

## **FINANCING FOR ADAPTATION ACTIVITIES IN DEVELOPING COUNTRIES**

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### I: INTRODUCTION

The principal objective of greenhouse gas *mitigation* activities is to reduce the amount of global warming likely to occur by eliminating the causes of climate change. In contrast, *adaptation* focuses on actual or imminent impacts of climate change and refers to spontaneous or planned measures taken to adjust practices, processes or structures of systems to projected or actual changes in the climate.<sup>1</sup>

Although the most well known adaptive option focuses on coastal protection, adaptation also includes other measures, such as adjusting agricultural and forest management, implementing early warning systems for extreme weather events and establishing migrations corridors for migrating species. Because the vulnerability of countries decreases when national income increases, the achievement of economic development in a sustainable manner could also be regarded as an adaptation policy. Invariably, the countries most concerned with adaptation are those that are economically, ecologically and socially vulnerable to the negative impact of climate change, with limited resources and thus a low capacity to adapt.

Developed countries, referred to as Annex I Parties in the Convention, are responsible to mitigation measures, having committed themselves under the Convention and Kyoto Protocol to emission reduction targets. Developing countries on the other hand, will inevitably have to undertake adaptation measures to adjust and adapt their economies and societies to the impacts of climate change. This means that more resources will need to be availed to meet the needs of developing countries in general and those of least developing countries in particular.

Given the long atmospheric lifetime of greenhouse gases and the inertia of both the climate and the socioeconomic system, a certain amount of climate change seems unavoidable and may already be happening (see IPCC scenarios). Adaptation will therefore be a major part of the national climate change response strategies of vulnerable countries and those having low greenhouse gas emissions. Even in these cases, adaptation should complement, rather than substitute for greenhouse gas abatement measures.

The paper presents an overview of issues relating to vulnerability and adaptation to climate change in developing countries and evaluates financing schemes for adaptation activities proposed under the UNFCCC and the Kyoto Protocol. It draws from the ongoing negotiations on adaptation in the context of the Convention and Protocol and focuses mainly

on opportunities for funding adaptation activities. This paper analyses the proposal for an adaptation fund for developing countries, least developed countries and small islands as outlined in the note by the President of the sixth conference of the Parties (COP-6) Jan Pronk in The Hague in November 2000. *This aim of this paper is to raise issues for further consideration and does not in any way provide answers to any of the issues raised.*

## **II. CLIMATE CHANGE VULNERABILITY AND IMPACTS IN DEVELOPING COUNTRIES**

### **II.1. Vulnerability and Climate Change.**

Though climate change is a global problem, not all the world inhabitants are in equal positions to face the impacts that are expected. Climate change will affect the different countries, regions, economic sectors and social groups in different ways resulting in impacts of different magnitudes based on the different causes, from climate particularities in each zone to life conditions of the diverse social groups involved, resulting in diverse degree of vulnerability to climate change.

Expected changes in global climate can lead to alterations in temperature and rainfall patterns in global, regional and local levels, resulting in variations in soil composition, sea level rise, increasing frequency of meteorological extreme events, high temperature episodes, floods and droughts.

Both natural ecosystems and human society have different degrees of vulnerability to certain phenomena. Their vulnerability is closely related to their capacity to absorb, adapt to and/or mitigate the effects of the unusual events. In the case of natural ecosystems that capacity is lower when the levels of structural fragility of those ecosystems are greater. In the case of societies, that capacity is linked to the existence of certain technology, infrastructure and economical and financial resources to cope with their vulnerability. Vulnerabilities are also associated with the speed with which the changes occur. If changes occur faster than the adaptation capacity of a society and/or ecosystem, the adverse effects may be more significant. However, the relationship between climate changes and their effects on human activities are far from being linear. Human institutions and social organization play an important role in the process of adverse climate change effects minimization. As that expected impacts of climate change should also be seen within the context of a dynamic analysis in which adaptation activities play a significant role. Some regions, countries, economic sectors and social groups will be able to adapt to changes that would be happen, while some others, mainly the poorest, will have difficulties for finding the appropriate responses. Consequently studies about adaptation to climate change should not avoid the analysis on social and economic vulnerability to climate change of those groups.

The poorest sectors of society are the more susceptible to the adverse effects of climate change, due to their limited access to technical and economical resources that need to adapt to or mitigate climate change and the limited opportunities to meet their financing needs to recuperate from the extreme events after they had occurred. Among the impacts facing such societies include to prevalence of new illnesses and plagues, habitat degradation, the loss of cultural values, which would inevitably lead to the intensification of poverty levels and thus increase chances for social and political conflicts as result of that situation. These characteristics

epitomize the vulnerability of poorest people living in developing countries, mainly in least developed countries (LDC's), which have less diversified socioeconomic sectors, with less access to appropriate technology substitution possibilities in order to adapt to changes, and consequently more vulnerable to climate variables.

The heterogeneity in the ability to face to climate change will exists not only between rich and poor countries, but also within the own developing countries. The disparity on income distribution between rich and poor people (typical from developing countries) means, the most of the cases, also a disparity in adaptation ability to changes between the diverse groups and sectors within the different countries. The social groups closest to the political authorities and those connected to the most dynamic activities will be in better conditions to overcome expected effects of climate change compared with the rest of the society, mainly the most unprotected groups. A way to overcome this situation may be to focalize adaptation activities in particular to poorest sectors and groups vulnerable to climate change all over developing countries, rather than only in poorest countries in general, trying to cover as wide as possible the most quantity of poor people around developing world.

It should not be avoided that climate change and globalization process occurs simultaneously and countries, regions, economic sectors, social groups and ecosystems should confront unavoidably the impacts of both process, mainly in the case of developing countries. As in the case of climate change, the poorest are the most vulnerable faced to the globalization process. So that, adaptation measures should be assessed within an integral framework that take into account the whole changes that are taking place in the global context.

Related to climate change expected impacts exclusively, in 1998 the Work Group II (WGII) of the IPCC carried out a regional assessment of the potential impacts of climate change, thus attempting to measure the sensitivity of natural and anthropogenic systems to expected climate changes, using ecological and socioeconomic models. The following sections outline in brief the regional distribution of climate change impacts.

## **II.2. Climate Change Vulnerability in the Latin American and Caribbean region.**

### **II.2.1. Latin America**

In the context of this document, Latin America includes all continental countries of the Americas, as well as adjacent seas, located from Mexico to Argentina and Chile <sup>2</sup>.

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2 Countries included in this region are: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guyana, Suriname, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.)

The Latin American contribution to global emissions of GHG is approximately 4%. However, in comparison, potential future impacts of climate and land-use changes could be large and costly for this region. The region is highly heterogeneous in terms of climate, ecosystems, human population distribution, and cultural tradition. Most Latin American production activities are based on the region's extensive natural ecosystems. *Land use is a major force driving ecosystem changes at present; it interacts with climate in different ways, so it is very difficult to identify common patterns of vulnerability.* The impacts of climate change are likely to be felt in the following major areas: natural ecosystems (forests, rangelands, wetlands), water resources, coastal zones, agriculture and human health, but the relative importance varies among countries.

Latin America is a region significantly affected by seasonal and inter-annual climate variability, such as El Niño (ENSO),<sup>3</sup> mainly in the cases of Central America, Peru, Ecuador, Chile, Brazil and Argentina. Some areas, especially in Central America are subject to extreme weather events, such as the recent Hurricane Mitch in 1998, earthquakes and volcanic activity. An increase in that climate variability jointly with more frequency of extreme events, as well as other climate change effects (as modifications in water supply, agricultural land loses, floods, among others) would result in serious socioeconomic problems, augmenting poverty leading to massive migrations from major affected zones (mainly rural and coastal regions) and intensifying national and international conflicts. It appears evident that it is necessary to design appropriate adaptation policies and institute measures within countries to build research capacity and promote scientific and technical knowledge. Lack of stability and continuity in policy application, lack of economical and financial resources for implementing adaptation actions, and lack of power to influence in the decision making process related to resources allocation to face the changes that are expected, are the major deficiencies of the region

Considering that Latin America is the region which possesses the most important biodiversity reserves in the world, the conservation of such patrimony and the appropriation of the gains of its potential commercialization will be questions that could become key issues when considering adaptation measures.

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3 El Niño phenomena was historically a warm-stream that appears annually in the coastal zone of Equator and Peru close to Christmas. But in some years the warming is significant when the Niño stream occurs jointly with the atmospheric phenomena named Southern Oscillation. So El Niño-Southern Oscillation (ENSO) should be understood as an interaction between the ocean and the atmosphere. During the Niño event, warm waters from the West Pacific Ocean migrate to the East shifting the precipitation zone of the Tropical Pacific Ocean from Indonesia to the arid coastal zone of Peru and Equator. These El Niño events show a duration of 12-18 months in average and occurs by intervals that fluctuate between 2 and 7 years. El Niño is associated with the warm phase of the ENSO while the opposite phase, La Niña, is associated with the cold phase of the ENSO, and the regions which suffer heavy rainfalls during El Niño could suffer strong droughts during La Niña.

Significant changes are expected in ecological systems, mainly in forest and pastures of Argentina, Bolivia, Brazil, Costa Rica, Mexico, Nicaragua and Venezuela, in mountainous regions and in transition zones between different types of vegetation. Latin American forests (which occupy approximately 22% of the region and represent about 27% of global forest coverage) have a strong influence on local and regional climate, play a significant role in the global carbon budget, contain an important share of the biodiversity of the region and are economically very important. Vulnerability studies indicate that forest ecosystems in many countries (Mexico, Central America isthmus, Venezuela, Brazil, Bolivia) could be affected by projected climatic changes. As an example, changes are expected in 67% of temperate forests in Mexico caused by warmer and dryer conditions as well as further expansion of the desert areas of the north of Mexico, Peru, Bolivia, Chile and Argentina. In Argentina, a increase in the semi-arid conditions of the Patagonian steppe advancing over the Sub-Antarctic forests could also be expected.<sup>4</sup> In the northern part of the region, an increase of temperatures would be accompanied by an increase in evapotranspiration, that would advance to the west, the current dry conditions of the area.<sup>5</sup> Climate change may also be an additional factor leading to the loss of forest cover in the Amazonas rainforest. This would not only imply habitat lose for several species but also directly affect the natural carbon balance and the hydrological cycle.

With regards to hydrology, climate change could result in a significant reduction in the extension of the glaciers and in continental ice fields, accelerating the melting of them, mainly in the Peruvian and Venezuelan Andes zone. However the Patagonian Continental Ice Fields (Argentina, Chile), will not be affected in the same magnitude. The reduction in precipitation will have direct effects not only on the seasonal hydrological supply but also in the recharge of surface and underground water in Andean regions thus affecting mountain tourism activities. A reduction in rainfall can also carry negative consequences for hydroelectric generation in Costa Rica, Panama and in the Cuyo region of Argentina as well as for urban and rural water supply.

As a consequence of sea level rise, there will be impacts on high coastal land and biodiversity (including negative impacts on coral reefs, mangroves, estuaries, wetlands, marine mammals and birds), infrastructure damages and marine water intrusion, mainly in Venezuela, Uruguay, Central America an other areas with low coastal zones. It is also possible than the sea level rise could lead to blockage in the drainage of plain rivers leading to increased risk of floods, not only in their basins, but also in their plains, as could happen in Argentina with the Salado Basin. For example, an increase of the mean ocean level may

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4 See NUÑEZ et al. (1996). Climate Change Scenarios over the South American Region: An intercomparison of Coupled General Atmosphere–Ocean Circulation Model. *International Journal of Climatology*, July.

reduce the hydraulic gradient of Pampean Plain, blocking the drainage of rain water and effluents, and increasing the risk of floods in the Pampean region (including Buenos Aires Metropolitan Area), and producing the salinization of underground water that provides water to Pampean Plain cities. A one meter sea level rise could carry serious consequences for the Del Plata Lower Basin (mainly Paraná and Uruguay rivers). Higher increases could imply a total disappearance of the Paraná Delta in Argentina.

A reduction in agricultural production is expected in Argentina, Uruguay, Chile, Mexico and Brazil, despite the positive effects of higher concentrations in CO<sub>2</sub> *and the adaptation measures that could be taken*. A significantly reduction in livestock production is also expected if temperate pastures are adversely affected by droughts. Traditional livestock breeding in the Andean region also could be affected by the lowering in the productivity of natural pastures.

Climate variability, changes in rainfall patterns and humidity distribution, and the general warming of the region, could contribute to expand geographical prevalence of diseases carrier vectors, and the endemic areas of infectious diseases. Drinking water availability and food quality also may be affected by climate change, exacerbating the impacts in poorest sectors that live in marginal areas. Human health and welfare will be adversely affected by higher concentrations of tropospheric ozone, plus higher temperatures and higher rates of solar radiation, mainly in higher latitudes.

### **II.2.2. The Caribbean**

This region is included in a group of countries often referred to as Small Island Developing States, which comprises 28 countries located mainly within the tropics, with the exception of Malta and Cyprus in the Mediterranean. Fourteen of these countries belong to the Caribbean Region: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago.

Sea level rise is the main vulnerability issue related to climate change for these countries, because much of the land area is only 3-4 m. above the present mean sea level. In most small island states, almost all the critic infrastructure and the majority of human settlements and activities are located within a radius of 1 to 2 km. from the coast or near the current sea level.

Some climatic variables often exhibit distinct seasonal patterns, particularly rainfall distribution, which results in wet and dry seasons. The Caribbean area is subject to tropical

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5 See HOFFMANN et al. (1997) . Temperature, Humidity and Precipitation variations in Argentina and the adjacent Sub-Antartic Region during the present Century, in *Meteorologische Zeitschrift*, and NUÑEZ et al. (1996).

cyclones and other extreme events and those that are outside the main storm tracks also are affected by high seas and swells associated with such events. The Caribbean states also are affected by ENSO effects.

The degree of vulnerability varies from island to island. However, main concerns are common for all of them and includes the increase of coastal erosion, the salinization of soil, the saline water intrusion in underground water and floods. In some cases, the response options within national frontiers are limited because the lack of physical space. This situation may provoke massive migrations if sea level rise effectively occurs.

Tourism is the dominant economic sector in many small islands states in the Caribbean Sea. This sector is the single largest contributor to GNP in many countries and the main source of foreign exchange. As an example, in 1995 tourism accounted for 69% of GNP in Antigua and Barbuda and 53% in Bahamas. The vulnerability to climate change of this activities is very high, because they are strongly influenced by climatic factors. Lose of beaches caused by erosion, floods and ecosystems and infrastructure degradation may affect strongly those economies.

Caribbean islands experienced an increase in mean annual temperature of more than 0.5°C during the period 1900-1995. During the same period, mean annual total rainfall decreased by about 250 mm and the rainfall record has been characterized by large variability. In most tropical areas, some coral species survives near its temperature tolerance limit (25-29°C). In this situation even a little increase in surface ocean temperature may have serious adverse impacts on the organisms. Mangroves and other marine ecosystems may become more vulnerable, because their natural capacity for moving and migrating will be reduced by the necessities of built infrastructure, land loses and the land use practices.

Related to the impacts on human settlements, in theory some degree of adaptation to these changes is possible, but the costs involved probably would be very high. Coastal protection, for example, has very high costs. In smaller and low land islands shall be considered the possibility of migrations and re-localization of human settlements outside the national frontiers, driving to conflicts among different states.

### **II.3. Climate Change Vulnerability in Africa and African Small Island States.**

Africa<sup>6</sup> is the least contributor to GHG emissions. However, under the assumption that access to adequate financing is not provided, Africa is the most vulnerable continent to climate change potential effects because widespread poverty limits adaptation capabilities.

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6 The study includes 49 countries: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Cote d'Ivoire, Democratic Republic of Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Niger,

Several climate regimes characterize the African continent; the wet tropical, dry tropical, and alternating wet and dry climates are the most common. Many countries on the continent are prone to recurrent droughts; some drought episodes, particularly in southeast Africa are associated with ENSO phenomena. Highly variable climate coupled with high population growth rates, lack of significant investment, inappropriate policies and deterioration in terms of trade caused by a drop in relative prices for most African export products, have made it difficult for several countries to develop patterns of livelihood that would reduce pressure on the natural resource base.

In terms of ecological systems, they are expected significant changes in forests and rangelands which are under threat from population pressures and systems of land use. The potential effects of these threats include loss of biodiversity and changes in its composition and in migratory patterns of the species involved, rapid deterioration of land cover and depletion of water availability. Changes in climate will interact with these underlying changes in the environment, adding further stress to a deteriorating situation. Many organisms in the deserts are near their tolerance limit and some may not be able to adapt drier and hotter conditions. Arid to semi-arid areas and the grasslands of eastern and southern Africa are particularly vulnerable.

Related to hydrology, it is expected a rainfall increase, coupled by an increase in draining, in those regions whose altitude is higher, and a reduction in draining in those whose altitude is lower caused by a conjunction between higher temperatures and lower rainfalls. It is expected a reduction in greater Sahel river's flows in the next 30/60 years and potential losses of wetlands along them. This situation, added to climate variability, makes water resources management more difficult.

The most agriculture activities in Africa will be adversely affected by rainfall reduction because of irrigation limitations in most of them. It is expected significant. Wheat and corn harvests may reduce significantly and also may be affected apples, pears, peaches and other fruits produced in Mediterranean Sea areas that need cold winters, as result of growing temperatures that are expected in winter. Droughts are expected to be more frequent and intense and they may affect seriously food and water availability, as in the '80 and '90's droughts in southern Africa and the Sahel.

Related to sea level rise, some of the socioeconomic, biologic and physical characteristics of West Africa, that are at present stressed by population growth and over-exploitation of some natural resources, may be seriously affected by sea level rise. Sea level rise, added to greater climate variability and a more frequent extreme meteorological events can aggravate coastal erosion, water and soil contamination, marine water intrusion and

floods. The coastal nations of Central and West Africa, like Senegal, Gambia, Sierra Leona, Nigeria, Cameroon, Gabon and Angola, among others, may be seriously threaten by sea level rise because of their topographic and coastal characteristics, particularly because most of the countries of the area have in the coastal zone cities which are growing rapidly. A one meter grow in sea level may threat around four million people and between 6.000 Senegal and 20.000 square kilometers in Senegal and Nigeria coastal zone. Furthermore, there are some Small Island States in the African coast of Atlantic Ocean like Cape Verde and Sao Tome and Prince, and also in the Indian Ocean like Seychelles, Comoros, Mauricio and Maldives<sup>7</sup>.

Human health also may be threaten by climate changes. It is expected a significant growth in the incidence of diseases carrier vectors as in the case of malaria, dengue, yellow fever and trypanosomiasis, caused by higher temperatures and changes in rainfall patterns. The population of cities located at higher altitudes (as Nairobi or Harare) may become vulnerable to malaria's epidemics. As a result of the higher frequency of extreme meteorological events like floods, storms, strong winds, soil sliding, cold spells, droughts and temporary sea level rises, among others, may become more difficult the management of water, soil and air pollution, waste disposal, drinkable water supply, sanitary conditions, public health and sanitation.

Climate change may adversely affect Tourism (one of the most dynamic economic activity in the last years in the region) trough negative impacts on wildlife and vegetation and also if recreation water supply were affected in places like Victoria Falls (Zambia), or Lakes like Midmar (South Africa), Malawi (Malawi) and Kariba (Zimbabwe). For some Small Island States in the Indian Ocean, like Mauricio, Seychelles or Maldives, tourism is the dominant economic sector and the most important source of foreign exchange.

#### **II.4. Climate Change Vulnerability in Asia**

In this document Asia includes three different regions: (a) Middle East and Arid Asia; that includes 21 countries from the arid and semi-arid region of Middle East and Central Asia<sup>8</sup>; (b) Temperate Asia, that includes countries in Asia located between the 18°N and the Arctic Circle, including the Japanese islands, the Korean peninsula, Mongolia, most parts of

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Togo, Tunisia, Uganda, Zambia and Zimbabwe.

7 Not in Africa but also within Indian Ocean.

8 Afghanistan, Bahrain, Islamic Republic of Iran, Iraq, Israel, Jordan, Lebanon, Kazakstan, Kuwait, Kyrgyz Republic, Oman, Pakistan, Qatar, Saudi Arabia, Syria, Tajikistan, Turkmenistan, Turkey, United Arab Emirates, Uzbekistan and Yemen

China, and Siberia in Russia<sup>9</sup>; and (c) Tropical Asia, that includes 16 countries from the southeast Asia<sup>10</sup>.

Middle East and Arid Asia is particularly vulnerable to climate change, mainly to dry conditions that limits water supply. Some countries do not have appropriate infrastructure to adapt to climate change and reduce its expected effects on human health and ecosystems. A soil humidity reduction may increase areas cover by deserts. Few changes are expected in arid and desert areas, but impacts may be significant in semi-arid zones. Water shortage is actually a problem that may be exacerbated by climate change mainly in some basins in Kazakstan and Middle East. Glacial melt, mainly in mountainous areas of Afghanistan, Kazakstan, Tajikistan and Uzbekistan, is projected to increase leading to increased flows in some river systems for a few decades (augmenting frequency and seriousness of floods and provoking changes in seasonal floods and affecting agriculture) followed by a reduction in flow as the glaciers disappear, creating larger areas of arid, interior deserts in low and mid-lying parts of Central Asia. Agriculture and livestock activities in this area are highly vulnerable to climate change if it will imply water shortage. Productivity may be reduced because of scarcity of water and it will become more and more important to improve irrigation practices. All these adverse effects may reduce the contribution of agriculture and livestock activities in GDP of those economies with the consequent impact on food security.

In Temperate Asia, are expected a large reduction in the area (up to 50%) and productivity of boreal forests productivity (primarily in Russian Federation) accompanied by a significant expansion of grasslands. There also would be a decrease in the area of the tundra zone accompanied by the release of methane and an increase in CO<sub>2</sub> emissions. It is expected a decrease of as much as 25% in mountain glaciers mass increasing the river flows in some basins. But models projected a reduction in water supply for the whole region. This impact may be particularly serious in the north of China accompanied by changes in spring, summer and autumn rainfalls influenced by monsoons. Some studies projected a reduction in China's agriculture yields from 10% to 30% by 2050, but in Siberia the productivity of agricultural activities is expected to increase. An increase in sea level may exacerbate the current severe problems of tectonically and anthropogenically induced land subsidence in delta areas, mainly in China. A one meter increase in ocean level may affect 50.000 km<sup>2</sup> in Yangtze, Huanghe, and Zhujiang delta rivers, affecting cities like Shangai, Tianjin and Canton. A similar increase may threat the Japanese coastal zones in which 50% of Japan's industrial production is located, affecting Tokyo, Osaka and Nagoya. Heat-stress mortality and illness (predominantly

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9 China, Democratic People's Republic of Korea, Republic of Korea, Mongolia, Hong Kong, Japan, Taiwan and Siberia

10 Bangladesh, Bhutan, Brunei, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand and Vietnam.

cardiorespiratory) are expected to increase resulting from an increase in the frequency or severity of heat waves caused by climate change.

The climate in tropical Asia is characterized by seasonal weather patterns associated with the monsoons and the occurrence presence of tropical cyclones (mainly in the Bay of Bengal, north Pacific Ocean and South China Sea). Important shifts of ecosystems in the mountains and uplands are expected with severe impacts in forest health and distribution. In Thailand and Sri Lanka a significant increase of dry forest is projected accompanied by a decrease in wet forest. Coastal ecosystems like mangroves, coral reefs and wetlands are vulnerable to climate change, but they are particularly vulnerable to anthropogenically impacts. The Himalayas have a critical role in the provision of water to this region. Increased temperatures and increased seasonal variability in precipitation are expected to result in increased recession of glaciers and increasing danger of floods. It is projected that this situation may provoke that availability of water from snow-fed rivers may increase in the short terms but decrease in the long run affecting hydroelectric generation, water supply and agriculture. Increased population, and the demand for water resources from agriculture, industry and hydroelectric generation, coupled to climate change, will put additional stress on water resources. It is expected that impact of climate change on agriculture activities may be significant for the region, in terms of crop yields, production, storage, and distribution, but the net effects of the changes regionwide is uncertain because of heterogeneity in different relevant issues like varietal differences, local differences in growing season and crop management, among others. Low-income rural populations that depend on traditional agricultural systems or on marginal lands are particularly vulnerable. Densely settled and intensively used low-lying coastal plains, islands and deltas are especially vulnerable to coastal erosion and land loss, flooding, and seawater intrusion related to sea level rise. Especially at risk are large delta regions of Bangladesh, Myanmar, Thailand and Vietnam and low lying areas of the Philippines, Indonesia and Malaysia. In terms of human health, the incidence of some vector –borne diseases, which are significant causes of mortality and morbidity in Tropical Asia, are expected to increase with global warming (malaria, schistosomiasis, dengue). Waterborne and water-related infectious diseases also are expected to increase when higher temperatures and higher humidity are superimposed on existing conditions, and projected increases in population, urbanization, declining water quality and other trends.

## **II.5. Climate Change Vulnerability in Small Island States in Australasia Region**

In this group are included 12 Small Island States<sup>11</sup> located in tropical areas in the Pacific Ocean. The climate of this region is characterized by a high natural variability and is strongly affected by El Niño – Southern Oscillation phenomena (ENSO). Low-lying island states and atolls are especially vulnerable to climate change and associated sea-level rise because in many cases (for example Kiribati or Marshall Islands) much of the land area rarely exceeds 3-4 meters above present mean sea level. Additionally, many islands also are vulnerable to climate change effects, particularly in their coastal zones where the main settlements are concentrated. Some critical ecosystems, such as coral reefs or mangroves, are very sensitive to temperature changes. Elevated seawater temperatures can seriously damage corals and the natural capacity of mangroves to adapt and migrate also is expected to be reduced by coastal land loss and the presence of infrastructure in the coastal zone. Freshwater shortage is a serious problem in many islands states and potential changes in the patterns of rainfalls may cause serious problems because many such states depend heavily on rainwater as the source of water. Higher rates of erosion and coastal land loss are expected in many small islands as a consequence of sea level rise. In Marshall Islands and Kiribati it is estimated that 80% and 12.5% (respectively) of total land would be vulnerable if one meter sea level rise occurred. Low-lying islands and atolls also are expected to experience increased sea flooding, inundation and salinization of soils and freshwater. Related to human settlements and infrastructure, in a number of islands, vital infrastructure and major concentrations of settlements are likely to be at risk given its location at or near present sea level (within 1-2 meters as in Kiribati or Tuvalu). In terms of human health, climate change is projected to exacerbate health problems such as heat-related illness, cholera, dengue, fever and biotoxin poisoning stressing additionally on health systems of most small islands. Climate change and sea level rise could affect tourism in different ways. This situation is serious for small islands states, because tourism is not only a dominant economic sector in a number of small islands but also the sector that earns the most part of the foreign exchange for these countries. In conclusion, the small islands states are extremely vulnerable to climate change and sea level rise. Though adaptation is possible, in some cases of small low-lying islands states and atolls migration and resettlement outside of national frontiers (Australia, New Zealand) might have to be considered.

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11 Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Palau, Samoa, Salomon Islands, Tonga, Tuvalu and Vanuatu.

### III: RESPONDING TO CLIMATE CHANGE

Mitigation and adaptation are two main ways of responding to climate change. Whereas mitigation focuses on measures to limit the occurrence of climate change, adaptation is premised on the fact that climate change is already occurring or is bound to occur and thus involves precautionary measures to adjust to the changes and their impacts. Developed countries have been mainly preoccupied with mitigation measures, which relate directly to their commitments to limit emissions. Adaptation has been, on the other hand, viewed as predominantly being a developing country issue as it is these countries that not only lack the resources to cope with climate change but by virtue of their development status, have higher vulnerability to the adverse impacts of climate change. It therefore follows that discussions on adaptation have focussed mainly on the availability of resources to enhance institutional, economic, human and other capacities to cope.

The most part of the efforts made related to climate change was referred to mitigation activities rather than adaptation activities. Less attention was paid to adaptation measures compared with mitigation ones, at least in the context of international negotiations on climate change. Even in developing countries, the efforts made on climate change mitigation were disproportionately high regarding to the efforts carried out related to adaptation activities. There are many possible reasons for this behavior. One is that developed countries know that they are capable to confront the expected effects of climate change so they prefer to focus in how to accomplish their emission reduction commitments. From this point of view, it is understandable that mitigation issues were prioritized by developed countries, because (since Kyoto mechanisms have appeared) mitigation issues are related to fulfill the commitments assumed by Annex I Parties in a flexible way, reducing their costs and becoming an additional business opportunity. But, for developing countries, the significance of the point is very different because how to adapt to climate change is an urgent issue.

Another reason is the intention of justify the little interest in financing the issues related to adaptation showed by developed countries, arguing that adaptation measures results in local benefit rather in global ones. However, this point of view hides the responsibility of developed countries in climate change process and the fact that the origin of the problem of climate change is the local appropriation by some countries of the benefits generated by the use of a common good (atmosphere) in their own benefit without compensation to the others owners (the rest of humankind) for the damage caused. The recognition of this externality is in the spirit of the “(..)common but differentiated responsibilities (...)” pointed out in the UNFCCC in its Article 4. Those benefits was

opportunistically appropriated locally by developed countries while the consequences were suffered globally. If assumptions of neoclassic economy are taken as good arguments to justify the use of Kyoto Mechanisms and the flexibility in the fulfillment of the commitments assumed by Annex I Parties, these assumptions also shall be valid to internalize at least a little part of the costs of prevent/remedy that historical externality. Moreover, it should be taken into account that sustainability is an integral concept composed by three elements: economic, social and environmental sustainability. It is unjustifiable to utilize a global efficiency concept to allow the implementation of mechanisms to reduce developed countries abatement costs and at the same time refusing the concept of “global sustainability” when is the time to finance developing countries adaptation costs. For this purpose, adaptive measures should be implemented taking into account not only the degree of vulnerability to current climate variations or the magnitude of the potential damage but also cost-effectiveness criteria.

Because of the focus on mitigation coming from global domestic political and academic attention, Schipper (2000: 20) argues that this has resulted in the adaptation discourse being strongly influenced by an opposition to mitigation. However, there is a growing recognition that the two must be complementary if climate change is to be effectively addressed.

The dilemma for developing countries is whether it is better to adapt to expected climate changes or to adapt to current climate variations. Not only is necessary that developing countries acquire an adequate adaptation to expected conditions related to climate change but also is necessary to adapt to current conditions. Taking into account the uncertainties involved regarding the projected conditions of future climate it will be useful to make efforts to improve adaptation to present climate conditions. Most of the effects are accumulative, so adapting to current climate may help to adapt to future conditions. It seems rationale for developing countries to attend to problems that affect their economies now rather than to worry about uncertain future changes. In this context, is crucial to attend to factors that influence present vulnerability.

### **III.1. SCOPE OF ADAPTATION ACTIVITIES**

Adaptation activities can either be long- or short- term.

Long term adaptation activities can be seen as covering three areas:

- Institutional and regulatory adaptation: those aimed at making development more sustainable by building adaptation components in development projects
- anticipatory measures: those specifically oriented to adapt to the effects of climate change, including coastal zone protection, agricultural innovations, etc..

- institutional and human capacity building including research, education and awareness (insert foot note: Downing et al, 1997: 28 and AOSIS position paper....).

Short-term adaptation activities constitute mainly of response measures relating to disaster management and preparedness. Such activities could be planned as the need dictates, though the capacity to act when needed should be enhanced as a long-term activity.

Unlike short-term adaptation, long term adaptation should be integrated within existing development programmes. For this to be effected, some argue that it is necessary to determine what the adaptation components of development projects would be and in retrospect define exactly what is to be addressed by adaptation. This is due to the resistance by developed countries to commit themselves to bearing unlimited responsibilities for unknown adaptation costs borne by present and future generations outside their borders<sup>12</sup>. Generally there has been a reluctance to be prescriptive when discussing the details of the adaptation activities, with due recognition to the fact that a "one-fits-all" approach would not appropriately respond to the specific needs of the affected countries. The general tendency has been to identify the broad area in which the activities would take place, leaving the specific details to the countries themselves. This however conflicts with what some donors want: specificity with regards the types of projects, their costs and their adaptive capacities.

Even though developing countries recognize the need for an immediate start to investing in adaptation measures, a degree of vagueness regarding whether there are distinct preferences for activities remains. Many countries have not thought through in concrete terms what activities they consider as priority arguing that it would be unwise to classify and prioritise adaptation measures given that range of vulnerable countries and their specific characteristics (be they countries with low lying coastlines, or arid countries at risk of extreme water scarcity or those prone to extreme weather events such as hurricanes and floods). Many of the countries consulted indicate a general need to have access to support both for long and short term adaptation depending on the vulnerability of countries, to ensure that countries can not only respond adequately but parallel to that plan to address any further impacts.

The responsibility for adaptation planning and identification of measures does not only lie with the affected countries but also with the donor countries. Both should ensure that adaptation concerns are reflected in their national programmes and in their funding guidelines respectively.

Notwithstanding the fact that adaptation activities remain to be further defined, three areas seem to stand out as being those where activities would be most concentrated. These are those that ensure long term food and water security as well as the security of infrastructure including housing and settlements in coastal areas. How these would be

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<sup>12</sup> Yamin, F. 1999

achieved would require a combination of both "hard" (technology, finances etc..) and "soft" (human and institutional capacity building and enhancement) adaptation measures.

There are however ongoing programmes through which adaptation activities can be further clarified and identified. The Convention to Combat Drought and Desertification, calls on Parties to prepare national, subregional and regional action programmes, which set out long term plans and strategies to address the underlying causes of desertification and cope with the impacts. African countries are identified as having priority considering the extent of their vulnerability to desertification<sup>13</sup>. The programmes would be supported through the Global Mechanism, which unlike the GEF, does not function as a financial mechanism but as a broker through which financial support would be channelled. Initial reports on the progress made in developing and implementing the action programmes, show that significant progress has been made at the grassroot level. The main shortcoming however, lies in accessing financial support to implement the programmes especially at the national and subregional levels. One reason for this is that the programme have not be sufficiently integrated into national priority programmes as being a priority area eligible for funding. Others argue that donor-funding policies still do not allow enough flexibility to accommodate such long-term programmes. Whatever the underlying reason, these programme present a good and existing starting point for adaptation activities especially in Africa and offer an opportunity for synergies at the implementation to be developed between the Climate and desertification conventions.

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<sup>13</sup> The Convention has five regional implementation annexes to the Convention -- Africa, Asia, Latin America and the Caribbean, the Northern Mediterranean, and the recently adopted Annex for Central and Eastern European Countries..

POSSIBLE ADAPTATION POLICIES<sup>14</sup>

<i>Sector</i>	Stage I: Planning (short term) General Capacity Building: Impact Studies; Identification of Vulnerable Areas	Stage II: Preparation (medium term) Further Capacity Building in Vulnerable Regions; Development of Appropriate Adaptation Plans	Stage III: Initiation (long term) Formulation of Measures to Facilitate Adaptation in Vulnerable Areas; Feasibility Studies; Insurance	
Agriculture	<p>Regional Climate Change and Climate Change impact studies:</p> <ul style="list-style-type: none"> <li>• Expected yield changes</li> <li>• Likelihood of droughts</li> </ul> <p>Vulnerability assessments:</p> <ul style="list-style-type: none"> <li>• Food security/possibility of famines</li> </ul>	<p>Individual adaptation options:</p> <ul style="list-style-type: none"> <li>• Change farming practice (fertilizer use, etc.)</li> <li>• Change timing of action</li> <li>• Use different crops</li> <li>• Keep different livestock</li> </ul> <p>Public sector adaptation options</p> <ul style="list-style-type: none"> <li>• Improve irrigation systems</li> <li>• Change land topography</li> <li>• Provide insurance/disaster relief</li> </ul>	<p>Farming training</p> <p>Research on heat/drought resistant plants</p>	<p>Pilot projects in farming adaptation</p> <p>Formulate disaster relief plans:</p> <ul style="list-style-type: none"> <li>• Emergency plans for famines</li> <li>• Crop insurance</li> </ul>
Forestry	<p>Forestry damage studies:</p> <ul style="list-style-type: none"> <li>• Forest migration patterns</li> <li>• Existing stress/over-exploitation of resources</li> </ul>	<p>Protection of existing forests:</p> <ul style="list-style-type: none"> <li>• Fire prevention</li> <li>• Suppress impacts of diseases, droughts, etc.</li> </ul> <p>Introduction of new species</p> <p>Forests management options:</p> <ul style="list-style-type: none"> <li>• Change in cutting practice</li> </ul>	<p>Training and education:</p> <ul style="list-style-type: none"> <li>• Fire prevention</li> <li>• Disease prevention</li> <li>• Sustainable forest management</li> </ul> <p>Conserve gene pools:</p> <ul style="list-style-type: none"> <li>• Install seed banks</li> </ul>	<p>Pilot programs</p> <p>Efficient forest management</p> <ul style="list-style-type: none"> <li>• Create right incentives</li> <li>• Abolish subsidies</li> </ul>

14 Potential Costs of Climate Change Adaptations (S. FANKHAUSER) (Secretariat GEF). In "Adapting to climate change. Assessment and Issues". Smith et al. (eds) (1996) Springer New York

<i>Sector</i>	Stage I: Planning (short term) General Capacity Building: Impact Studies; Identification of Vulnerable Areas	Stage II: Preparation (medium term) Further Capacity Building in Vulnerable Regions; Development of Appropriate Adaptation Plans	Stage III: Initiation (long term) Formulation of Measures to Facilitate Adaptation in Vulnerable Areas; Feasibility Studies; Insurance
Health / Air Pollution	Study of direct health impacts: <ul style="list-style-type: none"> <li>Heat stress</li> </ul> Study of indirect health impacts: <ul style="list-style-type: none"> <li>Mitigation of vector-borne diseases</li> <li>Increased air pollution</li> </ul>	<ul style="list-style-type: none"> <li>Sustainable forest use</li> <li>Improve health/sanitary standards</li> <li>Precautionary policies (vaccination)</li> </ul> Air pollution policy options <ul style="list-style-type: none"> <li>Impose air-quality standards</li> <li>Emissions taxes / permits</li> </ul>	Training and information: <ul style="list-style-type: none"> <li>Training of medical staff</li> <li>Information for vulnerable groups</li> </ul> Research in improved prevention: <ul style="list-style-type: none"> <li>vaccines</li> </ul> Facilitate behavioral adaptation by individuals: <ul style="list-style-type: none"> <li>Provide information</li> <li>Create right incentives</li> </ul> Encourage structural adaptation: <ul style="list-style-type: none"> <li>Issue planning / building guidelines</li> <li>Recommend air quality levels</li> </ul>
Coastal Zones	Collection of regional climate change data: <ul style="list-style-type: none"> <li>Sea-level data (tide gauge stations)</li> <li>Storm data</li> </ul> Coastal vulnerability studies: <ul style="list-style-type: none"> <li>Based on IPCC's common methodology</li> <li>Vulnerability of human settlements</li> <li>Vulnerability of ecosystems</li> </ul>	Option "protect" <ul style="list-style-type: none"> <li>"Hard protection (dikes, bulkheads)</li> <li>Soft protection (beach nourishment)</li> </ul> Option "retreat" <ul style="list-style-type: none"> <li>Restrict development (set back zones)</li> <li>Resettle affected people</li> </ul> Option "accommodate" <ul style="list-style-type: none"> <li>Adjust economic activities (convert farms to fish pools)</li> <li>Insurance</li> </ul>	Prepare ground for Integrated Coastal Zone Management: <ul style="list-style-type: none"> <li>Institutional arrangements</li> <li>Build technological capacity</li> <li>Build human capacity (training)</li> <li>Provide information to public</li> </ul> Implementing ICZM: <ul style="list-style-type: none"> <li>Provide incentives (market-based instruments)</li> <li>Design regulatory measures</li> <li>Set standards (water quality)</li> <li>Plan physical structures</li> <li>Ongoing monitoring of coastal processes</li> <li>Forecast storms</li> </ul>
Water	Regional climate change	Supply management options:	Create institutions and train staff: Pilot studies for supply measures

<i>Sector</i>	Stage I: Planning (short term) General Capacity Building: Impact Studies; Identification of Vulnerable Areas		Stage II: Preparation (medium term) Further Capacity Building in Vulnerable Regions; Development of Appropriate Adaptation Plans	Stage III: Initiation (long term) Formulation of Measures to Facilitate Adaptation in Vulnerable Areas; Feasibility Studies; Insurance
	<p>predictions:</p> <ul style="list-style-type: none"> <li>• Change in precipitation rates</li> </ul> <p>Impact on water supply:</p> <ul style="list-style-type: none"> <li>• Water quality</li> <li>• Water quantity</li> </ul> <p>Predictions on water demand:</p> <ul style="list-style-type: none"> <li>• Non-climate-change-induced (population growth)</li> <li>• Climate-change-induced (increased irrigation)</li> </ul>	<ul style="list-style-type: none"> <li>• Invest in reservoirs and infrastructure</li> <li>• Optimize systems (interregional water transfers)</li> <li>• Recycle water for lower-quality use</li> </ul> <p>Demand-side management</p> <ul style="list-style-type: none"> <li>• Invest in water-saving technologies</li> <li>• Change water use practices</li> </ul>	<ul style="list-style-type: none"> <li>• Create water supply agencies</li> <li>• Develop hydrological models</li> </ul> <p>R&amp;D into desalination and water recycling schemes</p> <p>Education/information for households</p>	<p>Pilot studies for demand measures</p> <p>Efficient water management</p> <ul style="list-style-type: none"> <li>• Develop drought management plans</li> <li>• Formulate water quality standards</li> <li>• Remove market distortions (subsidies)</li> </ul>

## IV. ADDRESSING ADAPTATION UNDER THE UNFCCC

### IV.1. Provisions for Adaptation in the UNFCCC and Kyoto Protocol

Even though the UNFCCC does not explicitly define adaptation, it recognizes the importance of adaptation for developing countries and the responsibility of developed countries assisting to cover the cost of such measures. It considers adaptation from the perspective of climate change and/or the adverse effects of climate change and thus providing a basis for its definition.

In its objective, it notes the need to “..achieve [stabilization of greenhouse gas concentrations] within a time frame 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.”<sup>15</sup> A precautionary approach for action is advocated to anticipate, prevent or minimize the causes of climate change.<sup>16</sup> It elaborates actions to be taken by all Parties to provide information on measures to facilitate adaptation, prepare elaborate and appropriate plans for adaptation and integrate preparations for adaptation in social, economic and environmental policies.<sup>17</sup> The special situation of developing countries is recognized, especially those that are most vulnerable. The Convention defines broadly in Article 4.8 the categories of vulnerable countries, highlighting the least developed countries. Similarly, the Kyoto Protocol echoes the Convention provisions on this issue by requiring Annex I Parties to strive to implement their emission targets in such a way as to minimize adverse social, environmental and economic impacts on developing countries, particularly those identified in Article 4.8 and 4.9<sup>18</sup>. It goes further in identifying how to realize the

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15 FCCC Article 2

16 FCCC Article 3.3. Article 3.3. of the UNFCCC calls for Parties to take “precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects” and establishes that “measures should be” not only “cost-effective so as to ensure global benefits at the lowest possible cost” but also “should take into account different socioeconomic contexts, be comprehensive, cover all relevant sources, sinks, and reservoirs of greenhouse gases and adaptation...”.

17 FCCC Article 4.1 (b), (e), and (f) Articles 4.1. (b) -“Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing...measures to facilitate adequate adaptation to climate change” (also included in Article 10 (b) of the Kyoto Protocol), 4.1. (e) -“Cooperate in preparing for adaptation to the impacts of climate change...” and 4.1. (f) -“Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions...to mitigate or adapt to climate change”.

18 In Articles 4.8 and 4.9 general reference are made to adaptation, related to Least Developed Countries (4.9) and “...the needs and concerns of developing country Parties arising from the adverse effects of climate change...”, with particular emphasis, among others is some vulnerability issues like: “Small Island Countries; Countries with low-lying coastal areas; Countries with arid and semi-arid areas, forested areas and areas liable to forest decay; Countries with areas prone to natural disasters; Countries with areas liable to drought and desertification; (f) Countries with areas of high urban atmospheric pollution and Countries with areas with fragile ecosystems, including mountainous ecosystems”.

measures that are outlined in the Convention by elaborating on what adaptation measures would include.<sup>19</sup>

**Adaptation: reference to other COP decisions (*to be completed*),**

#### **IV.2. Umbrella Group Position related to Finance Adaptation activities in developing countries. (I do not have totally clear how to do with this point, if include it or not)**

The general criteria of the UG proposal is based in maintain a strong link between financing adaptation and other measures related to climate change in developing country Parties and the actions taken to lower emissions in DC's. The UG is against a commitment for specific assistance target, and do not accept to extend the share of the proceeds, imposed to the CDM, to ET or JI. The UG prefers the GEF Secretariat managing the fund instead of any significant participation of COP/MOP in the management of the fund, except the definition of guidelines.

The main issues identified in the UG position are the following:

##### **Establishment of an Adaptation Fund**

Related to the establishment of an Adaptation Fund, the countries that are included in the UG declare their intention to seek the establishment of and the resources to fund a new window under the GEF instead of decided to create a new fund under the GEF.

The UG position makes no reference related to an agreement that includes the impacts of response measures. Instead of that, they refers to others forms of assistance related to mitigation of and adaptation to climate change.

UG refers to the intent to seek (including augmenting bilateral programs) a significant increase in funding for international climate change related activities and express their support for a replenishment of the GEF.

UG proposes that the fund will be used to finance the implementation of concrete pilot adaptation projects (Stage III activities) in developing country Parties by GEF Implementing Agencies, instead the UN Implementing Agencies. The fund will be managed by the GEF Secretariat under the guidance of COP/MOP instead the CDM Executive Board.

##### **Specific needs of LDC's (including SIDS).**

About the specific needs of LDC's, including SIDS, proposes: (a) the establishment of a separate work programme for them, and (b) the exempt from the share of the proceeds for adaptation in those countries, to encourage a greater flow of CDM projects to them. The implementation of small scale CDM projects will also be promoted.

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<sup>19</sup> Kyoto Protocol Article 10 (b) states, “

### **Related to the Convention Fund**

As in the case of Adaptation Fund, UG proposes to declare their intention to seek the establishment of, and the resources to fund, a new window under the GEF, instead of decided to create a new window under the GEF. Instead of funding available for national programmes containing mitigation measures, UG proposes that funding related to mitigation would be for the purpose of a Party's implementation of national abatement and sequestration strategies, which would be consistent with criteria to be agreed.

The UG proposes GEF Secretariat instead of GEF Council to manage the fund, with the guidance of COP/MOP. In this position no reference is made related neither to the voluntary contributions by Annex I Parties, nor to the transfer of [X] percent of any Annex II assigned amount to the registry of the fund.

### **Resources, Funding and Modalities**

UG proposes contributions from Annex II Parties that reflects their initial assigned amounts. These contributions should be made at rates adjusted to generate \$1 billion over the first commitment period, and may be directed to both Funds (Adaptation and Convention), as Parties deem appropriate, with modalities that will be defined at COP-7.

In UG proposal, no reference is made to the year 2005 as a limit for reaching the amount of \$ 1 billion. Instead of it, UG asks for periodic reviews of the modalities of the new GEF funds, including with respect to the level of funding and the eligibility requirements.

UG opposes to any levy on JI (Article 6 of PK) and ET (Article 17 of PK) in resources in 2005 were less than \$ 1 billion. The financing for Adaptation Fund that UG proposes is that generated by the share of the proceeds on the CDM (2% of the CER's generated by projects), voluntary contributions and by a percentage of assigned amount, or its financial equivalent.

### **Related to Climate Resources Committee**

UG proposes that Parties declare their intent to establish a Climate Resources Committee at COP-7 instead of decide to create it. UG proposes that the policy advice given by the Climate Resources Committee would be focused on maximizing climate change funding (instead of increasing climate funding) and mainstreaming climate-related objectives into existing financial flows, but no reference is made about monitoring and assessment issues.

## **V. FUNDING ADAPTATION UNDER THE UNFCCC AND KYOTO PROTOCOL**

On financial issues, the Convention states that developed countries shall provide new and additional resources to assist developing countries in fulfilling their

commitments. Article 4.4. deals with financing adaptive measures establishing that “The developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects”.

These commitments as stated above, include those relating to adaptation. It also calls on developed countries to assist developing countries, particularly those most vulnerably to climate change to meet the costs of adaptation to climate change.<sup>20</sup> Further provisions for funding are made in decisions of the Conference of the Parties relating to guidance to the financial mechanism. At COP-1, the financial mechanism was called on the take note of relevant provisions of the Convention, including those relating to adaptation. By the same decision, the three stages for short-, medium-, and long-term adaptation are defined. These are:

- Stage I: **Planning**, including studies of possible impacts of climate change. Emphasis is put on impact studies to identify “particularly vulnerable countries or regions”. The main attention is focused on general assessments of “policy options for adaptation and appropriate capacity building”;
- Stage II: Measures, including further capacity building, which may be taken to prepare adaptation as envisaged in the Convention Article 4.1 e); and
- Stage III: Measures to facilitate adequate adaptation, including insurance, and other measures for particularly vulnerable countries are to be initiated.<sup>21</sup>

According to this decision, Stage I activities were entrusted to the GEF. Stage I adaptation policies in developing countries are eligible for funding under the UNFCCC, provided these measures and undertaken as part of the formulation of their national communications. Financing for Stage II would only be available if the results of Stage I suggested that the actions were necessary. At COP-4 in Buenos Aires, Parties adopted a decision<sup>22</sup> giving further guidance to the GEF. According to this decision, the GEF would provide support for implementation of adaptation response measures (Stage II activities).

In the negotiations, adaptation has been generally seen as a developing country issue. The reason for this is that most of the countries that are categorized as most vulnerable, that is those with limited resources and the least capacity to adapt, are found in the developing part of the world, mainly small island developing states and least developed countries in Asia and Africa. These countries have relentlessly pursued the negotiations relating to ensuring that provisions for adaptation under the Convention are met. There has, however, been some reluctance among developed country Parties to address adaptation in detail, with preference

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<sup>20</sup> FCCC Article 4.4

<sup>21</sup> FCCC/CP/1995/7/Add. 1 “Decision 11 CP.1 paragraph (d)”

<sup>22</sup> Decision 2 CP.4

given to mitigation issues. The main reason for this has been the uncertainties on the impacts and thus lack of clarity on the scope of responsibilities. Even though there are decisions regarding the provision of support, these have not been adequately implemented. This has been in part due to the reluctance of the GEF to finance adaptation measures, which arguable result in more local than “global environmental” benefits.<sup>23</sup> It is anticipated that with the third replenishment of the GEF, there may be better opportunity for the availability of support.

There are also, misgivings among some developed countries regarding the provision of further guidance to the GEF on Stage III adaptation before sufficient information is available about the type of projects, their extent and magnitude of the resources required. Some developing countries however argue that there is a necessity to move into concrete long-term activities considering that significant information already exists. The main stumbling block however is the lack of clarity and agreement as to what Stage III adaptation would actually entail and the magnitude of the costs that would be entailed. The link to development, that is, to what extent would Stage III activities exist as stand alone activities as opposed to being long term developmental issues, also provides a dilemma as several developed country Parties are hesitant to commit the climate convention to addressing development issues that can be addressed in other fora and by other bodies.

## **VI. THE PRONK PROPOSAL (FCCC/CP/2000/CP.6)**

In November 2000, Jan Pronk presented a proposal for a possible package deal on several of the issues that remained unresolved in the negotiations. His proposal outlined options addressing funding mechanisms for technology transfer, adaptation and capacity building, the mechanisms, land use, land-use change and forestry, and policies and measures, compliance, accounting reporting and review. Pronk based his proposal on the positions put forward by the negotiating parties and following consultations that he had begun prior to COP-6.

In his proposal, the financial mechanism consists of two different funds:

- A ***convention fund***, created as a new window under the GEF with the aim of supporting developing country activities relating to technology transfer, capacity building related to climate change in general and to the CDM in particular, national programmes on mitigation and to assist with economic diversification. The sources of funding to the Convention fund will be the GEF (through its third replenishment), voluntary contributions by Parties, official development assistance and through the transfer of a certain percentage of initial assigned amounts of Annex II parties. This fund would be managed by the GEF council and would function under special guidance of, and be

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<sup>23</sup> Yamin, F. 1999

accountable to the COP, in order to ensure that the GEF is more responsive to the needs and priorities of developing countries.

- An *Adaptation fund*, created as a trust fund under the GEF aimed at financing adaptation projects in non-Annex I Parties (Stage III activities). "Special guidance is to be given to this fund and special consideration will be given to the needs of LDCs and SIDs." He proposed that UN implementing agencies be responsible for implementation of the adaptation projects that include avoidance of deforestation, combating land degradation, and desertification. The fund would be managed by the CDM Executive Board under the guidance of the COP/MOP.

Pronk also proposed the establishment of a climate resources committee which would be mandated to provide policy advice to existing financing channels and institutions such as the GED, regional development banks, the World Bank, UNDP and other multilateral institutions on increasing climate funding, mainstreaming and monitoring and assessment.

On actions to address the adverse effects of climate change, Pronk outlines actions to be undertaken by Annex II parties including, pilot and demonstration projects to show how adaptation can be translated into projects and integrated into national policy and sustainable development planning. Adaptation projects, in the areas of water resource management, land management, agriculture, health, infrastructure development, ecosystems and integrated coastal zone management, would be undertaken when enough information is available to warrant such activities.

It could be understood that the Adaptation fund will address Stage III adaptation while the convention fund along with other resources that are being and to be provided by the GEF will be used for Stage I and II adaptation.

#### **Comments on the Pronk Proposal**

Many developing countries are of the opinion that [funding adaptation will be a limiting factor in the overall process of developing adaptation strategies and implementing options](#). In their responses to Pronk's proposals, three areas are highlighted.

- [The role of the GEF](#)
- [The relation between the adaptation fund and the CDM](#)
- [The scope of adaptation activities](#)

*[The Role of the GEF:](#)* Many developing countries have expressed a preference for the adaptation fund to be established as a trust fund under the COP/MOP arguing that the GEF has not lived up to the expectations of developing countries. On the other hand, developed country parties have stated their preference for the GEF. Some argue that the transaction costs of involving or instituting another body to take on the responsibility, which

can be well served by an existing institution such as the GEF, would divert the badly needed resources. This could be done in tandem with streamlining the procedures of the GEF to make them more responsive to the needs of developing countries.

The GEF has also to date operated more as a banking system that is only answerable to its Council. The COP therefore cannot dictate or change its governance structure but give guidance for activities to be supported by the GEF. The Pronk proposal to establish a window is thus seen by some as going beyond the mandate that the COP has and thus should be seen as a request that has to be approved and decided upon by the GEF council. However, the GEF has already informally established an "OP14" programme called adaptation, which means that the "window" and operational aspects are essentially ready. It will therefore be up to the COP to agree how to work within this context.

*The Adaptation Fund and the CDM:* In the negotiations developing countries have maintained their wish for two separate decisions on adaptation, that under the convention and that under the Kyoto Protocol. They have argued against linking both the Convention and Protocol provisions noting that the commitments whereas the same are different and that implementation of the provisions of the Convention should not be contingent on the Kyoto Protocol, which is yet to be ratified. While the promise of adaptation funds through the CDM may become a reality in the future, they have repeatedly stressed the need to clearly distinguish between that source of funds and funds available for adaptation under the FCCC.<sup>(insert footnote)</sup> Reliance on the CDM as a major input could push further in the future, the realization of the adaptation fund as the credits accruing from CDM projects may not be known until the projects have been implemented to such a point where benefits are realized. This could mean that the credits will only be accrued when the project has run its whole life cycle. The adaptation fund could thus be short of support and could possibly not be realized within the near future. It also means that unless a decision to support a prompt start to the CDM is adopted, the availability of support to the adaptation fund will be in part dependent on the ratification of the Kyoto Protocol. Other concerns raised relate to the levy being put only on the CDM rather than on all three mechanisms, an issue pursued mainly by the G77/China. To some developing countries, this will unfairly burden the CDM making it less lucrative than its sister mechanisms, which will be implemented among Annex I countries.

Another issue requiring further elaboration is what proportion of the proceeds accrued from the CDM will actually be used on administrative charges and on actual adaptations. Some propose that not more than 10% of the proceeds be used for administrative charges with the rest being allotted to the adaptation activities. Others suggest that administrative charges should be borne by a separate administrative levy that applies to all three mechanisms or from other sources, such as a compliance fund.

**Scope of Adaptation Projects:** The Pronk proposal alludes to priority being given to certain projects in Stage III adaptation thus limiting the eligible projects under the adaptation fund. To many developing countries, this is not acceptable as some important activities may be excluded. The argument that there remains uncertainty on the adaptive contribution of other project could also imply that the adaptation fund could also be used to support further studies to identify relevant, effective and acceptable adaptation activities (i.e. Stage I and II adaptation).

On the other hand, Stage III adaptation is seen by some as being implemented from a wider range of funding sources than just the adaptation fund due to the broad expectations and varied needs of the vulnerable countries. The adaptation fund could therefore be used to demonstrate approaches to implementing a range of activities as well as to initiate others that would be implemented with support from other sources.

**What Next?:** In general, the Pronk proposal represents a constructive step towards finding a suitable way to ensure that adaptation measures are implemented. It however, needs further consideration and work to ensure that the divergences among Parties with the regards to the management of the fund and the scope of activities to be covered are narrowed. There is a general recognition that the Adaptation fund as presently proposed would not address all the resource needs of vulnerable countries, and should therefore be seen as one of several financing sources within and outside the framework of the Convention and Protocol. There is therefore a need to identify other complementary avenues for support, through existing multilateral organizations, financial institutions and the private sector.

In order to visualize the possible avenues for support, several issues relating to the nature, temporal scope and magnitude of adaptation projects and their integration into development processes need to be further considered. These includes further elaboration of:

- The role the GEF, and other financial institutions can play in funding adaptation as well as the role they can play in providing interim support, while waiting for the start of the CDM
- Options to generate finances for the Fund under the Convention and Protocol in the even that the CDM does not live up to the expectations.
- How administrative and transaction costs will be covered from the adaptation fund or if other options exists.
- The scope of adaptation activities especially as they relate to other developmental activities. Even though there is a clear need to broaden the scope of adaptation activities to be covered under the adaptation fund, further research is needed to

enhance the understanding of the relationship between adaptation and development. Concerns remain among several Parties regarding burdening the Climate Convention and Protocol with other issues that may be related. This lack of clarity calls for a clear delineation of the responsibility to be undertaken under the Climate Convention process and for synergies to be established that extend beyond information sharing among institutions.

- Institutional arrangements regarding the management of such a fund. There is a clear divergence between developed and developing countries regarding whether the Adaptation fund should be established under the COP/mop or the GEF and the role the CDM executive board will play in the management of the fund.

(Some additional points to include or to discuss)

- The engagement of Annex II related to assist developing countries with funding for financing adaptations activities is already established in the UNFCCC, therefore is independent from the Kyoto Protocol enter into force. For these reason, Adaptation Fund should not be linked to CDM putting into force. Additionally is not still clear how the really scope of potential market for CDM emission credits would be. The smaller this market were the more difficult might be to finance adaptation activities and the more necessary would be the existence of alternative sources of funding.
- To impose a levy exclusively on CDM to finance adaptive activities introduce a bias among the different Kyoto Mechanisms. Kyoto Mechanisms were thought to make more flexible the fulfillment of the commitments assumed by Annex B Parties, abating GHG emissions abroad in a cost-effective way, instead of obtaining them through domestic actions, policies and measures at higher prices. Developed countries will take advantage of this situation that means lower costs to fulfill their commitments. It is unfair the fact that developing countries should support the burden of funding adaptation activities through CDM, that represent the only activity in which they could share the benefits of their lower abatement costs options. The funding for adaptation activities should come from all the Kyoto Mechanisms and the levy should be imposed to the utilization of the CER's rather than in the generation of the emission credits. In this case, each Annex B country should contribute to Adaptation Fund in the same proportion that use the mechanisms to fulfill its commitments.
- Financing adaptive actions through a levy on CDM does not seem to be "additional and new funding" provided by developed countries. Funding for fulfilling these commitments should be new and additional and should not depend entirely on the mechanisms being operationalized, and the Kyoto Protocol being entered into force to avoid unnecessary

delays in funding integration. In this issue there are also equity considerations to take into account, because if the Adaptation Fund will be implemented exclusively through a levy in CDM, the adaptation activities in developing countries (and mainly in less developing countries) will be financed by developing countries rather than developed countries while responsibilities fall on Annex II Parties.

## **VII. CONCLUSION**

- Many times the countries who are the least able to adapt to climate change are also the more vulnerable to its effects.

(To be continued)