathways implemented, due to the very high environmental ambition required to fulfill the allocated pathway.

The difference between the pathway allocated and the actual pathway taken would be the subject of compensatory mechanism.

An illustration of this point can be seen in the study by WBGU (German advisory council on global change) on the budget approach. The study takes into account historical responsibility (with a starting year of 1990), and works out a budget for selected countries for 1990-2050. One of the two models in the study chooses a 75% probability of remaining within 2 degrees warming, and with thus a corresponding carbon budget of emissions allowed of 1100 Gton in 1990-2050 (600 Gton for 2010-50 because of 500 Gton actual emissions in 1990-2010). It finds that three countries (USA, Germany, Russia) have already emitted in 1990-2009 their entire allocated budget for 1990-2050 and therefore begins with negative emission allocations for the 2010-50 period. The United States has a emission allocation of minus 56 Gton of CO2 in its 2010-50 budget.

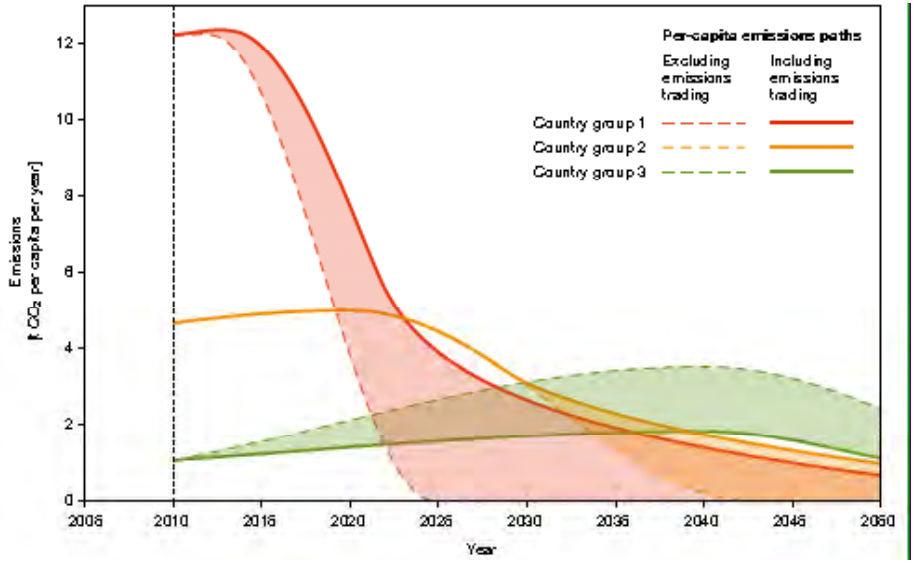
The study shows a graph with two pathways for three groups of countries. The first two groups, with high and medium emissions, buy emission rights from the third group. Thus they are able to have higher actual budgets than their allocated budgets, and can stretch out their emissions for many more years. The third group emits much less than their rights, and receives funds from emissions trading instead. This is reproduced as Graph 1.

The graph is reproduced for illustrative purposes as to an example of the methodology of assigning allocated budgets to groups of countries, and allowing for countries to under-fulfil their obligations while the study assumes that the difference between allocated emissions and actual emissions is paid for through the carbon trade mechanism. There could of course be different methods of assessing the value of the difference and compensating or paying for these. Instead of using carbon trading, the country could be responsible for mobilising the funds (through environmental taxes, innovative sources, etc) and for arranging for the payment into a Fund or Funds.

The WBGU study also recognises historical responsibility but does its calculation based on a base year

of 1990. This does not do justice to the full emissions discharged since the industrial revolution. Thus there will be different results as to the carbon budgets, when other base years such as 1850 are used. However, the study is a very useful example of making use of the methodology of carbon budgeting.

Chart 1



NOTES:
1. This graph is from German Advisory Council on Climate Change (WBGU) (2009 p39), “Solving the climate dilemma: the budget approach”. It is reproduced here for illustrative purpose, to show an example of the use of the concepts of allocated emission budget to groups of countries, and the actual emissions of these countries, and the compensatory mechanism (in this case carbon trading) used to transfer financing from one group of countries to another group of counties.
2. The note accompanying the graph in the WBGU report explains: “Examples of per-capita CO2 emissions trajectories from fossil sources for three country groups under the WBGU budget approach. The broken curves show theoretical per-capita CO2 emissions trajectories without emissions trading. These would allow compliance with the national budgets, but would be partly unrealistic in practice. The unbroken curves show emissions trajectories that could result from emissions trading. It is assumed that Group 1 countries increase their budget by 75 % by purchasing emission allowances for 122 Gt CO2. Group 2 countries purchase emission allowances totalling 41 Gt CO2. The suppliers of the sum total, i.e. 163 Gt CO2, are the Group 3 countries, resulting in a decrease of around 43 % in their own emissions budget. Towards the end of the budget period, convergence of real CO2 emissions occurs at around 1 ton per capita per year (based on the population in 2010). The areas between the curves represent the traded quantities of emission allowances....”

Critique of existing proposals on global emissions reduction

Given the above analysis and methodology, it is possible to assess the implied carbon budgeting involved in proposals that have been put forward by Annex I parties during the UNFCCC negotiations and also that are contained in various versions of the draft texts of the Chair of the AAWG-LCA (ad hoc working group on long-term cooperative action).

The main proposal (from some Annex I parties) is for a 50% global emissions cut by 2050 (compared to 1990) and a 80% cut for Annex I parties. This was for example proposed during the small meeting of political leaders in Copenhagen by Chancellor Merkel of Germany.

This proposal has several problems.

Firstly, the 50% global cut is environmentally not ambitious enough It would correspond to a carbon budget far above the minimum 600 Gton or 750 Gton in 2010-2050 required to keep temperatures within 2 degrees, let alone 1.5 degrees. According to South Centre estimates, the global budget would be 1,200 to 1,500 Gton, depending on various assumptions. .

Secondly, the implied distribution of the the carbon budget as between Annex I and non Annex I is unfair. According to South Centre estimates, the 50% global cut and 80% Annex I cut would give Annex I countries a budget share of 30-35 per cent, compared to their projected share of world population of 16% during this period. Thus they could get double the share of the budget than their share of population, thus worsening their cumulative carbon debt of 1850 to 2009.

Thirdly, if this proposal is accepted, then the UNFCCC including the developing country members would have explicitly accepted not only the unfair distribution of the 2010-50 carbon budget, but also implicitly the writing off of the 1850-2009 cumulative debt of the developed countries.

Fourthly, the implication of accepting a 50% global cut and an Annex I cut of 80% would be to also accept a specific emissions cut target for developing countries, as well as the locking in of this whole distribution of carbon budget and set of emissions cuts.

The global emissions cut is made up of Annex I cuts and Non Annex I cuts. Once the global cut is fixed, then the lower is the AI cut, the higher is the NAI cut Once the AI cut is also fixed, the residual cut has to be made by NAI.

The implications for developing countries of some proposed scenarios of a global cut and an Annex I cut by 2050 are shown in Table 4.

In 1990 the global emissions of all Greenhouse gasses (without LULUCF) was 29.7 Gton (per capita emissions of 5.6 ton). Annex I emissions were 18 Gton (15.3 ton per capita) or 60% of the total. Non Annex I emissions were 11.7 Gton (2.9 ton per capita).

(By 2005, Annex I emissions were 17.8 Gton and per capita emission of 14.1 ton. Non Annex I emissions were 19.5 gotten with per capita emission of 3.7 ton).

By 2050, a global cut of 50% from 1990 would bring emissions down to 14.9 Gton (1.6 ton per capita). An 80% cut by Annex I would then result in the following in 2050:

- Annex I emissions would go down by 80% to 3.6 Gton. Its per capita emission would be 2.8 ton or 82% below the 1990 level.
- Non Annex I emissions would go down by 5% to 11.4 Gton. Its per capita emission would be 1.5 ton or 50% below 1990 levels. This level would also be about half the level of Annex I per capita emissions in 2050. This implies that Non Annex I countries would have a drastic cut by 50% or half in per capita emission levels.
- The Non Annex I cut is even higher if a base year nearer the present is taken, instead of 1990. This is of course very relevant to policy makers, who have to make mitigation plans based on the present levels. Compared to its 2005 level, the Non Annex I total emission in 2050 would be 42% below and its per capita emission would be 60% below, which are very steep cuts indeed.

Table 4: Implications of Proposed 2050 Global and Annex I Emission Targets for Developing Countries

Global 2050 Emissions Budget (Gt)		Less Annex I 2050 Emissions Budget (A1e)			Equals Non-Annex I 2050 Emissions Budget (NA1e)		
50% below 1990	14.986 GTCO2eq	3.60 GTCO2eq	80%) below 1990	(2.68 tons/cap; 82.61 % below 1990 per cap)	11.385 GTCO2eq	(4.85% below 1990)	(1.46 ton/cap; 49.77% below 1990 per cap)
		0,90 GTCO2eq	95%) below 1990	(0.67 ton/cap; 95.65% below 1990 per cap)	14.085 GTCO2eq	(17.69% above 1990 – 27.62% below 2005)	(1.80 ton/cap; 37.86% below 1990 per cap)
80% below 1990	4.496 GTCO2eq	3.60 GTCO2eq	80%) below 1990	(2.68 tons/cap; 82.61% below 1990 per cap)	0.895 GTCO2eq	(92.52% below 1990)	(0.11 ton/cap; 96.05% below 1990 per cap)
		0.90 GTCO2eq	95%) below 1990	(0.67 ton/cap; 95.65% below 1990 per cap)	3.596 GTCO2eq	(69.96% below 1990)	(0.46 ton/cap; 84.14% below 1990 per cap)

NOTES:
1. Base Year Data
1990 global emissions – 29.971 GTCO2eq
1990 Annext 1 emissions – 18.003 GTCO2eq; 15.39 ton/cap
1990 Non Annex 1 emissions – 11.968 GTCO2eq ; 2.90 ton/cap
2. The top part of the table depicts the implications of the dominant proposal of some Annex I countries that there should be a global emissions cut of 50% by 2050 (compared to 1990) and a 80% emissions cut by Annex I countries. Another scenario of a 95% cut by Annex I countries is also depicted. If these are undertaken, then developing countries would implicitly be asked to do the residual reductions (last two coumns)..
3. The bottom part of the table depicts a situation where there is a global cut of 80% and cuts by Annex I of 80% or 95% The resildual cuts to be undertaken by developing countries are depicted in the last two columns.

If a global cut of 50% cut by 2050 is retained and the target for Annex I increases to 95% below the 1990 level, the developing countries would still have to cut their emissions to 1.8 ton per capita which is below their 1990 per capita level. Their absolute emissions would go to 14 Gton, which is 18% above their 1990 level but 28% below their 2005 level.

If a goal is set for a global cut of 80% by 2050, in order to more satisfyingly fulfil environmental ambitions, the predicament for developing countries is even more acute, because the carbon space is so limited. In this scenario, if developed countries were to cut their emissions by 95% from 1990 levels, the developing countries would have to cut their emissions from 11.7 Gtons in 1990 to 3.6 Gtons in 2050. This is 70% below their 1990 level and 82% below their 2005 level in absolute terms. The per capita emission would have to be cut to 0.46 ton, which is 84% below the 1990 level and 88% below the 2005 level.

Link between CO2 per capita levels and Emissions Reduction for Developed and Developing Countries

In order to fulfill the environmental goal of a global cut of 50% to 85% (and the upper end is more appropriate to approach the required global carbon budget), it is clear that developed countries will have to go into the territory of “negative emissions”, in order that the developing countries can have a decent level of “development space” through being allocated allowed emissions sufficient to cushion their path to low-emissions growth.

Table 5.1 and Annex I show different scenarios for a global cut of 50% below 1990 levels. The following are some conclusions to be drawn from this table:

- If the Annex I countries cut emissions by 80%, then developing countries would have to cut their per capita emissions by 50%, to 1.4 ton.
- To avoid a per capita emission cut by 2050, developing countries would retain a level of 3 ton per capita, resulting in a 3% increase in per capita for them, as shown in 4th line from the top. In this same line, Annex I countries would have to cut their total emissions by 147% I.e. cut by 100% to zero and then cut by another 47% to reach negative emission level of 8.4 ton.
- If a goal is set for developing countries (NAI) to double their per capita emissions from 1990 to 2050, then the scenario in the 1st line applies. Non Annex I increases its per capita emission by 107% to 6 ton per capita, and Annex I has to cut its aggregate emissions by 277% (go down from 18 Gton in 1990 to zero and then cut by another 31.8 Gton by 2050). This frees the space to enable developing countries to have 46 Gton of emissions. The addition of the two (- 31.8 plus 46.8 results in the new 2050 global emission of 14 Gton).
- In this Line 1 scenario, the global goal is set at 50% emission cut, with a 277% cut by Annex I and a 291% increase by Non Annex I.
- This metrology can be used to add on other scenarios.
- If Annex I cannot realistically meet the targets set especially at levels higher than 100%, then the mechanism of compensatory payment to developing countries to assist in fulfilling the allocated targets can be used, as discussed earlier.

Table 5.1 Global emissions reduction goal of 50% below 1990 levels (14.986 GTCO2eq global)

A1 GTCO2eq emission reductions from 1990 levels needed taking into account NA1 emissions per capita growth for development

NA1 CO2eq Ton/Capita 2050	NA1 aggregate % relative to 1990	A1 aggregate % relative to 1990	2050 A1 per Capita % relative 1990	2050 NA1 per Capita % relative to 1990
6	291%	(277%)	(254%)	107%
5	226%	(234%)	(216%)	72%
4	161%	(190%)	(178%)	38%
3	96%	(147%)	(141%)	3%
2	30%	(103%)	(130%)	(31%)
1,80	**17,70%**	**(95%)**	**(95,65%)**	(38%)
1,46	**(4,87%)**	**(80%)**	**(82,61%)**	(50%)
1	(35%)	(60%)	(65%)	(66%)

Table 5.2 Global emissions reduction goal of 85% below 1990 levels (4.496 GT-CO2eq global)

A1 GTCO2eq emission reductions from 1990 levels needed taking into account NA1 emissions per capita growth for development

NA1 CO2eq Ton/Capita 2050	NA1 aggregate % relative to 1990	A1 aggregate % relative to 1990	2050 A1 per Capita % relative 1990	2050 NA1 per Capita % relative to 1990
6	291%	(335%)	(304%)	107%
5	226%	(292%)	(267%)	72%
4	161%	(248%)	(229%)	38%
3	96%	(205%)	(191%)	3%
2	30%	(162%)	(154%)	(31%)
1	(35%)	(118%)	(116%)	(66%)
0,46	(69,95%)	**(95%)**	**(95,65%)**	**(84%)**
0,11	(92,52%)	**(80%)**	**(82,61%)**	**(96%)**

Table 5.2 has the same format as Table 5.1 in showing various scenarios, but with the more ambitious goal of a global cut of 85% by 2050 below 1990 levels. A few significant points:

- With this more stringent global goal, the developing counties would have to undertake very drastic emissions cuts if developed countries remain in “positive” rather than “negative emissions” territory. For example, even a 95% cut by Annex I would imply that Non Annex I has to cut by 84% per capita compared to 1990.
- With the same goals of maintaining or increasing per capita emission levels of developing countries, the developed countries have to have higher targets. For example, a 3% increase in Non Annex I per capita emission implies a 205% aggregate Annex I cut; and a 107% increase in Non Annex I per capita emissions means a 335% cut by Annex 1.
- Again, under an agreed compensatory system, Annex I countries can choose to transfer some of their obligations to developing countries.

7. PER CAPITA EMISSIONS, EQUITY AND DEVELOPMENT CONCERNS

Until recently, there was a widely held belief that complete equity would be achieved when each person or country would emit (or have emission rights of) the same per capita emission.

This would result in equal emissions per person. However it would not result in an equitable outcome, from a developmental perspective.

This is because countries and persons have different capacities as a starting point. The application of equal treatment or equal “emission rights” to countries and persons that are unequal in capacity would result in an unequal outcome in terms of income or living standards or capacity for development.

Presently, developed countries enjoy at least four advantages over developing countries:

- They have far better developed infrastructure such as roads, buildings, factories, power plants, etc., much of which were built cheaply but also were emission-intensive because of the use of fossil fuels. This infrastructure reflects high levels of embedded carbon and the carbon debt built up since the industrial revolution.
- The far superior levels of technology in terms of machinery, knowledge and innovation capability.
- The greater human and organizational capacity, including to turn around the economy towards low-emissions pathways.
- They have far higher levels of income that also enable them to pay for and be better in the three above factors.

These factors mean that developed countries have greater capacities to progress towards a low-carbon economy and society, while retaining or expanding their level of development and living standards.

Thus, if a level of 1 ton per capita is chosen as a “sustainable level” to avoid climate damage, it is conceivable that developed countries can reach that low-carbon per capita level, with technological and other changes, and retain their present level of living, such as $30,000 per capita income or more.

On the other hand, a country that now has a per capita emission of 1 ton of emissions or below may retain that level and not be able to climb up the income scale, so that its economic level remains at, for example, $1,000 or less. Also, developing countries that are currently at moderate emission levels of 3 to 8 tons per capita would find it difficult to reduce their emission levels while maintaining or expanding their economies through a low-emissions path, as they are lacking in the three factors.

Of course, with massive transfers of finance and technology, such a country could improve its economic condition. However it is unlikely that a developing country will be able to match the developed countries in the above factors.

Thus, to oblige the different countries to have the same per capita emission level would be to “lock in” the economic disparities among them. This should be avoided.

On the other hand, the concept of per capita emissions equity is a useful one, if all countries are at the same or similar levels of development.

One possible approach is to retain the aim of having an equal per capita emission as a starting point, but to provide countries with coefficients. Thus a country that is much poorer and lacks in infrastructure and technology could have a “multiplier” of 5 or 10 to apply to its coefficient of 1. Another country that in contrast is very advanced in technology and income could have a coefficient below 1, and may even have a negative coefficient so that it has a target of a negative emission. The coefficient would be a measure of the relative capacities of the countries, in terms of incomes, infrastructure, technology and human capacity.

8. DIFFICULT MULTIPLE TASKS FACING DEVELOPING COUNTRIES

The developing countries are facing very serious and difficult challenges.

- They face a development challenge as in most countries there is still substantial poverty, unemployment and social problems, which require economic growth to resolve.
- They are still in the initial phases of industrial development and require increasing amounts of energy (both fro industry and household use), while the use of cheap fossil fuels is increasingly phasing out, and renewable energy is more expensive.
- There is very little carbon space left, and to avoid disastrous climate change, the developing countries also have to contribute in curbing emissions (initially through slowing down the growth) in physical terms.
- Maintaining the ambition of high economic growth while increasingly economising on carbon emissions so as to eventually achieve emissions reduction, or to avoid a carbon growth path altogether (especially for low income countries) is an extremely complex and difficult task, which the developed countries have not had to go through.

An important and perhaps in future the most important task is to define and aim for efficiency in terms of obtaining the maximum amount of economic output (GNP) out of each unit of carbon which in turn is getting more scarce.

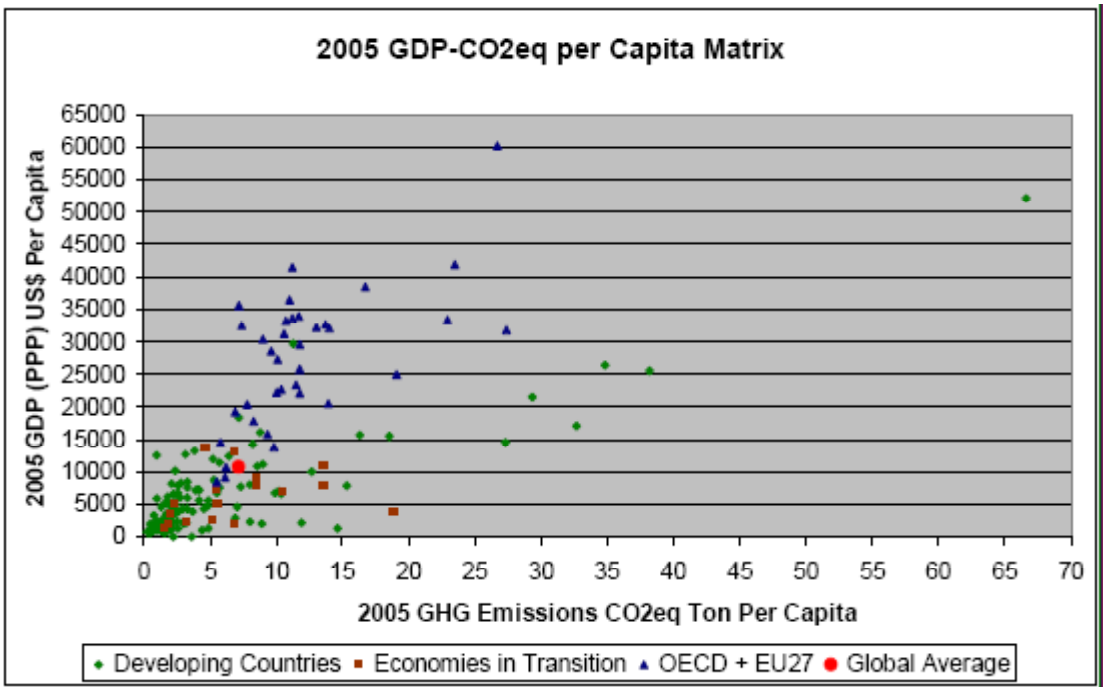
If the climate-development dilemmas and trade offs between climate mitigation actions and development-poverty-employment imperatives are not resolved, it will be difficult for developing

countries to undertake the technological leap-frogging and the shift to a low-emissions path to economic growth.

The objective should be to retain the objective of moving towards higher development levels while also simultaneously moving towards greater efficiency in carbon and emissions avoidance

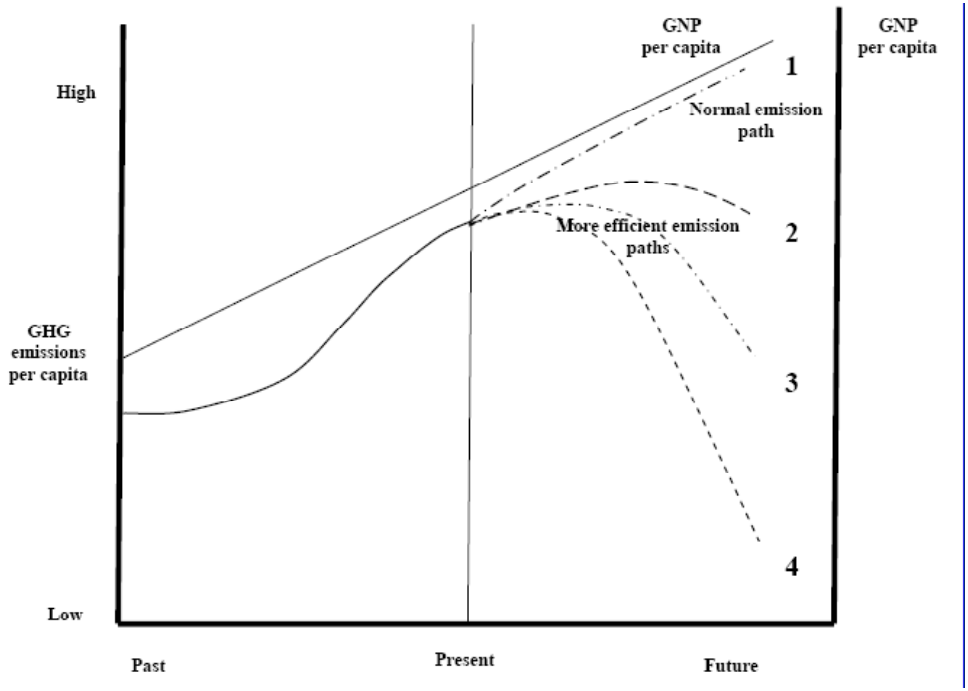
In the conventional growth path, economic growth and emissions growth are closely related and tied together. Chart 2 in chart form shows the close relation between per capita income and per capita emissions. Countries with higher per capita income generally have higher per capita emissions.

Chart 2:



The de-coupling of conventional economic growth from emissions growth potentially benefits both the country and the world through increasing units of avoided emissions. There are theoretically possible increasing gaps between the growth of GNP (and the business-as-usual accompanying high growth of emissions) on one hand, with more efficient emissions paths, as shown in Chart 3. However the efficient emissions pathways can be achieved only with international cooperation in transfers of finance and environmentally-sound technology. As illustrated in the Chart 3, higher levels of finance and technology transfers would lead to a greater efficiency in terms of lower emissions per capita while GNP per capita also continues to grow., and enable mitigation actions of developing countries. The relation between available financial resources and avoided emissions is shown in Chart 4.

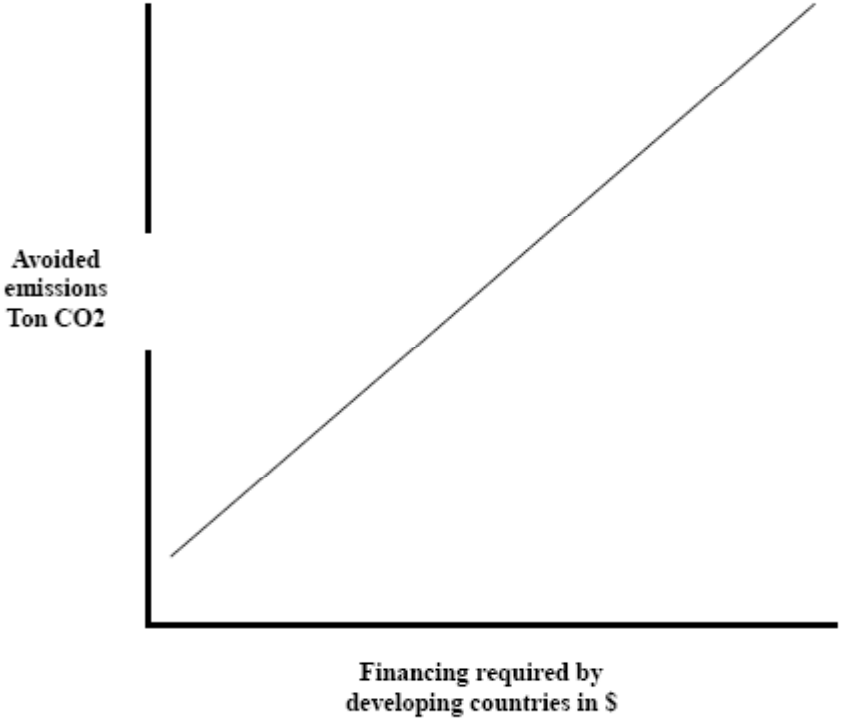
Chart 3: Some Pathways for Avoiding Emissions in Developing Countries



NOTE: The Chart illustrates that the developing countries have an economic growth path which they need to maintain for purposes of social and economic development. In a business as usual scenario, the growth of emissions would be in line with economic growth, in Path 1, the “normal emission path.” Paths 2, 3 and 4 indicate more efficient

emission pathways, with emissions reduced while normal economic growth is maintained. Path 4 involves greater avoided emissions than the other paths. The more the efficiency in avoided emissions, the greater is the gap between the efficient emissions path and the normal emissions path as well as the gap with the GNP line. The gaps have to be supported and enabled by finance and technology. Thus the more efficient is the emissions path, and the greater is the gap, the more are the finance and technology required.

Chart 4: Relationship between Mitigation Effort of Developing Countries and Financing to Them



9. THE FINANCE ISSUE IN THE EQUATION

General

The equity principles of common and differentiated responsibilities, historical responsibility, commitments of Annex I parties to take the lead in mitigation, and in provision of finance and technology to developing countries, and the principle that the extent of actions of developing countries depending on the extent of Annex I implementing their finance and technology commitments, as well as the objectives of the Convention pointing to high ambitions for the environment and economic development, lead to the following conclusions:

- Due to human activity having exhausted the atmospheric space in a short period, there is very little atmospheric space left to absorb more Greenhouse gas emissions. The developed countries have occupied most of the existing atmospheric space through their cumulative emissions, and to keep global warming within a level associated with disastrous effects, the world as a whole has to cut its rate of emissions very rapidly and bring emissions to zero or closer to zero as soon as possible
- This poses a major dilemma for developing countries, which have not been responsible for much of the problem, but which still need enormous amounts of carbon space should the conventional way of growth continues. To break the link between emissions growth and GNP growth, massive transfers of finance and technology are required by the developing countries
- The principles and analysis of historical responsibility should lead to positive action that can contribute to the resolution of the climate crisis. The climate debt of developed countries can be discharged through financing and technology transfers to developing countries to enable them in the decoupling and in the shift to low-emissions growth. It is desirable that there be a large extent of financial and technology transfers so as to enable the large extent needed for climate actions in developing countries.
- Methods should be developed to assess the existing climate debt and to transform this into financing for developing countries. Further, future debts (in terms of over-use of emissions in relation to population ratio) can also be compensated through mechanisms to enable developing countries to take mitigation actions.
- It is important to assess the mitigation and adaptation costs that developing countries will have to incur if they are to undertake adequate mitigation and adaptation measures. The greater the mitigation actions (or emission curbing that is required for developing countries to take, the greater the amounts of financing and technology are required. The greater the shortfall in terms of global mitigation actions, the greater the amounts of financing required for adaptation actions by developing countries.

Legal Obligations of Developed Countries: Why Climate Finance is Different from Aid

Climate financing is often treated like development aid. But unlike aid, which is voluntary and based on humanitarian concerns, the provision of financial resources to developing countries is a legal obligation of developed countries, which made commitments under the UNFCCC.

The developed countries (listed as Annex II of UNFCCC), as part of their treaty obligations, are committed to provide financial resources to developing countries, in at least three ways:

- Under Article 4.3 of the Convention, developed countries are obliged to provide new and additional resources to developing countries that would meet the agreed full incremental costs (including for technology transfer) of developing countries to implement their obligations under Art. 4.1
- They are also obliged to meet the full agreed costs for preparing and submitting developing countries> national communications, under Art. 4.3
- Under Art 4.4., developed countries are also obliged to assist developing countries to meet the costs of adaptation.

In addition, developed countries have obligations on technology transfer under Art. 4.7 of the Convention.

The developing countries therefore have rightly considered climate financing as fundamentally different from development aid. Aid has been to a significant extent an act provided under a framework of charity or humanitarian concern. Climate financing is a treaty obligation established to address a global crisis, in a framework and Convention which recognises that developed countries are responsible for causing most of the problem and have a legal duty to take the lead in emission reduction themselves and to support and enable developing countries to take their own mitigation and adaptation actions.

Elements of Climate Financing for Developing Countries

The provision of climate financing is not the only key element in globally addressing the climate crisis. For example, there is a great need for developed countries to reduce their emissions as quickly and steeply as possible. However, climate financing is crucial in supporting and enabling developing countries to take their own climate actions and thus to contribute to the global solutions.

The following are some elements of climate financing

(1) Resolution of the climate debt

In Sections 3 and 4, the carbon debt and estimates of it were discussed. The carbon debt accumulated

in 1850 to 2008 by Annex I countries is estimated at 568 Gton of CO2 at the end of 2008. The credit that developing countries have is the same amount.

One method of discharging the debt obligation is to assess its value and planning its repayment.

Concepts and estimates regarding allocation of emissions rights were given by the economist Nicholas Stern's in his book The Global Deal: "If the allocations of rights to emit in any given year took greater account both of history and of equity in stocks rather than flows, then rich countries would have rights to emit which were lower than 2 tonnes per capita (possibly even negative) The negotiations of such right involve substantial financial allocations: at $40 per tonne CO2e a total world allocation of rights of, say, 30Gt (roughly the required flows in 2030) would be worth $1.2 trillion per annum"

Stern recognises the concepts of equity, historical emissions and the fact that if these are applied to rights to emit, developed countries' rights could even be negative. This concept of allocation of negative emissions has been used in earlier parts of this paper. The use of the level of $40 per tonne of CO2 equivalent is also a significant example. It is also important that Stern recognises that the value of the emission rights may be worth more than US$1 trillion a year.

A carbon debt of 568 billion tonnes, valued at $40 a tonne, would be worth $23,000 billion. An amount like this, contributed to a Fund to be accessed by developing countries, would go a significant way to support and enable their climate actions. If this amount is divided into 40 installments (corresponding to the period 2010-2050), then a sum of about $600 billion a year (not counting interest on the capital amount or the effects of inflation on future value of the amounts) could be paid into the Fund. This is about 1.5% of the current GNP of developed countries.

(2) Financing for mitigation

Developing countries require financing for mitigation activities, which is required to contribute to the world keeping to the carbon budget for 2010-2050. According to the Convention's Art. 4.7, the extent to which developing countries take climate actions depends on the extent to which developed countries meet their commitments on providing finance and technology transfer. The commitment is to meet the full incremental costs of mitigation in developing countries.

The costs can be very significant, and thus the amounts required should match this. Middle income developing countries that have moderate per capita emissions require substantial finance to mitigate and to avoid future emissions. This is to avoid taking either the inefficient growth path However low-income countries also require substantial financing, perhaps even more, because their growth path may be even more difficult, as they could attempt to avoid "moving up the per capita emissions pathway" before climbing downwards, as they develop, build economic and social infrastructure and industrialise. The avoided emissions required may be even higher for low-income countries throughout their movement towards higher development levels.

The World Bank in its World Development Report 2010 has estimated that: “In developing countries mitigation could cost $140 to $175 billion a year over the next 20 years (with associated financing needs of $265 to $565 billion).” This is associated with stabilising greenhouse gas concentration at 450 ppm. The Bank's conclusion is made after a survey of various existing studies. The Bank distinguishes between mitigation cost (which it defines as the incremental costs of a low-carbon project over its lifetime) and incremental investment needs (the additional financing requirement created as a result of the project). According to the report, because many clean investments have high up-front capital costs, followed later by savings in operating costs, the incremental financing requirements tend to be higher than the lifetime costs reported in mitigation models, and the difference could be as much as a factor of three.

It should also be noted that if the stabilisation target is more ambitious than the 450 ppm chosen, the mitigation costs to developing countries would go up correspondingly.

The widely used method of conceptualising mitigation costs is to estimate the cost of avoiding emissions. It has been argued that this “abatement cost” is cheaper in developing countries than in developed countries. The UNFCCC's investment and financial flows report concluded that $200-211 billion is needed globally in one year (2030) in order to reduce emissions worldwide by 31.7 Gton CO2eq. Of this, an annual flow to developing countries of $65 bil is needed which would reduce emissions by 21.7 Gton (or 68% share of global emissions). However an update of the UNFCCC report (2009, p56) recognises its under-estimation of mitigation costs, as the $200-210 bil covers only the initial capital cost of new physical assets and covers only the use of known technologies; it does not include the costs of capacity building, creation of enabling environment, or the development and use of new technologies. Moreover, it admits that the estimates for the cost of additional investment needed in 2030 have gone up since its original report (for example the cost of reducing energy-related CO2 emissions is 170% higher in a 2008 report than in the 2007 report it had based its estimates on). However it does not update its own overall cost estimate.

Much more work needs to be done on estimating costs in developing countries through a “bottom-up approach”. The UNFCCC financial flows report, using marginal abatement cost (MAC) curves, shows that in general it is much cheaper at first to reduce emissions in developing countries, but that the costs go up significantly after the initial and easier measures have already been taken. “Available information shows that significant mitigation potential exists until 2020 with known technologies. However to achieve the necessary reductions in 2030, mitigation actions have to be scaled up considerably and new mitigation opportunities need to be identified and developed.” (UNFCCC 2009 p 56).

This point, of an easy start but of increasingly difficult follow-up phases, is made in a study in India of the six most emissions intensive sectors to determine India's low carbon growth options. The study by Centre for Science and Environment (2010), concludes: “The fact is that till 2020 India's current commitment (20-25 per cent reduction in emissions intensity of GDP) is easy to meet. It is about picking off low-hanging options, which will cost but not enough to be undoable. This is the easy part. The tough

part is what begins now for the future. The fact os that in all high-polluting sectors, the technology options for emissions reduction stagnate after 2020. There is no real way we can reduce emissions without impacting growth as we know it, once we cross the current emissions-efficiency technology threshold....It is for this reason that India (and all other late entrants to the development game) must not give up on their demand for an equitous global agreement."

The CSE study estimates that for the most important sector, power generation, a low-carbon strategy could reduce emissions in India cumulatively by 3.4 Gton by 2030-31. The additional cost of generating power from renewable technologies in the low-carbon strategy over business-as-usual until 2030-31 is estimated at 8470 billion rupees (US$203 bil) at 2010 constant prices, or about $10 bil a year. This also means an average cost of 2,500 rupees, or $60 per tonne of CO2 emissions avoided. The study notes that this is three times the price of carbon credits traded on the European Climate Exchange either under the Clean Development Mechanism or the EU Emissions Trading Scheme. "This means that the CDM cannot pay for the transition to low carbon in the power sector in India, and a new international mechanism will be required to fund the transition." (CSE 2010 p36-37).

It should also be noted that the UNFCCC report had concluded that a large majority of the emission reduction potential in developing countries can be realised at a cost of below $25 per ton of carbon. However the CSE study estimates a cost of $60 per ton for the Indian power sector, and that a payment below that through a carbon trading regime would not be able to finance the transformation needed.

(c) Financing for Adaptation

There are various estimates of adaptation financing needs of developing countries. Most of the studies done are limited in scope (because they leave out several sectors and activities) and thus in their cost estimates. The World Bank's recent report on "The cost to developing countries of adapting to climate change" estimates that "the cost between 2010 and 2050 of adapting to an approximately 2 degree C warmer world by 2050 is in the range of $75 billion to $100 billion a year." In its wetter scenario with a total $102 bil adaptation cost, the study concludes that the costs are $29 bil for East Asia/Pacific, $23 bil for Latin America and Caribbean, $19 bil for Sub-Sahara Africa, $17 bil for South Asia, $11 bil for Europe and Central Asia and $4 bil for Middle East and North Africa.

The Bank's estimate is higher than the UNFCCC's financial flows report, which estimated the cost of adaptation for developing countries at $27 to $66 bil a year (with the global cost being $49-171 bil a year)..

The most comprehensive estimate is by a team of scientists led by Martin Parry, former Co-Chair of the IPCC working group on impacts, vulnerabilities and adaptation. The study found that the UNFCCC report had significantly underestimated adaptation costs because it left out several sectors (mining, manufacturing, energy, retail, finance, tourism), and under-stated the costs in the sectors it covered by 2 to 3 times.

In the sectors covered by the UNFCCC report (water, health, infrastructure, coastal zones), the real costs are 2 to 3 times greater than estimated by that report. For example, in infrastructure, the the UNFCCC estimate of $8-130 bil assumed that low levels of infrastructure investment will continue to characterise development in Africa and other poor parts of the world. But the Parry report takes the view that such investment must increase to reduce poverty and avoid high vulnerability to climate change. The costs of upgrading the housing and infrastructure in developing countries would be $315 bil a year over 20 years and adapting to climate change for the upgraded infrastructure will cost an additional $16-63 bil a year.

If the Parry report estimate is that the UNFCCC estimate is 2 to 3 times too low for the sectors it covered, then the real cost would be $68 to $165 bil a year for developing countries (using a multiplier of 2.5). If we also add the adaptation costs to ecosystems that UNFCCC did not cover, the additional cost is $65-300 billion. Moreover the costs of “residual damage” (the damage caused from situations where adaptation is not economical or technically feasible), not covered, are very substantial. A background paper for UNFCCC by Dlugolecki (2007) estimated the costs of damage from present extreme weather at $200 billion a year, and pointed out that this reflects the current scale of inadequate adaptation.

A rough estimate of the cost of adaptation needs, based on the above, is that developing countries require $68 to 165 billion plus a fraction of the global $65 to 300 billion for ecosystem protection and of the $200 bil if costs of damage from weather events are to be included. Taking the upper end of the first item and half of the next two items, the cost comes to $630 billion annually. This figure does not include the costs of several sectors that are not included.

(d) Financing for technology cooperation and transfer

The UNFCCC's expert group on technology (EGTT) provides estimates of additional financing needed to achieve projected implementation of specified mitigation technologies. The total finance needs are $300-1,000 billion a year on average from now to 2030 (UNFCCC 2009 page 58-59). Of this total, developing countries are estimated to have additional funding needs $182 – 505 billion a year, for deployment and diffusion of technology. This does not include research and development or demonstration, which are assumed to be additional financing in developed countries.

More research needs to be done on the cost of technology transfer to developing countries and on research and innovation in developing countries themselves. It should however be noted that there are separate costs involved for technology development and transfer, although there may be an overlap of some costs with mitigation or adaptation.

Conclusion on Finance

An equitable framework for sharing the atmospheric space requires the discharging of the historical

responsibility of developed countries through enabling developing countries to take climate actions in mitigation, adaptation, capacity building and technology.

A major method of realising this is through the provision of finance and technology, massive amounts of which are required. The discussion above indicates some measure of the amounts of financing required:

- Resolution of the climate debt, at a possible estimate of $600 billion a year over 40 years
- Financing for mitigation, which the World Bank estimates will cost up to $585 bil a year.
- Financing for Adaptation, which can be estimated at $630 bil a year
- Technology financing needs, estimated at up to $500 bil a year.

These are rough estimates and more work is required on the carbon debt as well as additional costs for which developing countries need financing. The above suggests that about $2,300 billion or equivalent of 6% of the current GNP of developed countries is required.

10. IMPLICATIONS FOR NEGOTIATIONS

The analysis in this paper has implications for various aspects of the UNFCCC negotiations. Below is a brief summary of these:

(a) Shared Vision:

In the negotiations on shared vision, developing countries have argued that a decision on a global goal (whether temperature limit or global emissions reduction) should be in the context of equity and even to be preceded by a paradigm for the equitable sharing of the atmospheric space or resource. This should also be the case for the wording on a global peaking year.

This is a correct position because the global goals for temperature and emissions reduction have implications (explicit or implicit) for the responsibilities of developing countries or for their options in their emissions and thus their economic pathways. This principle of equity in sharing of atmospheric space has to be operationalism, with the use of the concepts and data on cumulative emissions, carbon debt and credit, and how to discharge the debt, etc. The data on fair shares and actual emissions and thus on debt/surplus also have major implications for the sharing of the carbon space in the 2010-2050 period, and thus of the allocation of emission obligations and rights as would be expressed in the shared vision's important element of “global goal for emissions reduction.”

It is suggested that special sessions of the AWG-LCA be held to deal with the issues of “the equitable sharing of the atmospheric space”, which will discuss the inter-related issues of historical emissions, the remaining carbon space up to 2050, the emissions reduction required, and how this burden of reductions should be shared, based on the equity principles of the UNFCCC.

(b) Mitigation

The concepts and figures on cumulative emissions and carbon debt/surplus make it clear that Annex I parties must continue to “take the lead” in emissions reduction. Thus in the current negotiations for the mid-term up to 2020, and even in the discussion on 2050 targets, there should not be an “escape” from this leadership responsibility by arguing that certain developing countries have to join in the effort if there is to be a binding obligation on Annex I parties. Or that they would not want to have a binding commitment on emissions reduction because developing countries are not prepared to join in. The reiteration of historical emissions and historical responsibility and carbon debt are relevant in an argument in favour of binding targets for developed countries, for the continuation of the Kyoto Protocol and for comparable effort for those Annex I parties that are not in the KP.

It must be recognised that if developed countries undertake only weak targets for the next commitment period (2013-2017 or 2013-2020), and their emissions are only reduced a little (or even increases), then there is even less carbon space left for developing countries. The present pledges made either in the Copenhagen Accord or previously in the Kyoto Protocol working group are simply inadequate. Various analyses (most notably one in Nature journal) show that the Annex I (including the US) pledges add up collectively to only a 16% reduction at best (by 2020 compared to 1990) and if loopholes (through LULUCF and AAUs) are taken into account there can even be a 6.5% increase in Annex I emissions. If the carbon debt approach is taken (where poor performance is not simply ignored but is made accountable through the increase in carbon debt, with implications for compensation), then there is a greater incentive or imperative for Annex I countries to play their leadership role.

The analysis should also be useful in supporting the argument that developing countries' mitigation actions have to be supported and enabled by finance and technology, as is stated in the Bali Action Plan and the Convention's articles.

(c) Finance

The historical carbon debt that developed countries hold should be discharged through compensation into a UNFCCC Fund. This could be a lump-sum payment or payments over the 40 years 2010-2050 in yearly installments. The funds will enable developing countries to undertake climate and development actions.

Besides this, the developed countries have obligations under the UNFCCC to meet the additional or incremental costs of developing countries in mitigation and in preparing their national communications, as well as to meet additional costs for adaptation and technology.

The paper indicates that the quantum of funds for discharging the carbon debt and for meeting the additional costs are large, but this is to be expected since the financial requirements of adaptation, mitigation, capacity building and technology are massive. This is so under a framework of limiting

temperature rise to 2 degrees. It is even much larger should limit of 1.5 degrees is agreed upon.

It is also important to ensure that the funds are additional, predictable and stable and are not mostly not loan-based as this would only add on to the financial debt burden of developing countries.

The amounts so far announced ($10 bil a year from 2010, and $100 bil by 2020 made up of private and public funds, etc) are grossly inadequate given the enormity of the tasks facing developing countries and the estimates of the needs.

The G77 and China have estimated a value of at least 1.5% of the GNP of developed countries as the basis of the finance needed by developing countries. In the light of the analysis of this paper, this figure is inadequate, and may have to be reconsidered. The paper indicates that the financing aspect should be 6% of GNP. More research can be undertaken on this issue.

(d) Technology

It is clear that if the world is to achieve a temperature limit that gives a reasonable chance of survival, developing countries will have to play their role in avoidance of emissions, while at the same time not sacrificing their development goals.

This requires a tremendous technological leap or leap-fragging that involves access to climate-related technology at the most affordable rates. The avoidance of disastrous climate change is definitely a global public good, which must have higher priority that commercial interests. Thus the developing countries are correct to take the position that

1. They must have the maximum access at least cost to the best technologies;
2. Barriers to technology transfer must be addressed, including the issue of IPRs;
3. Developing countries must be assisted in the development of endogenous technology and to undertake their own R and D and develop innovation, with international support;
4. R and D activities should be financed by a UNFCCC funds, and the products from these should be in the public domain;
5. Sufficient funds be provided for technology development and transfer to developing countries.
6. A Technology Policy Board or Council be set up under the COP to address all the technology issues.

(e) Measurement, reporting and verification (MRV)

Developed countries have been pressing to create new MRV obligations on developing countries. These pressures are unfair when the developed countries themselves are preparing the ground for abandoning the Kyoto Protocol or any form of binding commitment on developed countries on an aggregate reduction

target that is adequate in line with the science. In other words they have prepared to abdicate their leadership role in emissions reduction, while shifting the burden onto developing countries. The MRV requirements that they seek to impose would impose more conditions on developing countries without any corresponding increase in the obligations of developed countries.

It is thus important to establish a binding, adequate and useful MRV system on the implementation of the commitments of developed countries to provide finance and technology to developing countries. This should be placed in the draft texts of UNFCCC and a negotiating group on this issue should be established.

Annex 1:
Global emissions reduction goal of 50% below 1990 levels (14.986 GTCO2eq global)

A1 GTCO2eq emission reductions from 1990 levels needed taking into account NA1 emissions per capita growth for development

NA1 CO2eq Ton/ Capita 2050	NA1 GTCO2eq Aggregate 2050	NA1 aggregate % relative to 1990	A1 GTCO2eq Aggregate 2050	A1 aggregate % relative to 1990	A1 CO2eq Ton/ Capita 2050	2050 A1 per Capita % relative 1990	2050 NA1 per Capita % relative to 1990	2050 A1 per Capita % relative to 2005	2050 NA1 per Capita % relative to 2005
6	46,83	291%	(31,84)	(277%)	(23,66)	(254%)	107%	(267%)	62%
5	39,02	226%	(24,04)	(234%)	(17,86)	(216%)	72%	(226%)	35%
4	31,22	161%	(16,23)	(190%)	(12,06)	(178%)	38%	(185%)	8%
3	23,41	96%	(8,43)	(147%)	(6,26)	(141%)	3%	(144%)	(19%)
2	15,61	30%	(0,62)	(103%)	(0,46)	(103%)	(31%)	(103%)	(46%)
1,80	14,085	17,7%	0,900	(95%)	0,67	(95,65%)	(38%)	(95,27%)	(51,25%)
1,46	11,385	(4,87%)	3,601	(80%)	2,67	(82,61%)	(50%)	(81,07%)	(60,59%)
1	7,80	(35%)	7,18	(60%)	5,34	(65%)	(66%)	(62%)	(73%)

Global emissions reduction goal of 85% below 1990 levels (4.496 GTCO2eq global)

A1 GTCO2eq emission reductions from 1990 levels needed taking into account NA1 emissions per capita growth for development

NA1 CO2eq Ton/ Capita 2050	NA1 GTCO2eq Aggregate 2050	NA1 aggregate % relative to 1990	A1 GTCO2eq Aggregate 2050	A1 aggregate % relative to 1990	A1 CO2eq Ton/Capita 2050	2050 A1 per Capita % relative 1990	2050 NA1 per Capita % relative to 1990	2050 A1 per Capita % relative to 2005	2050 NA1 per Capita % relative to 2005
6	46,83	291%	(42,33)	(335%)	(31,46)	(304%)	107%	(323%)	62%
5	39,02	226%	(34,53)	(292%)	(25,66)	(267%)	72%	(281%)	35%
4	31,22	161%	(26,72)	(248%)	(19,86)	(229%)	38%	(240%)	8%
3	23,41	96%	(18,92)	(205%)	(14,06)	(191%)	3%	(199%)	(19%)
2	15,61	30%	(11,11)	(162%)	(8,26)	(154%)	(31%)	(158%)	(46%)
1	7,80	(35%)	(2,31)	(118%)	(2,46)	(116%)	(66%)	(117%)	(73%)
0,46	3,596	(69,95%)	0,900	(95%)	0,67	(95,65%)	(84%)	(95,27%)	(87,56%)
0,11	0,895	(92,52%)	3,601	(80%)	2,67	(82,61%)	(96%)	(81,07%)	(96,90%)

Annex 2
Some useful data relevant to the Carbon Budget analysis

Data Item	Value
A1 1990 aggregate emissions CO2eq	18.003 billion tons (GT)
NA1 1990 aggregate emissions CO2eq	11.968 GT
Global 1990 aggregate emissions CO2eq	29.971 GT
A1 1990 per capita emissions CO2eq	15.39 Tons
NA1 1990 per capita emissions CO2eq	2.90 Tons
A1 1990 population	1.169739 Billion
NA1 1990 population	4.120713 Billion
A1 2005 aggregate emissions CO2eq	17.757 GT
NA1 2005 aggregate emissions CO2eq	19.459 GT
Global 2005 aggregate emissions CO2eq	37.216 GT
A1 2005 per capita emissions CO2eq	14.14 Tons
NA1 2005 per capita emissions CO2eq	3.70 Tons
A1 2005 population	1.256 Billion
NA1 2005 population	5.256 Billion
NA1 2020 aggregate emissions CO2eq projected under IPCC A1FI SRES baseline scenario	35.126 GT
NA1 2020 population (projected UN)	6.353 Billion
A1 2020 population (projected UN)	1.321 Billion
A1 2050 population (projected UN)	1.346 Billion
NA1 2050 population (projected UN)	7.804 Billion

Notes on data sources:

1. Emissions data for 1990-2005: World Resources Institute, Climate Analysis Indicators Tool (CAIT) ver 7.0 (http://cait.wri.org)
2. Emissions projections for 2020: Table 4, M. den Ellen & N. Hohne, Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets, Climate Change (2008), 91:249-274, p. 261 at http://www.springerlink.com/content/r272jg6071257627/fulltext.pdf (this is the study referred to by the EU in its Dec 2008 communication on the Copenhagen agreement to support its 15-30% below baseline proposal)
3. Populations data from UNDESA Population Division, The World Population Prospects: 2008 Revision Population Database, http://esa.un.org/unpp/

Annex 3.
SOME RELEVANT PROVISIONS OF THE UN CLIMATE CONVENTION THAT RELATE TO EQUITY

Some of the important provisions in the UN Framework Convention on Climate Change relating to equity and development concerns are as follows.

Preamble: Noting that the largest share of historical and current global emissions of GHG has originated in developed countries, that per capita emissions in developing countries AR still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs."

Preamble: Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty,

Preamble: Recognizing that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial,

Article 2 : The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

Article 3.1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of **equity and in accordance with their common but differentiated responsibilities** and respective capabilities. Accordingly, the developed country Parties **should take the lead in combating climate change** and the adverse effects thereof.

Article 3.2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.

Article 4 .2. The developed country Parties and other Parties included in Annex I commit themselves specifically as provided for in the following:

(a) Each of these Parties shall adopt national1 policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention...

Article 4.3. The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1.

They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.

Article 4.4. The developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

Article 4.5. The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

Article 4.7. The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.