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Engaging developing countries in climate change negotiations

Note

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EXECUTIVE SUMMARY

Fifteen years after the establishment of the climate change negotiating process, it is clear that the process is more urgent than ever and it also becomes increasingly more important to proactively engage the developing world. However, the power of the developing world vis-à-vis the developed world has continued to decline as we have moved from tripartite politics, through a bi-polar world and unilateralism, to an era of new emerging powers who may stop promoting developing country issues while exclusively attracting attention to themselves. In the context of the climate negotiations, developing countries feel themselves to be cumulatively deceived by the developed countries which have not really shown leadership in drastically reducing their own emissions while also scarcely providing the necessary resources to the developing countries to both adopt new technologies and adapt to the most serious impacts of climate change. Based on the assumption that developed countries need to at least treble their own efforts to reduce their emissions, this paper explores the possible ways to attract developing countries on board in addressing climate change.

This paper submits first that the division of the world into Annex I/B and non Annex I/B countries tends to lump the rest of the world into one big category. While in the negotiations interest based coalitions and regional coalitions exist, in fact there are vast differences between the economic, political and human contexts of these countries, and these differences need to be accounted for in the development of instruments to encourage these countries to participate in policy processes. It presents a table which shows that some of the so-called developing countries have incomes and industrial CO₂ emission levels on a per capita basis that is comparable to those of the developed world and vice versa.

The paper then argues that there are a number of key issues of particular relevance to the developing world. These include the lack of commitment globally to defining a long-term objective on when climate change becomes dangerous for the earth and, in particular, for the most vulnerable peoples and countries and accordingly defining a pathway towards achieving such a long-term goal. Other issues include the inadequate interpretation of the common but differentiated responsibility principle under the Convention, the limited resources available in the multiple funds especially for adaptation, the limited ability of the Clean Development Mechanism (CDM) to respond rapidly enough to the growing number of projects submitted to it by the more advanced countries as well as to be more inclusive in trying to proactively promote projects in the African and the small island states; and the slow rate at which technology transfer and capacity building occurs. For the first time, we have 132 National Reports discussing the situation in the developing countries for 1994 and this is the first official record of the situation in these countries, although it is clearly a bit dated. This, however, provides valuable information on which future recommendations can build upon.

The paper then focuses on land-use, an area in which considerable difference of opinion exists. While on the one hand, deforestation is seen as a key source of greenhouse gas emissions and there is urgent need to deal with deforestation; on the other hand reforestation and afforestation can also make contributions. A number of environmental, ethical and economic issues regarding how land use issues can be effectively included in the climate change regime are discussed and the pros and cons of market versus non-market mechanisms elaborated.

Another critical area is adaptation. Following a brief history of adaptation, the paper argues that the resources are limited and the resources mostly come from North-South cooperation on climate change via the CDM. The resources are a fraction of what is needed to cope with the worst impacts of climate change and both new resources and effective delivery mechanisms are needed.

The paper proposes a sort of menu-card of policy options that developing countries could be encouraged to take on board, based on whether they would like to be active (like the Least Developed Countries (LDCs)), proactive (like those who are somewhat richer) or innovative (for those who have much better economic and human resources). Countries can be encouraged to adopt policies within these three sets of options as a first step towards a more formal system that treats like countries (in terms of emissions and income per capita) alike.

The paper concludes with a set of recommendations on a long-term objective, on policies and measures (principles, CDM, raising resources for adaptation, technology transfer and capacity building, and public awareness). It suggests that a voluntary approach to adopting policies from a menu-card should be an intermediate step towards a final goal of a long-term predictable system that treats like countries alike.

ACRONYMS

AOSIS	Association of Small Island States
AWG	Ad Hoc Working Group
CDM	Clean Development Mechanism
CBDR	Common But Differentiated Responsibilities
CEIT	Country with Economy in Transition
CER	Certified Emissions Reduction
COP	Conference of the Parties
DC	Developed Country
DNA	Designated National Authorities
EAC	East African Community
ECOWAS	Economic Community of West African States
ETS	Emissions Trading Scheme
FDI	Foreign Direct Investment
GHG	Greenhouse Gas
GDP	Gross Domestic Product
GEF	Global Environment Facility
HDI	Human Development Index
LACs	Latin American Countries
LDCs	Least Developed Countries
LDCF	Least Developed Countries Fund
LULUCF	Land Use, Land Use Change and Forestry
IPCC	Intergovernmental Panel on Climate Change
ITTO	International Tropical Timber Organisation
NC	National Communication
NAPA	National Adaptation Plan/Programme of Action
ODA	Official Development Assistance
OECD	Organization of Economic Cooperation and Development
OPEC	Organisation for Petroleum Exporting Countries
REDD	Reduced Emissions from Deforestation and Forest Degradation
SADC	Southern African Development Community
SBI	Subsidiary Body for Implementation

SBSTA	Subsidiary Body for Scientific and Technological Advice
SCCF	Special Climate Change Fund
SIDS	Small Island Developing States
TT:CLEAR	Technology Transfer Clearing House
UAE	United Arab Emirates
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION AND BACKGROUND

1.1 The need to engage Developing Countries (DCs)

Fifteen years have passed since the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992 and every five years the Intergovernmental Panel on Climate Change (IPCC) emphasises the increasing urgency for taking action. If we indeed wish to keep the most dangerous impacts of climate change under control, there is a real need to quickly start on a downward trend (possibly by 2015) in global emissions of greenhouse gases. This urgency calls for not only much stronger commitments for the developed world but also for both rapidly including developing countries into the process of proactively designing national policies that take climate change into account and helping them to prepare for the most serious impacts of climate change.

1.2 Understanding DCs in terms of global politics

At the time of the birth of the UN, most developing countries were not yet independent states and did not have any say in the structure of global politics. Following the end of World War II and the rise of the cold war, the world was divided into three groups – the East bloc, the West bloc and the non-aligned countries. In this era of tripartite politics, developing countries could go to either east or west for assistance and both east and west provided assistance to the developing countries to increase their sphere of influence.

With the fall of the Berlin wall in 1990, tripartite politics evolved into North-South politics. This had two implications – the first was that there was no more money from the East for the South; and in fact the east became a competitor with the South for money from the North; and second, the developing countries could no longer play one bloc against the other. Although there were high hopes in this period that there would be a peace dividend flowing from the fact that lesser resources were needed for security issues, this did not ultimately materialise. Thus climate change politics coincided with this period of diminished power for the developing countries.

Since 2000, there has been a greater focus on unilateralism and there was an increasing fear of isolation and lack of good will commitment from the developed countries as a whole because of the decision of the US to not ratify the Kyoto Protocol. From the second half of this decade, we are seeing the rise of a multi-polar world with Russia, China and India becoming powers to be reckoned with. How this will affect the rest of the developing and developed world is unclear.

1.3 Understanding DC hesitation in terms of global climate politics

The UNFCCC of 1992 was based on the concept of leadership – that the developed countries would lead by (a) reducing their own emissions and (b) by providing ‘new and additional resources’ to developing countries as stated in Article 4(3). New and additional implied over and above the 0.7% of GNP target for Official Development Assistance (ODA) as agreed for in the UN General Assembly Resolution of 1970.

However, by 1997, the leadership idea had become conditional with the US waiting for the key DCs to take meaningful action and the EU making its action dependent on what other developed countries would commit to. Furthermore, the Kyoto Protocol of 1997 revealed that the developed countries would reduce their emissions partially *via* the use of market mechanisms financed by the so-called ‘new and additional’ resources.

In the meantime, there are major doubts about whether ‘new and additional’ resources have been made available in terms of financial assistance; and since more recently many developed countries, and the EU, are actively talking about ‘mainstreaming’ climate change into development aid, there is a growing fear that aid money will be relabelled as assistance for climate change.

Before moving further, some elements of the discussions should be clarified upfront. Although there is considerable confusion regarding the difference between mainstreaming and integration, we suggest that for the purpose of this report:

- a) mainstreaming is a political discourse about the need to remove an idea from a marginal discourse and put it in the centre of discussions to re-design other discourses; and
- b) integration is a policy discourse and tool to ensure coherence between sectoral activities and hierarchical activities at centralised and decentralised levels.

Mainstreaming and integration of the different types of funds are *politically sensitive* for the developing country leadership in the context of the past international negotiations on climate change, but also related issues such as agriculture, biodiversity, etc. Mainstreaming and integration could enhance the synergies between the funds and reduce the negative impacts. However, some critical questions remain: will these resources be diverted to meet what developed countries see as critical goals, or will they also be used for the needs of the developing countries themselves. Will they be diverted for environmental goals at the cost of social goals?

1.4 Purpose and approach of this paper

This paper recognizes the critical lack of far-reaching leadership by the developing world, while acknowledging that the European Union has nevertheless played a significant role thus far¹ Against this background, it seeks to investigate the possible space to creatively and proactively engage developing countries in further action by analyzing the evolving domestic circumstances, policies and positions of these countries in relation to climate change. It thus investigates into the range of possible mechanisms for engaging the G-77 further in climate change discussions at the international level.

This paper is based on 15 years of research on developing countries and their role in the climate change negotiations, current decisions and discussions within the formal negotiations under the climate change regime and an extensive literature review to update the information, the National Communications (NCs) and the National Adaptation Plans of Action (NAPAs) prepared by these countries, and an examination of recent statistical information regarding the status of various groups of developing countries. This paper discusses some general information on DCs (Chapter 2), the status of key climate change issues in relation to DCs, (Chapter 3) with special reference to forestry (Chapter 4) and adaptation (Chapter 5) issues, a discussion of two approaches to engaging developing countries into the discussion (Chapter 6) and then finally draw some conclusions (Chapter 7).

2 DIFFERING CONDITIONS IN DIFFERENT DCS

2.1 Introduction

The DCs in the climate change regime are classified according to a negative criteria – their non-inclusion in Annex I of the UNFCCC (see Annex 1 of this paper) and in Annex B of the Kyoto Protocol. This group consists of about 150 countries. Of these 150 countries, 130 belong to the G-77, and the others are mostly former East and Central European countries.

G-77 countries (130)	Non G-77 countries by group (23)			
	New OECDs (2)	CEITs (11)	AOSIS (6)	Misc. (4)
133-3 members (Palestine is not an independent state; Yugoslavia is not allowed to participate; Romania is in Annex 1)	Mexico, Korea (Rep.)	Albania, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Macedonia (Former Yugoslav Republic of), Moldova, Tajikistan, Uzbekistan, Yugoslavia (Federal Rep.)	Cook Islands, Kiribati, Nauru, Niue, Palau, Tuvalu	Andorra, Israel, Holy See, San Marino

Table 2.1: Non-Annex 1 Negotiating coalitions in the Climate Negotiations

Source: Updated from Gupta, J. 2000bⁱⁱ.

Legend: G-77: Group of 77 and China; OECD: Organization of Economic Cooperation and Development; CEITs: Countries with Economies in Transition; AOSIS: Association of Small Island Countries

As a group, the 130 G-77 countries share some common features (Chapter 2.1.1) and while the G-77 serves as a common negotiating forum, this in fact hides a large number of differences of interests (Chapter 2.1.2). Further, a number of negotiation coalitions have been set up by the DCs, but these coalitions may have ostensibly common interests, but are often extremely different. Understanding these features is critical to addressing the needs of these DCs. The data in this chapter is from the World Bank database and the World Resources Institute report of 2005/6ⁱⁱⁱ for industrial CO₂ emissions for 2000.

2.1.1 Common features of DCs

The 130 DCs that are members of the G-77 share a number of common features:

- They share a colonial past (except to some extent Thailand, Ethiopia and the former East and Central European countries).
- Many see their participation in global politics as peripheral to the core of global governance in which the developed countries are active.
- They are geographically clustered to the south of the ‘North’ (excluding Australia and New Zealand).
- Historically, many of these countries have very long traditions and cultures and see themselves as old civilizations (except e.g. Malaysia) and as highly distinct from

Western culture; and there is ideologically often a distinct anti-liberalisation position (including Malaysia) taken – although this changes from time to time.

- Many have a relatively unstable political structure (except perhaps China and India) and often lack the rule of law.
- Most have not yet met the basic needs of their population (except e.g. Singapore).
- Most do not have a significant scientific community and cutting edge technology; many are rich in biodiversity and yet short of water and food.
- GHG emissions of many of these countries are generally low (except e.g. in South Korea, Singapore); most have marginal total GHG emissions (except China, India and South Africa); and
- Most are likely to be highly vulnerable to the impacts of climate change.

2.1.2 Developing country coalitions and interest groups

DCs have organized themselves into two types of overlapping coalitions; the first is interest-based and the second is geographic. The geographic coalition consists of 53 African countries; and 33 Latin American and Caribbean countries. The Asian group does not really negotiate as a group but consists of about 46 countries.

In terms of interest groups, the Organisation for Petroleum Exporting Countries (OPEC) group consists of 12 countries (including Angola as a new member) that wish to protect the interests of oil exporters. The Association of Small Island States (AOSIS) consists of 42 countries (excluding Malta which is now a member of the EU, and including Haiti as the new member) that are seen as highly vulnerable to sea-level rise. The Small Island Developing States (SIDS) consist of 53 countries including 11 non-AOSIS members (such as Aruba, French Polynesia, Puerto Rico, Bahrain). The Least Developed Countries (LDCs) consist of 50 countries, classified as such by the UN, and are those that are fast-tracked for receiving assistance from other countries.

The key challenge facing DCs is very similar to that of the developed countries – namely how to keep the rate of economic growth high without necessarily increasing the rate of growth of emissions. While the challenge is similar, the situation is vastly different for a number of reasons. The economic and social resources available to DCs are much lower than to developed countries; the governance frameworks are more limited; and there are pressing priority short-term issues that need immediate attention.

2.2 Interest-based classification of the G-77

2.2.1 Fast growing developing countries

The rapidly emerging economies of China, India, South Africa and Brazil have changed the shape of DCs. While these countries were significant leaders of the developing world, their rapid economic growth rate has made their interests diverge somewhat from the bulk of the DCs. Three points can be made here, as outlined in the following.

First, although politically these countries tend to present themselves in recent years as constructive to defensive in climate negotiations and although most of them are taking a number of measures with respect to energy efficiency and the development of renewables and forestry; it is clear that these measures will be greatly overshadowed by the investments in conventional fuels and the existing deforestation rates in some countries. Furthermore they all reiterate in their policy documents of the need to respect Article 4(7) of the UNFCCC^{iv} and their relatively low past and present per capita contributions to climate change.

They stress that their actions will depend in large part on the degree to which the developed countries take action commensurate with their emission levels and help them to take action. The Indian National Communication argues that even though it will continue using coal, ‘by consciously factoring in India’s commitment to the UNFCCC, [they] have realigned economic development to a more climate friendly and sustainable path’.^v The National Climate Change Programme of China highlights climate change as an essential developmental issue and argues that China’s role in climate change is based on Article 4(7) of the UNFCCC and that actions taken in China will depend on the resources made available to it by the developed countries.^{vi}

Second, while all these countries recognise the potential severe impacts of climate change on their economy, China is far further in acknowledging this and putting it in the context of its emission limitation strategy while India only recently has attempted to start a research process to get a better insight into these issues.

Third, there is a temptation for this group to follow the unilateralist tradition set by the United States with respect to the Kyoto Protocol and this is a major risk to the entire climate change regime. It is of vital importance to continue to engage these countries proactively within the multilateral regime of climate change as opposed to the unilateral and bilateral efforts to engage them in complementary, but possibly competing regimes such as the International Partnership on the Hydrogen Economy, the Asia Pacific Partnership on Clean Development, the Methane to Markets Initiative, etc.

There are however significant differences between the countries in this group. South Africa has the highest GDP per capita (US\$5,390), followed by Brazil (US\$4,730), China (US\$2,010) and then at a much lower rate we see India (US\$820). The HDI in Brazil (0.8) and China (0.777) is the highest. South Africa’s industrial CO₂ emissions are the highest at 7.8t CO₂ per capita, followed by China (2.7), Brazil (1.9) and India (1). These differences imply that treating them as a group will not be easy.

2.2.2 Oil and Petroleum Exporting Countries (OPEC)

Another fairly rich group among the developing world is OPEC. However, closer examination shows that they are an extremely heterogeneous group. Qatar, Kuwait and United Arab Emirates (UAE) are amongst the richest OPEC countries, and have very high CO₂ emissions per capita.^{vii} On the other hand, Angola, Indonesia and Nigeria are amongst the poorest, with diverging emission levels. The GDP/capita within the OPEC group varies from US\$640 (Nigeria) to US\$30,630 (Kuwait).

Angola is a member of the Least Developed Country group, but possibly not for very long because its current GNP per capita is at US\$1,980. Algeria and Libya have grown considerably between 1999 and 2006 with 13.01% and 10.70% respectively. These countries export petroleum but the importance of petroleum exports to their national income also varies considerably (see Figure 2.1). While relatively speaking, oil exports for Venezuela have become less important in the last 7 years (-8.73%), for Angola this has become very important as its exports of oil have grown by 97.97%.

The Human Development Index (HDI)^{viii} varies considerably for this group. Angola and Nigeria have the lowest HDI (0.446 and 0.47 respectively) and Kuwait, Qatar and the UAE have the highest HDI (0.891 and 0.875 respectively).

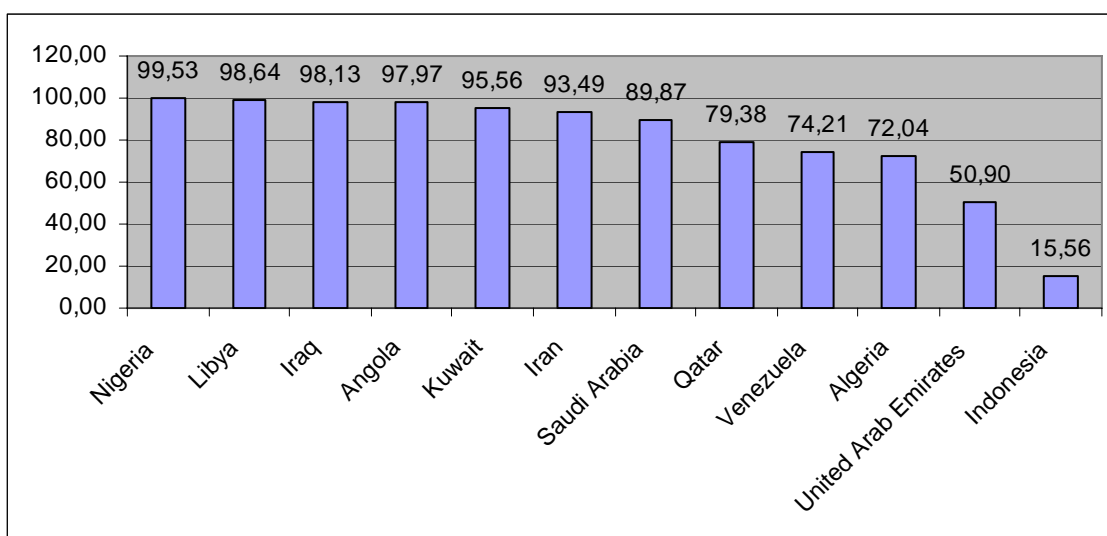


Figure 2.1: Exports of petroleum as a percentage of total exports

2.2.3 Association of Small Island States (AOSIS) and Small Island Developing States (SIDS)

Of the 53 SIDS, 41 are members of AOSIS, and a significant proportion of these countries are members of the Least Developed Countries group (11 countries). Although they share a common threat – rising sea levels – their ability to cope with this depends to a large extent on their economic welfare and their HDI. Some AOSIS countries are very rich (e.g. Singapore, Bahamas, Antigua and Barbuda, Trinidad and Tobago) while others are very poor (e.g. Guinea Bassau, Haiti). Some have a very high HDI (e.g. Singapore, Seychelles, Bahamas, Barbados) while other have a low HDI (e.g. Guinea Bissau).

The annual per capita industrial CO₂ emissions also differ considerably. Singapore (61.1t), Cuba (31.1t), Trinidad and Tobago have high annual per capita emissions, while Solomon islands (0.2t) and Guinea Bissau (0.3t) have low annual emission levels.

2.2.4 Least Developed Countries (LDCs)

Economically, the LDCs appear to have a more homogenous profile and their GNP per capita ranges from low (Burundi US\$100; Congo US\$130; Liberia US\$140) to relatively high (Equatorial Guinea US\$8,250; Maldives US\$2,680; Samoa US\$2,270 and Cape Verde US\$2,130).

The annual per capita CO₂ emissions also range from low (e.g. Solomon Island 0.2t; Burundi 0.2t; Lesotho 0.2t; Chad 0.1t) to high (e.g. Bangladesh 29.9t; Yemen 10.4t).

HDI is relatively low in Sierra Leone, Burkina Faso, Guinea Bissau, Niger and higher in the Maldives, Samoa and Cape Verde.

2.2.5 The forest group

Although there is no real forest group in the Convention, there are around 40 countries that draw attention because of their high forest area and their relatively high deforestation rate. The table below lists the countries with the highest deforestation rate. In forestry there are a few key issues.

While deforestation leads to the highest emissions, addressing this problem through compensatory measures may cause problems as there are no rewards for those who maintain their forests. At the same time, countries without forests that wish to afforest cannot be identified through such an exercise (see also Chapter 4 on land-use and forestry).

	Deforestation rate (2000-2005)	forest area (2005)	forest area per total area (2005)
	<i>(1000 ha/yr)</i>	<i>(1000 ha)</i>	<i>(%)</i>
Brazil	-3103	477698	57.2
Indonesia	-1871	88495	48.8
Sudan	-589	67546	28.4
Myanmar	-466	32222	49
Zambia	-445	42452	57.1
Tanzania, United Rep. Of	-412	35257	39.9
Nigeria	-410	11089	12.2
Congo, the Democratic Rep. of	-319	133610	58.9
Zimbabwe	-313	17540	45.3
Venezuela	-288	47713	54.1

Table 2.2 Countries with the largest deforestation rate (with respect to their total forest area and percentage forest area)

Note: Based on (FAO) 2005 Global Tables^{ix}

2.3 Geographic classification of the G-77

2.3.1 African Group

The African group consists of 54 countries (including Western Sahara which is not an independent state) and tends to have a relatively strong common negotiating position. Of these countries, 32 are classified as Least Developed Countries (LDCs). The remaining 22 countries are somewhat richer. The richest African countries are Seychelles (GDP per capita of US\$8,650), Equatorial Guinea (US\$8,250) Libya (US\$7,380) and, while Botswana, Mauritius, South Africa and Gabon also have average per capita incomes above US\$5,000 per annum, the bulk of Africa has very low incomes (see figure 2.2).

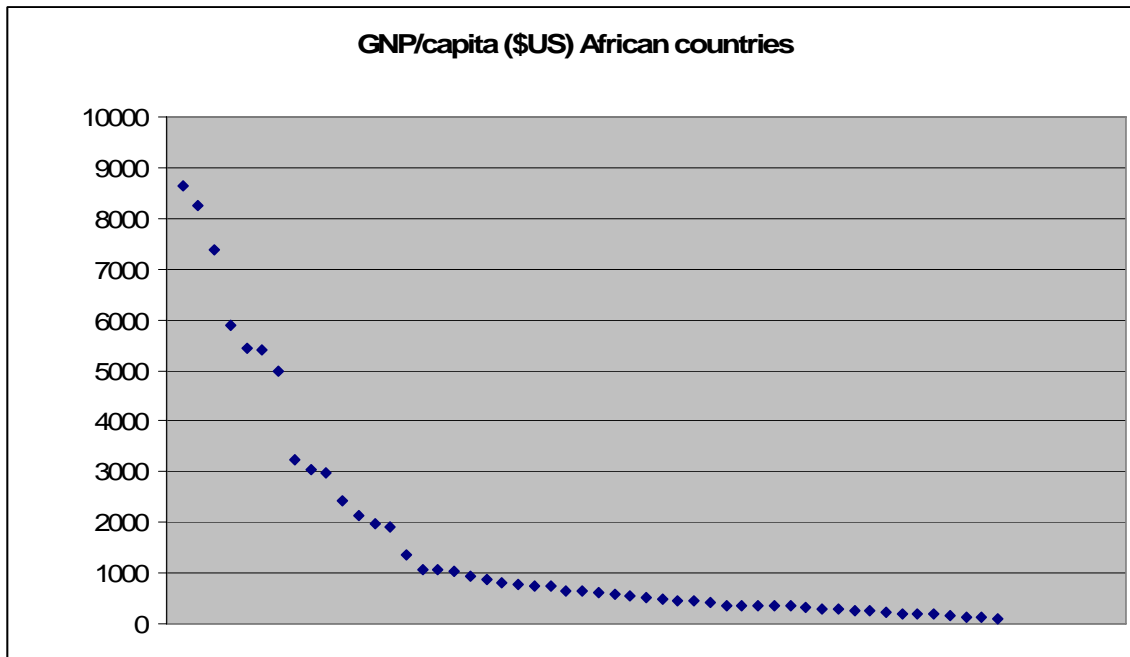


Figure 2.2: Overview of GNP per capita of the African Countries

The Seychelles and Mauritius have a relatively high HDI (0.843 and 0.804 respectively); however Equatorial Guinea is lower down the scale (HDI of 0.642). The countries with the lowest HDI are Guinea-Bissau (0.374), Niger (0.374), Burkina Faso (0.37) and Sierra Leone (0.336). The average HDI of the African Group is 0.528.

The main part of industrial CO₂ emissions in Africa comes from South Africa (7.8t per capita per year). For 50% of the African countries, emissions are below 0.5t per capita. For Africa, methane emissions from waste are most important, as the National Communications reveal.

2.3.2 Latin America and the Caribbean(LAC)

There are in total 35 countries within the Latin American and Caribbean countries group. GNP per capita is highest in Bahamas (US\$15,800), Trinidad and Tobago (US\$13,340), Antigua and Barbuda (US\$11,210), Saint Kitts and Nevis (US\$8,840), Mexico (US\$7,870), and Chile (US\$6,980). Although Mexico is now a member of the OECD, and hence not a member of the G-77, it still claims its non-Annex I status under the climate change regime. The poorest countries in this group are Guyana (US\$1,130), Bolivia (US\$1,100), Nicaragua (US\$1,000) and Haiti (US\$480).

Annual CO₂ emissions are highest in Trinidad and Tobago (14t), Venezuela (5.6t), Suriname (5.3t), Jamaica (4t) and Mexico (3.9t). The HDI is very high in Barbados, Argentina, Chile, Uruguay, Costa Rica, Bahamas, Cuba, Mexico, St. Kitts and Nevis, Antigua and Barbuda, Trinidad and Tobago, Panama and Brazil (ranging from 0.892 to 0.8). The lowest HDI can be found in Haiti (0.529).

2.3.3 Asia

Asia includes 46 countries with some who are members of OPEC, some in SIDS and/or AOSIS and some LDCs. The income per capita ranges from very high in Kuwait (US\$30,630), Singapore (US\$29,320), UAE (US\$23,950), Israel (US\$18,580), South Korea (US\$17,690) (no data for Qatar and Brunei) to very low in Nepal (US\$290), Tajikistan (US\$390), Cambodia and Bangladesh (US\$480).

The HDI is very high in Israel (0.932), Singapore (0.922), Republic of Korea (0.921) and Cyprus (0.903) and very low in Bangladesh (0.547), Nepal (0.534), Papua New Guinea (0.53) and Yemen (0.508). Annual industrial CO₂ emissions per capita range from very high in Kuwait (26t), UAE (25.6t), Singapore (15.2t), Saudi Arabia (12t), Israel (10.4t) South Korea (10t) to extremely low in Bangladesh, Bhutan, Myanmar, Laos, Nepal, Afghanistan and Cambodia (average of 0.11t).

2.4 Summary

	Similarities	Differences
OPEC (12 countries)	Oil producers and exporters	Algeria, Indonesia, Iran, Iraq, Nigeria and Angola have relatively low incomes per capita; while Kuwait, Qatar and UAE are relatively very rich; Kuwait, UAE, and Saudi Arabia have very high per capita CO ₂ emissions. Petroleum accounts for more than 80% of the exports of Iran, Angola, Kuwait, Libya, Nigeria and Saudi Arabia. For Indonesia it is less than 20%. The HDI in Nigeria and Angola is very low, and is on the relatively high side in Kuwait, Qatar and UAE.
AOSIS (42 countries)	Small, islands, vulnerable to sea-level rise	Singapore has very high income per capita, Antigua and Barbuda, Bahamas, Palau, Saint Kits and Nevis and Seychelles have income above \$7,500 per capita. Singapore, Trinidad and Tobago and Cuba have very high emissions per capita.
LDCs (50 countries)	Very low income	Bangladesh has relatively high emissions; Cape Verdi, Maldives and Samoa have relatively high HDI.
Africa (53 countries)	Geographical unit; and structural similarities	33 are LDCs; nevertheless relatively homogenous group of countries. Seychelles, Libya, and Equatorial Guinea have relatively high income per capita. South Africa has relatively high per capita emission levels.
LACs (33 countries)	Geographical unit; and structural similarities	The Bahamas, Trinidad and Tobago, and Antigua and Barbuda are among the richer countries in the region. Per capita emissions of Trinidad and Tobago are very high. Mexico is member of OECD.
Asia – OPEC – AOSIS - LDCs (27 countries)	Geographical, economic and political	Very high income levels in Bahrain, Israel and Korea (Dem. Rep.). CO ₂ emissions high in these countries and Kazakhstan, Oman, Korea (Rep.) and Turkmenistan. South Korea is a member of OECD.

Table 2.3: Similarities and differences between developing countries

The above table shows the key differences within the groups. The non-Annex I group consists of very rich countries – such as Bermuda, Equatorial Guinea, UAE and Singapore – but also some of the world’s poorest. It consists of a few countries highly dependent on oil exports. Some countries have very stable economies and some do not. Some are in civil or military crises (Burma, Sudan, Chad, Afghanistan, Iraq etc.). The HDI ranges from very high in Israel (0.932) to very low in Sierra Leone (0.366).

The following figure shows how DCs could be classified in terms of their CO₂ emissions and their per capita income. Since there is limited comparable data available about developing countries, only CO₂ emissions data from countries for 2000 (excluding from land use; WRI 2005/6) and the per capita income data from the World Bank database) have been used.

The countries have been divided into twelve classifications based on their GDP per capita and their annual CO₂ emissions. Specific (obligatory/voluntary) measures could be developed for each country based on its classification. Countries in the upper half of the table are as rich as the developed countries and could thus be encouraged to take on Annex I responsibilities. Countries in the left column have very low per capita income, have contributed the least to the problem of climate change and should therefore receive prior assistance for climate change.

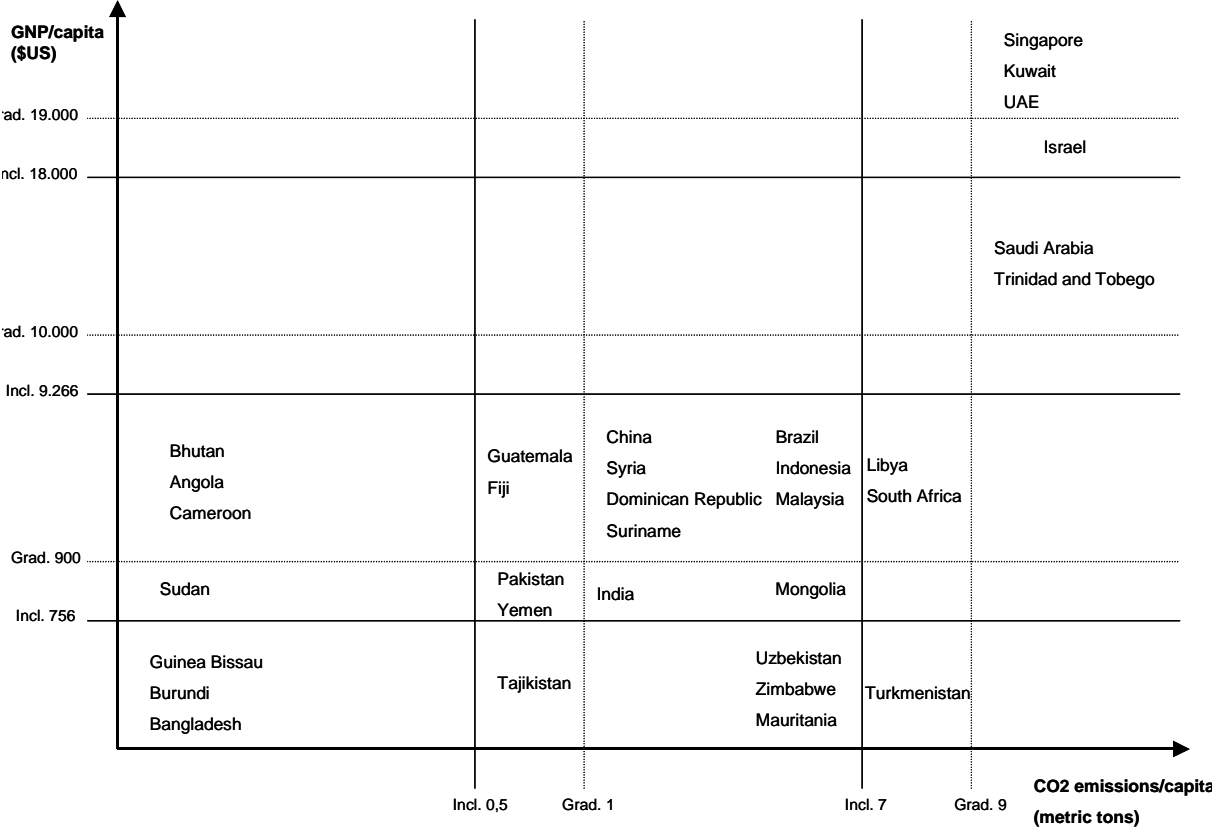


Figure 2.2: Some DCs classified on the basis of income per capita and industrial CO₂ emissions per capita

Source: Updated from Gupta 2003; data collected by Elma Brasser

Countries whose income increases or whose emissions per capita increase beyond a specific level graduate to the next level and after a few years are included in that level which may require them to accept measures relevant for that level. The levels for inclusion and graduation here are chosen based on a number of criteria, but can be changed if there is reason to do so. This is merely indicative of a system that could be used to classify developing countries and assign specific responsibilities.

It may be useful to reflect here how the various EU member countries compare using comparable data. Our database shows that while Netherlands has high industrial CO₂ emissions and income, France has medium emissions and high income, Poland has high emissions and income comparable to the developing countries, while Bulgaria and Romania have medium income and fall into the upper low income category. Thus EU member states range from upper low income to very high income and are shown in italics in the figure below.

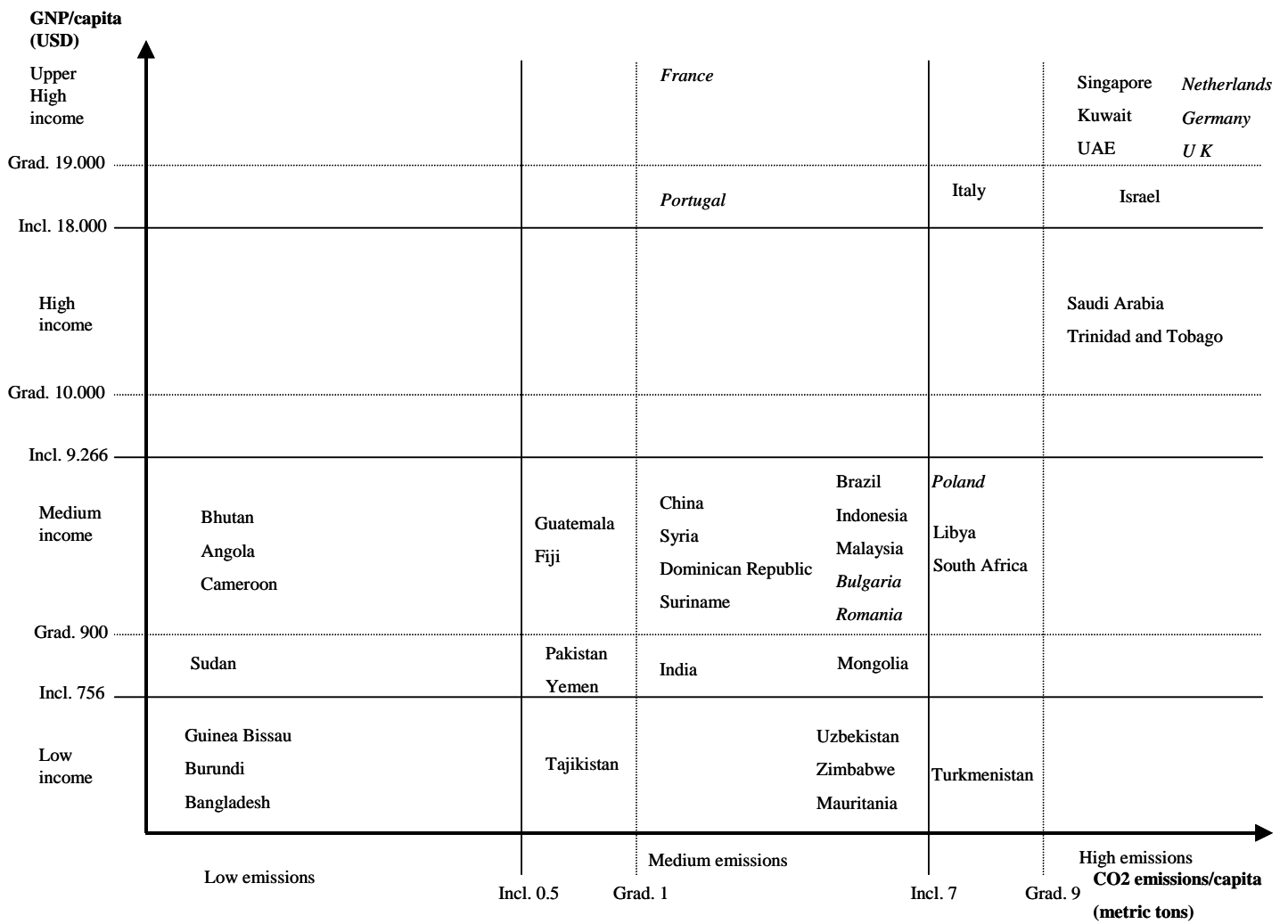


Figure 2.3: Some EU and DC countries classified on the basis of income per capita and INDUSTRIAL CO₂ emissions per capita

Source: Updated from Gupta 2003, data collected by Elma Brasser.

3 ISSUES IN THE CLIMATE AGREEMENTS OF RELEVANCE TO DCS

3.1 Introduction

Before going further, this section presents a brief account of the key issues in the climate agreements of direct and immediate relevance to developing countries. It presents the status of the discussions followed by the perspectives of developing countries. Forestry and adaptation issues are discussed in further detail in sections 4 and 5 respectively.

3.2 Long-term objective

The 1992 climate change treaty includes the qualitative elements of a long-term objective in Article 2^x, but the article has since not been elaborated. At the 13th Conference of the Parties (COP13) in Bali in 2007, the Ad Hoc Working Group on Further Commitments for Annex I Parties (developed country Parties) concluded^{xi} by referring to the recent work of IPCC and the need to peak emissions of greenhouse gases in the next 10-15 years.^{xii} However, the key document of the COP – the Bali Action Plan^{xiii} – was relatively vague and only recognised that ‘deep cuts’ would be needed to achieve the ultimate objective of the Convention and has launched a two year process to work out:

- long-term cooperative action;
- action on mitigation with measurable commitments and actions for the developed countries and nationally appropriate mitigation actions by developing country Parties, measures on deforestation, cooperative sectoral action, market based approaches, economic and social consequences of response measures and strengthening the catalytic role of the Convention;
- enhanced action on adaptation;
- enhanced action on technology development and transfer; and
- enhanced action on the provision of financial aid and investment to support action.

While some DCs are not so keen on focusing on a long-term objective with drastic implications, the small island states and a big part of Africa are seriously concerned. This concern was reflected in the text of Ad Hoc Working Group which stated (in its 4th paragraph): ‘The AWG noted the concerns raised by small island developing States and some developing country parties with regard to the lack of analysis of stabilization scenarios below 450 ppmv of carbon dioxide equivalent. In line with the iterative approach to the work programme, the information referred to in paragraph 3 above will be reviewed in the light of information received by the AWG, including from possible further scientific work on stabilization scenarios.’^{xiv}

An implicit fear of many developing countries is that the long-term objective may be designed to suit the interests of the developed countries but may still expose the most vulnerable countries to far-reaching irreversible impacts of climate change.^{xv} Even the large DCs that have reason to be ambiguous towards the targets are worried about the already visible possible impacts of climate change (policy documents in China; interviews in India, 2007).

3.3 Policies and measures

3.3.1 General

Under the Convention, a set of five principles has been accepted – the Common But Differentiated Responsibilities (CBDR) and respective capabilities principle, the precautionary principle, the principle of helping the most vulnerable states, the principle of sustainable development and the principle of maintaining an open international economic system. The relatively weak implementation of the precautionary principle and the CBDR principle as reflected in the non-existence of an elaborated long-term objective and the low emission reduction targets of the developed world have been cause for concern for the DCs.

DCs have the obligation to adopt a series of policies and measures under Article 4 of the Convention and Article 10 of the Protocol, although the degree to which they do so is subject to the help they receive (Article 4(7) of the Convention). They have submitted national communications under Article 10 that show the policies they have taken and the problems they face (see 3.3.2). DCs have been under pressure since the COP meeting in Buenos Aires in 1998 to adopt meaningful action. At Bali in 2007, it was decided that DCs should be part of the process to adopt ‘nationally appropriate mitigation actions’.

3.3.2 National communications - findings

A total of 132 National Communications have been received from the DCs, providing a source of valuable information about their national policies. The reports reveal that most of these countries have yet to meet their basic needs, with only a few having average annual per capita incomes above US\$15,000 (e.g. Bahamas and Cyprus).^{xvi} Most of these countries had fluctuating economies (e.g. Kazakhstan) and suffered from political chaos and the impacts of fluctuating commodity prices.

Furthermore, the need for halting deforestation and energy efficiency measures was discussed. The most significant GHG in Africa was methane, compared to CO₂ as the major source on other continents. For the majority of the countries, energy was the largest source of GHGs, for others agriculture was the most significant, and for six countries it was waste management. The most significant source for the Americans and the Caribbean was Land Use, Land Use Change and Forestry (LULUCF).^{xvii}

Most countries are taking a number of measures to promote renewables and energy efficiency. For 83% of the 122 countries compared in the synthesis study prepared for the Subsidiary Body for Implementation, the agricultural sector was most vulnerable, for 76% – the water sector was seriously affected, and for 59% – the coastal areas were most vulnerable.^{xviii}

3.4 Funding and flexibility mechanisms, technology transfer and capacity building

Although early drafts of the climate change convention ruled out the concept of compensation for harm done, the ‘leadership’ paradigm meant that primarily because of their larger contribution to the problem and their financial status, the richest developed countries (those included in Annex II of the Convention) would provide assistance to the developing world. The initial compromise was articulated in terms of the wording ‘new and additional’, ‘agreed incremental costs’, and ‘technology transfer’.

3.4.1 Funding mechanisms

Over the years, several funds have been created to meet this need. The Global Environment Facility (GEF) established in 1990 was seen as the (interim) operating entity of the:

- Financial mechanism of the Climate Convention in 1992;
- Special Climate Change Fund (established to finance some adaptation, transfer of technologies in the fields of energy, transport, industry, agriculture, forestry and waste management and will help DCs diversify their economies) in 2000;
- Least Developed Country Fund also initiated in 2000 which will support LDCs to prepare and implement National Adaptation Programmes of Action; and the
- Adaptation Fund in 2000 and operationalised in 2008 which aims to fund projects that are country-driven, based on national priorities and aiming at sustainable development.

While the first three funds are financed by voluntary contributions from Annex II countries, the adaptation fund is financed from a tax on North-South cooperation in the CDM as 2% of the proceeds of the Certified Emissions Reduction (CERs) generated will be used to fund this mechanism.

A number of problems are visible from the developing country perspective. First, the resources are fairly limited despite the proliferation of funds and management systems and these resources often do not reflect 'new and additional' resources, over and above the commitment of the developed countries to provide 0.7% of their GNP to DCs. Second, a big share of the money is being used for emission reduction and not for adaptation, which is a key and pressing concern for most DCs but is not necessarily a concern for the developed countries. Third, the 2% tax on CDM is seen as unfair since such a tax has not been levied on the other two flexible instruments Joint Implementation (JI) and emission trading (Gupta 1998), although at COP13 a decision was taken to see if such extension could be possible.

3.4.2 Flexibility mechanisms

Although there were a number of reasons why DCs were highly sceptical about project-based emissions trading in the 1990s, they ultimately accepted the concept of the CDM in 1997. Enthusiasm to participate in CDM has exploded and more than 128 Designated National Authorities exist today, and at least 948 CDM projects have been registered and 85,049,697 million certified emission reductions have been issued.

Yet, a number of problems remain. For example, as of 16 January 2008, of the 1068 projects China has submitted, only 150 have been approved and/or handled; and there are major bottlenecks in the Executive Board.^{xix}

At the same time, most projects seem to be concentrated in middle-income countries, and Africa and the small island states are bypassed. For example in 2007, Africa hosted only about 2.6 % of the registered CDM projects and only 55 (less than 2%) of the 3000 projects in the pipeline.^{xx} The share of sub-Saharan Africa is 41 projects (1.4 %) of which 23 are South African. More than 30 sub-Saharan countries have yet to benefit from any CDM project activity.

The under-representation of Africa in the global CDM market can be attributed to their small energy and industrial sectors with limited opportunities to reduce carbon emissions. Carbon sequestration from avoided deforestation and from agriculture – potentially important areas for climate mitigation and important in many African economies – has been excluded from the CDM.

At the same time, CDM-eligible assets from afforestation and reforestation are excluded from entry into the large European Union-Emissions Trading Scheme (EU ETS), substantially limiting their market value and potential share in the multi-billion dollar global carbon market.

The CDM could be relevant in many parts of Africa if CDM methodologies were available that would better address the African circumstances in activities such as controlling energy losses, composting waste at dump-sites, biofuel production, tapping sources of methane emissions from lakes and volcanic activity, and household to small village-scale activities. The registration of a programme of various activities as a single CDM project activity and the sectoral approach are expected to provide valuable opportunities for African countries in the future.

Furthermore, although there are about 35 Designated National Authorities (DNAs) in Africa, this number is not reflected in the share of the carbon market. About 20 sub-Saharan countries having a DNA do not have any CDM projects in the pipeline. The host country capacity is often lacking in both public and private sectors. Access to technology, management and know-how are very often constraints to participating in the CDM. The administrative procedures for project approval may be unclear and/or very slow. Several CDM methodologies insist on compiling complex data (e.g. for baseline construction) which only a handful of African countries have. Moreover, there is a lack of private investment financing, and banks are often reluctant to provide loans or guarantees for CDM projects because of the limited understanding of the whole concept.

COP12 adopted a 'Nairobi Framework,' to: build and enhance capacity of DNAs to become fully operational, build capacity in developing CDM project activities, promote investment opportunities for projects, improve information sharing/outreach/exchange of views on activities/education and training and promote inter-agency coordination.

The first concrete outcome under the Nairobi Framework is a joint UNDP-UNEP six-country CDM capacity development project in sub-Saharan Africa operationally launched in November 2007 covering Ethiopia, Kenya, Mauritius, Mozambique, Tanzania and Zambia. The Governments of Spain, Sweden and Finland have contributed a total of US\$1.5m to the project.

Another option would be to create regional CDM centres of excellence and initiate regional skills development and exchanges initiatives under the existing regional organisations (such as Economic Community of West African States (ECOWAS), East African Community (EAC), Southern African Development Community (SADC)). In order to increase the likelihood of projects in the LDCs, the CDM Board has abolished payment of registration fees and share of the proceeds at issuance of credits for projects hosted in these countries^{xxi} but whether this will make a significant difference remains to be seen.

3.4.3 Technology transfer and capacity building

Since 1990, when the Ministers participating in the Second World Climate Conference argued that there was a need to transfer technologies to DCs to help them leap-frog their way to modern development, technology transfer has been on the agenda. Article 4(5) of the UNFCCC stated this clearly, but in the initial years little happened in this area except for some inventories. In 1997, this provision was reiterated in the Kyoto Protocol and in 1998 in the Buenos Aires Plan of Action – set up a consultative process on technology transfer leading to regional workshops. A Technology Needs and Needs Assessment framework was set up in the period thereafter.

IPCC published a special report on technology transfer in 2000 and an Expert Group on Technology Transfer was set up, whose mandate has been extended for another five years in Bali, 2007. This Group should focus on adequate and timely financial support for technology transfer and the development of performance indicators for monitoring and evaluating effectiveness; to maintain the TT:CLEAR (Technology Transfer Clearing House) and, *inter alia*, to focus on creating enabling environments for technology transfer including '[t]o encourage Parties to avoid trade and intellectual property rights policies, or lack thereof, restricting transfer of technology', capacity building for technology transfer.^{xxii} The Subsidiary Body for Implementation (SBI) also decided that the Expert Group on Technology Transfer shall make recommendations to help the COP to take decisions and that the GEF should especially look at addressing the financing needs of the DCs.^{xxiii} Country specific needs assessments have been carried out for several DCs,^{xxiv} but it is unclear how these needs are to be met.

There are a number of problems with technology transfer:

- most modern technologies are expensive and in private hands;
- there are limited resources to finance these transfers;
- the flow of old, and hence affordable, technologies continues unabated to DCs; and
- there are real political bottlenecks to prioritising the transfer of specific technologies since these would benefit some countries at the cost of other exporters.

While capacity building was discussed in Article 9 of the Convention and Article 10e of the Kyoto Protocol, it was only in 2000 that capacity building really came on to the agenda and a process to deal with this was set up. The capacity building provisions for DCs, adopted in the Marrakesh Accords of 2000 emphasise, *inter alia*, that there is no 'one size fits all' formula for capacity building. It also emphasises that capacity building is a continuous, progressive and iterative process and should be integrated, programmatic and aim at maximising synergies with other conventions. Capacity building efforts were reviewed in 2004 and a compilation of capacity building efforts in DCs were made in 2007. The bulk of the capacity building was either on stand-alone projects, or as embedded in regular projects, through the GEF's enabling activities or technical support. The DCs have argued that it is vital that capacity building is 'needs-driven' but based on strong partnership between donor and recipient. They stressed the need for allocating time to carefully identify needs and gaps and learning by doing. In addition, the SBI noted that GEF projects serve as a catalyst, and that there remain serious concerns about whether African nations have the capacity to participate in CDM.^{xxv}

3.5 Summary

This section argues that, from a developing country perspective, there is need for a clear and articulated long term objective that also seeks to protect the most vulnerable countries. The underlying science is limited by what is politically possible and does not look at what is necessary. Although there are a number of principles, the polluter pays principle is absent, the precautionary principle is arguable poorly interpreted and the mechanisms being developed tend to focus on cost-effectiveness. In terms of national policies and measures, DCs have adopted a range of policy measures and more than 132 have reported on these in their National Communication (financed partly by the GEF) that reveals also the key differences between these countries in terms of policy space. In the area of cooperation, there is a proliferation of funds and hence funding rules and modalities, but this does not reflect a larger motivation to provide resources.

The project based emission trading has taken off in a big way, but is neither capable of dealing with the rise in projects on the one hand, nor in equitably distributing projects across the world. CDM needs to be improved by (a) increasing its capacity to deal with the projects in the pipe-line, (b) creating simplified methodologies for a range of small projects that are likely to be developed in Africa and for which local entrepreneurs may be in a position to develop the project documentation, (c) create regional CDM centres of excellence to promote the development of CDM projects, (d) ensure a clear complementarity criterion, and (f) develop a mechanism for verifying that CDM projects contribute to sustainable development as claimed in the project documentation. The bureaucratic initiatives to monitor technology transfer have increased and a clearing house was established but whether this has actually led to additional transfers is not evident. While technically there are many arguments against diverting ODA funds towards climate change, some argue that such funds could be used to promote capacity building for participation in CDM projects in Africa.^{xxvi} Efforts to actually understand the capacity building and technology needs of developing countries need to be multiplied.

4 ADDRESSING LAND USE THROUGH POLICY MEASURES

4.1 Introduction

Land Use, Land Use Change and Forestry (LULUCF) are key sources of emissions; and deforestation (of 13 million hectares annually) alone is seen as causing 20% of global emissions.^{xxvii} US\$106-266b is needed annually to address forestry plus a one-time expenditure of US\$11-270b for forestation and management costs thereafter.^{xxviii} The key issues are: how does one encourage afforestation, reforestation and deforestation?

4.2 Status of discussions in the regime

The Climate Convention called on countries to enhance their sinks and to participate in sustainable forestry. At COP4 in 1998, Parties were allowed to add emissions from forestry in their assigned amounts and DCs were requested to participate in forestry discussions in the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA).^{xxix} At COP5, Parties decided to endorse a work programme on forestry based on IPCC conclusions.^{xxx} At COP6, it was decided that FAO definitions of forestry and IPCC definitions of afforestation, deforestation and reforestation would be used; that deforestation and land degradation should be addressed through the adaptation fund, and that methodologies and rules on accounting should be further developed.^{xxxi} At COP7 the decision to make afforestation and reforestation projects eligible as CDM projects was taken, as was the decision that LULUCF projects within the CDM would be very limited in the first commitment period (i.e. 1% of base year emissions multiplied by 5), with possibility for further discussion for the second negotiation period.^{xxxii} Avoided deforestation was excluded because of methodological challenges with respect to additionality, leakage, base lines and monitoring. Besides, such avoided deforestation credits could lead to a huge surplus of supply over demand and bring the price of the carbon credits down. At COP9, modalities and procedures for forestry under CDM were decided for the first commitment period, and it was decided that parties could also submit suggestions about how to include small scale forestry projects under the CDM,^{xxxiii} and that DCs should use the good practice guidelines in reporting on LULUCF activities.^{xxxiv} In 2005, at COP11, it was decided to use common reporting formats,^{xxxv} and a two-year discussion period on Reduced Emissions from Deforestation and Forest Degradation (REDD) was launched to identify scientifically sound policy incentives to deal with this issue. The Parties adopted methods for small-scale afforestation and reforestation projects and recommended that these be considered by the CDM Board.^{xxxvi}

At Bali in 2007, a key decision was taken on reducing emissions from deforestation in DCs. Although this decision is couched in very diplomatic language ('invites' and 'encourages', 'requests', rather than 'decides' and 'adopts'), it puts pressure on countries to try and invest in reducing deforestation and forest degradation and encourages Parties to report on these using the Good Practice Guidelines for Land-Use, Land-use Change and Forestry. The decision requests countries to make recommendations on how to improve methodological issues, which will then be compiled and synthesised by the secretariat and may provide the basis for a follow-up decision.^{xxxvii}

4.3 Key policy challenges for land use

The question is how best to address the emissions emerging from LULUCF. The options include encouraging afforestation and discouraging deforestation. Stern^{xxxviii} argues that Deforestation may be a theoretically attractive cost-effective option to reduce emissions in a sustainable manner; and market mechanisms are arguably a possible way to do so.^{xxxix} On average, dealing with deforestation could cost 27.25 US\$ per ton CO₂.^{xl}

From the developing country perspective a number of issues appear relevant. While most countries have reported on measures taken to address deforestation in their National Communications and enhance forests in their countries in their national reports, in practice this remains a key challenge. While recognizing the importance of LULUCF activities in climate change, many of the current land use changes taking place are driven by domestic socio-economic reasons. Keeping the forests standing or diverting land use for afforestation purposes comes at a price. The question is how to finance such activities. One option supported by some countries, like Brazil, is the establishment of a fund to finance such activities. The other option is to launch a market based mechanism to support such activities. The lack of resources in the existing funds does not augur well for the first proposal. The second proposal appears attractive, however market mechanisms in the area of forestry have not been particularly successful. Afforestation and reforestation projects have barely covered 0.08% of CDM projects financed so far; and in effect, as of 15 February 2008, only one afforestation project has been initiated, although such projects were developed in the early 1990s but never really materialised.^{xli} However, the money needed to deal with LULUCF options calls for trebling/ quadrupling existing forestry related flows to DCs, and ensuring that these are all working in the same direction.

Prof. Eric Lambin^{xlii} brought up the following comments regarding LULUCF:

- using market mechanisms for forestry may inadvertently lead to a devaluation of other forestry services;
- drawing baselines for forestry is very complicated because the baselines keep changing over time;
- attributing credits to action taken is difficult because the drivers of deforestation may be policy oriented but could also be linked to exogenous factors such as global markets;
- there may be international leakage as efforts to reduce deforestation in one country may lead to increased demand for forestry products in other countries
- it is practically impossible to ensure permanence;
- measuring forest degradation and fragmentation and its impacts is very difficult;
- the transaction costs of payments for ecosystem services are very high (6-45%); and
- REDD schemes may 'reward the bad guys' and create a new set of winners and losers at local level.

At the same time, land use is a key source of emissions from Africa and resources channelled into this sector may proactively engage the continent in dealing with climate change.

4.4 Land use related statistics for the G-77

The countries with the largest area of land under forestry in hectares are Congo (133,610,000 ha), Indonesia (88,495,000 ha), Angola (59,104,000 ha), Venezuela (47,713,000 ha). The countries with the largest rate of deforestation are Brazil and Indonesia where about 3.1 and 1.9 million ha of forests are lost annually (FAO 2006; see also Table 1).

According to one report, the countries with the highest % of LULUCF emissions in 2000 are Indonesia (33.64%), Brazil (18.01%), Malaysia (9.17%), Myanmar (5.58%), Congo (4.16%), Zambia (3.09%), Nigeria (2.56%), Peru (2.46%), PNG (1.92%), Venezuela (1.89%), Nepal (1.62%), Colombia (1.39%), Mexico (1.27%), Philippines (1.25% and Ivory Coast (1.20%).^{xliii} In terms of effectiveness focusing on these countries would be most useful; except that the political stability in all these countries is quite different and guaranteeing results may be difficult.

Funds going into the forestry sector are about US\$110m from Official Development Assistance (ODA), US\$1.25b from GEF, US\$11.5m from the International Tropical Timber Organisation (ITTO), US\$1.5-2m from World Bank Global Forest Alliance, US\$37b from Foreign Direct Investment (FDI), 65-75m from International Finance Cooperation (IFC), about US\$15b from direct private investments etc.^{xliiv} However, these funds may not be linked to reducing forest losses.

4.5 Issues of relevance to different clusters of DCs

Different countries are presenting their views on LULUCF and climate change. Creating market mechanisms for forestry is problematic because of the need to be absolutely sure that credits are generated and because of the complex rules created. The Indonesian government, for example, complains that the rules make it difficult to identify 'eligible' land for afforestation; and the complexity of the rules reduces the incentive to participate. This raises the question – whether forestry is a cost-effective option when one takes into account the institutional issues involved in such a project.^{xlv}

Vanuatu is presently participating in a Vanuatu Carbon Credits project which will analyse emissions trading based on a sectoral baseline and credit approach, based on a carbon stock approach and based on a direct barter approach. In the development of incentives, environmental integrity, comprehensiveness, adaptation needs including impacts from flooding, effective impacts, cost-effectiveness and usability in different countries needs to be taken into account. Also support for sustainable development and inclusiveness to all countries should be considered. The Vanuatu project further recommends that rather than developing a uniform policy approach, a menu that links with national policies should be taken into account.^{xlvi}

A group of developing countries (Bolivia, Central African Republic, Costa Rica, Congo, Dominican Republic, Fiji, Ghana, Guatemala, Honduras, Kenya, Madagascar, Nicaragua, Panama, PNG, Samoa, Solomon Islands and Vanuatu) have jointly argued that there is need for a set of complementary instruments that provide simple, transparent and positive incentives to reduce emissions for LULF. Such activities should not just reward those who have deforested a lot in the past, but also those who have adopted proactive forestry conservation policies early on. This would include a Stabilisation fund for those who maintain their forests, a REDD mechanism to account for gross carbon emission reductions in existing forestry options, and a REDD enabling fund to help countries create the capacity to deal with their forestry issues.^{xlvii} The following table compares 3 mechanisms, as proposed by Papua-New Guinea (market based mechanism), Brazil (fund based) and by a group of Latin American Countries (mixed approach).

	Market Based (Papua-New Guinea)	Fund Based (Brazil)	Mixed (Latin American Countries approach)
Funding	+ Funding through markets. + Least cost method.	+/- Voluntary contributions from northern nations + Funding disbursed EX POST after actions to reduce deforestation have occurred	+ Market-based. National + double baseline-and-credit mechanism. National and sub-national level + The allocation of credits to the private sector, gives faster implementation + Multilateral fund. Voluntary contributions and Overseas Development Aid (ODA)
2. Environmental Effectiveness			
Baselines	+ Min 5 year baseline period, derived at national level. - Lack of data in some countries - Potential for manipulation	+ Reduced Emission Rate- past 10 years trend in emissions. + RER - every 3 years. Insurance - crediting of 'anyway tonnes.' - Lack of national capacity to collect data	+ national base reference period + reviewed periodically to account for structural changes
Permanence	+ Withholding some credit funds to secure permanence.	+ Credit debit scheme attempts. Emissions reductions not achieved, amount converted to a monetary sum and deducted from future credit received	+ Temporary credits and Insurance reserves.
Leakage	+ Control at national level prevents sub-national leakage. +/- International level dependent on broad participation	N/A	+ strict 'eligibility criteria' + Project leakages detected - subtracted in calculation of emissions reductions attributable to the REDD activity, added to the national target emissions level
Monitoring	+ Identified as critical area to improve. - Difficulties in GHG accounting. - Essential for effective permit trading market.	- Lack of national capacity to carry out monitoring	N/A
Institutional Capacity	- Requires institutions capable of effective enforcement - National level excludes FAO, ITTO?	- institutional shortcomings, affecting the chance for monitoring and data collection - Monitoring responsibility	+ project level action overcome institutional and governance shortcomings + private sector bringing in new capacity
Equity	- Not addressed by proposals		

Table 4.1: Three key proposals compared at a preliminary level^{xlvi}

4.6 Inferences

With respect to forestry, land use and land use change will have significant impacts on emission levels, but only preliminary steps have been taken so far. The key policy instruments and the discussions to deal with are presented in the table below. While REDD discussions focus on the risk of ‘rewarding the 40 worst deforesters’, afforestation can benefit a wide range of countries. Maintaining forests is also seen as critical. The following table illustrates the differences between fund and market based mechanisms.

	Fund based Mechanisms	Market based Mechanisms
+	<ul style="list-style-type: none"> Can correct market failure Can focus on multiple goals Less strict data requirement Preferable when weak institutions exist Does not require exact GHG accounting 	<ul style="list-style-type: none"> Theoretically: Achieve environmental goals at least cost Control over targets through permit allocation Leverages private sector funding
-	<ul style="list-style-type: none"> Less economically efficient than market Expected donor nations likely to favour market approach Long term funding uncertainty Bureaucratic issues 	<ul style="list-style-type: none"> Potential for REDD credits to flood carbon markets, cheap price reducing the incentive for fossil fuel abatement in developing countries Difficulties of devolving incentives from national/ sub-national level to forest owners and other stakeholders Forestry GHG accounting difficulties Ignores equity, justice & distributional effects
	<p><u>Problems common to both</u></p> <ul style="list-style-type: none"> Baselines, lack of long-term data Permanence Leakage Monitoring – when monitoring capacity is low it leads to uncertainty and undermines policy effectiveness 	

Table 4.2: Advantages and disadvantages of fund and market based mechanisms^{xlix}

5 ADAPTATION ISSUES

5.1 Introduction

The impacts of climate change are already visible and all countries will be affected. However, DCs may be disproportionately affected because so many of them are small island states, have low lying, highly populated coastal areas, fragile mountain ecosystems and rain dependent agricultural and water sectors. DCs will be affected most by climate change impacts, even though most have so far contributed the least to the problem of climate change. Hence, it is important to ensure that the DCs' vulnerability is reduced by developing adaptive capacities to cope with the physical effects of climate change and variability.

5.2 Status of discussions in the regime

Although the issue of adaptation has been on the climate change agenda since the 1990s, few resources have thus far been generated. Adaptation includes changes in behaviour, infrastructure, policy, technologies and management. The National Adaptation Programmes of Action (NAPAs) are programmes to assist the 50 least developed countries to prepare analysis of the impacts of climate change and how they can best adapt on a priority basis to the potential impacts. 30 NAPAs have already been received.

It is assumed that the poorest countries will be extremely vulnerable to climate change while at the same time, possibly the least able to identify their own needs and deal with them without assistance. These NAPAs identify the strategies of local populations to deal with climatic variation and seek to find ways to make national priorities on the basis of this. Hence, community based information is seen as vital. The NAPAs emerge from the special recognition of the needs of LDCs (Art 4(9) of UNFCCC) and decisions 5/CP.7 and 28/CP.7 of the COP. In 2005, the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change was adopted. This includes nine areas of work: methods and tools; data and observation; climate modelling, scenarios and downscaling; climate related risks and extreme events; socio-economic information; adaptation planning and practices; research; technologies for adaptation, and; economic diversification. This Programme expects to enhance capacity, provide improved information and advice, and cooperation among Parties and civil society to lead to integrated policy in the area of adaptation.

Adaptation and adaptation funding, has been controversial, as few developed countries wished to see this in the light of the liability and compensation debate. Early on adaptation was seen as a national issue, while emission reduction was seen as an international issue.¹ Since it was seen as a national issue, the need to fund this through international mechanisms was not seen as necessary.^{li} With the passage of time only certain preparatory measures (Stage III measures) to adaptation became eligible for funding from GEF, since GEF funds are earmarked for 'global environmental benefits' and not local benefits.

Since DCs were dissatisfied, the GEF has established a Strategic Priority on Adaptation in 2006. In the meanwhile, the Kyoto Protocol set up three new funds: the Special Climate Change Fund (SCCF), the Least Developed Countries Fund (LDCF); and the Adaptation Fund (which is not yet fully operational). However, these mechanisms scarcely have any resources and are not yet fully mobilised.^{liii} Although an Adaptation Fund was set up and is to be operational from 2008, there are questions regarding its suitability to disburse resources. While there are arguments (in terms of costs and simplicity) to have the GEF administer the Fund, it is feared that those most in need of adaptation funding would miss out.^{liiii}

Some have suggested that instead, a stand-alone governing body would be better suitable to administer the Adaptation Fund.^{liv} This could ensure that those most affected by climate impacts could have a stronger voice in the decisions on the allocation of funds.

Although there is a proliferation of funds, the resources remain limited.^{lv} World Bank estimates range from US\$10b to US\$40b, while Oxfam suggests that even if countries were able to accelerate their efforts to reduce greenhouse gases, annual adaptation costs may amount to US\$50b, while the budget currently available/set aside/used for adaptation purposes does not reach the billion dollar mark. The Adaptation Fund is projected to have only about Euro 325 million until 2012.

At present activities are underway to identify technology needs for adaptation, and in December 2007, the COP decided that the GEF should continue with country dialogues, using national experts where possible, simplifying the incremental cost principle, taking the lessons on Piloting an Operational Approach to Adaptation, improving access to funds, reporting to the Conference in time for it to be able to examine the report carefully before the meetings start, ensuring that the agreed full costs of DCs are covered in relation to Article 12(1) and reporting on these as part of the regular reports it makes to the Conference.^{lvi} The COP/MOP3 in Bali decided that the Adaptation Fund will become operational in 2008 and will fund concrete adaptation projects in countries that are particularly vulnerable to climate change. It has an Adaptation Fund Board, a secretariat (GEF on an interim basis) and a trustee (The World Bank). The Board consists of 16 members with regional distribution and decisions must be taken by consensus at meetings held at least twice a year. Quorum calls for simple majority. The meetings are meant to be open and decisions transparent by making decisions available in all UN languages.

The Adaptation Fund Board has several functions, including developing strategic priorities to be adopted by the COPs, operational policies and guidelines, criteria for project selection, rules of procedure, monitoring and review of activities, establishing committees, panels and working groups as required, and being responsible for the monetisation of certified emission reductions.^{lvii} One of the most controversial issues at Bali was the role of the GEF and the World Bank in the Adaptation Fund. Consensus was ultimately found by asserting that meetings of the Board would take place in Bonn, even if the secretariat activities were undertaken by the GEF in New York and that applications for funding would be directed at the Board and not via one of the implementing agencies of the GEF.

5.3 Critical policy issues

Although adaptation is seen as a critical issue, resources for adaptation are limited and the information that can support such adaptation activities is not adequate. For example, downscaling global models into local models in order to be able to predict whether water storage systems should be built or not is not yet advanced. It is thus clear that not only existing mechanisms for adaptation funding need to be strengthened by increasing the pledges and actually transferring the pledged resources, but also that new and innovative funding mechanisms need to be developed. In this respect, there is already a wide range of conceivable options.^{lviii}

One option to increase adaptation funding, as suggested in Section 3.4, in the case that a future climate regime will continue to make use of flexibility mechanisms, is to extend the adaptation levy of 2% to all transactions, thereby including international emissions trading and Joint Implementation, and not only the CDM.^{lix} Such a levy could be applied on all transactions of the various existing carbon markets, including those not related to the Kyoto Protocol.^{lx}

This latter option would not only generate more revenues but would ensure a level playing field between those entering into such transactions within the Kyoto Protocol and those outside the multilateral system.

A second option is to apply a levy on the use of air travel, and channel the revenues to adaptation activities.^{lxi} A similar levy could be applied to ship transport emissions as well, as both aviation and shipping emissions are not included in the Kyoto Protocol.^{lxii}

Besides, countries with a per capita emission level above a minimum level and with per capita income level above, for example, US\$10,000 could be invited to fund 0.3% (or some such percentage) of their GNI for adaptation purposes, since they can be presumed to be contributing to the climate change problem. These could be seen as the “new and additional” resources that the developed countries had promised. Other suggestions include contributions to an international insurance pool.^{lxiii}

Finally, efforts to clarify the responsibilities for paying for adaptation should be heightened^{lxiv} based on the principles of historical responsibility,^{lxv} as well as the ability to pay as has been developed by Oxfam^{lxvi}.

When providing financial support for adaptation activities, the UNFCCC provisions, stating that funding should be ‘new and additional’,^{lxvii} should be respected. This provision was inserted to ensure that industrialised countries do not divert Official Development Assistance to finance adaptation projects. On the other hand, however, it is also important to screen development aid projects on their contribution to vulnerability reduction.^{lxviii} Much of the recent literature also advises that there is little need to seek to differentiate between climate change and climate variability (and thus between projects related to climate adaptation and projects related to development assistance respectively.) since it would be difficult, if not scientifically impossible, to determine which impacts fall into which category.

Adaptation needs are different for different groups of DCs. The common vulnerable sectors for most of the developing countries are the agricultural and water sector. For coastal nations – the coastal infrastructure and communities are at stake. The National Communications and the NAPAs indicate the range of different challenges faced by the different countries within the developing world. They also give estimates of the possible costs of adaptation.

5.4 Inferences

On the issue of adaptation, despite the fact that this is a key issue, it took a long time before funding for studying adaptation in the LDCs became available and presently 30 National Adaptation Plans of Action have been prepared. Ironically the most promising instrument – the adaptation fund, which begins operating in 2008 - is funded by a tax on North-South cooperation through the CDM. However, the resources available barely cover the kinds of adaptation costs DCs claim to face.

6 FROM A MENU OF OPTIONS TO A LONG-TERM PREDICTABLE SYSTEM

6.1 Introduction

This section argues that one way to take into account the differences between different groups of developing countries is to offer a menu of options from which different groups can voluntarily select options that suit them best (see 6.2). This voluntary step is seen as an intermediate step towards involving them in a system which treats like countries alike and is predictable so that countries can take the long term implications into account into their development plans (see 6.3).

6.2 Menu of options

This suggestion is inspired by the menu offered by the Dutch government to the provincial and local governments. In this menu, the Dutch government invites provinces and cities to sign up to measures listed in the menu-card in return for limited subsidies. Similarly, all DCs could be encouraged to sign on to different elements of a menu-card to be designed, and the menu-card itself could be made more specific over time. A preliminary menu-card is presented below and is merely indicative of how this could be developed. Over time, one could strive to ensure that LDCs follow the Active Policy; the rich DCs (from OPEC, AOSIS and the rest) follow the Innovative Policy, and all others the Proactive Policy (see Table 6.1).

6.3 Long-term predictable system

The voluntary adoption of a menu of actions could be a precursor to a more fair set of policy packages differentiated per group of countries. It is vital that a predictable and simple system of policy responsibilities for countries in accordance with their financial capability and contribution to the problem is created. The following table from the Keep it Simple Stupid System^{lxi} illustrates how different non-Annex I countries should actually adopt a different range of policy responsibilities commensurate with the characteristics that feature those countries. Table 6.2 matches the classifications created in Figures 2.2 and 2.3.

Theme	Active (for e.g. LDCs)	Proactive (for e.g. rest)	Innovative (for e.g. rich and rapidly emerging economies)
Climate policy	National climate policy commission National climate policy; compliance with int. agreements	Climate policy integrated into one or more specific sectors	Climate policy integrated into energy, forestry, water, agriculture and other policy
Long term objective	Observer	Supports other countries vision on long-term objective	Promotes a long-term objective
Principles	Observer	Supports and implements existing principles at international and domestic level	Proactively pushes for certain principles at domestic and international level
Emission reduction	Accepts policy measures	Accepts sectoral targets in some sectors	Accepts national energy intensity or other such targets
	Demand side management	Sectoral targets on DSM	National targets on DSM
	Promotes renewable energy	Active fuel-switch policy	Accepts targets on renewable energy as % of total energy mix Accepts fuel switch targets
	Uses energy supply technologies, if offered	Commits to using better energy technologies in energy supply sector	Accepts targets on GHGs for energy supply sector
Forestry	Minimizing deforestation levels not just <i>de jure</i> but also <i>de facto</i> to be achieved by national or international market (e.g. CDM) and non-market mechanisms	Maintaining current forest levels not just <i>de jure</i> but also <i>de facto</i> to be achieved by national or international market (e.g. CDM) and non-market mechanisms	Active net afforestation targets to be achieved by national or international market (e.g. emissions trading) and non-market mechanisms
Adaptation	Preparation of adaptation needs; achieved by national or international mechanisms	Implementing adaptation options in specific sectors (e.g. agriculture; tourism, water, coastal zone management etc.); achieved by national or international mechanisms	Integrating adaptation into national development policy to be achieved by national or international mechanisms

Table 6.1: Menu-card of options for DCs.

	Emissions below minimum per capita	Emissions in the middle category	Emissions above maximum per capita
Very high income per capita	Na	Na	Package 1
High income per capita	Na	Package 3	Package 2
Medium income per capita	Package 5	Package 4	Package 3
Low income per capita	Package 6	Package 5	Package 4

Table 6.2: The packages of responsibilities for non-Annex I countries

Legend: Na = Not applicable

Such a system does not need to be rigid; there may be a number of mitigating factors that countries may use to argue that they do not fit into a particular system (see Gupta, 2003).

7 CONCLUSIONS AND RECOMMENDATIONS^{lxx}

7.1 Introduction

This section tries to draw the different elements of this report together in a series of conclusions and recommendations on the long-term objective; policies and measures; and the cooperative mechanisms. Although this report focuses on the developed countries, Chapter 1 argued that without a serious commitment from the Annex I countries to reduce their domestic emissions, the DCs will neither have the motivation to push harder, nor have access to the technologies consistent with a low carbon economy and lifestyle.

7.2 Long term objective

This briefing has pointed out that (a) there is no quantitative elaboration of the long-term objective in the formal treaty documents, (b) that the IPCC projections are seen as not considering sufficiently the concerns of the particularly vulnerable island and coastal states and possibly also those with arid and semi-arid conditions and vulnerable mountainous regions seriously, and that (c) there is clear political reluctance to be explicit on this point as demonstrated by the Bali Action Plan.

The DCs call for showing concern for protecting the most vulnerable, and not just for protecting Europe from the worst impacts of climate change. This means keeping up the pressure for a long-term target aiming at limiting temperature rise to 2°C above pre-industrial levels (consistent with current EU policy), and in the meanwhile, putting pressure on academic institutions to see what stabilisation scenarios below 450 ppm imply.

7.3 Policies and Measures

On policies and measures, this paper **concludes** the following:

1. Although DCs have taken a number of policies and measures in a variety of fields, this will clearly not be enough to counter the business-as-usual trend unless very drastic measures are taken.
2. The principles guiding action seem to have lost value over time;
3. The incentives from outside – CDM, technology transfer and the financial transfers – have been limited and are unlikely to make a major dent; and
4. The DCs cover an extremely wide group of countries with very different issues and interests; and any effort to incorporate them effectively and equitably needs to take this into account.

On the basis of the above conclusions, the following **recommendations** can be made:

1. The existing principles in the UNFCCC should be honoured by all and new proposals should be tested against these principles. In addition (a) the polluter pays and liability and compensation principles should be taken into account, (b) the human rights principle in the form of an entitlement right should be included; and (c) the precautionary principle should not be qualified by a cost-effectiveness principle, unless the polluter pays and liability principles are internalized in the accounting of costs.

2. If CDM is to be effective in encouraging the adoption of modern technologies in developing countries and changing land use practices, emission reduction targets in the developed world will have to be sufficiently high in order to create a demand for CERs, keeping in mind also the need for supplementarity. As it is vital that emissions are also reduced within the developed world, a supplementarity criteria that says that no more than 50% of the reduction commitment can be met through CDM is necessary. Only then will there be a fair price for carbon reduction per ton. Otherwise, the market may be flooded by CERs and the price may fall so low that the mechanism will fail. Further, if the sustainability criteria in sustainable development are to be taken seriously, those criteria should be included into the CDM project development and monitoring process. Finally, efforts need to be taken to ensure that not only the momentum of developing projects in the rapidly developing economies is not lost, but also that the methods developed encourage a movement towards small-scale project development in the poorer countries. Hence, CDM needs to be improved by (a) increasing its capacity to deal with the projects in the pipe-line, (b) creating simplified methodologies for a range of small projects that are likely to be developed in Africa and for which local entrepreneurs may be in a position to develop the project documentation, (c) create regional CDM centres of excellence to promote the development of CDM projects, (d) ensure a clear supplementarity criteria, and (f) develop a mechanism for verifying that CDM projects contribute to sustainable development as claimed in the project documentation.
3. There is need for assistance for adaptation in DCs. Given the large gap between currently available funding for adaptation, and the expected costs of adaptation, it is crucial that available adaptation funding is increased through new and innovative mechanisms. Such an increase in funds is possible through:
 - an adaptation levy for all flexibility mechanisms by 2012, which should feed into the Adaptation Fund;
 - a tax on passenger and goods travel through air and ship transport, which should be used to contribute to adaptation;
 - reserving a percentage of GNI of the rich and polluting countries (this could include some non-Annex I/B countries and exclude some existing Annex I/B countries) as a fixed contribution to adaptation. This could be seen as the “new and additional” resources that the developed countries had promised. ODA should not be diverted for climate change goals, but this does not imply that development aid projects, should not take the impacts of climate change into account. The new and additional character of climate funding should be maintained;
 - an international insurance pool, provided that the coverage is affordable to least-developed countries; and
 - increasing efforts to clarify the responsibilities for paying for adaptation, based on the principles of historical responsibility as well as the ability to pay.

4. UNFCCC measures related to forestry and LULUCF must, besides reducing emissions, also take into account sustainable forestry and protecting ecosystem services. Since the multiple services provided by forests cannot be easily protected through the CDM, and because of its focus on cost-effective reductions of GHGs, any market mechanism developed to encourage forestry should have strong monitoring to also ensure that the non-GHG element of the projects are also met. Alternatively, other types of funding mechanisms should be developed.
5. Continuous and clear global educational and public awareness raising programmes are needed to ensure support for appropriate policies.
6. In the short-term, a menu of active, proactive and innovative options should be developed and developing countries should be encouraged to sign on to one or other of the packages (see tables 6.1 and 6.2). As many are already undertaking a large number of measures, this might be in line with their existing practices but still calls for greater alertness in policy development.
7. Such adoption of a menu should be seen as an intermediary step to encouraging countries to accept certain policy options that are consistent with their emission levels and their income per capita. A long-term fair and predictable system of responsibilities needs to be designed so that all countries can take potential future responsibilities into account in their planning processes.

In concluding, there are several possible ways in which participating more constructively in the climate change regime can be made more attractive to the developing countries. In order to develop such instruments, it is vital that there is understanding among the developed countries about the critical problems faced by the developing world, their similarities and differences and the historical and cultural contexts within which they function. Such an analysis should form the basis on which recommendations regarding their involvement are made. Furthermore, critical to developing country participation is helping them adapt to the most serious impacts of climate change which can have serious repercussions on food, water and energy security as well as impact on their livelihoods. This not only calls for raising resources to assist these countries but also new ways of effectively delivering the assistance to these countries.

ANNEX 1: NON-ANNEX I NEGOTIATING GROUPS IN THE CLIMATE NEGOTIATIONS (BY REGION).

Regions	Countries	Total	
		G-77	Non G-77
Africa	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (DR), Congo (Rep.), Cote D'ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Western Sahara,* Zambia, Zimbabwe.	53 ^{lxxi}	
Asia	Afghanistan, Armenia,* Azerbaijan,* Bahrain, Bangladesh, Bhutan, Brunei, Cambodia, China, Cyprus, Georgia,* India, Indonesia, Iran, Iraq, Israel,* Jordan, Kazakhstan,* Korea (DPR), Korea (Rep.),* Kuwait, Kyrgyzstan,* Lao (PDR), Lebanon, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Oman, Pakistan, Palestine, ^{lxxii} Papua New Guinea, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Syria, Tajikistan,* Thailand, Turkmenistan, United Arab Emirates, Uzbekistan,* Vietnam, Yemen.	36	9
Latin America and the Caribbeans	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Costa Rica, Cuba, Colombia, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico,* Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela.	32	1
Europe	Albania,* Andorra,* Bosnia Herzegovina, Holy See,* Macedonia (FYR) ,* Malta, Moldova,* San Marino,* Yugoslavia (Federal Rep.)*	2	7
Oceania	Cook islands,* Fiji, Kiribati,* Marshall Islands, Micronesia (Federal States of), Nauru,* Niue,* Palau,* Samoa, Solomon Islands, Tonga, Tuvalu,* Vanuatu.	7	6
Total G-77	All the above countries minus the * ones, i.e. those mentioned below.	130	
Non G-77	Albania, Andorra, Armenia, Azerbaijan, Cook islands, Georgia, Holy See, Israel, Kazakhstan, Kiribati, Korea (Rep.), Kyrgyzstan, Macedonia (Former Yugoslav Republic of) , Mexico, Nauru, Niue, Palau, Moldova, San Marino, Tajikistan, Tuvalu, Uzbekistan, Yugoslavia (Federal Rep.)		23

Source: Gupta (2000).

NOTES

- i Gupta, J., Grubb, M. (2000) *Climate Change and European Leadership: A Sustainable Role for Europe?* Kluwer Academic Publishers; Gupta, J., and Ringius, L. (2001) The EU's Climate Leadership: Reconciling Ambition and Reality. *International Environmental Agreements: Politics, Law and Economics* 1, 2, pp. 281-299.
- ii Gupta, J. (2000) *On Behalf of My Delegation: A Guide for Developing Country Climate Negotiators*, Center for Sustainable Development of the Americas, Washington D.C., p 100.
- iii WRI (2006) *World Resources 2006*, World Resources Institute, Washington D.C.; WRI (2006) *World Resources 2005-2006*, World Resources Institute, Washington D.C.
- iv UNFCCC, Art. 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."
- v India's Initial National Communication to the United Nations Framework Convention on Climate Change, Ministry of Environment and Forests, Government of India, 2004; p. xiii.
- vi China's National Climate Change Programme (2007). National Development and Reform Commission of the Peoples' Republic of China, Beijing.
- vii Data source: World Resources 2005 (data on Qatar is not available)
- viii The Human Development Index (HDI) is based on life expectancy, knowledge and literacy, and GDP per capita (at Power Purchasing Parity).
- ix FAO FRA 2005 global tables; <http://www.fao.org/forestry/site/32178/en/>
- x UNFCCC, Art. 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."
- xi AWG 4 Decision on Review of Work Programme, Methods of Work and Schedule of Future Sessions, see http://unfccc.int/files/meetings/cop_13/application/pdf/awg_work_p.pdf.
- xii 'It noted the usefulness of the ranges referred to in the contribution of Working Group III to the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) and that this report indicates that global emissions of greenhouse gases (GHGs) need to peak in the next 10–15 years and be reduced to very low levels, well below half of levels in 2000 by the middle of the twenty-first century in order to stabilize their concentrations in the atmosphere at the lowest levels assessed by the IPCC to date in its scenarios. Hence the urgency to address climate change. At the first part of its fourth session, the AWG recognized that the contribution of Working Group III to the AR4 indicates that achieving the lowest levels assessed by the IPCC to date and its corresponding potential damage limitation would require Annex I Parties as a group to reduce emissions in a range of 25–40 per cent below 1990 levels by 2020, through means that may be available to these Parties to reach their emission reduction targets. The IPCC ranges do not take into account lifestyle changes which have the potential of increasing the reduction range. The ranges would be significantly higher for Annex I Parties if they were the result of analysis assuming that emission reductions were to be undertaken exclusively by Annex I Parties. The AWG also recognized that achievement of these reduction objectives by Annex I Parties would make an important contribution to overall global efforts required to meet the ultimate objective of the Convention as set out in its Article 2.'
- xiii Bali Action Plan, available at http://unfccc.int/files/meetings/cop_13/application/pdf/cp_bali_action.pdf.
- xiv AWG 4 Decision on Review of Work Programme, Methods of Work and Schedule of Future Sessions, see http://unfccc.int/files/meetings/cop_13/application/pdf/awg_work_p.pdf.

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- xv Parry, M., N. Arnell, T. McMichael. et al. (2001), 'Millions at risk: defining critical climate threats and targets', *Global Environmental Change*, **11** (3), 181-183.; Baer, Paul and Tom Athanasiou (2004), Honesty about dangerous climate change, At: http://www.ecoequity.org/ceo/ceo_8_2.htm (03.01.05).
- xvi GNP data derived from <http://web.worldbank.org/>
- xvii FCCC/SBI/2005/18; p. 9.
- xviii FCCC/SBI/2005/18; p. 15.
- xix Ming, Li Gupta, J. and Onno Kuik (2008) *Will CDM in China make a Difference?*, IHDP Conference, Berlin, 22-23 February 2008.
- xx UNEP Risø Centre (<http://cdmpipeline.org/cdm-projects-region.htm#6>).
- xxi CMP 3 Decision on Further Guidance Related to the Clean Development Mechanism, see http://unfccc.int/files/meetings/cop_13/application/pdf/cmp_af.pdf.
- xxii COP13 Decision on Development and Transfer of Technologies under the Subsidiary Body for Scientific and Technological Advice, see http://unfccc.int/files/meetings/cop_13/application/pdf/cp_tt_sbsta.pdf
- xxiii COP13 Decision on Development and Transfer of Technologies under the Subsidiary Body for Implementation, see http://unfccc.int/files/meetings/cop_13/application/pdf/cp_tt_sbi.pdf
- xxiv ttclear.unfccc.int/ttclear/jsp
- xxv FCCC/SBI/2007/25.
- xxvi Capoor, K. and Ambrosi, P. (2006) *State and Trends of the Carbon Market 2006. A Focus on Africa*. The World Bank.
- xxvii Stern (2007); Stern, N. H. (2006) *Stern Review on the Economics of Climate Change*. Available at: http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm; Nabuurs, G.J., Masera, O., Andrasko, K., Benitez-Ponce, P., Boer, R., Dutschke, M., Elsiddig, E., Ford-Robertson, J., Frumhoff, P., T.Karjalainen, Krankina, O., Kurz, W.A., Matsumoto, M., Oyhantcabal, W., Ravindranath, N.H., Sanchez, M.J.S. and Zhang, X. (2007) Forestry. In: B. Metz, O.R. Davidson, P.R. Bosch, R. Dave & L.A. Meyer (Eds), *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- xxviii http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/trines.pdf
- xxix Decision 9/CP.4.
- xxx Decisions 16/CP.5
- xxxi Decision 1/CP.6
- xxxii Decision 17/CP.7
- xxxiii Decision 19/CP.9
- xxxiv Decision 13/CP.9
- xxxv Decision 14/CP.11
- xxxvi Decision CMP.1
- xxxvii COP13 Decision on Reducing Emission from Deforestation in Developing Countries: Approaches to Stimulate Action, see http://unfccc.int/files/meetings/cop_13/application/pdf/cp_redd.pdf
- xxxviii See Stern (2007).
- xxxix Rokityanskiy *et al.* (2007) Geographically explicit global modeling of land-use change, carbon sequestration, and biomass supply. *Technological Forecasting and Social Change* 74, 7, pp. 1057-1082.
- xl <http://www.nature.org/initiatives/climatechange/strategies/art20602.html>.

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- xli Distribution of registered project activities by scope;
<http://cdm.unfccc.int/Statistics/Registration/RegisteredProjByScopePieChart.html>.
- xlii Professor Eric Lambin works at the Department of Geography at the University of Louvain, Louvain-la-Neuve in Belgium. This was communicated via email to the author.
- xliii http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/trines.pdf
- xliv http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/trines.pdf
- xlv Reducing Emissions from Deforestation in Developing Countries, Submitted by Indonesia, ...
- xlvi http://unfccc.int/files/methods_and_science/lulucf/application/pdf/vanuatu.pdf
- xlvii http://unfccc.int/files/methods_and_science/lulucf/application/pdf/bolivia.pdf
- xlviii This table was based on student research by Kenneth Hansen, Hannah Smith and Mathew Smith.
- xlxi Supra note above.
- i Gupta, J. (1997) *The Climate Change Convention and Developing Countries - From Conflict to Consensus?*, Environment and Policy Series, Kluwer Academic Publishers¹, Dordrecht.
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- iii Möhner, A. and Klein, R.T.J. (2007) *The Global Environment Facility: Funding for Adaptation or Adaptation to Fund?* Stockholm Environment Institute - Climate and Energy Programme.
- iiii See, for example, the speech of the Deputy Prime Minister of Tuvalu at the UN High Level Meeting on Climate Change on 29 September 2007, http://www.tuvalu.islands.com/un/2007/un_2007-09-29.html (accessed 5 November 2007).
- liv Sopoaga, E., Greyling, L., Lesolle, D., Massawa, E. and Miguez, J. (2007) *On the Road to Bali: Operationalising the Kyoto Protocol Adaptation Fund*. Available at: http://www.eurocapacity.org/downloads/IIED-ecbi_AF_2007 (accessed 5 November 2007).
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