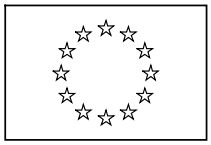

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CLIMATE CHANGE IN THE CONTEXT OF DEVELOPMENT COOPERATION

TABLE OF CONTENTS

1. INTRODUCTION

Scientific evidence[1] confirms that climate change[2] is already taking place and there is new and stronger evidence that most of the warming observed during the last 50 years is attributable to human activities. Scientists further project that the rate of change will be more rapid than previously expected. Sea levels are projected to rise as a result of increased warming, and changes in rainfall patterns, droughts, floods and other extreme weather events are also projected.

But climate change is not only an environmental problem. It is also clearly a development problem since its adverse effects will disproportionately affect poorer countries with economies predominantly based on natural resources and related economic sectors (agriculture, forestry and fisheries). Yet even countries with more diversified economies are vulnerable to climate change since lack of financial resources, adequate technology, and stable and effective institutions translate into poor capacity for adaptation to climate change. Developing countries, having the most vulnerable populations and the least adaptive capacity, are likely to suffer the greatest consequences, despite having so far contributed the least to the problem. Furthermore, within countries, the poorest members of society often tend to live on the most marginal land and be particularly reliant on natural resources and rain-fed agriculture. They are thus at most risk from flooding and drought.

At the same time, partner countries have legitimate needs for economic development. Increasing industrialisation in developing countries will however lead to both higher energy consumption and greenhouse gas (GHG) emissions, as has happened in developed countries. It is therefore in all parties' interest to promote sustainable trends in GHG emissions also in partner countries[3]. Despite ongoing national efforts in these areas, partner countries will need support in reconciling their legitimate needs for economic development with the protection of the environment and sustainable use of energy and natural resources.

The EU is committed to assisting its partner countries in the fight against poverty, the fulfilment of the Millennium Development Goals and the promotion of sustainable development. Climate change forms an integral part of this agenda given the multiple ways it affects societies and interacts with place-specific vulnerabilities. It is therefore important that any response to climate change is conceived within and in coherence with existing development frameworks, rather than in isolation from them. That is, as an integral part of mainstream EU development co-operation activities.

The EU subscribes fully to the principle that development strategies and processes should be country owned and driven, and that the partner countries themselves are responsible for identifying and responding to environmental issues. However, climate change concerns (as environmental concerns in general) often have low priority in partner countries. Strengthening

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1 All scientific information and statements in this section are from the Third Assessment Report of the IPCC (2001).

2 Climate change is caused by rising concentrations of greenhouse gases (GHGs) in the atmosphere, released primarily by the combustion of fossil fuels and from agriculture and land-use changes. The GHGs cause the atmosphere to retain more of the infrared heat radiated from the Earth's surface, thus leading to a gradual rise in global temperature.

3 There will probably be rising international pressure on DCs to take positive action to control emissions increasing in parallel with their growth in the negotiations for the second commitment period under the Kyoto Protocol.

the environmental dialogue with partner countries and linking it to sustainable development (including poverty alleviation and social and economic development) is therefore key to creating awareness and raising the policy profile of climate change.

As a response to the above, the Commission invites the Member States, European Parliament, civil society and other stakeholders to contribute to the formulation and implementation of a coherent and co-ordinated EU climate change strategy and action plan for support to partner countries, on the basis of the objectives, strategy and action plan proposed in the present paper.

The overall objective of the proposed strategy is to assist EU partner countries[4] in meeting the challenges posed by climate change, in particular by supporting them in the implementation of the UN Framework Convention on Climate Change and the Kyoto Protocol. For this purpose, climate change concerns and its potentially disastrous long term implications need to be fully mainstreamed into EU development co-operation so that they receive a higher profile in priority-setting in a way that is completely coherent with the overarching objective of poverty reduction. Such an approach will equally contribute to the implementation of the EU strategy for sustainable development, in particular its external dimension, and in the case of the Community, to the Cardiff process on environmental integration.

The proposed strategy is composed of three sub-sections. The first sub-section defines the overall objective and lists some guiding principles. The second sub-section operationalises the overall objective by identifying four strategic priorities: (i) Raising the policy profile of climate change, (ii) Support for adaptation, (iii) Support for mitigation, and (iv) Capacity development. Finally, the third sub-section identifies indicative strategic responses for EU partner countries, placing an emphasis on vulnerability and adaptation[5].

The action plan (Annex I) translates the recommendations of the strategy into concrete actions and indicates the concerned entities. The focus of the action plan is on adaptation to climate change, capacity development and research[6].

The paper starts with two analytic background sections. The first explores the rationale for action. The second analyses current and projected changes and impacts of climate change on partner countries, and adaptation and mitigation as a response to climate change.

2. RATIONALE FOR ACTION

The scientific context: Current and projected global climate changes

Scientific evidence[7] confirms that climate change is already taking place and there is new and stronger evidence that most of the warming observed during the last 50 years is attributable to human activities. Scientists further project that the rate of change will be more rapid than

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4 For the Community this means the ACP, ALA, MEDA, CARDS and TACIS countries. However, this paper will not cover Croatia, Russia and Ukraine as they have emission targets under the Kyoto Protocol.

5 See Annex II for indicators and selection process.

6 Notably the ECs new RTD Framework Programme (2002-2006) under its Research Priority on Sustainable Development, Global Change and Ecosystems will provide opportunities for partner countries to participate in energy, transport and climate change research projects.

7 All scientific information and statements in this section are from the Third Assessment Report of the IPCC (2001).

previously expected. Projections for climate change, based on current scientific evidence, include the rise of global average surface temperatures by another 1.4 to 5.8 degrees Celsius over the next 100 years. This projected rate of warming is the highest in 10,000 years. The rise in temperature is predicted to have strong adverse effects through rising sea levels (between 9 and 88 centimetres), more irregular precipitation, and an increase in extreme weather events like droughts and storms. (See Annex III for more details on the science of climate change and projected effects).

The international context: The United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol (KP), Monterrey and Johannesburg

Global climate change has its given place on the international agenda for sustainable development. The United Nations Framework Convention on Climate Change (UNFCCC)[8] was opened for signature at the "Earth Summit" in Rio in 1992, where environment and development agendas were reconciled, and came into force in 1994. In 1997, Parties to the UNFCCC adopted the Kyoto Protocol with the view to strengthening the UNFCCC commitments[9]. The EC and the Member States are all Parties to the UNFCCC and have ratified the Kyoto Protocol[10].

Under the UNFCCC, both developed and developing countries are committed to developing and submitting inventories on greenhouse gas emissions by sources and removals by "sinks" (such as forests, which absorb carbon dioxide) and reporting on measures taken to implement the UNFCCC; adopting national climate change mitigation programmes and adaptation strategies; promoting technology transfer; co-operation on scientific and technical research; and promoting public awareness, education and training.

In accordance with the principle of common but differentiated responsibilities, developed countries shall take the lead in combating climate change[11] and shall also assist developing countries in the implementation of their commitments under the UNFCCC by the provision of funding, including for technology transfer and adaptation for those who are particularly vulnerable to the adverse effects of climate change[12].

At the resumed session of the Sixth Conference of the Parties to the UNFCCC (Bonn, July 2001), a political declaration was made by the EU+ group[13]. In this declaration the group pledged US$ 410 million (€ 450 million at July 2001 exchange rates) per year by 2005 in climate change funding for DCs. This amount is to be reviewed in 2008. There is not yet agreement on the distribution of the US$ 410/€ 450 million, but the suggestion at the time was that distribution should be calculated on the basis of the countries' CO_2 emissions in

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8 The intermediate objective of the UNFCCC is to stabilise CO_2 emissions in industrialised countries at 1990 levels by the year 2000.

9 The KP outlines binding greenhouse gas emissions reduction targets for developed countries. In this context, the EU is committed to reducing its collective emissions of greenhouse gases by 8% below its emissions level in 1990 in the 2008-2012 period.

10 The EU adopted the ratification of the Kyoto Protocol at the Council meeting of 4 March 2002 (Council Decision of 25 April 2002 concerning the approval on behalf of the European Community of the Kyoto Protocol to the UNFCCC and the joint fulfilment thereunder, OJ 15 May 2002, L130, page 1). The Member States completed their national ratification processes by 31 May 2002.

11 Given their historical responsibility for the occurrence of the problem and the technologies and financial resources they command.

12 For example the Least Developed Countries (LDCs) and Small Island Developing States (SIDS).

13 The EU+ group consists of the EC and the Member States plus Canada, Iceland, New Zealand, Norway, and Switzerland.

1990, i.e. according to the Polluter Pays Principle (PPP). Consequently, the EU share of the pledge is to be met by the Member States, given that the Community has no CO_2 emissions of its own. The Commission will probably still make a contribution, even though by definition truly additional funds under the current financial perspective are not available. (See Annex IV for a summary of the international climate change process, and Annex V for other international initiatives relating to climate).

The Monterrey Conference held in March 2002 addressed the challenges of financing for development. The agreed Consensus stresses the need to mobilise and increase the effective use of financial resources to eliminate poverty, improve social conditions, raise living standards and protect the environment. It also recalls that good governance is essential for sustainable development, seeing as critical the need to reinforce national efforts for capacity building in developing countries. The EU announced in Monterrey its commitment to increase its ODA from the current level of 0.33% of GNP to 0.39% between now and 2006 which amounts to an extra € 7 billion per year by the year 2006.

Against this background, and in the light of the Marrakech Ministerial Declaration[14], the World Summit on Sustainable Development (WSSD), which took place in Johannesburg at the end of August 2002, provided a good opportunity to highlight the need to maximise synergies between sustainable development goals, including the overarching objective of poverty reduction, and measures to fight climate change and adaptation to its adverse impacts[15]. The UN Secretary-General had identified five priorities for the Summit: water, energy, health, agriculture and biodiversity (WEHAB), priorities which indeed all have their relevance for climate change concerns. The outcome of the WSSD included agreement to increase urgently and substantially the global share of renewable energy sources with the EU initiating a "coalition of the willing" committing to targets and timetables. There was also agreement on the EU proposal for a 10-year framework for programmes on sustainable consumption and production. The industrialised countries agreed to take the lead in this global effort to correct unsustainable patterns and help developing countries put in place policies and tools to this end. Two EU initiatives on water (Water for Life) and energy (EU Energy Initiative for Poverty Eradication and Sustainable Development) were also launched in support of the WSSD Plan of implementation. These initiatives demonstrated the EU's commitment to translate the political agreements made there into concrete action, in support of the Millennium Development Goals.

The European context: EC development policy, the Cardiff process, the Member States and Civil society

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14 The Marrakech Declaration was adopted in November 2001 at the Seventh Conference of the Parties to the UNFCCC. It recognises that the World Summit on Sustainable Development provides an important opportunity for addressing the linkages between climate change and sustainable development. It puts a particular emphasis on the need to maximise synergies between the UN Conventions on Climate Change, Biological Diversity and Desertification and stresses the importance of capacity building as well as of developing and disseminating innovative technologies in respect of key sectors of development.

15 Despite not being formally on the agenda, climate change and the Kyoto Protocol moved rapidly up the political agenda during the Summit with China, Poland and South Africa announcing their ratification. In addition, Canada stated that it would ratify and Russia made a positive statement about its ongoing ratification process.

The central objective of EC development policy is the reduction and eventual eradication of poverty[16]. This entails support for sustainable development, the integration of developing countries into the world economy and a determination to combat inequality, as stated in Article 177 of the EC Treaty. In the context of sustainable development, the EU has established a strategy for sustainable development comprising of both an internal EU dimension[17] and, following the request of the Göteborg European Council in June 2001, an external dimension[18] prepared in view of the WSSD in August 2002.

Environmental concerns form an integral part of this agenda since environmental degradation undermines partner countries' prospects for sustainable economic and social development, and risks offsetting any short-term gains in poverty reduction. In the medium and long-term it may even lead to more poverty. Climate change is an additional stress for those who are already vulnerable, in particular the LDCs, and is therefore likely to further aggravate poverty and human deprivation.

In accordance with Article 6 of the EC Treaty, a process intended to promote the concrete integration of environment into all Community policy areas[19], with a view to promoting sustainable development, was launched at the Cardiff summit in 1998. In December 1998 the Vienna summit extended this invitation to include development co-operation. At both the Cardiff and Vienna summits, Heads of State indeed highlighted the area of climate change as the most obvious example for the need for integration of environmental concerns into other policy areas.

The working document "EC Economic and Development Co-operation: Responding to the New Challenges of Climate Change" from November 1999, was a first attempt to address how climate change could be further taken into consideration and served as an input to the Council under the Finnish Presidency in 1999. In its conclusions of 11 November 1999, the Council reaffirmed that the problem of global climate change should be prioritised and invited the Commission to report on the progress made in integrating climate change considerations into EC economic and development co-operation policies in a document that should also include an action programme.

International negotiations on the implementation of the UNFCCC and the Kyoto Protocol took some time, however, and delayed the development of an action programme. The negotiations finally came to a close in November 2001 at the seventh session of the Conference of the Parties (COP7 Marrakech). The Commission reported to the Council and the European Parliament on past and on-going initiatives through the submission of the Third

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16 "The European Community's Development Policy" COM(2000) 212 final. In November 2000, the Council and the Commission endorsed a Development Policy Declaration (Council document 13458/00) that identified six thematic priority themes which are: trade and development, regional integration and co-operation, support to macro-economic policies linked to social sector programmes, transport, sustainable rural development and food security and institutional capacity building, good governance and rule of the law. Environment is a crosscutting issue, which needs to be integrated into all six priority themes in order to make development sustainable.

17 "A sustainable Europe for a Better World: A European Union Strategy for Sustainable Development" COM(2001) 264 final.

18 "Towards a global partnership for sustainable development" COM(2002) 82 final.

19 Article 6 of the EC Treaty, as amended by the Amsterdam Treaty, requires that environmental protection is integrated into the definition and implementation of all Community policies and activities referred to in Article 3, in particular with the view to promoting sustainable development. Furthermore, the Sixth Environment Action Programme "Environment 2010: Our future, our Choice", states that climate change considerations need to be addressed and integrated into all Community sectoral policies.

national Communication from the European Community under the UNFCCC in November 2001[20]. Climate change-related development activities have hitherto been financed either from the European Development Fund or from the Community budget[21]. Up to now, however, it has been difficult to distinguish projects that are conducive to climate change abatement and adaptation from other projects (conservation, energy efficiency projects, etc). This is a consequence of the lack of specific markers in the current EC information retrieval system. Climate change relevant projects have also been financed from the research budget under the Fifth Framework Programme (see Annex VI).

As concerns the Member States, climate change related development activities have been financed both on a bilateral basis and by contributions to the Global Environment Facility (GEF), which operates the financial mechanism of the UNFCCC, or by other multilateral channels. Furthermore, civil society is increasingly taking a more active stance towards the development aspects of climate change, in addition to its environmental effects, which have long been high on its agenda.

Thus, the present paper is the Commission's response both to the request of the Council and to the recent evolution the climate change process has known in terms of scientific knowledge, institutional frameworks and public awareness. By making the link between poverty and climate change explicit, it proposes an integrated strategy for addressing climate change and poverty reduction concerns, which in the case of the Community also strengthens the on-going process of integrating environment into EC development co-operation[22] and the sustainability dimension of EU external policies[23]. Moreover, the Commission invites the Member States, European Parliament, civil society and other stakeholders to contribute to the formulation and the implementation of a coherent and co-ordinated EU climate change strategy and action plan for support to partner countries, on the basis of the objectives, strategy and action plan proposed in the present paper.

3. CURRENT AND PROJECTED CHANGES AND IMPACTS OF CLIMATE CHANGE ON PARTNER COUNTRIES[24]

Rising temperatures and sea-levels and more irregular precipitation and extreme weather events are already leading to adverse effects for developing countries. The projected effects of climate change for the coming 100 years are even more severe. The impact of these effects on the environment and on social and economic development is expected to be both place-specific and complex depending on the type, rate and magnitude of the climatic changes and the extent to which the affected people and systems are vulnerable to those changes. Climate vulnerability is a function both of how sensitive people and systems[25] are to the adverse effects of climate change, involving both gradual changes in climatic conditions and

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20 Staff Working paper of 20.12.2001, SEC(2001) 2053.

21 MEDA, ALA, TACIS or CARDS budget lines and horizontal thematic budget lines such as the Environment in Developing Countries and Tropical Forests budget line B7-6200.

22 An EC strategy for integrating the environment into EC economic and development co-operation was finalised in April 2001. SEC(2001) 609: "Integrating the environment into EC economic and development co-operation".

23 Complementary contribution to the external dimension of the EU Sustainable Development Strategy (COM (2002) 82 final) and the Strategy on environmental integration in the external policies of the General Affairs Council. GAC meeting 11 march 2002, doc. 6927/02. .

24 When no other source is indicated, the principal source for section 3 is the Third Assessment Report of the IPCC (2001).

25 Natural, human managed and human made systems.

extremes, and their ability to adapt to or cope with them. Socio-economic adaptive capacity (or capacity to cope), is in turn determined by factors such as economic resources and other assets, technology and information and the skills needed to use them, infrastructure and stable and effective institutions. Many partner countries are poorly endowed with these attributes and are consequently highly vulnerable to climate change. The enhancement of adaptive capacity is therefore likely to reduce both vulnerability to climate change and promote sustainable development.

It should be stressed that for developing countries, particularly the least developed countries, climate vulnerability is likely to add to, interact with and reinforce existing problems such as population growth, problems related to health, dependence on global markets and resource depletion and thereby further aggravate poverty and human deprivation.

3.1 Environmental and socio-economic effects of climate change

The linkage that exists between poverty and the environment implies that adverse effects on ecosystems, natural resources and related economic sectors will affect poor people hardest.

3.1.1 Ecosystems and natural resources

Poor people, particularly the rural poor, depend heavily for their livelihoods on access to and the quality of natural resources and ecosystems. Ecosystems provide essential goods such as food, shelter and fuel; as well as services such as breakdown of wastes and pollutants, purification of water and maintenance of soil fertility. Coastal ecosystems such as mangrove forests and coral reefs protect the coastline from erosion. However, climate change is expected to alter the functioning of ecosystems in complex and uncertain ways so they may no longer be able to, or may have increasingly reduced capacity to perform their role as important life support systems and render vulnerable those who depend on their goods and services. In addition, a shift in temperature zones caused by climate change could seriously affect biodiversity and lead to a geographic shift in the occurrence of different species and/or the extinction of species in many locations as the world's ecosystems will not able to adapt as fast as the climate is changing[26]. Documenting ecosystem change is necessary both to assess effects of climate change and to assess the effects of ecosystem change on climate; yet such documentation is extremely difficult because many developing countries lack reliable baseline information on ecosystem boundaries and ecosystem condition.

Changes in precipitation and more irregular precipitation will mean that water resources in many regions will come under further stress. This will affect both drinking water supplies and irrigation. Floods are further expected to increase water degradation. The number of people living in countries that are water-stressed may therefore increase massively, from 1.7 billion people (one-third of the world's population) to around 5 billion by 2025 (depending on the rate of population growth).[27]

Moreover, higher maximum temperatures are expected over nearly all land areas. Warm seasons will become dryer in most mid-latitude continental interiors, increasing the frequency

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[26] CGIAR Annual Report 2000.

[27] In Africa average water runoff will increase due to decreasing soil infiltration capacity and water availability in general will decrease in Northern and Southern Africa, in Asia this will happen in arid and semi-arid areas. This will exacerbate desertification in Southern, North and West Africa. In Latin America, in addition to increases in the frequency of droughts, the loss and retreat of glaciers will remove an important supply of fresh water. Third Assessment Report of the IPCC 2001.

of droughts and land degradation. This will be particularly serious for areas where land degradation, desertification and droughts are already severe. Sea level rise may also lead to the salinisation and loss of low-lying agricultural land. Major vegetation fires will increase in magnitude and frequency in the Amazon basin and elsewhere in the tropics, presenting a real threat to the sustainability of the world's remaining humid tropical forests and the indigenous peoples and other poor people who rely on them.

3.1.2 Economic sectors and food security

Thus climate change is expected to have a clear negative impact on agricultural and livestock activities. For example, yields for many countries in Africa, Asia and Latin America are projected to decrease and even in regions where agricultural output is not directly affected by climate change, natural pest control may become increasingly destabilised as predators and prey in local ecosystems are decoupled. In Asia and in Latin America agricultural productivity is also projected to decrease due to more frequent tropical cyclones. In Asia, rice production may be substantially affected by climate change. Moreover, fish stocks are expected to shift polewards and climate change induced destruction of mangrove forest and coral may also negatively affect fisheries resources. Inland fisheries in Africa may also be adversely affected by fresh waters coming under additional stress.

There is consequently a real risk that climate change will worsen food security[28] and exacerbate hunger. In the short-term, however, the greater impact on food security could come from the projected increases and severity of extreme weather events rather than from gradual changes in the climate. In the longer term, increasingly serious shifts in food production potential due to gradual climate change have been projected for the period 2050-2080 in current food-insecure areas.[29] Particularly vulnerable are food-deficient small African countries that are dependent on food imports, as well as subsistence farmers in some regions of Latin America. In addition, in areas where fish constitute a significant source of protein for the poor, declining and shift of resources due to additional climate change stress may impact on their food security. It should be kept in mind however that food security is a function of several interacting factors, of which food production potential is only one. Poverty and the lack of food purchasing power probably have a more direct bearing on food security, but these may in turn be exacerbated by other effects of climate change.

3.1.3 Human health, migration/displacement and infrastructure

Changes in temperatures and precipitation are also likely to increase the geographic range of vector-borne diseases such as malaria and dengue fever and expose new populations to these diseases. Furthermore, droughts and flooding may increase water-associated diseases such as cholera and diarrhoea, particularly in areas with inadequate sanitary infrastructures. Prolonged intense heat waves coupled with humidity may also increase mortality and morbidity rates, particularly among the urban poor and the elderly. Extensive vegetation fires which are often associated with climate change have already caused widespread respiratory problems, particularly in South East Asia.

The loss of landmass in coastal areas is likely to lead to increased permanent or semi-permanent displacement of populations. The most exposed regions in demographic terms are South and Southeast Asian coastal countries and African coastal countries. In Asia the

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[28] The ensuring of food security while combating climate change is an integral part of the ultimate objective of the Convention.

[29] World agriculture: towards 2015/2030: A FAO perspective (2002).

number of people exposed to this threat is most significant in Bangladesh and Vietnam, and in Africa more than one-quarter of the population resides within 100 km of the coast. Small island states are also particularly vulnerable and may face such devastating effects from climate change that people may be forced to abandon their island homes and migrate elsewhere. Moreover, food insecurity aggravated for example by severe drought may translate into famine (particularly in rural areas in sub-Saharan Africa) leading to migration to cities that lack sanitary and other health related capacity to deal with such an influx.

More severe storms and increased sea-level rise are expected to ravage low-lying coastal areas in many parts of the globe leading to loss of life and infrastructure damage. Harbours, offshore infrastructure, coastal urban areas and tourist infrastructure are particularly at risk, but extreme weather events may also damage inland road, rail, and air infrastructure, thereby disrupting vital transportation systems.

3.1.4 Macro-economic impacts of climate change

Apart from having direct economic effects on already vulnerable livelihoods in terms of lost endowments and entitlements, the above projected impacts are also likely to have major macro-economic implications for developing countries, in both the short and the long-term perspective. In Ecuador in 1997-98, El Niño is believed to have cost US$ 2 billion in economic losses, which is more than 12 % of the country's GNP. This may have increased the incidence of poverty in affected areas by more than 10 percentage points. In Honduras in 1998, hurricane Mitch caused an estimated 7 % decline in agricultural output.[30]

Since climate change has multi-sectoral and economy-wide impacts, output in the manufacturing industry (due to e.g. decreasing availability of water and energy) and revenues from tourism may also decrease. Moreover, chronic food insecurity and deteriorating health conditions will put more pressure on national budgets and costs related to potential conflicts due to increasing water scarcity or mass migration may also be expected.

Existing poverty and lagging development will amplify the adverse effects of both gradual changes in climatic conditions and extreme weather events, leading to economic losses, including costs for relief and reconstruction efforts, that may consume a significant proportion of partner countries' GDP. Diverting funds away from programmes for poverty reduction and sustainable development will further complete the vicious circle of depleting capital reserves, foreign indebtedness and loss of foreign investor confidence, leading in turn to more poverty and vulnerability.

3.2 Meeting the challenge of climate change by means of adaptation and mitigation

What are the options for partner countries challenged by the threat of climate change? Simplifying, current responses to climate change can be said to be of two types. One aims at adaptation to climatic change; the other at mitigating its cause, GHG emissions, both by reduction at source level and by sequestration by so called 'sinks', e.g. forests.

Given that climate change is already taking place, adaptation to its adverse effects becomes a necessity. Adaptation refers to all those responses that may be used to reduce vulnerability to

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30 World Development Report 2000/2001.

climate change[31]. Areas for adaptation to climate change include natural resources management (e.g. land/soil, water, forest and coastal resources), related economic sectors (agriculture, forestry, fisheries), infrastructure, human settlements and human health.

Some generic objectives for adapting to climate change are: (i) improving the robust design of infrastructure and long-term investments; (ii) increasing the flexibility of vulnerable managed systems (e.g. changing activity or location); (iii) enhancing the adaptability of vulnerable natural systems (e.g. reducing non-climatic stresses); (iv) reversing trends that increase vulnerability (e.g. slowing development in vulnerable areas such as flood-plains and coastal zones); and (v) improving the preparedness and awareness of society. (See Annex VII for a summary on adaptation needs and options).

Mitigation is usually defined as an intervention to reduce anthropogenic emissions of greenhouse gases. Measures aiming at the reduction at source level include energy efficiency measures, renewable energy sources and new and cleaner energies. Natural resources management options such as land use, land use change and forestry (LULUCF) may also serve mitigation purposes since they offer significant carbon conservation and sequestration potential, especially in the tropics[32]. (See Annex VIII for a summary on mitigation needs and options).

Measures for adaptation, including natural resources management, and mitigation should however not be seen as mutually exclusive. On the contrary, certain options can offer great synergies between these different objectives and their maximisation is often very beneficial to reducing poverty. For example, a renewable energy programme for decentralised electricity (off-grid systems) could include a package of solar water pumping systems for domestic use and forest conservation/sustainable management in remote areas.

4. PROPOSAL FOR AN EU CLIMATE CHANGE STRATEGY FOR SUPPORT TO PARTNER COUNTRIES

4.1 Overall objective and guiding principles

The overall objective of this strategy is to assist EU partner countries[33] in meeting the challenges posed by climate change, in particular by supporting them in the implementation of the UNFCCC and the Kyoto Protocol.

Given the multiple ways climate change affects societies and interacts with place-specific vulnerabilities, it is however important that any response to climate change is conceived

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31 Adaptation involves individual and collective coping and risk management strategies including adjustment in practices, processes or structures of systems (natural, human managed and human made). Adaptation can be autonomous or planned, reactive or anticipatory.

32 For example, conservation of threatened carbon pools may help to avoid emissions, if leakage can be prevented, but are only sustainable if the socio-economic drivers for deforestation and other losses of carbon pools can be addressed. In agriculture, methane and nitrous oxide emissions can be reduced, e.g. from livestock enteric fermentation, rice paddies, nitrogen fertiliser use and animal wastes and have direct benefits in terms of increased incomes and also improve food-grain production and availability. Conservation and sequestration of carbon may allow time for other options to be further developed and implemented.

33 For the Community this means the ACP, ALA, MEDA, CARDS and TACIS countries. However, this paper will not cover Croatia, Russia and Ukraine as they have emission targets under the Kyoto Protocol.

within and in coherence with existing development frameworks, rather than in isolation from them.

This means that the stated objective should be achieved as an integral part of mainstream EU development co-operation activities and in complete coherence with the overarching objective of poverty reduction. That is, climate change concerns needs to be fully mainstreamed into EU development co-operation and development staff made aware of the disproportionate impact climate change is likely to have on the poorest countries and on the poorest people in all developing countries.

The EU will in the implementation of this strategy be guided by the following principles:

– Contribution to the overarching objective of poverty reduction as stated in the EC development policy and, where appropriate, its six core areas.[34]

– Contribution to the Millennium Development Goals[35] and the outcome of WSSD.

– Coherence, both internally and externally, and on the following levels: (i) coherence with other EC and MS policies,[36] (ii) coherence with other development sector/thematic policies/strategies,[37] (iii) and coherence/synergies with support actions for other Multilateral Environmental Agreements.[38]

– Co-ordination and complementarity between the Community, Member States and other donors. The complementarity should be viewed from the political, financial, geographical and type of expertise point of view.

– Primacy of national ownership of development strategies and processes.

– Broad stakeholder participation in the implementation process.

4.2 Strategic priorities

Guided by the above-mentioned principles, the Commission proposes that EU development co-operation should focus on the following four strategic priorities[39]:

(i) Raising the policy profile of climate change,

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34 (i) Trade and development, (ii) Regional integration and co-operation, (iii) Macro-economic reform and social sector programmes, (iv) Transport, (v) Food security and rural development, and (vi) institutional capacity strengthening.

35 (i) Eradicate extreme poverty and hunger, (ii) Achieve Primary Universal Education, (iii) Promote gender equality and empower women, (iv) Reduce child mortality, (v) Improve maternal health, (vi) Combat HIV/AIDS, malaria and other diseases, (vii) Ensure environmental sustainability, (viii) Build a global partnership for development.

36 For example, environment, trade, agriculture, research, transport.

37 For example, energy, water, transport, rural development, forests, health, education, and gender.

38 For example support actions for the MEAs on desertification, biodiversity and forests, which contributes to poverty alleviation and at the same time addresses climate change concerns.

39 It should be kept in mind that these priorities are abstract constructs, which in practice both may overlap and interact, including on different levels. They should therefore be seen as useful crosscutting organisational and guiding aids rather than as independent separate areas.

(ii) Support for adaptation to climate change,

(iii) Support for mitigation of climate change, and

(iv) Capacity development.

4.2.1 Raising the policy profile of climate change, both in dialogue and co-operation (a) with partner countries and (b) within the Community

(a) with partner countries: The EU subscribes entirely to the principle that development strategies and processes should be country-owned and driven and that partner countries themselves are primarily responsible for identifying and responding to environmental issues. However, climate change concerns are in almost all cases absent from partner countries development strategies such as PRSPs and CSPs, in full contradiction to their increasing claims for capacity building and financial resources in international negotiations. Closing that gap is essential and means that actions to enhance the policy profile of climate change must first concentrate on the national/implementation level.

One way of raising the policy profile of climate change in partner countries is to clarify or make the link with other EU and international agenda topics which already receive high political attention such as the Millennium Development Goals and Sustainable Development (i.e. making it a full component of social and economic development). In this context, links will be made with the political and action-oriented recommendations of the Johannesburg Summit.

A second and complementary way of raising the policy profile, raising awareness, and placing the issue of climate change on partner countries' national agendas is the strengthening of the environmental dialogue between the EU and individual partner countries, but also within each partner country. High level political dialogue can play a crucial role in encouraging partner countries to address climate change and other environmental concerns, in particular by highlighting that economic development goals in developing countries can be achieved while contributing to climate protection. Also other types of policy dialogue can further this purpose, e.g. consultations with partner countries in the development and review of CSPs.

The EU will therefore take advantage of existing institutional frameworks, such as the Cotonou Agreement (with the ACP), Partnership and Co-operation Agreements (with the NIS) and the Barcelona process (Euro-Mediterranean Partnership) or other bilateral agreements, and its extensive network of delegations and representations (Commission and MS), in order to increase the dialogue on climate change as part of both political dialogue and regular country policy dialogue to better identify country-specific needs with the view to better responding to them.

Increasing the specific dialogue will also help identifying and implementing EU initiatives to support the preparation of national strategies for sustainable development (nssds) including climate change as a horizontal component, particularly in countries where EU involvement is already strong. The EU can also play a key role in promoting regional co-operation among partner countries.

With regards to the intra-country dialogue, increased support will be given to Ministries and other national authorities that are responsible for climate change, in order to help them make their voices heard. This could be done through the institutional support component of the EC development Policy. For example, support should be given for the setting up of inter-

ministerial and multi-stakeholders committees. In this context, the key role of civil society is fully recognised and must be supported.

This paper should be instrumental in providing an incentive for dialogue between the EU, in particular the Commission delegations/MS representations, and its partner countries, discussing how the EU can best support their efforts of addressing the problem of climate change while, at the same time, aiming at sustainable development (including poverty alleviation and social and economic development).

(b) within the Community: Up to now, climate change concerns have in almost all cases been absent from EC development strategies. On an in-house basis and in line with the Commission Staff Working Paper adopted in 2001[40], the Commission will mainstream climate change concerns into all strategic programmes and sectors of EC development co-operation[41] and into other EC internal and external policies having possible impacts on partner countries . This will be done by providing in-house training to strengthen the awareness and knowledge of Commission staff in relation to the linkages between poverty reduction and climate change, including for effective political and policy dialogue with partner countries; by giving practical advice on how to integrate climate change into Country and Regional Strategy Papers (CSPs/RSPs) by the annual and mid-term reviews of those papers; by the setting up of a thematic network addressing environmental issues involving Commission headquarters and Delegations, and ensuring that they are appropriately staffed.

The Commission will ensure the co-ordination between the initiatives resulting from the WSSD, in particular the EU Energy Initiative and the Coalition of the Willing on renewables, as well as development co-operation programmes and other Community programmes related to energy co-operation with third countries to ensure that they work in synergy. It will also draw on these various programmes in its political dialogue on climate change with partner countries.

In addition, the Commission will expand the on-going dialogue with the EIB and the EBRD in order to ensure that they take climate change into consideration, in an explicit and systematic way, when programming their activities that are climate change relevant, in particular those related to the energy, transport and water sectors.

This paper should be a catalyst for Commission in-house awareness raising on climate change issues.

4.2.2 Support for adaptation to climate change

Ecological, social and economic effects of climate change are projected to be both place-specific and interrelated. Options for adaptation will therefore have to accommodate such complexities in order to be effective. Moreover, adaptation will have to address both gradual changes in average climatic conditions and climate variability and extremes.

Many of the countries or groups within the countries which are most vulnerable to climate change are already under stress with respect to current climate variability. Addressing vulnerability to the current climate is therefore a logical first step in adaptation to climate change. The EU will support adaptation measures to current climate and its variability,

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40 SEC(2001)609 : Integrating the environment into EC economic and development co-operation.

41 The use of the Environment in developing countries and Tropical Forests budget line could be helpful in this context. See priority actions 10-12 in the strategic guidelines for the budget line.

including extreme events, in view of strengthening knowledge and adaptive capacity in partner countries to deal with future changes in the climate. Present-day climate vulnerability can for example be reduced by feasible cost-effective adaptation in the form of no-regrets measures that are measures that have benefits also for non-climatic stresses. The identification of such options in relevant sectors will be supported. In this context, the EU will also continue its support for ecosystem conservation and environmentally sound natural resources management in partner countries with a view to taking advantage of possible synergies between sustainable ecological, social and economic development and adaptation concerns[42].

Secondly, specific adaptation measures are more likely to be implemented if they are consistent with or integrated in frameworks that address non-climatic stresses. The EU will support and promote mainstreaming of adaptation concerns and national action plans for climate change reported in national communications or national adaptation programmes of action (NAPAs), where they exist, into strategic frameworks such as national strategies for sustainable development (nssds) and PRSPs. Support will also be given for the development of tools and capacities for the integration of climate risk management/adaptation concerns into national and sectoral planning. Furthermore, wide stakeholder involvement will be supported in order to ensure that formal interventions are compatible with informal 'traditional' responses to risks posed by changes in the climate, thereby contributing to the development of strategies combining the joint strengths of strategic oversight and local knowledge/decision-making.

The EU will also ensure coherence and/or complementarity, where appropriate, between actions aimed at adaptation and actions linked to relevant development co-operation sectors (e.g. water, forests, agriculture, fisheries, rural development, health and education) in order to avoid interventions that may increase vulnerability (maladaptation). Since people and all types of systems are generally more vulnerable to sudden disruptive changes than to gradual ones, adaptation options should also take into account disaster preparedness and prevention.

Finally, planned anticipatory adaptation has the potential to reduce vulnerability to climate change. Climate change impact and vulnerability assessments[43] provide the basis for, and sometimes integrate the identification and assessment of possible options for anticipatory adaptation[44]. However, even though significant advances have been made in these areas, further research and methodological work are still required to narrow the gap between current knowledge and policymaking needs.

Scientific and technological knowledge of direct relevance to developing countries to support their transition to sustainability is scarce and incomplete and should be urgently reinforced through the joint mobilisation of scientific communities in the EU and DCs. Climate change is one of the priorities in the 6th Framework Programme (FP6) for research (2002-2006)[45]. Research and scientific and technological co-operation with developing countries are therefore key instruments that the EU has at its disposal for the implementation of this strategy and the FP6 is a vehicle for partner countries to develop knowledge, tools and methodologies that are relevant for the issue of climate change and planned adaptation (both

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42 Ecosystem conservation and environmentally sound natural resources management may also serve mitigation purposes in terms of carbon conservation and sequestration.

43 Climate change impact assessments are often based on quantitative models analysing the relationship between climatic variables and selected impact sectors.

44 Any option for adaptation will usually involve trade-offs that need to be thoroughly evaluated.

45 The specific programme on Global Change and Ecosystems will have a budget of € 700 million, a substantial part being dedicated to climate change.

reactive and anticipatory). To be effective, scientific and technological co-operation must necessarily target the ecological, socio-cultural and economic conditions in developing countries.

Universities and research institutions of partner countries will therefore be encouraged to join their European counterparts and form research consortia that contribute to the development of adaptation strategies and the understanding of scientific processes under the specific conditions of developing countries, as well as the corresponding monitoring activities. .

4.2.3 Support for mitigation

Partner countries will need support in reconciling their legitimate needs for economic development with the protection of the environment and sustainable use of energy and natural resources. Even though mitigation options can be explored in all sectors of the economy, as far as developing countries are concerned the greater potential for emission reductions through mitigation activities, with good ancillary benefits in terms of sustainable development, exist primarily in the areas of energy supply, energy use and transport. The EU will therefore continue and strengthen its support to actions having both explicit and implicit potential (direct and indirect impacts) for the mitigation of GHG emissions, emphasising these three areas. However, mitigation concerns need to be mainstreamed into all aspects of existing EU development assistance in order to achieve a less carbon intensive economic growth than otherwise would have happened, for the benefit of all countries.

Taking also into account the Commission Communication on Energy co-operation with Developing Countries[46] and the Energy Initiative proposed by the EU in view of the World Summit on Sustainable Development the EU will employ the full menu of technical and institutional options including energy efficiency and renewable energies. This will be achieved through the establishment of partnerships with developing country governments for providing assistance for the development of sustainable energy policies as well as advice on financing opportunities from various sources (donor aid to be complemented by bank loans and equity investments from governments and the private sector). The partnerships may also lead to the creation of national or regional energy capacity building initiatives that will work on the development and implementation of national and regional energy policies.

In the context of climate change, the EU will, when it is the best option for sustainable development, promote renewable energies and energy efficiency technologies. The EU will also, drawing on its experience of scientific and technological co-operation with partner countries in areas of direct relevance to climate change, support research into alternative fuels: bio-fuels, natural gas; ensure wide dissemination of results; and promote North-South research co-operation.

Transport investment contributes to economic growth, facilitates trade and reduces poverty by facilitating the mobility of people and goods. When supporting partner countries developing their transport policies, strategies, and transport services and infrastructure, the EU will encourage and assist the evaluation of the long-term consequences of greenhouse gas emissions of the different transport modes. For example, whether it would be feasible and sustainable for goods transport to use lower greenhouse gas emitting modes such as railways or inland waterways. Urban public transport is a major source of greenhouse gas emissions and needs tackling on several fronts. The EU will promote such measures as the use of non-

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[46] COM(2002)408 final.

motorised transport, the development of clean and efficient public transport means and the provision of appropriate infrastructure, the enforcement of national regulations governing vehicular road-worthiness, the improvement in traffic management and the timely maintenance of infrastructure, particularly roads. These "no-regrets" measures benefit both transport users and climate change concerns and could, where feasible, be complemented by the introduction of mass transit systems. The gradual introduction of basic economic instruments, such as charges for infrastructure use and energy taxation, would help to steer demand towards the less energy intensive modes of transport and provide an additional source of funds for transport investment in those modes.

Sustainable energy systems and sustainable surface transport are priorities in the 6th Framework Programme for Research (2002-2006), including renewable energy sources, energy savings and efficiency, alternative motor fuels and environmentally friendly transport systems.

The EIB will consider in its future support to energy and transport in developing countries the more sustainable energy and transport modes.

The EU will contribute to the identification and removal of key barriers to the implementation of mitigation measures. Examples of barriers are the lack of available capital and lack of finance at low interest rates, the information gap hindering proper technology selection, the lack of access to the state of the art technology, and the small scale of many projects.

The above mentioned barriers are definitely also relevant for the implementation of projects that may be eligible under the Clean Development Mechanism (CDM). This project-based mechanism was established by the Kyoto Protocol and has the two-fold objective of contributing to the ultimate objective of the UNFCCC and assisting developing countries in achieving sustainable development. In practice it allows developed countries with GHG reduction targets to earn emission reduction credits through investing in GHG reduction in developing countries, i.e. to take advantage of lower abatement costs in developing countries. They can thereafter use the credits earned to partly meet their own emission reduction targets. In effect, this makes the CDM an economic incentive for the greening of Foreign Direct Investment. The CDM is primarily to be driven by the private sector and is expected to be a good vehicle for the transfer of clean and modern technologies in developing countries while delivering real development benefits.

The CDM is a market-driven instrument and the Marrakech Accords stipulate that CDM activities should not result in a diversion of Official Development Assistance (ODA). As the private sector is driving the CDM, it is likely that CDM activities will first be proposed in the more advanced developing countries where least cost greenhouse gas mitigation potential exists and where there is a comparative advantage for the private sector with less uncertainties or fewer non-commercial risks. In this context, it is predictable that equity as well as development and social dimensions will not be targeted as priority objectives by the private sector. Consequently, some public funding may be necessary to ensure that these issues are addressed and that a balanced geographical distribution of CDM projects is safeguarded. Using ODA for project preparation activities, including capacity building of the host developing country, could be an important step in that direction. To stimulate CDM project development in LDCs where the public sector has a comparative advantage over the private sector and where additional social benefits are to be expected from the CDM project, particularly in the form of poverty reduction, ODA could also be used to finance the costs of a

CDM project.[47] In any case, ODA shall not be used for financing the acquisition of CDM credits[48].

4.2.4 Capacity development

In view of partner countries' vulnerability to the adverse effects of climate change and their growing greenhouse gas emissions, it is essential to develop their capacity for the implementation of both the UNFCCC and the Kyoto Protocol if global efforts to combat climate change are to be meaningful. Their full participation in the international negotiations is also essential, particularly with regard to future negotiations on possible DC commitments under the Kyoto Protocol.

Capacity development is about improving overall organisation performance and function capabilities as well as ability to adapt. Both the public and the private sectors, including the civil society, will be targeted by capacity development initiatives in order to raise awareness about the challenge of climate change, the opportunities offered by the UNFCCC and Kyoto frameworks in terms of financial and technical assistance, technology transfer and investment potential through CDM activities in order to assist partner countries in meeting their obligations. Capacity development activities undertaken within this framework should also maximize synergies between the UNFCCC and other multilateral environmental agreements, as appropriate.

In particular attention will be given to reinforcing scientific and technological capacity in developing countries through the synergistic and complementary use of research instruments such as the mobility component of the 6th RTD Framework Programme and the capacity building supported through external relations instruments such as the EDF, MEDA and the ALA Regulation.

4.3 Indicative strategic responses for EU partner countries

Even though the formulation of development priorities should be country-driven in order to further national ownership of the development process, there are several advantages with identifying indicative response strategies to climate change for EU partner countries. Firstly, they may be a useful point of departure for any discussion with partner countries regarding their particular needs for coping with climate change. Secondly, they may provide a tool for identifying opportunities for exploiting synergies with ongoing projects/programmes in related sectors such as forest conservation/sustainable natural resources management, transport, energy and rural development. Thirdly, they may provide guidance for the selection of projects to be financed from horizontal/thematic budget lines such as the Community budget line "Environment in developing countries and Tropical Forests". Fourthly, they could further enhance co-operation/complementarity between the Community's, Member States' and other donors' actions. Fifthly, they could identify countries for which an integrated climate approach, i.e. linking adaptation responses with mitigation and/or conservation responses, might be relevant.

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47 An EU Code of Conduct for the use of ODA for funding CDM activities should be developed. Such a Code should clearly indicate that the value accruing from the part of the CDM credits that was generated through an ODA supported CDM project, should either be 're-invested' in the same project (to maintain the additional social benefits) or given to the host country.

48 Environment Council conclusions, 6 October 1998, Development Council conclusions 11 November 1999.

A first attempt to identify such possible response strategies for EU partner countries has been made in Annex II. This indicative exercise has been done in two stages. The first stage has been aiming to identify indicators expressing countries' vulnerability to climate change as well as their relative contribution to, and mitigation of, the problem. The following indicators have been selected: (a) socio-economic ability to adapt, (b, c) physical ability to adapt, (d) projected adverse effects on crop yields, (e) particularly disaster prone countries, (f) countries affected by desertification/land degradation, (g) emissions of CO_2, (h) emissions of CO_2 per capita, (i) amount of forest area in km^2, and (g) voluntary interest for emission target or other obligation.

In the second stage, these indicators have formed the basis for an indicative selection of the following response strategies (i) adaptation, (ii) mitigation, and (iii) conservation/sustainable management of ecosystems. This second stage has been guided by a concern of prioritising countries' vulnerability to climate change, placing a higher emphasis on indicators expressing such vulnerability (a-f) and thereby adaptation. (See Annex II for details on the indicators and the selection process).

However, it should be stressed that since these indicative response strategies are only to serve guiding purposes; they certainly do not exclude any country from identifying any additional priority and obtaining development assistance for it. The indicative response strategies should be regularly reviewed, in particular following the results of future negotiations for the 2^{nd} commitment period.

Annexes

ANNEX I: ACTION PLAN

The four strategic priorities identified in the preceding strategy are here translated into actions indicating the entities concerned.

I. Raising the policy profile of climate change, both in dialogue and co-operation

Actions:

– Climate change is regularly put on all high level political meetings' agendas dealing with development (COM-Partner countries-MS-NGOs)

– A Joint Paper on climate change within the development context is elaborated with other interested donor agencies (COM)

a) with partner countries

Actions:

– This Communication is put on future agendas of the ACP Council, Joint Parliamentary Assembly and other high level consultations within other EC co-operation agreements for presentation and monitoring of the Action Plan (MS-COM)

– The environment dialogue between the EU, in particular the Commission delegations/MS representations, and partner countries is strengthened, using this Staff Working Paper and its Action Plan as a basis (MS-COM-Partner countries)

– When implementing the recommendations of the Johannesburg Summit (WSSD), in particular those related to water and the EU Energy initiative, as well as the Coalition of the Willing on renewables, full consistency with this Action Plan is ensured (MS-COM)

– The mainstreaming of climate change concerns (in particular with regard to adaptation), national action plans for climate change, and national adaptation programmes of action (NAPAs), where they exist, into strategic frameworks such as national strategies for sustainable development (nssd) and PRSPs is supported (Partner countries-MS-Multilateral donors-COM)

– Climate change issues are integrated into CSP and RSP reviews, in particular new initiatives by partner countries for specific intervention in the context of climate change (Partner countries-COM)

– Climate change issues are integrated into NIPs/RIPs reviews (Partner countries-COM)

– The establishment of a multi-stakeholders committee for taking stock of on-going activities and identifying priorities for action is supported in each partner country and region (Partner countries-MS-COM)

– The target audience of the finalised EC Environmental Integration Manual is extended in order to make it usable by partner countries (COM)

– Regional initiatives to identify key implementing issues for the regions/countries, to develop country/regional strategies, and to exchange experience and develop methodologies are supported (e.g. through workshops) (MS-COM)

b) within the Community

- **Mainstreaming and integration of climate change in strategic frameworks**

Actions:

– Climate change concerns are better integrated into other EC and MS external policies and internal policies having possible external impacts on partner countries (MS-COM)

– Climate change concerns are better integrated into other sector policies of development co-operation (energy, transport, research and technology, water management, rural development, trade, civil society involvement, institutional support, health, gender, education, forests, fisheries, private sector development) (MS-COM)

– Concrete checklists to facilitate the consistency of projects with climate change goals are elaborated. (COM)

– A user friendly screening tool to identify GHG potential of projects at operational level is developed (COM) and is made available, within the framework of the use and implementation of the finalised Environment Integration Manual, to all Delegations and Services (COM)

– The draft Environmental Integration Manual is finalised and made operational (COM)

– The Environmental Integration Manual is effectively used (MS-COM)

– Specific training to projects' and programmes' managers is provided, on the basis of this paper and the Environmental Integration Manual (COM)

– An Environmental Help Desk to assist Commission Headquarters and Delegations and Planners is set up (COM)

– A network of expertise on climate change/MEAs/environment in Commission Headquarters and Delegations is established (COM)

– A paper summarising UNFCCC and Kyoto Protocol and other Multilateral Environmental Agreements' (MEAs) obligations is developed and distributed to all Delegations and within Headquarters (COM)

– The dialogue between the EC and the EIB is reinforced through the establishment of a working group on climate change in order to ensure that climate change is taken into consideration in the EIB's funding instruments and in the programming and implementation of its activities, in particular those related to the energy, transport and water sectors (COM-EIB)

– The implementation of this Action Plan is monitored (MS-COM)

– Sufficient resources are allocated within current budgetary and human resources frameworks at Commission (HQ & Delegations) level to ensure the full implementation of the actions assigned to the Commission in this action plan (COM)

– A specific marker system for the identification of climate change related projects based on the OECD/DAC marker system for MEAs, is introduced in the Commission Development database to facilitate the fulfilment of reporting obligations and to increase the visibility of Community actions in all international fora and partner countries (COM)

- **Co-ordination and coherence**

Actions:

– A Clearing house mechanism on climate change activities is set up at EU level for the studying and dissemination of information on the wide range of support provided by the Community and Member States to Partner Countries, with a view to improving co-ordination between projects and programmes which contribute to the implementation of the Framework Convention and the Kyoto Protocol and providing a basis for enhanced capacity building in developing countries (MS-COM-EEA)

– The planning of climate change related programmes and activities in the development context is co-ordinated at Community level (from the political, technical, geographical and financial point of view) (MS-COM)

– MS and multi-stakeholder Experts Groups' meetings for the co-ordination and implementation of the recommendations contained in this Action Plan are regularly organised (COM-MS-Partner countries-Stakeholders)

– Feedback from bilateral and multilateral climate-related discussions with partner countries, is to be taken into account in the implementation of this Action Plan, to further enhance the EU's position in climate change negotiations (COM)

– Co-ordination between the EC and other multilateral donors through a better exchange of information on programmes and an increased number of co-operative activities is improved (COM-Multilateral donors)

– Synergies at EC level between various development related action plans under the different MEAs and other international initiatives (Desertification, Biodiversity, Forests, Water, etc) are examined (COM)

II. Support for adaptation

- **Research on impacts, vulnerability and adaptation**

Actions:

– Research on impact, vulnerability and risk assessment, including sector specific and integrated assessments[49],with particular emphasis on changes in the range of climatic variation and the frequency and severity of extreme climate events is supported (MS-COM)

– The improvement of tools for integrated assessment, including risk assessment, to investigate interactions between components of natural and human systems and the consequences of different policy decisions is supported (MS-COM)

– Research for the development and assessment of adaptation strategies and measures, estimation of the effectiveness and costs of adaptation options, and identification of differences in opportunities for and obstacles to adaptation in different regions, countries and populations, including methodologies to these ends, is supported (MS-COM)

[49] For example land use, land use change and forestry sectors. An integrated assessment of water resources would look into water use in a number of sectors, and how these interact.

– The assessment of opportunities to include scientific information on impacts, vulnerability and adaptation in decision-making processes, risk management and sustainable development initiatives is supported (MS-COM)

– Universities and research institutions of partner countries are encouraged to join European research consortia to contribute to monitoring activities, to the understanding of scientific processes and to the development of adaptation strategies (MS-COM)

- **Integration of adaptation concerns into strategic frameworks and national and sectoral planning**

Actions:

– The coherence or complementarity of adaptation measures with measures within relevant sectors (water, agriculture, forests, fisheries, rural development, health, education) is promoted in order to avoid actions of maladaptation (action that increase vulnerability) to climate change (Partner countries-MS-COM)

– The linking of adaptation measures, where appropriate, to relief, rehabilitation and development (LRRD) and disaster preparedness (DP) concerns is supported (Partner countries-MS-COM)

– The integration of climate risk management into the planning process for all national entities/agencies with responsibilities for long-term investments, e.g. infrastructure is supported (MS-COM-EIB)

– The establishment of a mechanism for greater collaboration among national entities/agencies responsible for planning in partner countries is supported (Partner countries-MS-COM)

– Good governance and human and institutional capacity building are supported in order to ensure stable and effective institutions and thereby strengthen partner countries' adaptive capacity and reduce their vulnerability to climate change (COM)

- **Adaptation policies/strategies and measures linked (directly or indirectly) to current climate and its variability, including extreme events, are improved and supported in order to strengthen knowledge and adaptive capacity in partner countries to deal with future changes in the climate**

Actions:

– Adaptation options to reduce current climate vulnerability, particularly no-regrets options[50], are identified (COM-MS)

– The setting up of adaptation pilot projects is promoted and supported in dialogue with partner countries following their own adaptation concerns and priorities (MS-COM)

– Increased surveillance of vector borne diseases is supported (MS-Partner countries-COM-Multilateral donors-NGOs)

– The development/improvement of codes and standards for buildings, residences and other infrastructures, including roads, bridges, etc. is supported (MS-COM)

– Capacity building and training for monitoring, assessment and data gathering are supported at all relevant levels, including for the use of data and methodologies developed by relevant international programmes such as the JRC's Global Land Cover 2000 network is supported (MS-COM)

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50 Measures that have benefits also for non-climatic stresses.

– Capacity building for development and maintenance of environmental observing and forecasting infrastructures, networks and competencies, in coherence with the foreseen European contribution to the global climate change observation systems and the EC/ESA GMES initiatives is supported (COM-MS)

– Training and awareness raising activities on adaptation are supported in order to improve skills and raise public awareness on adaptation and thereby strengthen public adaptive capacity (MS-COM)

– The creation of local stakeholder groups is promoted in order to ensure that formal interventions for the management of risks posed by climate change support existing informal interventions in that area, thereby contributing to the development of strategies combining the joint strengths of strategic oversight and local knowledge/decision-making (MS-COM-Partner countries-NGOs)

– Capacity building for the elaboration and implementation of national and/or regional programmes concerned with adaptation to climate change is supported (Partner countries-MS-COM)

– The elaboration/update of National Adaptation Programmes of Action (NAPAs) by LDCs is supported (Partner countries-MS-COM)

- **Continued support for adaptation through forest conservation and/or sustainable management of ecosystems and natural resources in partner countries**

Actions:

– The development of policies/strategies, and supporting databases, for forest conservation and/or sustainable management of forests, water and coastal ecosystems as well as land use and biological diversity which fully integrate climate change considerations is supported in order to take advantage of synergies between sustainable ecological, social and economic development and adaptation concerns or, as a minimum, avoid actions that run counter to adaptation concerns (maladaptation) (MS-Multilateral donors-COM)

– The development of measures to minimise greenhouse gas emissions from land use are designed in conjunction with measures to minimise adverse climate impacts (MS-COM)

III. Support for mitigation

- **Mainstreaming**

Actions:

– Partner countries are encouraged to develop a strategy with regard to mitigation measures, in particular in the energy (including at energy use level) and transport sectors (MS-COM)

– For the partner countries/regions which so desire, financial assistance for the formulation and implementation of energy policies is concentrated on twinning operations. Funds are also devoted to promote the networking of EU energy agencies and equivalent centres (already in existence or to be set up) in the developing countries (COM)

– A strategic impact assessment/environmental impact assessment, which include a specific climate change component, is systematically conducted for programmes and projects, including the development of tools for such assessments (MS-COM)

– A systematic screening of projects is made in order to identify additional project components or investments, which would provide additional benefits with respect to climate change (MS-COM)

– Energy efficiency objectives are systematically included in development aid programmes and projects in the energy sector (COM)

– Within the framework of CSPs and NIPs, particular attention is given to support where possible the identification and implementation of no regrets measures such as expansion of mass transit systems (road to rail), vehicle efficiency improvement through maintenance and inspection programmes, improved traffic management, paving of roads, fuel pipeline installation, infrastructure provision for non-motorised transport, increased use of biomass ethanol and natural gas (MS-COM-partner countries)

– Appropriate internal procedures and tools are developed to ensure that the opportunities where renewable energy is an economically attractive option on a life cycle basis are fully captured (COM-MS)

– Integrate climate change concerns within Sustainability Impact Assessments (MS-COM)

– Support the greening of export credits by, inter alia, the implementation of the OECD Recommendation on Common Approaches on environment and officially supported export credits. Explore ways of strengthening the climate dimension of export agencies' activities and foster the contribution of export credits to the CDM implementation (MS-COM)

- **CDM activities in partner countries are supported by public funding, particularly in LDCs, where there is no comparative advantage for the private sector and where additional social benefits are expected, through:**

Actions:

– The development of a set of indicators, based on the UNDP Human Development Index (HDI), to identify the partner countries concerned and the ancillary benefits expected (poverty reduction in the sustainable development perspective) (COM)

– The development of an EU Code of Conduct for the use of ODA for funding CDM activities is supported. Such a Code should clearly indicate that the value accruing from the part of the CDM credits that was generated through an ODA supported CDM project, should either be 're-invested' in the same project (to maintain the additional social benefits) or given to the host country. (MS-COM)

– Raise awareness and develop capacity of the private sector in partner countries in order to build investment partnerships with EU investors for CDM activities (MS-COM)

– The creation of an enabling environment for CDM implementation (awareness raising, link to a national climate change strategy or to the national strategy for Sustainable Development, regulatory framework and administrative procedures for the selection/approval of CDM projects including the appointment of a CDM focal point, technology information dissemination for further replication…) is supported (MS-COM)

- **Technology transfer and research**

Actions:

– Research for the demonstration of innovative and clean technologies responding to partner countries needs and contributing to mitigation efforts is promoted (MS-COM)

– Research related to the development and an enhanced use of alternative fuels is supported (MS-COM)

– The development of national-regional energy capacity building initiatives is supported (MS-COM)

– Capacity building on environmentally friendly technologies and goods is supported (MS-COM)

– The flow of information on technical parameters, economic and environmental aspects of environmentally sound technologies between the different stakeholders to enhance the development and transfer of environmentally sound technologies is facilitated (COM-MS-NGOs)

– The identification of barriers to technology transfer and measures to address these barriers through sectoral analyses is supported (COM-MS-Partner countries)

– Negotiate with partner countries in the context of the Doha Development Agenda and regional trade agreements the reduction/elimination of tariff and non-tariff barriers to environmental goods and services (COM-MS-Partner countries)

– A systematic screening of results of EU research and technology development, with particular emphasis on EU-developing countries joint research activities, with a view to, where feasible, disseminating them and testing pilot technologies, methodologies and concepts in non-Annex I countries is supported (MS-COM-Partner countries)

– Universities and research institutions of partner countries are encouraged to join European research consortia to contribute to monitoring activities, to the understanding of scientific processes and to the development of mitigation strategies (MS-COM-partner countries)

IV. Capacity development

Specific actions for capacity development related to the preceding strategic priorities are listed under the relevant section.

- **Raising public awareness in partner countries through:**

Actions:

– The development and implementation of educational and public awareness raising programmes (e.g. work-shops, training courses) and/or information campaigns on climate change and its effect, are supported (MS-COM)

– The provision of information on measures for mitigation and adaptation and technical advice on how to improve energy efficiency at supply and consumption levels is supported (MS-COM)

– Making databases describing ecosystem condition and change widely available through the media and where appropriate the world wide web (MS-COM-EEA-NGOs)

- **Development of human and institutional capacities in partner countries for the implementation of the UNFCCC and the Kyoto Protocol through:**

Actions:

– The development and implementation of awareness raising programmes for national officials on challenges and opportunities arising from UNFCCC and the Kyoto protocol are supported (MS-COM)

– The identification of country and regional specific needs for the implementation of the UNFCCC and the Kyoto Protocol is supported (MS-COM)

– The preparation of National Communications, including inventories, mitigation activities, methods for data systematisation and statistics, particularly in view of negotiations for the second commitment period, is supported (MS-COM)

– The development of negotiation skills for participation in the international UNFCCC/Kyoto Protocol process is supported (MS-COM)

- The maximisation of synergies between the UNFCCC and Kyoto Protocol and other MEAs, in particular the UN Conventions on Desertification and Biological Diversity, is promoted (MS-COM)

- The strengthening (from the political and technical point of view) of the Climate Change Focal point in each partner country is supported (MS-COM)

ANNEX II: INDICATIVE STRATEGIC RESPONSES FOR EU PARTNER COUNTRIES

	Type of EU cooperation	GDP per Capita (PPP US$ 1999)[51]	Total fossil fuel Carbon Dioxide Emissions (in million metric tons CO2) [52]	Per Capita Carbon Dioxide Emissions (in metric tons per person)[53]	Forest Area (Square kilometres)[54]	Adaptation, mitigation or conservation needs[55]	Indicative EU response strategies		
							Adaptation	Mitigation	Con-servation
Afghanistan	ALA	N/A	N/A	N/A	13,510	A,D			
Albania	CARDS	3,189	1.47	0.5	9,910	C,E,F			
Algeria	MEDA	5,063	68.19	2.3	21,450	C,D,F			
Angola	ACP	3,179	4.81	0.4	**697,560**	A,C,D,F,I			
Antigua and Barbuda	ACP	N/A	N/A	N/A	90	B,E,F			
Argentina	ALA	12,277	**142.74**	**3.9**	**346,480**	F,G,H,I,J			
Armenia	TACIS	2,215	2.96	0.8	3,510	F			
Azerbaijan	TACIS	2,850	33.19	**4.2**	10,940	F,H			
Bangladesh	ALA	1,483	26.33	0.2	13,340	A,C*,F			
Belarus	TACIS	6,876	57.05	**5.6**	94,020	F,H			
Belize	ACP	4,959	N/A	N/A	13,480	E			
Benin	ACP	933	1.18	0.2	26,500	A,C,D,F			
Bhutan	ALA	1,341	N/A	N/A	30,160	A			
Bolivia	ALA	2,355	9.84	1.2	**530,680**	F,I			
Bosnia and Herzegovina	CARDS	N/A	5.32	1.4	22,730				
Botswana	ACP	6,872	N/A	N/A	124,270	D,F			
Brazil	ALA	7,037	**305.55**	1.8	**5,324,810**	F,G,I			
Burkina Faso	ACP	965	N/A	N/A	70,890	A,D,F			

51 Source: UNDP's Human Development Indicators: http://www.undp.org/hdr2001/back.pdf. For Suriname, Lebanon, Armenia, Maldives and the Democratic Republic of Congo data refer to a year other than that specified. For Tajikistan, Myanmar, Djibouti, Sudan data refer to a year or period other than that specified, differ from the standard definition or refer to only part of a country, Aten, Heston and Summers 2001.

52 Source: IEA: http://www.wri.org Figures are for 1999.

53 Idem.

54 Source: FAO, *The state of the World's forests 2001*: http://www.fao.org/docrep/003/y0900e/y0900e00.htm Figures are for 2000.

55 See description of indicators and sources at the end of the table.

Burundi	ACP	578	N/A	N/A	940	A,D,F			
Cambodia	ALA	1,361	N/A	N/A	93,350	A,C*,E,F			
Cameroon	ACP	1,573	2.58	0.2	**238,580**	C,I			
Cape Verde	ACP	4,490	N/A	N/A	850	A,B,F			
Central African Republic	ACP	1,166	N/A	N/A	**229,070**	A,D,F,I			
Chad	ACP	850	N/A	N/A	126,920	A,D,F			
Chile	ALA	8,652	58.95	**3.9**	155,360	F,H			
China	ALA	3,617	**3051.11**	2.5	**1,634,800**	C,E,F,G,I			
Colombia	ALA	5,749	56.50	1.4	**496,010**	C,F,I			
Comoros	ACP	1,429	N/A	N/A	80	A,B,F			
Democratic Republic of the Congo	ACP	801	2.45	0	**1,352,070**	A,C,F,I			
Republic of the Congo	ACP	727	0.37	0.1	**220,600**	C,D,F,I			
Cook Islands	ACP	N/A	N/A	N/A	N/A	B			
Costa Rica	ALA	8,860	4.70	1.2	19,680	C,F			
Côte d'Ivoire	ACP	1,654	4.69	0.3	71,170	C,F			
Cuba	ALA	N/A	28.35	2.5	23,480	B,F			
Djibouti	ACP	2,377	N/A	N/A	60	A,C,D,E,F			
Dominica	ACP	N/A	N/A	N/A	460	B,F			
Dominican Republic	ACP	5,507	17.79	2.2	13,760	F			
East Timor	ALA	N/A	N/A	N/A	N/A	C*			
Ecuador	ALA	2,994	19.33	1.6	105,570	F			
Egypt	MEDA	3,420	**110.26**	1.7	710	C,D,F			
El Salvador	ALA	4,344	5.31	0.9	1,210	F			
Equatorial Guinea	ACP	4,676	N/A	N/A	17,520	A,C,D			
Eritrea	ACP	880	0.62	0.2	15,850	A,C,D,E,F			
Ethiopia	ACP	628	2.93	0	45,930	A,D,E,F			
Fiji	ACP	4,799	N/A	N/A	8,150	B			
Gabon	ACP	6,024	1.49	1.2	**218,260**	C,D,F,I			
Gambia	ACP	1,580	N/A	N/A	4,810	A,C,D,F			
Georgia	TACIS	2,431	5.25	1.0	29,880	C,F			

Ghana	ACP	1,881	4.39	0.2	63,350	C,F			
Guatemala	ALA	3,674	8.32	0.8	28,500	C,F			
Guinea	ACP	1,934	N/A	N/A	69,290	A,C,D,F			
Guinea Bissau	ACP	678	N/A	N/A	21,870	A,B,C,D,F			
Guyana	ACP	3,640	N/A	N/A	168,790	B,E			
Grenada	ACP	N/A	N/A	N/A	50	B,F			
Haiti	ACP	1,464	1.38	0.2	880	A,B,F			
Honduras	ALA	2,340	4.31	0.7	53,820	C,F			
India	ALA	2,248	**903.82**	0.9	**641,130**	C*,D,F,G,I			
Indonesia	ALA	2,857	**244.92**	1.2	**1,049,860**	C*,G,I			
Jamaica	ACP	3,561	10.05	**3.9**	3,250	B,C,F,H			
Jordan	MEDA	3,955	13.38	2.8	860	D,F			
Kazakhstan	TACIS	4,951	**114.45**	**7.0**	121,480	F,J,H			
Kenya	ACP	1,022	7.65	0.3	170,960	C,F			
Kiribati	ACP	N/A	N/A	N/A	280	A,B			
Kyrgyzstan	TACIS	2,573	4.73	1.0	10,030	F			
Laos	ALA	1,471	N/A	N/A	125,610	A,F			
Lebanon	MEDA	4,705	15.59	**4.5**	360	C,D,F,H			
Lesotho	ACP	1,854	N/A	N/A	140	A,F			
Liberia	ACP	N/A	N/A	N/A	34,810	A,C,D			
Macao	ALA	N/A	N/A	N/A	N/A	C*			
F.Y.R. Macedonia	CARDS	4,651	10.03	**5.0**	9,060	H			
Madagascar	ACP	799	N/A	N/A	117,270	A,D,F			
Malawi	ACP	586	N/A	N/A	26,010	A,D,E,F			
Malaysia	ALA	8,209	**101.27**	**4.6**	192,760	C*,G,H			
Maldives	ALA	4,423	N/A	N/A	10	A,B			
Mali	ACP	753	N/A	N/A	131,860	A,D,F			
Marshall Islands	ACP	N/A	N/A	N/A	N/A	B			
Mauritania	ACP	1,609	N/A	N/A	3,170	A,C,D,F			
Mauritius	ACP	9,107	N/A	N/A	160	B			
Mexico	ALA	8,297	**358.21**	3.7	**552,050**	C,D,F,G,I			
Micronesia (federation)	ACP	N/A	N/A	N/A	N/A	B			

Moldova	TACIS	2,037	6.56	1.5	3,250	F			
Mongolia	TACIS	1,711	N/A	N/A	106,450	E,F			
Morocco	MEDA	3,419	28.02	1.0	30,250	C,D,F			
Mozambique	ACP	861	1.07	0.1	**306,010**	A,C,D,F,I			
Myanmar	ALA	1,027	9.02	0.2	**344,190**	A,C*,F,I			
Namibia	ACP	5,468	2.22	1.3	80,400	C,D,F			
Nauru	ACP	N/A	N/A	N/A	N/A	B,			
Nepal	ALA	1,237	3.01	0.1	39,000	A,F			
Nicaragua	ALA	2,279	3.39	0.7	32,780	C,F			
Niger	ACP	753	N/A	N/A	13,280	A,D,F			
Nigeria	ACP	853	38.39	0.3	135,170	C,F			
Niue	ACP	N/A	N/A	N/A	N/A	B			
North Korea	ALA	N/A	**214.33**	**9.7**	N/A	C,G,H			
Palau	ACP	N/A	N/A	N/A	350	B,F			
Papua New Guinea	ACP	2,367	N/A	N/A	**306,010**	B,I			
Pakistan	ALA	1,834	**92.16**	0.7	25,050	C*,D,F			
Panama	ALA	5,875	4.81	1.7	28,760	C,F			
Paraguay	ALA	4,384	3.99	0.7	**233,720**	F,I			
Peru	ALA	4,622	21.15	0.8	**652,150**	F,I			
Philippines	ALA	3,805	66.32	0.9	57,890	C*,E			
Rwanda	ACP	885	N/A	N/A	3,070	A,D			
Samoa	ACP	4,047	N/A	N/A	1,050	A,B,E			
Sao Tome and Principe	ACP	N/A	N/A	N/A	270	A,B,F			
Senegal	ACP	1,419	3.28	0.4	62,050	A,C,F			
Seychelles	ACP	N/A	N/A	N/A	300	B			
Sierra Leone	ACP	448	N/A	N/A	10,550	A,C,D			
Solomon Islands	ACP	N/A	N/A	N/A	25,360	A,B			
Somalia	ACP	N/A	N/A	N/A	75,150	A,C,D			
South Africa	ACP	8,908	**346.31**	**8.1**	89,170	C,F,G,H			
Sri Lanka	ALA	3,279	9.61	0.5	19,390	C*,F			
St. Kitts and Nevis	ACP	N/A	N/A	N/A	40	B			
St. Lucia	ACP	N/A	N/A	N/A	90	B,F			

St. Vincent and the Grenadines	ACP	N/A	N/A	N/A	60	B,F			
Sudan	ACP	664	5.39	0.2	**616,270**	A,C,D,F,I			
Suriname	ACP	4,178	N/A	N/A	141,130	B,F			
Swaziland	ACP	3,987	N/A	N/A	5,220	E,F			
Syria	MEDA	4,454	48.06	3.0	4,680	C,D,F			
Tajikistan	TACIS	1,031	5.71	0.9	4,000	F			
Tanzania	ACP	501	2.20	0.1	**388,110**	A,C,D,F,I			
Thailand	ALA	6,132	**155.82**	2.5	147,620	C*,F,G			
Togo	ACP	1,410	0.88	0.2	5,100	A,C,D,F			
Tonga	ACP	N/A	N/A	N/A	40	B			
Trinidad & Tobago	ACP	8,176	15.62	**12.1**	2,590	B,F,H			
Tunisia	MEDA	5,957	16.71	1.8	5,100	C,D,F			
Turkmenistan	TACIS	3,347	33.85	**7.3**	37,550	F,H			
Tuvalu	ACP	N/A	N/A	N/A	N/A	A, B			
Uganda	ACP	1,167	N/A	N/A	41,900	A,D,F			
Uruguay	ALA	8,879	6.78	2.0	12,920	F			
Uzbekistan	TACIS	2,251	**117.52**	**4.8**	19,690	F,G,H			
Vanuatu	ACP	N/A	N/A	N/A	4,470	A,B			
Venezuela	ALA	5,495	**120.03**	**5.1**	**495,060**	C,F,G,H,I			
Vietnam	ALA	1,860	36.56	0.5	98,190	C*,F			
West Bank and Gaza Strip	MEDA	N/A	N/A	N/A	N/A	C,D			
Yemen	ALA	806	8.58	0.5	4,490	A,D,F			
Yugoslavia, Federal Republic of	CARDS	N/A	N/A	**4.0**	28,870	C,H			
Zambia	ACP	756	1.89	0.2	**312,460**	A,F,I			
Zanzibar	ACP	N/A	N/A	N/A	N/A	C			
Zimbabwe	ACP	2,876	13.65	1.1	190,400	E,F			

Indicators for adaptation, mitigation and conservation needs

A: Low socio-economic ability to adapt (LDC) (Source: UNCTAD http://www.unctad.org/en/pub/ldcprofiles2001.en.htm)

B: Low physical ability to adapt: Member of AOSIS (Source: SIDSnet http://www.sidsnet.org/aosis/)

C: Major adverse effects of sea-level rise other than SIDS (c* extremely adverse) (Source: CGIAR Annual Report 2000, p. 14).

D: Major adverse crop yield effects due to climate change (Source: CGIAR Annual Report 2000, p. 12).

E: 15 cooperation countries most affected by natural disasters since 1990 (calculation made based on data from EM-DAT, CRED, University of Louvain, Belgium and the World Bank). These 15 countries are the ones with a higher ratio between the cumulative number of population affected by natural disasters from 1990-2001 and the total population.

F: Affected country parties which have submitted reports to the Committee for the Review of the implementation of the Convention (CRIC) to combat desertification.

G: 15 cooperation countries with the largest emissions of CO_2.

H: 15 cooperation countries with the largest per capita emissions of CO_2.

I: Countries with more than 200,000 square kilometres of forest area.

J: Countries interested in inclusion in Annex I or other obligation

Identification of indicative strategic responses

Adaptation: Given partner countries' higher vulnerability to the adverse effects of climate change, priority has been given to this response strategy. This is reflected in that all the countries having at least one of the indicators expressing vulnerability to climate change (A,B,C,D,E) have been identified for adaptation. Naturally, vulnerability to climate change differs from one country to another and the indicators selected attempt to reflect this reality.

Mitigation: Partner countries being major emitters of CO_2, having relatively high per capita CO2 emissions or having expressed an interest in taking on voluntary emission and/or other commitments have been identified for mitigation. For some of these countries an integrated climate approach, i.e. linking mitigation responses with adaptation responses, might also be relevant.

Conservation/sustainable management of ecosystems: Partner countries having high levels of carbon storage in forests have been selected for conservation/sustainable management of ecosystems. For some of these countries an integrated climate approach, i.e. linking conservation responses with adaptation responses, might also be relevant.

Special emphasis on an integrated climate approach could possibly be placed on countries identified for all three response strategies. These countries are Argentina, Brazil, China, India, Indonesia, Mexico and Venezuela.

However, it should be stressed that since these indicative response strategies are only to serve guiding purposes; they certainly do not exclude any country from identifying any additional priority and obtaining development assistance for it. The indicative response strategies should be regularly reviewed, in particular following the results of future negotiations for the 2nd commitment period.

ANNEX III: INFORMATION ON THE SCIENCE AND PROJECTED IMPACTS OF CLIMATE CHANGE[56]

Past trends

- The atmosphere concentration of carbon dioxide has increased by 31% since 1750, from 280 parts per million (ppm) to 367 ppm today. The present CO_2 concentration has not been exceeded during the past 420,000 years and is likely not have been exceeded during the past 20 million years.

- The global average temperature has increased by 0.6 °C since 1861. It is very likely that the 1990s were the warmest decade, and 1998 the warmest year, since 1861. Data from tree-rings, coral reefs, ice cores and historical records indicate that the increase in temperature in the 20th century is likely to have been the largest of any century during the past 1000 years. There is new and stronger evidence in the IPCC 3rd Assessment report that most of the warming observed over the last 50 years is attributed to human activities.

- Average sea levels have risen by 10 to 20 cm. Snow cover has decreased by about 10% since the late 1960s in the mid- and high-latitudes of the Northern Hemisphere. It is also very likely that annual duration of lake- and river-ice cover has shortened by about two weeks over the 20th century and that Arctic sea-ice thickness during late summer to early autumn has declined by about 40% in recent decades.

- An increase in precipitation of ½-1% per decade has been measured over most mid- and high latitude areas of the Northern Hemisphere continents. In parts of Africa and Asia, the frequency and intensity of droughts seems to have already worsened.

Future trends[57]

- The global average surface temperature is projected to increase by 1.4–5.8 °C from 1990 to 2100, if action is not taken to reduce emissions.

- Sea levels are projected to rise by between 9 and 88 cm from 1990 levels by 2100.

- Climate change will result in economic losses due to more frequent tropical cyclones, loss of land as a result of rising sea levels and damage to fishing stocks, agriculture and water supplies.

- It will also worsen food security in Africa. A general reduction in potential crop yields is predicted in most tropical and sub-tropical regions making developing countries even more vulnerable to famine and social unrest (or political instability).

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[56] Third Assessment Report of the IPCC (2001).

[57] These projected changes are not taking into consideration the possibility described by the IPCC of further large-scale and irreversible impacts (further climate destabilisation, temperature changes and sea-level rises of much larger magnitude) due to the release of terrestrial carbon from permafrost regions, methane from hydrates in coastal sediments or the disintegration of major ice sheets, for which the likelihood is difficult to assess.

- The number of people living in countries that are water-stressed will increase massively, from 1.7 billion people (one-third of the world's population) to around 5 billion by 2025 (depending on the rate of population growth). This will affect drinking water supplies and irrigation for agriculture.

- There will be an increase in the geographic spread of potential transmission of malaria and dengue fever, which already impinge on 40-50 % of the world's population.

ANNEX IV: SUMMARY OF THE INTERNATIONAL CLIMATE CHANGE PROCESS

United Nations Framework Convention on Climate Change (UNFCCC)

The Intergovernmental Panel on Climate Change (IPCC) was established under UN auspices in 1988 in order to provide a scientific assessment on climate change. Its findings, published in its first assessment report in 1990, prompted the negotiations of what would become the United Nations Framework Convention on Climate Change (UNFCCC).

The UNFCCC was signed by 154 countries at the Earth Summit in Rio in June 1992. It came into effect on 21 March 1994 and it represents a concerted effort to tackle global warming occurring as a result of human-induced (anthropogenic) climate change (CC).

Its ultimate objective is the "stabilisation 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"[58].

Under the Convention, both developed and developing countries agree to develop and submit inventories on greenhouse gas emissions by sources and removals by "sinks" (such as forests which absorb carbon dioxide) and report on measures taken to implement the convention. Parties should also adopt national CC mitigation programmes and adaptation strategies; promote technology transfer; co-operate on scientific and technical research; and promote public awareness, education and training.

The Convention makes several references to the special situation of developing countries. In its guiding principles it employs the concept of common but differentiated responsibilities and capabilities, requiring developed countries to take the lead in combating CC. Other principles deal with the special needs of developing countries in their aspirations for economic development and the importance of encouraging sustainable development. Furthermore, the precautionary principle should be applied, meaning that Parties should not abstain from implementing measures to prevent, mitigate or adapt to climate change in the absence of full scientific certainty if the possible damage is serious or irreversible.

Although both developed and developing countries undertake a number of general commitments, specific commitments regarding greenhouse gas emission reduction are only delegated to developed countries. These should, individually or jointly, aim to returning to 1990 greenhouse gas emission levels by 2000. Moreover, under the Convention developed countries are to promote and finance technology transfer to DCs and assist those which are particularly vulnerable to the adverse effects of climate change in meeting the costs for adapting accordingly, in particular Small Island Developing States (SIDS) and LDCs.

Financial mechanism of the UNFCCC: Article 11 of the Convention defines a mechanism for the provision of financial resources to developing countries on a grant or concessional basis, including for the transfer of technology. In 1998, the Conference of the Parties to the UNFCCC designated the Global Environmental Facility (GEF) which also assists developing countries in the areas of biological diversity, ozone and water management, as the operating entity of the financial mechanism. For climate change, the GEF meets the agreed full costs associated with monitoring and reporting obligations like for the preparation of National Communications, but it also meets the incremental costs of investment projects which have additional benefits for climate change, i.e. mitigation and sequestration. At COP 7, Parties adopted a decision that expands the scope of activities eligible for funding under the GEF, including those related to adaptation and capacity-building (in particular for disaster preparedness).

[58] Article 2 of the UNFCCC.

Furthermore, according to Article 4 so-called Annex II Parties[59] (developed countries) shall provide new and additional financial resources to cover (i) the full costs related to DCs inventory and reporting obligations and (ii) the agreed full incremental costs incurred by DCs in the implementation of their other commitments. For this purpose, the Convention establishes a financial mechanism, which is to be operated by the Global Environmental Facility (GEF) which is jointly managed by the World Bank, the UNDP and the UNEP.

It should be noted that, in addition to the original funding mechanism, two new Funds have been established under the UNFCCC as a result of recent negotiations – these are the Special Climate Change Fund and the Least Developed Country Fund. Furthermore, a political declaration was made by the EU+[60] group at the resumed sixth session of the Conference of the Parties in Bonn in July 2001 in which the group pledged € 450 million per year by 2005 in climate change funding for DCs.

Other UNFCCC Funds: At the resumed session of the Sixth Conference of the Parties to the UNFCCC (COP6bis, Bonn, July 2001), Parties agreed that predictable and adequate levels of funding should be made available to developing countries and recognise the need for funding that is new and additional to existing financial resources. As a result, parties agreed upon the creation of two new funds under the UNFCCC, in addition to the original financial mechanism:

A special climate change fund (SCCF) to finance activities in the following areas: adaptation to climate change; technology transfer; energy, transport, industry, agriculture, forestry and waste management; and activities to assist fossil-fuel dependent developing countries to diversify their economies[61].

A least developed countries fund (LDCF) to support a work programme for these countries, which shall include *inter alia* National Adaptation Programmes of Action (NAPAs).

Both the SCCF and the LDCF will be operated by the Global Environment Facility (GEF).

Kyoto Protocol (KP)

The Kyoto Protocol (KP) to the UNFCCC was adopted in December 1997 at the 3rd session of the Conference of the Parties (COP) in Kyoto, Japan, but has not yet entered into force. To date, 76 countries plus the EC and its Member States have already ratified it.

The KP represents a strengthening of the existing commitments laid down in the UNFCCC, particularly for the developed countries given their greater historical and current share of greenhouse gas emissions. As a matter of fact, it outlines binding quantified emission reduction targets that pertain solely to developed country Parties or so-called Annex I Parties[62]. These countries are required to reduce their collective emissions of six greenhouse gases (GHGs)[63] by 5% in relation to the 1990 level for the period 2008-2012 (the first commitment period). The EU Member States adopted in June 1998

59 Australia, Austria, Belgium, Canada, European Community, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the UK, and the US.

60 Austria, Belgium, Canada, Denmark, European Community, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK.

61 The fund shall be financed by contributions from Annex II countries and other countries in a position to contribute.

62 Essentially the countries listed in Annex II and countries with economies in transition.

63 The GHGs of concern are carbon dioxide, methane and nitrous oxide, which are naturally occurring gases, and three industrially produced fluorocarbons.

the "burden-sharing agreement" in which they agreed to internally distribute the collective EU reduction obligation of 8 %.

In order to encourage and facilitate the implementation of their emission reduction commitments, Annex I Parties have at their disposal so-called flexible mechanisms, created with a view to promoting the achievement of emissions reductions in a cost-effective way. These flexible mechanisms are: Emissions Trading (ET), Joint Implementation (JI), and the Clean Development Mechanism (CDM).

Emissions Trading will allow Annex I countries or enterprises within these countries to trade emission allowances between themselves in order to meet their national targets. Under Joint Implementation Annex I countries can gain Emission Reduction Units by investing in emissions-reducing projects in other developed countries. The aim of the Clean Development Mechanism is to further sustainable development in DCs while at the same time assist developed countries in meeting their commitments under the Protocol. The CDM will allow developed countries to gain Certified Emission Reductions by financing emissions-reducing projects in developing countries. The Certified Emission Reductions will then in turn help the developed countries in meeting their own emission reduction targets. Consequently, the Clean Development Mechanism is of particular relevance with respect to developed-developing country relations and co-operation.

Financing of projects through the Kyoto project-based mechanisms, in particular the Clean Development Mechanism (CDM)[64]: The Kyoto Protocol allows developed countries to use emission credits generated through the so called Kyoto project-based mechanisms, namely Joint Implementation (JI, for projects taking place in developed countries) and the Clean Development Mechanism (CDM, for projects in developing countries), to partly meet their emission reduction targets. Emission credits can only accrue if the emission reductions achieved through the project are additional to what would have happened in the absence of the activity (environmental additionality). JI and CDM projects are primarily to be driven by the private sector. The CDM has the two-fold goal of both contributing to the ultimate objective of the UNFCCC and assisting developing countries in achieving sustainable development. The CDM will be supervised by an Executive Board, which was established at COP7.

Already now, before the Kyoto protocol enters into force, project-based activities can be eligible under the CDM and generate credits. These credits will have a value since governments can purchase them to meet their Kyoto targets or entities can use them to fulfil their domestic obligation to reduce emissions at lower cost. This makes the CDM providing an economic incentive for greening Foreign Direct Investment. As such, and taking account the environmental additionality requirement laid down by the Kyoto Protocol, the CDM is expected to be a good vehicle for the transfer of clean and modern technologies in developing countries while delivering real development benefits.

Finally, the Protocol reiterates the obligation to provide new and additional financial resources. As a result of recent negotiations, a new Fund entitled the Adaptation Fund[65] has been established under the KP and most recently at the COP-7 in Marrakech (29 October - 10 November 2001), decisions were taken on the operational structure of the mechanisms that will allow the immediate start for CDM projects and the start of JI projects and ET from 2008.

At the Seventh Conference of the Parties to the UNFCCC held in Marrakech (November 2001) Parties also adopted the Marrakech Ministerial Declaration recognising that the World Summit on Sustainable Development provides an important opportunity for addressing the linkages between climate change and sustainable development. The Marrakech Declaration puts a particular emphasis on the need to

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64 At COP-7 in Marrakech (29 October - 10 November 2001), decisions were taken on the operational structure of the mechanisms that will allow the immediate start for CDM projects and the start of JI projects from 2008.

65 This Fund is to finance concrete adaptation projects and programmes, but only in DCs that are Parties to the Protocol, with a special attention given to LDCs and SIDS. The UN agencies will implement the projects. The fund shall receive its financing from the share of proceeds of the CDM (2% of CDM credits generated by each CDM project) and from other sources.

maximise synergies between the UN Conventions on Climate Change, Biological Diversity and Desertification and stresses the importance of capacity building as well as of developing and disseminating innovative technologies in respect of key sectors of development.

ANNEX V: OTHER INTERNATIONAL INITIATIVES RELATING TO CLIMATE

Vienna Convention: The Vienna Convention for the Protection of the Ozone Layer was formulated as a framework Convention to address the problem of ozone depletion. It was negotiated under the auspices of the UNEP, was signed in 1985, and entered into force in 1988.

The Convention establishes a framework for the adoption of necessary measures to "protect human health and environment against adverse effects resulting from human activities which modify or are likely to modify the Ozone Layer"[66].

Although the Convention does not elaborate specific measures, target-substances or time frames it acts as a thrust in encouraging research, co-operation among countries and exchange of information in the context of ozone protection.

Montreal Protocol: The Montreal Protocol on Substances that Deplete the Ozone Layer was signed in 1987 and came into effect in 1989. There are 183 Parties to the Protocol including the European Community. Not all Parties have yet adopted the successive amendments which have tightened the provisions of the Protocol. The agreement sets out specific legal obligations for the progressive reduction and ultimate elimination of the production and consumption of ozone-depleting substances (ODS), or so-called controlled substances[67]. Timetables for their phase out were initially established for developed countries and for countries with economies in transition.

Furthermore, the Protocol sets out measures to control trade in controlled substances and discourages trade in the technology associated with their production and use. The Protocol has thus far been modified five times[68], and its provisions progressively strengthened.

Under the Montreal Protocol certain developing countries[69] were initially given less stringent compliance criteria. For example, DCs having an annual consumption of controlled substances inferior to 0.3 kg per capita (later reduced to 0.2 kg) were allowed to delay compliance for ten years. The expiry of the grace period and the successful phasing out of many of the ODS in developed countries means that the accent will increasingly be on developing countries in future implementation of the Protocol.

DCs are the beneficiaries of a mechanism for the provision of financial and technical co-operation, including the transfer of technologies. The financial mechanism is intended to meet the agreed incremental costs required for implementation and compliance by DCs. The mechanism includes a Multilateral Fund that is financed by contributions from the developed countries and governed by a board where developing and developed countries have equal voting rights.

Convention on Biological Diversity: The Convention on Biological Diversity (CBD) was adopted at the Earth Summit in 1992 and came into force in 1993. It currently has 183 Parties including the European Community.

The concept of biological diversity covers both the variety of plants, animals and micro-organisms (approximately 1.75 million species have thus far been identified out of an estimated 3 to 100 million) as well as genetic differences within each species. The variety between and within different ecosystems is yet another aspect of biodiversity.

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66 Article 2 of the Vienna Convention.

67 In particular chlorine atoms originating from chlorofluorocarbons (CFCs) which destroy ozone molecules. Subsequent amendments to the Protocol have added additional CFCs, carbon tetrachoride, methylchloroform, methyl bromide, hydrobromofluorocarbons (HBFCs) and hydrochlorofluorocarbons (HCFCs used to be a substitute for CFCs).

68 London (1990), Copenhagen (1992), Vienna (1995), Montreal (1997) and Beijing (1999).

69 Those developing countries operating under Article 5.1.

The Convention combines the twin concerns for biodiversity conservation and human development, recognising that biological diversity is largely seen as a resource for humans and that it therefore needs to be conserved and used in a sustainable manner.

The Convention has three main objectives: the conservation of biodiversity; the sustainable use of its components; and fair and equitable sharing of benefits arising from commercial and other utilisation of genetic resources. It recognises that states have sovereign rights over their own biological resources and states that access to such resources shall only be granted on mutually agreed terms and subject to prior informed consent of the country providing the resources. This is of a particular importance for DCs having diverse biological resources and rich indigenous knowledge of how to conserve and use biodiversity in a sustainable way.

Under the Convention, all Parties agree to develop National Biodiversity Strategies or Action Plans, identify and monitor components of biological diversity and implement measures and incentives for their conservation and sustainable use; co-operate in technical and scientific research and information dissemination; enhance education and public awareness; and prepare national reports on efforts to implement the commitments of the Convention.

The special situation of developing countries is clearly recognised in the Convention and there are specific references to the provision of new and additional financial resources and access to relevant technologies, so as to enable DCs to meet the agreed full incremental costs of implementing their commitments. In fact, effective implementation in DCs is stated as being contingent upon the provision by developed country Parties of necessary financial resources and technology transfer. The Global Environment Facility (GEF) is the body charged with the operation of the financial mechanism that makes available financial resources to developing countries.

The Commission adopted a Community Biodiversity Strategy in February 1998 and this has subsequently been reinforced through four sectoral Action Plans covering Agriculture, Fisheries, Nature Protection within the EU as well as Economic and Development Cooperation These have all been endorsed by relevant Councils. The Development Action Plan (text at http:/biodiversity-chm.eea.eu.int).provides a blue print for mainstreaming biodiversity objectives into Community development strategies and policy dialogue. It takes account of guiding principles and guidelines adopted under the Convention. The Development Council adopted Conclusions on 8 November 2001 welcoming the Action Plan and pointing to the links between biodiversity conservation and poverty reduction.

United Nations Forum on Forests (UNFF): Due to the political sensitivity surrounding issues such as national sovereignty and land tenure, as well as the fact that sustainable forest management has to be adapted to local circumstances there is, as yet, no global Convention on forests. Instead, the international consensus on the protection and sustainable management of forests was first set out in the context of the United Nations Conference on Environment and Development (UNCED) notably in Agenda 21 (Chapter 11), and the "Forest Principles"[70], as well as in the forest elements of the Convention on Biological Diversity and the Framework Convention on Climate Change.

In the wake of the UNCED the intergovernmental process on forest policy dialogue did however pick up speed. In April 1995 the United Nations Commission on Sustainable Development established the Intergovernmental Panel on Forests (IPF) which by the end of its two-year mandate had negotiated over 100 Proposals for Action on issues related to sustainable forest management. The IPF was succeeded in 1997 by a further two-year process, the Intergovernmental Forum on Forests (IFF). This was to promote and facilitate the implementation of the IPF proposals, consider matters pending from the IPF process (issues related to finance and technology transfer, trade and environment), and debate the question of institutions and legal instruments.

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[70] Complete title: "Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests".

The United Nations Forum on Forests (UNFF) was established at the fourth session of the IFF in 2000 as a subsidiary body to the UN Economic and Social Council (ECOSOC). It is very much an international environmental process designed to build confidence and consensus rather than a legally binding MEA. Its objective is to promote "the management, conservation and sustainable development of all types of forests, and to strengthen long-term political commitment to this end"[71]. To achieve this aim the UNFF is to promote and facilitate the implementation of the IPF/IFF Proposals for Action and mobilise the financial, technical and scientific resources needed to this end. Through its role as an arena for continued policy development and dialogue the UNFF is also expected to enhance and foster co-operation efforts, monitor and assess progress in implementing the Proposals and strengthen political commitment to sustainable forest management.

The UNFF will reconsider the contentious issue of the need and potential scope for a legally binding instrument on forests during its fifth session which is scheduled for 2005 and will also then review its own effectiveness.

United Nations Convention to Combat Desertification (UNCCD): The Convention to Combat Desertification was opened for signature in October 1994 and came into effect in December 1996. It currently has 179 Parties including the European Community. The Convention defines desertification as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities"[72]. Despite having initially been perceived as a regional problem, the global dimension of desertification is increasingly being acknowledged. The Convention develops a bottom up approach, especially in its provisions for the National Action Programmes (NAPs), in which it seeks to combine traditional and innovative methods to combat desertification while involving all relevant stakeholders (local populations, NGOs, resource users such as farmers and pastoralists) in the formulation, decision-making, implementation and review process. Successive Conferences of the Parties of the UNCDD have increasingly recognised the need to integrate NAPs into broader national strategies for sustainable development and to ensure enhanced co-ordination and synergies with other relevant MEAs and activities such as CBD, UNFCCC, UNFF.

The two main objectives of the UNCCD are (i) to combat desertification and mitigate the effects of drought, and (ii) to achieve sustainable development in affected areas. This is to be achieved by way of an integrated approach which addresses the physical, biological and socio-economic aspects of desertification as well as strategies for poverty eradication.

The general obligations of all Parties to the Convention include promoting and strengthening co-operation at all levels[73]; promoting the integrated approach and the integration of poverty reduction strategies into efforts to combat desertification and efforts to mitigate the effects of drought, giving due attention to the situation of affected DC; and promoting the use of existing multi- and bi-lateral financing mechanisms that mobilise and channel significant financial resources to affected DC Parties in combating desertification.

The Convention is the only MEA to have a well developed regional dimension. All countries affected by desertification are grouped into five Annexes. While priority is given to African countries[74] (Annex I), other affected countries are grouped into four additional Annexes: Asia; Latin America and the Caribbean; Northern Mediterranean; Eastern Europe. Four EU Member states, Portugal, Spain, Italy and Greece are members of the northern Mediterranean Annex and several of the candidate countries are potential members of the new Eastern European Annex. Members of different Annexes have agreed specific provisions in addition to the basic Convention text amongst themselves and efforts are made by the Secretariat and others to promote regional and sub-regional implementation.

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71 UN ECOSOC Resolution E/2000/35, contained in E/2000/INF/2/Add.3.

72 Article 1 a of the UNCCD.

73 At sub-regional, regional, international and inter-governmental levels.

74 Art 7 of the Convention

Under the Convention there are additional obligations for Parties depending on whether they are classified as "affected" or "developed" country Parties. Affected Parties are required primarily to strengthen their legal framework (establish new laws when appropriate); develop and implement strategies and National Action Programmes to combat desertification and mitigate the effects of drought; promote awareness and facilitate broad local participation; and give due priority to combating desertification including in the allocation of resources.

The additional obligations of developed country Parties pertain entirely to relations with DCs, in particular with respect to the provision of financial resources and the mobilisation of new and additional funding (including from the private sector) to support and assist DCs in implementation. Furthermore, developed country Parties are to promote access by DCs to technology, knowledge and know-how.

Although there is currently no dedicated financing source for the Convention[75], there is a fund-raising/clearinghouse facility called the Global Mechanism, which is housed by the International Fund for Agricultural Development (IFAD). Its operation is carried out by a Facilitation Committee, which is composed of representatives of IFAD, UNCCD Secretariat, World Bank, UNDP, UNEP, GEF Secretariat, FAO and regional development banks[76].

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal: During the 1970s the export of hazardous wastes (i.e. toxic, poisonous, explosive, corrosive, flammable, eco-toxic or infectious wastes) to developing countries increased as some developed countries preferred to dispose of their waste outside their borders. However, many developing countries lacked adequate disposal facilities or the knowledge and capacity to manage hazardous wastes safely. In response to the lobbying of some developing countries and growing international concerns the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted in 1989 and came into effect in 1992. It now has 150 Parties including the European Community.

The Convention does not prohibit the transfer of hazardous wastes, but aims instead to regulate it by way of a strict operational control system which applies to all transboundary movements of hazardous wastes. The system is based on a prior written notification procedure on the part of the exporting state and the requirement of prior written consent from the state of import before any transboundary movement of hazardous wastes can take place. Furthermore, Parties under the Convention are to ensure that hazardous wastes are managed and disposed of in an environmentally sound manner. Hazardous wastes may not be exported to or imported from a non-party country.

Under the Convention, Parties are required to reduce transboundary movements of hazardous wastes to a minimum, treat and dispose of such wastes as close as possible to the source of generation, and reduce and minimise waste generation at source. The Convention also provides for co-operation in the monitoring and prevention of illegal traffic; the provision of assistance, particularly to developing countries; for the environmentally sound management of hazardous wastes and in the development of technical Guidelines and/or Codes of Practice. Furthermore, Parties should establish regional or sub-regional centres for training and technology transfer and decide on the establishment of appropriate voluntary funding mechanisms. The Convention itself predates the establishment of the Global Environment Facility and does not have its own financial mechanism.

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75 The possibility of providing funds for land degradation related projects through the GEF is one of the topics to be discussed at the GEF Assembly in October 2002.

76 These are: the African Development Bank (AfDB), the Asian Development Bank (AsDB), and the Inter-American Development Bank (IDB).

A ban on all forms of hazardous wastes exports intended for recovery, recycling and final disposal from OECD to all non-OECD countries was agreed at COP-2[77] in 1994 and was integrated into the Convention as an Amendment[78] the following year at COP-3. The ban has not yet entered into force[79].

A Protocol on Liability and Compensations for Damage Resulting from Transboundary Movements of Hazardous Waste and its Disposal was adopted at COP-5 in 1999 but has not yet entered into force. The Protocol establishes strict liability on the notifier (i.e. liability without the need to establish fault) and an obligation to insure against this liability.

[77] Decision II/12

[78] Decision III/1.

[79] So far only 30 of the necessary 62 instruments of ratification have been deposited

ANNEX VI: CLIMATE CHANGE RELEVANT PROJECTS FINANCED UNDER THE FIFTH FRAMEWORK PROGRAMME FOR RESEARCH

A. Climate change prediction and scenarios

1. Development of a European multi-model ensemble system for seasonal to interannual prediction

2. Detection of changing radiative forcing over the recent decades

3. European project on cloud systems in climate models

4. Metrics of climate change

5. Parameterisation of the aerosol indirect climatic effect

6. Mechanisms and predictability of decadal fluctuations in Atlantic-European climate

7.Predictability and variability of monsoons, and the agricultural and hydrological impacts of climate change

8. Solar influences on climate and the environment

9. Arctic ice cover simulation experiment

10. High-resolution continental paleoclimate record from lake Baikal: A key-site for Eurasian teleconnections to the North Atlantic Ocean and monsoonal system

11. Greenland sea convection mechanisms and their climatic implications

12. European project for ice coring in Antarctica

13. Late holocene shallow marine environments of Europe

14. Pole-ocean-pole: global stratigraphy for millennial climate variability

15. Tracer and circulation in the nordic seas region

16. Cirrus microphysical properties and their effect on radiation: Survey and integration into climate models using combined satellite observations

17. Climatological database for the world's oceans 1750-1850

18. Development of European pilot network of stations for observing cloud profiles

19. A forty-year European re-analysis of the global atmosphere

20. European component of gewex surface radiation budget

21. Evaluation of the climatic impact of dimethyl sulphide

22. System for observation of greenhouse gases in Europe

B. Impacts and Vulnerability

1. Assessing climate change effects on land use and ecosystems: from regional analysis to the European scale

2. Vulnerability assessment of shrubland ecosystems in Europe under climatic changes

3. The future of the tropical forest carbon sink

4. The European dimension of the global observation research initiative in alpine environments - a contribution to gtos

5. Biogenic volatile organic compound (bvoc) emission of European forests under future CO2 levels: influence on compound composition and source strength

6. European project on stratospheric processes and their impact on climate and the environment

7. Interhemispheric differences in cirrus properties from anthropogenic emissions

8. Influence of stratosphere-troposphere exchange in a changing climate on atmospheric transport and oxidation capacity

9. Aircraft emissions: contribution of different climate components to changes in radiative forcing-trade-off to reduce atmospheric impact

C. Mitigation and Adaptation

1. Climate change and adaptation strategies for human health in Europe

2. Dynamic and interactive assessment of national, regional and global vulnerability of coastal zones to climate change and sea-level rise

3. Greenhouse gas emission control strategies

4. Implementing the Kyoto mechanisms - contributions by financial institutions

5. Institutional interaction - how to prevent conflicts and enhance synergies between international and EU environmental institutions

6. Procedures for accounting and baselines for projects under joint implementation and the clean development mechanism

7. Strategic integrated assessment of dynamic carbon emission reduction policies

8. Response strategies to climatic change in management of European forests

9. Climate change policy and global trade

11. Procedures for accounting and baselines for projects under joint implementation and the clean development mechanism

12. Regional assessment and modelling of the carbon balance within Europe

13. Mitigation of climate induced natural hazards

14. Systems analysis for progress innovation in energy technologies

15. Assessing climate response options: policy simulations – insights from using national and international models

16. Greenhouse gas emission control strategies

17. New econometric model for environment and strategies implementation for sustainable development

ANNEX VII: ADAPTATION NEEDS AND OPTIONS

Adaptation refers to all those responses that may be used to reduce vulnerability to climate change. It involves individual and collective coping and risk management strategies including adjustment in practices, processes or structures of systems (natural, human managed and human made). Adaptation can be autonomous or planned, reactive or anticipatory.

Vulnerability is the combination of the sensitivity of people and systems (natural, human managed and human made) to adverse environmental and socio-economic effects of climate change, involving both gradual changes in climatic conditions and extremes, and their ability to cope with them.

Vulnerability involves risk and attendant exposure. Enhancing security means reducing vulnerability by reducing or mitigating risks, i.e. by risk management.

Climate change impact and vulnerability assessments[80] provide a basis for, or sometimes integrate, the identification and assessment of possible options for planned adaptation. Given that ecological, social and economic effects of climate change are projected to be both place-specific and interrelated, adaptation to climate change will have to accommodate these complexities in order to be effective. Moreover, adaptation will have to address both gradual changes in average climatic conditions and climate variability and extremes. Both people and all types of systems are generally more vulnerable to sudden disruptive changes than to gradual ones; therefore adaptation options should also take into account disaster preparedness and prevention.

Vulnerability is also linked to socio-economic adaptive capacity (or capacity to cope), which in turn is determined by factors such as economic resources and other assets, technology and information and the skills needed to use them, infrastructure and stable and effective institutions. Many partner countries are however poorly endowed with these attributes and are consequently highly vulnerable to climate change.

Some generic objectives for adapting to climate change are: (i) improving the robust design of infrastructure and long-term investments; (ii) increasing the flexibility of vulnerable managed systems (e.g. changing activity or location); (iii) enhancing the adaptability of vulnerable natural systems (e.g. reducing non-climatic stresses); (iv) reversing trends that increase vulnerability (e.g. slowing development in vulnerable areas such as flood-plains and coastal zones); and (v) improving the preparedness and awareness of society.

Some areas for adaptation to climate change are natural resources management (water resources, coastal resources, forest resources), related productive sectors (agriculture, forestry, fisheries), infrastructures and human settlements, and human health. Below follows some possible options for adaptation in four specific sectors.

Water resources: *Supply adaptation*: (i) modification of existing physical infrastructure; (ii) construction of new infrastructure; and (iii) alternative management of the existing water supply systems. *Demand adaptation*: (i) conservation and improved efficiency; (ii) technological change; and (iii) market/price-driven transfers to other activities.

Coastal zones (in response to sea level rise): (i) strategic retreat from or prevention of future major developments in coastal areas that may be affected by sea level rise; (ii) continued but altered usage of the land, including adaptive responses such as elevation of buildings, modification of drainage systems, and land-use changes; (iii) defensive measures seeking to maintain shorelines in their present position either by building or strengthening protective structures or by artificially nourishing or maintaining beaches and dunes.

[80] Climate change impact assessments are often based on quantitative models analysing the relationship between climatic variables and selected impact sectors.

Agriculture: (i) altered choice of crops (quicker/slower maturing varieties, drought/heat resistant crops, pest resistant crops, mix of crops); (ii) altered tillage, timing of operations and crop husbandry (row and plant spacing, intercropping); (iii) alteration of inputs (irrigation, fertilisers, chemical control).

Forests: (i) change the species or varieties planted and harvested (drought/heat resistant tree cultivars); (ii) increased investment in fire prevention; (iii) control of the spread of new diseases.

Source: UNEP/IVM (1998) Handbook *on Methods for Climate Change Impact Assessment and Adaptation Strategies*.

ANNEX VIII: MITIGATION NEEDS AND OPTIONS

Mitigation is usually defined as an intervention to reduce anthropogenic emissions of greenhouse gases. The type, magnitude, timing and costs of mitigation depend on different national circumstances, socio-economic and technological development paths, and the desired level of GHGs. Development paths leading to low emissions depend on a wide range of policy choices and require major policy changes in areas other than climate change. National responses to climate change can be more effective if deployed as a portfolio of policy instruments to limit or reduce greenhouse gas emissions. Such portfolio may include - emissions/carbon/energy taxes, provision and/or removal of subsidies, deposit/refund systems, technology or performance standards, energy mix requirements, product bans, voluntary agreements, government spending and investment.

Running counter to the technological and economic potential for GHG emissions reduction are rapid economic development and accelerating change in some socio-economic and behavioural trends that are increasing total energy use in developing countries. The average annual energy use growth rate between 1990 to 1998 in developing countries was 2.3 – 5.5%.

Options for mitigation technology adoption in developing countries lie in price rationalisation, increased access to data and information, availability of advanced technologies, financial resources, and training and capacity building. Opportunities for any given country might be found in the removal of any combination of barriers.

Mitigation options can be explored in all sectors of the economy. As far as developing countries are concerned, the greater potential emission reductions through mitigation activities with good ancillary benefits in terms of sustainable development primarily exist in the areas of energy supply, energy use and transport.

Energy: At least up to 2020[81], energy supply and conversion will remain dominated by relatively cheap and abundant fossil fuels. However, new and clean technologies should be promoted already in order to anticipate the long-term effect of climate change. Greenhouse gas emissions can be reduced through fuel switching (from coal to gas for example), conversion efficiency improvement, greater use of combined cycle and/or co-generation plants, and the promotion of renewable energy sources (wind, solar, geothermy…). Low-carbon energy supply systems can make an important contribution through sustainable biomass from forestry and agricultural by-products, municipal and industrial waste to energy, reuse of methane from landfills, wind energy and hydropower. For the energy sector, almost all greenhouse gas mitigation and concentration stabilisation scenarios are characterised by the introduction of efficient technologies for both energy use and supply, and of low- or no-carbon energy. Transfer of technologies between countries and regions will widen the choice of options at the regional level and economies of scale and learning will lower the costs of their adoption.

Since the late 1980s, energy use and related CO2 emissions from buildings in the developing countries have grown about five times as fast as the global average. Energy use per capita is higher in the residential sector than in the commercial sector in all regions. In developing countries, cooking and water heating dominate residential energy use, followed by lighting, small appliances and refrigerators. Intensity of electrical appliance use is increasing. Continued reduction or stabilisation in retail energy prices throughout large portions of the world reduces incentives for the efficient use of energy or the purchase of energy efficient technologies in all sectors.

Transport: CO2 from combustion of fossil fuels is the predominant GHG produced by transport, accounting for over 95% of the annual global warming potential produced by the sector. On a modal basis, road transport accounts for almost 80% of transport energy use. A radical change is also needed in the public transport. New transport technology lead- and life- times, imply that sudden, massive changes in the trends and outlooks described above can be achieved only with determined effort. ‘No

[81] IPCC Special report on Mitigation, 2001.

regrets' operational and infrastructure measures include: expansion of mass transit systems (road to rail), vehicle efficiency improvement through maintenance and inspection programmes, improved traffic management, paving roads, fuel pipeline installation, infrastructure provision for non-motorised transport, increased use of biomass ethanol and natural gas.

Finally, land use, land use change and forestry options (forests, agricultural lands, and other terrestrial ecosystems) offer significant carbon conservation and sequestration potential, especially in the tropics. Conservation and sequestration of carbon may allow time for other options to be further developed and implemented. Biological mitigation can occur by three strategies: (a) conservation of existing carbon pools, (b) sequestration by increasing the size of carbon pools, and (c) substitution of sustainable produced biological products, e.g. wood for energy intensive construction products and biomass for fossil fuels. Conservation of threatened carbon pools may help to avoid emissions, if leakage can be prevented, but are only sustainable if the socio-economic drivers for deforestation and other losses of carbon pools can be addressed. In agriculture, methane and nitrous oxide emissions can be reduced, e.g. from livestock enteric fermentation, rice paddies, nitrogen fertiliser use and animal wastes.