

## Climate Challenges to Africa: A Call for Action

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*"The poorest developing countries will be hit earliest and hardest by climate change, even though they have contributed little to causing the problem. Their low incomes make it difficult to finance adaptation. The international community has an obligation to support them in adapting to climate change. Without such support, there is a serious risk that development progress will be undermined."*

The Stern Review, 2006

*This document has been prepared by the APF Support Unit for discussion during Session 1 on "Environmental Issues and Climate Change" at the 10<sup>th</sup> Meeting of the Africa Partnership Forum in Tokyo on 7-8 April 2008*

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## Key Reference Materials

United Nations Economic Commission for Africa and African Union Commission Report, Climate Change: African Perspectives for a Post-2012 Agreement

<http://www.uneca.org/cfm/2008/docs/ClimateChange.pdf>

United Nations Climate Change Conference 2007 Bali Action Plan:

[http://unfccc.int/files/meetings/cop\\_13/application/pdf/cp\\_bali\\_action.pdf](http://unfccc.int/files/meetings/cop_13/application/pdf/cp_bali_action.pdf)

International Panel on Climate Change Fourth Assessment Report:

<http://www.ipcc.ch/ipccreports/ar4-syr.htm>

UNDP Human development Report 2007/2008 :

<http://hdr.undp.org/en/reports/global/hdr2007-2008/>

OECD Environmental Outlook to 2030

[www.oecd.org/environment/outlookto2030](http://www.oecd.org/environment/outlookto2030)

The Stern Review on the Economics of Climate Change:

[http://www.hm-](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

[treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

## Background papers

The Impact of Climate Change on Achieving the MDGs

Summary of Relevant International Commitments and their Delivery

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*This text may be used free of charge for the purposes of advocacy, campaigning, education, and research, provided that the source is acknowledged in full. In the event, the Africa Partnership Forum Support Unit requests that all such use be registered for impact assessment purposes (please e-mail [Vanessa.Vallee@oecd.org](mailto:Vanessa.Vallee@oecd.org)).*

*This paper and its accompanying annexes may be found on the APF website at: [www.africapartnership.org](http://www.africapartnership.org).*

# Climate Change and Africa

## *EXECUTIVE SUMMARY*

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African leaders expressed their grave concern at the impact of climate change at the 8<sup>th</sup> Ordinary Session of the African Union in January 2007, calling on member states and Regional Economic Communities to integrate climate change considerations in their development strategies, and on development partners for their support. This concern was reiterated at successive meetings throughout the year, including the 8<sup>th</sup> meeting of the APF in May, and culminating in the UN Framework Convention for Climate Change meeting in Bali in December, and agreement on a 'Bali Action Plan' identifying 5 topics to be addressed in the international negotiating process over 2008-2009.

2. Although Africa is the continent least responsible for climate change, it is acutely vulnerable to its adverse effects – on economic growth and sustainable development, on poverty reduction, on human security, and on the prospects for achieving the Millennium Development Goals (MDGs). The impacts range from energy shortages, reduced agricultural production, worsening food security and growing malnutrition, to spreading disease, more humanitarian emergencies, growing migratory pressures and increased risk of conflict over scarce land and water resources. Africa is the continent least able to meet the costs of adapting to these impacts, with the greatest need to develop its energy sources, and also with the potential to contribute to global efforts to reduce emissions through its forest resources. Yet it is also the continent which receives least from current carbon finance mechanisms.

3. This paper looks at the impact of climate change in Africa; at the current response; and the key priorities for both the wider international community and for Africa. It has 3 main components:

- ♦ A brief overview under 3 headings: adaptation and risk management; mitigation and clean energy development; finance and other cross-cutting issues (pages 2 – 5);
- ♦ 6 one-page summaries on specific focus areas: water; energy; agriculture, forestry and fisheries; health; peace and stability, and financial mechanisms (pages 6 – 13);
- ♦ 10 'fact boxes': these cover climate change scenarios, the economic impact, the impact on achieving the MDGs, trade and technology transfer, gender, the impact on small-holder farmers, National Adaptation Programmes of Action (NAPAs), a case study on Rwanda, the ClimDev Africa Programme, and the negotiating process in the UNFCCC (pages 14 – 23);

4. The paper is supported by 6 more detailed annexes on the focus areas above, and 2 background papers: a review of current literature on the impact of climate change on achieving the MDGs in Africa; and a summary of relevant commitments made in various international fora and progress in delivering these.

5. Its central conclusion is that urgent action is needed both by the wider international community and by African governments, acting both at national level and through their regional and continental institutions. Its main recommendations are very much in line with the Bali Action Plan, and can be summarised in 10 key points:

### ***Adaptation and Risk Management***

- (i) Substantial additional and predictable financial support from development partners to help meet the additional costs of adaptation, including for the development of climate-related information and early warning systems;
- (ii) Strengthened action to integrate the impact of climate change into national development strategies and existing sector policies (including energy, water, land use and agriculture);
- (iii) Concerted action to build the capacity of national governments in addressing climate risks and joint efforts by Africa and development partners in strengthening regional institutions;

### ***Mitigation and Clean Energy Development***

- (iv) Agreement globally on stronger commitments to reduce greenhouse gas emissions;
- (v) A full recognition of Africa's development needs in any future agreement on emission limitations;
- (vi) Increased support for **clean energy development**, and for **avoiding deforestation**;

### ***Finance and Other Cross-Cutting Issues***

- (vii) Facilitate and promote greater **access to the carbon market and other GHG-friendly activities for Africa**, together with the establishment of **new mechanisms** to provide additional resources from official and concessional sources and through innovative financing mechanisms;
- (viii) Continued efforts to strengthen the business environment in order to attract greater **private sector** investment, including through the Clean Development Mechanism (CDM);
- (ix) More support for **technology transfer** and implementation;
- (x) A strengthened African **voice** in future **international negotiations**.

### Adaptation and Risk Management – ‘Managing the Unavoidable’<sup>1</sup>

#### 6. Although much is still unknown, it is already possible to identify likely changes in Africa’s climate:

(i) Northern and Southern Africa are already warming faster than the global average. Under a medium GHG emissions scenario, Africa is projected to experience an average warming of between 3 to 4 degrees C by the end of this century compared to 1980-99 levels;

(ii) Along with rising temperatures, there is also likely to be increased rainfall variability, more extreme precipitations, and growing water stress. By 2020 between 75 and 250 million people are projected to be at risk of increased water stress. The problem of water scarcity will be particularly acute in North Africa;

(iii) The sea-level will rise. Projections suggest that the number of people at risk from coastal flooding could increase from 1 million in 1990 to 70 million in 2080, forcing major population movements;

(iv) There are likely to be more intense and unpredictable weather events including the increased instance of floods and droughts, more intense tropical cyclones and stronger and more frequent storm surges.

7. Although Africa is not unique in experiencing these changes, it is particularly vulnerable to the effects, because of factors such as its high dependence on rain-fed agriculture, very low capacity for water storage, wide-spread poverty, existing vulnerability to humanitarian emergencies, and weak adaptive capacity. Also, compared to other regions of the world, sub-Saharan Africa is severely constrained by the lack of climate-related information without which it will be difficult to design and implement climate adaptation activities.

(i) Climate change is likely to have a significant impact on the prospects for **economic growth**. Africa’s major economic sectors are vulnerable to climatic change and variability, in particular agriculture where yield per hectare is already on the decline and could be reduced further. Country studies also underline the significant impact of droughts and floods on GDP performance. But climate change also impacts more broadly on the availability and reliability of energy, and thus other sectors throughout the economy too;

(ii) There is likely to be a significant impact too both on the rate of progress towards the **Millennium Development Goals**, and the long-term sustainability of this progress. Reduced economic growth will mean a slower reduction in income poverty, and reduced agricultural production is likely to exacerbate malnutrition (MDG 1). Progress towards universal primary education could be affected (MDG 2). Women are in general more vulnerable to the effects of climate change - in times of climate stress, they must cope with fewer resources and greater workloads (MDG 3). The impact of climate change is likely to add to the pressures on already over-stretched health systems and basic water and sanitation infrastructure, affecting infant, child and maternal mortality, and the spread of climate-sensitive diseases such as malaria (MDGs 4, 5 and 6). Environmental sustainability (MDG 7) will be put at risk. More extreme weather events such as flooding and droughts are likely to lead to increasing humanitarian emergencies, presenting further risks to progress towards all the MDGs;

(iii) There are also important implications for **human security**. Increased competition for scarce water and land resources, triggered by environmental degradation, desertification, and water scarcity, and compounded by population pressures, will present increased risks to peace and stability. These factors, along with the specific risk to major settlements in coastal areas, will impact on migratory flows, generating additional

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<sup>1</sup> Terminology originally used in United Nations Foundation—Sigma Xi Scientific Expert Group on Climate Change (2007) publication “Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable” by Rosina M. Bierbaum, and others, eds. Scientific Expert Group Report on Climate Change and Sustainable Development prepared for the fifteenth Session of the United Nations Commission on Sustainable Development. [http://www.unfoundation.org/files/pdf/2007/SEG\\_Report.pdf](http://www.unfoundation.org/files/pdf/2007/SEG_Report.pdf).

pressures. The combination of resource pressures and migratory flows will also create increased risk of regional tensions.

8. **A number of important initiatives have already been taken**, including the ‘Action Plan on Climate Information for Development in Africa’ (ClimDev Africa) programme being implemented by the AU, UN Economic Commission for Africa and African Development Bank (Fact Box 9 refers); the African Climate Policy Centre being launched by UNECA; risk management schemes such as the weather-related crop insurance schemes developed in Ethiopia and Malawi; and the flood early warning systems established by Mozambique. Twenty-two countries have now developed National Adaptation Programmes of Action (NAPAs). The more detailed annexes on individual ‘focus sectors’ – water, energy, agriculture, forestry and fisheries, health, and peace and stability -- identify a wide range of further sector priorities. These range from specific responses such as improved information and early warning systems, and climate risk management schemes such as weather-related crop insurance, to broader issues such as improved water storage, the application of climate resistant technologies, the strengthening of health systems, and improved emergency preparedness and response systems. The key role of regional institutions is a cross-cutting theme.

9. **Adapting to these impacts will however impose major costs on African governments and will require significant additional support from development partners.** Estimates using different approaches all indicate very large financing requirements, potentially amounting to tens of billions of dollars per annum (as described in more detail under Focus Issue 6). Given the limited domestic resources available, this underlines the importance of substantially increased external support – as well as the need to integrate adaptation strategies into broader development planning – as part of “climate-resilient development”.

#### **MAIN PRIORITIES:**

(i) Substantial additional and predictable financial support from development partners to help meet the additional **costs of adaptation**, including for the development of climate-related **information** and **early warning systems**;

(ii) Strengthened action to integrate the impact of climate change into **national development strategies** and existing **sector policies** (including energy, water, land use and agriculture);

(iii) Concerted action to build the capacity of **national governments** in addressing climate risks and joint efforts by Africa and development partners in strengthening **regional institutions**.

## **Mitigation and Clean Energy Development - ‘Avoiding the Unmanageable’**

10. **Strong and effective commitments to reducing global emissions, including incentives for key developing countries to cut emissions, will be essential for a post-2012 framework to address climate change.** The next UN Framework Convention on Climate Change (UNFCCC) meetings in 2008 and 2009 will be a key part of this process. The European Union has already committed to cut emissions by 20% in 2020 compared to 1990 levels and by 30% for the same period if other countries were committed to meet similar targets, to reduce energy by 20%, and raise the share of renewable sources of energy by 20% of the total. At the 2007 G8 Summit in Heiligendamm, the G8 reached an understanding that they will seriously consider the decisions made by the European Union, Canada and Japan which include at least a halving of global emissions by 2050.

11. **Africa’s specific development needs – and in particular its very low emissions and extreme energy poverty - must be recognised within any overall global agreement on emission limitations.** Average *per capita* emissions in Africa are 13 times less than North America, and Africa accounts for less than 4% of total global emissions. This reflects its acute energy poverty – the rate of access to electricity is around 25% in sub-Saharan Africa – and even under the best of assumptions will only rise to 35% by 2015. Half of sub-Saharan African countries have experienced power crises over the last 2 years due to a combination of

factors including changing climatic conditions that have reduced the power generation capacity of hydroelectric dams.

**12. Developing energy capacity is thus critical – both to the prospects for sustained economic growth and diversification, and to human development.** Africa's energy resources are vast, but unevenly distributed and under-developed. There is large potential for the development of clean energy sources, including through the development of Africa's huge hydroelectric power potential – less than 4% of which is currently utilized. African governments have begun to address both the reform of regulatory frameworks in order to attract independent power generation and issues of sub-regional river basin management. Development partners have begun to scale up their support for energy access and to mobilize private sector investment. But huge investments are needed involving at least the doubling of financing from US\$ 2 billion to US\$ 4 billion a year, and requiring not only the further scaling up of aid resources but also the leveraging of greater private sector resources. Biofuels present significant potential but will need to be carefully assessed against competition for land under food production. There is also scope for significant efficiency gains, for instance in energy-intensive industry processes such as the cement industry, and huge opportunities to reduce transmission and distribution losses in many African countries.

**13. Compensation for avoided deforestation is another way to limit emissions.** Worldwide, deforestation is responsible for around 20% of total annual emissions. Forest losses each year are equivalent to an area 4 times the size of Belgium. Brazil and Indonesia are the worst-affected countries, but 6 of the 10 largest forest losses are in sub-Saharan Africa. Several initiatives to help manage forests on a sustainable basis have been launched. Two of the better-known new initiatives are: the Congo Basin Forest Initiative managed by the Africa Development Bank, and a new Forest Carbon Partnership Facility (FCPF) which has been set up at the World Bank to pilot a system of positive incentives for reducing emissions from deforestation and degradation. Avoiding deforestation is not currently eligible under the Clean Development Mechanism but under the Bali Action Plan, negotiations of a post-2012 international framework will consider policy approaches and positive incentives to promote and support reduced emissions from deforestation and forest degradation (REDD).

#### **MAIN PRIORITIES:**

- (i) Agreement globally on stronger commitments to reduce greenhouse gas **emissions**;
- (ii) A full recognition of **Africa's development needs** in any future agreement on emission limitations;
- (iii) Increased support for **clean energy development**, and for **avoiding deforestation**;
- (iv) **Reforms of national regulatory frameworks** to allow local energy providers (of clean energy) to connect to the national power grid to promote the development of clean energy;
- (v) **Promoting a regional approach** to capture the potential of complementary investments in hydroelectric power generation and water resources, and in particular in strengthening the capacity of regional institutions.

### **Finance and Other Cross-Cutting Issues - 'Delivering the Achievable'**

**14. The financial resources currently available to meet the challenges of adaptation and clean energy development are limited and segmented.** Although it is increasing, the proportion of ODA and concessional lending specifically directed to adaptation to climate risks remains very small. The main sources of multilateral funding for climate change adaptation are donor contributions to the Global Environment Facility (GEF) and special funds set up under the UNFCCC The Adaptation Fund, which was set up under the Kyoto Protocol and resourced from a 2% levy on proceeds from Clean Development Mechanism (CDM) projects, has yet to become operational. Together, these various funds are currently projected to deliver only US\$ 150 million to US\$ 300 million per annum compared to the much larger adaptation needs. Only the Adaptation Fund is demonstrably additional to existing and planned development partner funding. The bulk of the **carbon market** takes the form of emissions trading between committing developed countries (known as Annex 1 parties). Proceeds from CDM projects contribute to around 17% of the total carbon market. But the CDM mechanism has largely by-passed Africa – which accounted for only 3% of the US \$5billion CDM proceeds in 2006.



15. **There is a need: firstly to explore options to allow Africa to benefit more from the carbon market and other GHG-friendly activities** through, for instance, a broadening of the CDM to include land-use changes and forestry and through the development of Africa's capacity; **and secondly for action to generate substantial and predictable levels of new and additional donor funding for adaptation.** On the first point, there is an important link to the domestic investment environment and regulatory framework - in order to encourage private sector investment in carbon finance activity. On the second point, there are a number of new initiatives by bilateral and multilateral donors including new carbon facilities and, most importantly, the establishment of a new multi-donor trust fund to promote low carbon and climate-resilient economic growth and poverty reduction. Discussions have also begun on the possibility of innovative financing using donors' good credit ratings to raise funding on the capital markets to finance climate-related activities and projects.

16. Whilst only negotiations between governments can deliver the international framework for dealing with climate change, the involvement of the **private sector** will be essential to delivering results on the ground. More intensive efforts will be needed to identify specific ways of increasing private sector investment in adaptation, renewable energies and energy efficiency, and technology transfer. The Clean Energy and Development Framework developed by the African Development Bank and the World Bank is designed to promote private sector engagement in areas ranging from household electrification to access to clean cooking, heating and lighting fuels.

17. **Technology** development and transfer will be key to adapting to and mitigating climate change. The Bali Action Plan calls for enhanced action on the removal of obstacles to, and the provision of incentives for the acceleration and scaling up of technology transfer, along with cooperation on research and development. African countries have called for: the establishment of a new body under the Convention, the Technology Development and Transfer Board (TDTB); a Multilateral Technology Acquisition Fund (MTAF) to buy intellectual property rights; and the development of indicators to monitor implementation of the technology transfer framework. There is also active interest in explicitly identifying goods and services that are directly relevant to adaptation or mitigation and including them as climate change issues in trade negotiating agendas. The recent OECD Environmental Outlook found that the removal of tariff and non-tariff barriers can increase the diffusion of clean technologies in developing countries. A World Bank study also found large potential for promoting clean energy technology between developing countries.

18. **All of these issues will form part of the intensive international discussions and negotiations** leading up to the next UNFCCC Conferences in Poznan (Poland) in December 2008 and in Copenhagen (Denmark) in November 2009. It will be essential to make significant progress in 2008. Important meetings, in addition to UNFCCC expert meetings, where climate change issues will be discussed over the next 6 months include: the first joint annual meetings of the AU Conference of Ministers of Economy and Finance and ECA Conference of Ministers of Finance, Planning and Economic Development in March/April; the IMF/World Bank Spring meetings in April, TICAD IV in May; the OECD Ministerial Council in June; the G8 Summit in Hokkaido in July and the MDG Summit in New York in September. It is important that Africa should be equipped to speak with a strong and unified voice in international negotiations.

#### **MAIN PRIORITIES:**

- (i) Facilitate and promote greater access for Africa to the **carbon market and other GHG-friendly activities** together with the establishment of **new mechanisms** to provide additional resources from official and concessional sources and through innovative financing mechanisms;
- (ii) Continued efforts to strengthen the business environment in order to attract greater **private sector** investment, including through the Clean Development Mechanism (CDM);
- (iii) More support for **technology transfer** and implementation;
- (iv) A strengthened **African voice** in future **international negotiations**;

## FOCUS ISSUES

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### Focus Issue 1: Water

#### THE IMPACT

19. Water is central to realizing the development potential of Africa. Safe water is critical to health and well-being; water is also an essential input into agriculture and other productive activities including the provision of hydroelectric power. Climate change, through rising temperatures and advancing desertification, is likely to affect:

- (i) **Water availability:** by 2025, it is expected that 25 African countries will be subject to water scarcity or water stress. North Africa, which has heavily invested in water storage and distribution infrastructure, already sustains water demands that are substantially in excess of renewable resources;
- (ii) **Rainfall variability:** patterns of precipitation and runoff are likely to change substantially: rain in fewer, heavier events will lead to more floods and dry spells while ground water recharge will diminish, making it more difficult to improve access to safe water, adding to existing pressures on water systems, and further complicating efforts of achieving basic water security;
- (iii) **Economic growth:** recent country-level studies suggest that the impacts of hydrology and rainfall variability on economic development are significant. In Ethiopia, it was estimated that droughts and floods have reduced economic growth by more than one third. Annual damages in Kenya due to flooding and drought in 1998–2000 range from 10–16% of GDP. With poorly protected watersheds and more erratic rainfall, both Eastern and Western Africa have experienced below-normal reservoir levels that severely affected hydroelectric power generation, aggravating already-fragile energy sectors and forcing cash-strapped governments to invest in emergency fossil-fuels or coal-based energy generation.

#### THE RESPONSE

20. As an input into productive activities, Africa's water resources remain under-utilised. Less than 4% of potentially irrigable lands in sub-Saharan Africa have been developed. Less than 7% of Africa's hydropower potential has been exploited. African governments have, however, taken important decisions such as: i) establishing the African Ministers' Council on Water (AMCOW) to provide political leadership and policy directions in the provision, use and management of water resources; ii) adopting the Integrated Water Resources Management (IWRM) principles in the management of national and regional policies; iii) establishing collaborative agreements to facilitate the management and development of trans-boundary water resources; and iv) investing in water infrastructure and storage. Some progress has been registered under i) and iii).

21. Development partners are also focusing increased attention on the systematic integration of climate risk management into project planning and management. A concerted effort is beginning to promote river basin co-operation and support trans-border river basin commissions. This has led, for instance, to the financing of a 10-year programme of basin multipurpose development for the Senegal River. After several years of preparation (capacity and institutional development), the Nile River Basin has entered the investment phase costing US\$ 400 million.

#### SECTOR PRIORITIES

##### For sub-Saharan Africa:

- (i) Develop **water storage** infrastructure. This is a key factor for de-linking economic performance and poverty reduction from extreme hydrological variability. Average storage capacity in sub-Saharan Africa at around 200m<sup>3</sup>/person/year is noticeably low by international comparison;
- (ii) Introduce innovative water management approaches including integrated river basin management combining water storage infrastructure with **hydroelectric power** development, water for **irrigation** and ancillary investments such as transport that, together, would help Africa to reduce its heavy reliance on rain-fed agriculture, to promote economic diversification and, in the process, increase its resilience to climate risks;

(iii) **Strengthen water policies** and water resource management including enhancing the **role of the private sector**.

For North Africa

(iv) Realign **water demand** with available supply through broader institutional and policy reform;

(v) Further strengthen **water scarcity management** strategies, including through water-saving technologies and demand-management measures.

For Africa as a whole:

(vi) Strengthen **disaster risk management**, particularly in relation to floods. For every US\$ 1 spent preparing for disasters, US\$ 7 is saved in the cost of post-disaster recovery and reconstruction.

## Focus Issue 2: Energy

### CONTEXT AND OPPORTUNITIES: ENERGY AS A PREREQUISITE FOR ECONOMIC GROWTH & DIVERSIFICATION

22. Access to reliable energy has been systematically identified as critical to both Africa's growth and its export competitiveness. Access to electricity is also critical to making progress towards other MDGs such as health and education. With more than 550 million people without access to electricity services, energy production and consumption are expected to soar in the future. Underlying these low levels of access are the exceptionally low levels of installed generation capacity, of which 60% is in South Africa alone. Mismatch between power demand and available supply has grown, and increasing numbers of African countries have become vulnerable to power crises.

#### THE IMPACT

23. Climate change presents additional challenges to Africa – at a time when it is already hard hit by high oil prices. Climate change, through changing and more erratic rainfall, has severely affected the generation capacity of hydroelectric power dams in both Eastern and Western Africa, forcing countries to spend their limited resources on adding emergency generation capacity, relying mainly on coal- or fuel-based systems thus aggravating greenhouse gases emissions. Twenty-eight countries are or have been affected by the energy crisis in the past 24 months.

24. Africa is thus faced both with the challenge of increasing access to energy, and the opportunity to exploit the large potential for development of its clean energy sources. There is enormous untapped renewable energy potential – especially hydroelectric power, geothermal energy, solar and wind power, as well as more improved energy efficiency, and more efficient use of biomass. Climate change and carbon finance thus provide Africa with the incentives to develop clean energy, and in particular hydroelectric power. Greater access to finance and regional cooperation are both crucial to exploiting this potential.

#### THE RESPONSE

25. External support for the energy sector has significantly expanded. ODA commitments rose sharply from US\$ 1.9 billion in 2005 to US\$ 2.4 billion in 2006. Over 50% of that amount is for North Africa. Arab partners and India provided over US\$ 900 million to Africa for investments in energy generation and connections. China, which is by far the most significant player, has financed the construction of hydroelectric power stations in several countries. Private sector flows are substantial, reaching US\$ 1.2 billion in 2005 mostly for generation capacity by independent power producers.

26. Through the Clean Energy Investment Framework, the African Development Bank and the World Bank, in collaboration with other bilateral and multilateral agencies, are promoting a multi-track approach covering: improving access in urban and rural areas; upgrading national transmission grids; helping to develop efficient power-trade arrangements; promoting off-grid renewable power supply systems; and promoting sustainable household fuels. Together with other multilateral development banks (MDBs), they are exploring ways of accelerating access to appropriate and affordable technologies and to carbon finance, and of strengthening coordination between the public and private financing windows of each of the MDBs.

27. African countries have also begun to address these issues by developing regional energy interconnections and facilitating regional energy trade through the establishment of regional power pools in all sub-regions of Africa.

#### SECTOR PRIORITIES

(i) Promote **renewable energy**, both on a national and regional basis:

For **Africa**, the challenges are:

- to harness the continent's huge but as yet untapped hydroelectric power resources;
- to promote other renewable energy sources such as geothermal energy, particularly where these provide cost-effective options to increase electricity service in rural areas;
- to undertake and implement regulatory reforms to facilitate connections of local electricity generation to national power grids;
- to promote regional approaches, building on the regional power pools already established;
- to gear up to participate with a stronger voice in international discussions regarding carbon finance – revenue tapped from carbon credit trade through the CDM could effectively reduce the cost of clean energy options;

**Development partners** need to help Africa overcome constraints in financing and capacity development, and to promote technology transfer;

(ii) Promote **energy efficiency** – through a combination of supply-side initiatives to improve technical efficiency, and demand-side initiatives to promote energy saving;

(iii) Promote clean household **biomass fuels**

(iv) Consider **biofuels** options - whilst keeping in perspective the importance of balancing the competition between food and biofuels for arable land, and the implications for food availability and food prices;

(v) Use available opportunities to promote **mitigation** in countries with large CO<sub>2</sub> emissions;

(vi) Reduce **gas flaring** – through the Global Gas Flaring Reduction Partnership (GGFR).

### Focus Issue 3: Agriculture, forestry and fisheries

#### THE IMPACT OF CLIMATE CHANGE

28. **African agriculture is particularly vulnerable to the effects of climate change.** Whilst these are likely to differ across the continent, most of Africa relies on rain-fed agriculture and is therefore highly vulnerable to changes in climate variability, seasonal shifts and precipitation patterns. Long-term projections indicate that agricultural output (without carbon fertilization) could be reduced by 28 per cent by 2080, more than any other region. The first to be affected are likely to be those who are dependent on agriculture for jobs and income, and whose adaptive capacity is constrained the most – farmers, and particularly small-holder farmers.

29. **Climate change impacts may increase the number of people at risk of hunger.** Africa's agricultural yields are already on the decline, so the attainment of MDG 1 - eradicating poverty and hunger – could be seriously threatened. A 3°C warming could put 150 million to 550 million additional people at risk of hunger. There has also been growing concern about the impact of biofuels on the world's food supply and food prices.

30. **Africa's forest resources can contribute to global efforts to reduce emissions.** Of the 10 countries with the largest net forest loss per year in the past 5 years, 6 are from Africa. The major cause is removal for wood and fuel. Rising temperatures are also making forests drier and therefore more susceptible to fires, pests, and disease. Recognition of the importance of deforestation led to agreement at Bali on the need for new incentives to promote conservation, sustainable forest management and enhancement of forest stocks in developing countries, and thus to reduce emissions from deforestation and forest degradation (REDD). Significant new initiatives are underway including the Congo Basin Forest Initiative and the Forest Carbon Partnership Facility (FCPF).

31. **Declining productivity of African fisheries may be exacerbated with climate change.** Fish supply is already in crisis. Africa is the only continent in the world where fish supply per person is declining. Climate change is projected to exacerbate declining productivity levels for African fisheries by changing water levels, sea temperatures and ocean acidity levels which will cause a shift in the range of fish species and fish reproductive patterns. Given that significant numbers of people in Africa depend on fish for protein, impacts on the fisheries sector will also affect nutrition and health.

## SECTOR PRIORITIES

### *On Agriculture:*

- (i) Increased support for the development of **early warning systems, forecasting and climate information**, including the “ClimDev Africa” programme developed by the AU, UN Economic Commission for Africa and African Development Bank, with support from the Global Climate Observing System (GCOS);
- (ii) Increased support for the development of **climate-resilient technologies and practices**. More funds are needed for research and development, and dissemination of appropriate technology, such as drought and heat-resistant crops;
- (iii) The increased use of climate-related **insurance schemes**, as a key tool in climate risk management, building on the recent innovations in insurance contracts which have led to the initiation of weather-related insurance schemes in Africa, as well as other regions around the world;
- (iv) The adaptation of **food distribution systems**, in response to the increasing risk of food insecurity, and specifically designed to meet the needs of vulnerable communities and poor households most at risk;
- (v) Careful analysis of the implications of **biofuels for food availability and food prices**, and in particular the implications for the poorest, alongside a carbon assessment;

### *On Forestry:*

- (vi) Increased support from development partners for forest conservation and sustainable forest management, including through the **Congo Basin Forest Initiative**, and the **Forest Carbon Partnership Facility (FCPF)**;
- (vii) Agreement that policy instruments to promote and support **Reduced Emissions from Deforestation and Degradation (REDD)** are developed and recognised within a post-2012 climate treaty;

### *On Fisheries:*

- (viii) The expansion and intensification of **aquaculture**, including action both by African governments to integrate aquaculture into national development strategies, and increased support from development partners for initiatives such as the NEPAD Action Plan for the Development of Fisheries and Aquaculture and PROFISH.

## Focus Issue 4: Health

### THE IMPACT OF CLIMATE CHANGE

32. There is growing concern at the impact of climate change on health, and increasing numbers of humanitarian emergencies linked to climatic factors. The European heat-wave of 2003 caused an estimated 15,000 deaths in France alone. For Africa the potential impact of climate change, although less well-documented, is even more serious – adding to the pressures on over-stretched health systems and basic water and sanitation infrastructure, and with a direct effect on prospects for progress towards the MDGs. Potential health impacts are through:

- (i) The spread of **climate-sensitive diseases**: increased temperatures and higher humidity will lead to the extension of malaria-transmission areas. Increased flooding will increase the spread of diseases associated with water, such as cholera and diarrhoeal diseases. Drought conditions create a higher risk of meningitis

infection and epidemics. Higher temperatures aggravate air pollution, thereby increasing the risk of acute respiratory diseases;

(ii) Reduced access to **water and sanitation**, and higher levels of **malnutrition**, as described in Focus Issues 1 and 3

(iii) More **humanitarian emergencies** triggered by extreme weather events, such as storms, floods and droughts, leading to population dislocation, lack of shelter, disease, widespread malnutrition and shortage of clean drinking water.

There is a potential impact on MDG 1: eradicating hunger; MDG 4: reducing infant and child mortality; MDG 5: reducing maternal mortality, and MDG 6: combating HIV/AIDS, malaria and other diseases.

#### THE RESPONSE

33. There have been a number of broader initiatives – from both Africa and its development partners – designed both to strengthen health systems and finance the fight against infectious diseases, and hence reducing vulnerability to the impact of climate change. In addition:

(i) **Climate-sensitive diseases**: there has been some progress in developing remote detection and early warning systems to allow governments to anticipate seasonal variations in climate and the epidemiological risks associated with these. It is clearly essential that this work be undertaken on a regional basis;

(ii) There have also been initiatives to upgrade **water and sanitation infrastructure** and improve **food security**;

(iii) **Humanitarian emergencies**: several governments have made progress in reducing the impact of extreme weather events, for instance by developing early warning systems for droughts and floods, and disaster response programmes. The international community has established the Central Emergency Response Fund (CERF). In addition there is increasing attention to the need to integrate disaster risk reduction into development planning and practice. The African Union has adopted the AU/NEPAD African Regional Strategy for Disaster Risk Reduction.

#### SECTOR PRIORITIES

34. Action is needed on two tracks: firstly to continue to improve the capacity of health systems and basic infrastructure in order to reduce vulnerability to the potential impact of climate change; and secondly, to address specific climate-related impacts. More specifically, the priorities are:

(i) Continue and intensify efforts to improve **health systems** at all levels, from community to local government to national planning and policy, including through:

- improving the alignment of support from development partners with national health system priorities;

- integrating **climate risk management** into health planning and health systems, including through improved early warning systems to identify where climate change is likely to impact on the dynamics of climate-sensitive diseases;

(ii) Continue and intensify broader efforts to upgrade **water and sanitation infrastructure**, and to improve **food security**, in order to reduce vulnerability and improve resilience to the potential impact of climate change;

(iii) Reinforce **disaster risk management through**:

- enhanced preparedness and response systems, including improved early warning systems and the establishment of food stocks, together with continued efforts to ensure the necessary financial support from the international community for emergency preparedness as well as emergency response;

- combining the integration of disaster risk reduction into broader national, economic and development strategies, planning and practice. This is particularly important in the most vulnerable regions such as arid and semi-arid areas, and areas potentially subject to flooding.

## Focus Issue 5: Peace and Stability

### THE IMPACT OF CLIMATE CHANGE

35. Climate change has important potential implications for peace and stability, both globally and in Africa. When coupled with other pressures including resource scarcity and high population growth and density, it multiplies the risks of instability and conflict – particularly in fragile states - through:

(i) Increased **competition for scarce land and water resources**, triggered by environmental degradation, desertification and water scarcity, and creating the potential for conflict within and between both communities and countries. UN reports have identified changes in the Sahel climate over the last 30 years as a factor in the conflict in Darfur. The high rate of population growth will further trigger competition for resources;

(ii) Increased **migratory flows**, both internally and cross-border. The scale of the displacement and movement of people due to both gradual and sudden environmental changes is expected to rise and is likely to have a significant impact on lives and livelihoods, generating additional environmental and socio-economic pressures. A significant feature of this trend is likely to be accelerated urbanisation – adding to urban unemployment and poverty;

(iii) An increased risk of **regional tensions** and potentially conflict, triggered by resource competition and migratory flows, as above. Although the number of conflicts in Africa has declined dramatically, there are still significant risks both of political instability and violent conflict – as in other regions. The social and economic impact of climate change can transcend borders, thereby significantly extending the geographical extent of crisis and conflict regions;

Given the importance of peace and stability to economic development and poverty reduction, this combination of effects presents real risks to progress towards the MDGs, and to the sustainability of this progress.

### THE RESPONSE

36. The international community, as well as individual countries, have begun to address the impact of climate change on security. In April 2007, the UN Security Council (UNSC) held its' first-ever discussion specifically focused on the linkages between climate change, energy and security. The debate observed that climate change multiplies the potential for conflict, that migration is the most important stress factor, and that the emerging issue of 'environmentally induced migration' (which falls into the gap between both international refugee and immigration policy) needed to be addressed. The EU is to consider a report on the impact of climate change on international security in spring 2008.

37. These are however still emerging issues. Whilst there have been various discussions on the important linkages between migration and development, there have been fewer attempts to make the linkages with environment and climate change and security policy. This is reflected in approaches to adaptation at national and sub-regional level. The National Adaptation Programmes of Action (NAPA) supported by the UNFCCC, of which 22 relate to African countries, are intended to help the LDCs identify a limited number of immediate priority adaptation projects, and as a result do not take population displacement or migration into account as a possible policy response.

### SECTOR PRIORITIES

(i) Expansion of **information and early warning systems** with particular emphasis on vulnerable regions, assessing the potential impact of increased resource scarcity and population displacement and migration, and the consequent potential risk to peace and stability. Climate change and migration indicators could thus be included within the AU's Continental Early Warning System (CEWS);

(ii) Inclusion of land and water management and migration issues within national and sub-regional **adaptation strategies** where migration is or is expected to become a significant issue in the short- to medium-term – including possibly future National Adaptation Programmes of Action (NAPAs), and Sub-Regional Action Programmes (SRAPs);

(iii) Increased support for **regional cooperation** on trans-boundary resource management, including current river basin initiatives (such as the Senegal River Basin, and the Nile Basin Initiative);

(iv) **Increased attention** in the multilateral arena on the security risks related to climate change, in particular within the UN Security Council, and the G8 as well as UN specialised bodies, together with increased collaboration between the **UN bodies and agencies** working on the environment and climate change, security, and migration issues;

(v) Further consideration of how to address the issue of **environmentally-induced migration**, including the possible need for an international legal framework.

## Focus Issue 6: Financing and financial mechanisms

### SCOPE OF ADAPTATION NEEDS

38. Estimates of the costs of adaptation to climate change in developing countries using different approaches all indicate very large financing requirements, potentially amounting to tens of billions of dollars per annum. Three such approaches are: 1) estimates of the needs to climate-proof new development projects by the World Bank with recent updates by the UNDP in the 2007 Human Development Report; 2) UNFCCC's global estimates of adaptation needs by sector for both developing and developed countries; and 3) Oxfam's analysis of adaptation needs in developing countries based on extrapolation from 13 National Adaptation Plans of Action (NAPAs). While there is considerable debate as to the integrity of these figures, they provide a useful order of magnitude. Private sources of funding can be expected to cover a proportion of adaptation costs, particularly in agriculture and fisheries where privately owned assets are common; but public resources are expected to play a predominant role in all sectors.

### ASSESSMENT OF CURRENT ADAPTATION FINANCING MECHANISMS

39. Existing funding mechanisms are very modest in relation to needs. Bilateral donors have started to support developing countries' efforts in addressing climate adaptation. At the multilateral level, funding for adaptation totalled around US\$ 50 million per year between 2001 and 2006, most of which are financed through the Global Environment Facility (GEF). Under the UNFCCC, three funds have been established to help cover the cost of adaptation to climate change in developing countries. They include: 1) the Least Developed Countries Fund; 2) the Special Climate Change Fund; and 3) the Strategic Priority on Adaptation that are funded by voluntary contributions and operate under the GEF. A fourth facility, the Adaptation Fund was created under the Kyoto Protocol, using a 2% levy on carbon credits generated by Clean Development Mechanism (CDM). This fund is estimated to be worth around US\$ 200-300 million currently and could reach US\$ 440 million by 2012. The Adaptation Fund is not yet operational.

### THE CARBON FINANCE MARKET

40. In Kyoto, the developed countries, known as Annex I parties, committed to reducing their average emissions by 5.2% between 2008-12 in relation to the emissions in 1990, the baseline year. Based on its individual target, each Annex I Party is assigned a specified number of carbon dioxide equivalent (CO<sub>2</sub> eq) emission units. Unused emissions allowances can be traded to allow countries that exceed their allowances to meet the emissions commitments under the Kyoto protocol. In addition to the above type of transactions of emission credits, also known as the allowance-based transactions, the carbon market also covers project-based transactions in which a buyer can purchase emission credits from a project that can demonstrate, in a verifiable manner, it will contribute to GHG emission reductions compared with what would have happened otherwise. Projects implemented in developing countries (non-Annex I parties) are also known as Clean Development Mechanism (CDM) projects.

41. The overall carbon finance market doubled to over US\$ 60 billion between 2006 and 2007, representing nearly a six-fold increase from US\$ 11 billion in 2005. The proceeds from CDM projects were estimated to amount to US\$ 5.2 billion in 2006, approximately 17% of the total carbon market of around US\$ 30 billion in 2006. In addition to these compliance-based schemes, there is also a growing voluntary carbon market whose participants are environmentally-aware companies. Developing countries in Asia (and particularly China) with large CO<sub>2</sub> emissions and proactive approaches to CDM projects have dominated the CDM market. Africa -- including North Africa -- accounted for only 3% of the US\$ 5.2 billion transactions in



2006. In spite of efforts to streamline the rules and procedures for small CDM projects and the possibility for programmatic CDM (whereby several small GHG-mitigation activities can be regrouped to reduce transactions costs), the various steps involving monitoring methodologies and the quantification and verification of prospective emission reductions have proven to be formidable obstacles in Africa and other low-income countries. Poor investment climates have also limited CDM activities in Africa. A number of countries including South Africa, Ghana and Tanzania, have begun to take a more proactive approach toward CDM projects. Notwithstanding the constraints described above, CDM projects and carbon finance more generally provide African countries with the possibility to generate additional resources and, at the same time, adopt more GHG-friendly activities.

42. Besides the above sources of financing, bilateral and multilateral donor agencies are experimenting with new funding mechanisms to help finance climate adaptation in developing countries. More recently, the World Bank has established two new facilities, the Carbon Partnership Facility and the Forest Carbon Partnership Facility.

#### **FINANCING PRIORITIES**

- (i) Facilitate and promote greater access for Africa to the **carbon market and other GHG-friendly activities**;
- (ii) Recognise that current financing available to developing countries for climate adaptation are woefully inadequate. Provide **additional resources** from official and concessional sources and through innovative financing mechanisms;
- (iii) Raise the **share of IDA resources** devoted to climate change in Africa;
- (iv) Continued efforts to strengthen the business environment in order to attract greater **private sector** investment, including through the Clean Development Mechanism (CDM);

### Fact Box 1: Climate Change Scenarios: Assumptions about Future Trends

Although much is unknown, it is possible to identify likely changes in Africa's climate:

#### Temperature

1. All of Africa is very likely to warm during this century. The warming is very likely to be larger than the global, annual mean warming throughout the continent and in all seasons, with drier subtropical regions warming more than the moister tropics. In all four sub-regions and in all seasons, the median temperature increase lies between 3°C and 4°C, roughly 1.5 times the global mean response. Half of the climate models project warming within about 0.5°C of these median values<sup>1</sup>. The warming in the Mediterranean area is projected to be largest in the summer.

#### Precipitation

2. Annual rainfall is likely to decrease in much of Mediterranean Africa and northern Sahara, with the likelihood of a decrease in rainfall increasing as one gets closer to the Mediterranean coast. Rainfall in southern Africa is likely to decrease in much of the winter rainfall region and on western margins. There is likely to be an increase in annual mean rainfall in East Africa. Finally, it is uncertain how rainfall in the Sahel, the Guinean Coast and the southern Sahara will evolve in this century. Compared to the average of 1980-99, mean annual rainfall for the 2080 – 2099 period is very likely to decrease along the Mediterranean coast (by 20%), extending into the northern Sahara and along the west coast to 15°N, but is likely increase in tropical and eastern Africa (around +7%), while austral winter (June to August) rainfall will very probably decrease in much of southern Africa, especially in the extreme west. There are, however, differences between the equatorial regions (north of 10°S), which show an increase in summer (December to February) rainfall, and those located south of 10°S, which show a decrease in rainfall associated with a decrease in the number of rain days and in the average intensity of rainfall. For the Western Sahel, there are still some discrepancies between models: some projecting a significant drying, and others simulating a progressive wetting with an expansion of vegetation into the Sahara.<sup>2</sup>

#### Extreme Weather Events

3. Finally, there is still limited information available on extreme events, despite frequent reporting of such events -- the spatial distribution and frequency of tropical cyclones affecting Africa --including their impacts. A recent study the Sahel region showed that the number of extremely dry and wet years will increase during the present century. Modelling of global drought scenarios shows drying for northern Africa that appears consistent with the rainfall scenarios outlined above and wetting over central Africa. On a global basis, droughts were also estimated to be slightly be more frequent and of much longer duration by the second half of the 21<sup>st</sup> Century relative to the present day. Other experiments indicate that in a warmer world, and by the end of the century, there could also be more frequent and intense tropical storms in the southern Indian Ocean. Tropical cyclones are likely to originate over the Seychelles from October to June. There could very probably be an increase of between 10 and 20% in cyclone intensity.<sup>3</sup>

#### Summary

- (i) In general the drier sub-tropical regions will warm more than the moister tropics;
- (ii) Northern and southern Africa will become much hotter and drier in the summer, with a greater risk of drought;
- (iii) In eastern Africa, including the Horn of Africa, and parts of central and western Africa, average rainfall will increase;
- (iv) Sea levels will rise perhaps by half a metre in the next 50 years, with serious consequences in the Nile Delta and certain parts of coastal West Africa;
- (v) But there is also much that we don't know, such as the impact in the Sahel, or on the flow of the Nile due to a poor understanding of the drivers of the African climate poor data; and
- (vii) We urgently need more capacity and research to better understand the consequences at local levels of the impact of global models and more detailed and regular climate information at the local level, particularly for central Africa.

<sup>1</sup> International Panel on Climate Change Fourth Assessment Report, Working Group Report "The Physical Science Basis", Chapter 11: <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>

<sup>2</sup> Ibid

<sup>3</sup> Ibid

## Fact Box 2: The Economic Impact of Climate Change

**There is a real risk that climate change will have adverse implications for economic growth in Africa.** The experience of past extreme weather events in Africa testifies to the damaging effects that an adverse climate can have on economic prospects in Africa. If climate change increases the frequency and severity of these events, as the science suggests, the economic costs on African countries will grow significantly. Climate change is likely to have damaging effects on the health and productivity of the labour force, cause losses and damage to agriculture and infrastructure, and lower the quality of investment and capital. Therefore, as the factors of production are affected, growth prospects are likely to be weaker.

**A climate change reduction in GDP is likely to increase the number of people living in poverty.** Given the strong correlation between growth and poverty reduction, a climate change reduction in GDP is therefore likely to increase the number of people living in poverty. According to the Stern Report, climate change could cause an additional 45 million people to be living on less than 2 USD a day because of GDP losses alone. Unfortunately, many of the countries that are falling behind in terms of MDG achievement are located in the parts of Africa where climate change impacts are projected to be worse. The effects of climate change will therefore make the achievement of MDG 1 on halving the number of people in poverty more difficult for Africa.

**Africa's major economic sectors are vulnerable to climate change.** Although Africa contributes only about 3.8% of total greenhouse gas emissions, its countries are among the most vulnerable in the world. This vulnerability derives from its heavy reliance on climate-sensitive sectors (such as rainfed agriculture). This vulnerability is exacerbated by existing development challenges such as endemic poverty, limited access to capital, and weak adaptive capacity. Constraints in technological access and options, limited infrastructure, information and links to markets further heighten vulnerability to climate stress. In many African countries, the expenditure requirements of dealing with the effects of climate change on their major economic sectors are beyond the capacity of governments and local communities. Improved access to carbon finance and substantial and additional external assistance will be needed.

**Comprehensive estimations of the economic impacts of climate change in Africa are hard to find.** The Stern Review of the Economics of Climate Change indicates that delaying response to climate change could result in losses of up to 20% of GDP, against an estimated cost of 1% of GDP for immediate actions necessary for removing much of the related risks. Major studies such as the IPCC Fourth Assessment and the Stern Review further highlight the following sectoral impacts that threaten the achievement of the MDGs and sustainable development in Africa.

**Agriculture and food security:** Climate change is projected to severely constrain agriculture -- the backbone of the economy of most countries - and curtail the prospects for broad-based economic growth, poverty reduction and food security in Africa. In addition to contracting the area suitable for agriculture, warming by 0.4°C over current temperatures would result in a shortening of crop growing period by more than 20% in the Sahel by 2020 and a reduction of yields from rain-fed agriculture -- the bulk of African agriculture -- by up to 50%. More frequent and severe droughts, floods and weather extremes would constrain crop and livestock production, while rising water temperatures would decrease food supplies from fisheries resources.

**Water:** Africa's water resources have been decreasing over time as a result of droughts, melting snowcaps, and drying lakes and rivers. Climate change will exacerbate this situation, exposing up to 250 million people to increased water stress by 2020, and increasing the area under water shortage in Sub-Saharan Africa by 29% by 2050. Decreasing water level would negatively affect water quality and intensify water-related conflicts arising from competing demands and the management of shared water resources.

**Energy:** A combination of reduced water flows to major hydropower dams and worsening depletion of biomass energy resources resulting from climate change could seriously compound the already dire state of energy availability and accessibility and further impede industrial development throughout Africa.

**Coastal areas:** Climate change-induced sea-level rise will affect low-lying coastal areas in Africa, further degrade mangroves and coral reefs and threaten human health, infrastructure, fisheries, biodiversity and tourism industries. The resulting hardships would affect large populations, as more than 25% of Africa's population currently lives within 100 kilometres of the coast, and most of the largest cities are along vulnerable coasts.

**Forests and biodiversity:** Current estimates indicate that climate change could lead to loss of up to 40% of species' habitats in Africa by 2085. Along with deforestation, this spells doom for millions of people -- including two-thirds of the population of Sub-Saharan Africa -- whose livelihoods are associated with products from forests and other biodiversity resources.

**Health:** Warmer environments and altered temperature and rainfall patterns resulting from climate change are expected to increase incidences of vector-borne diseases in Africa. Many sub-regions of such as the Sahel, Southern and Eastern Africa would experience increased outbreaks and severity of vector borne diseases such as malaria, cholera, yellow fever, trypanosomiasis and rift valley fever, with far-reaching economic impacts.

**Migrations and conflicts:** Extreme climate events (e.g. floods, droughts, desertification and sea-level rise) are likely to force increasing numbers of African population to migrate from rural to urban areas, and away from increasingly arid areas, low lying coastal areas and small islands. Such massive migrations could spark violent conflicts for access to and control of key resources such as land and water within the continent, and further fuel international migration flows out of the continent.

Contributed by the UN Economic Commission for Africa

### Fact Box 3: How Climate Change Threatens the MDGs

MILLENNIUM DEVELOPMENT GOAL	POTENTIAL IMPACTS OF CLIMATE CHANGE ON THE MDGs
<b>1. Eradicate extreme poverty and hunger</b>	<p>Climate change is predicted to:</p> <ul style="list-style-type: none"> <li>◆ Degrade the forests, fish habitats, pastures, and crop land that many poor families depend on for their food and livelihoods.</li> <li>◆ Damage poor people's homes, water supply, and health, which will undermine their ability to earn a living.</li> <li>◆ Exacerbate social tensions over resource use, which can lead to conflict, destabilising livelihoods and forcing communities to migrate.</li> <li>◆ Affect the operations of hydroelectric power dams.</li> <li>◆ Jeopardize the eradication of hunger and malnutrition through its impact on food output</li> </ul>
<b>2. Achieve universal primary education</b>	<p>Climate change could undermine children's ability to attend school.</p> <ul style="list-style-type: none"> <li>◆ More children (especially girls) are likely to be taken out of school to help fetch water, care for ill relatives, or help earn an income.</li> <li>◆ Malnourishment and illness among children could reduce their school attendance, and impair their learning when they are in class.</li> <li>◆ Floods and hurricanes destroy school buildings, and force migration.</li> </ul>
<b>3. Promote gender equity and empower women</b>	<p>Climate change is expected to exacerbate current gender inequalities.</p> <ul style="list-style-type: none"> <li>◆ Women tend to depend more on the natural environment for their livelihoods than men do, and so are more vulnerable than men are to its variability and change.</li> <li>◆ Women and girls are typically the ones to fetch water, fodder, firewood, and often food. In times of climate stress, they must cope with fewer resources and a greater workload.</li> <li>◆ Female-headed households with few assets are affected particularly severely by climate-related disasters.</li> </ul>
<b>4, 5, 6. Reduce child mortality, improve maternal health, and combat major diseases</b>	<p>Climate change may increase the prevalence and spread of diseases.</p> <ul style="list-style-type: none"> <li>◆ It will lead to more deaths and illness due to heat-waves, floods, droughts, and hurricanes.</li> <li>◆ It may increase the prevalence of diseases spread by mosquitoes (such as malaria and dengue fever) or of those spread in water (such as cholera and dysentery). Children and pregnant women are particularly vulnerable to these diseases.</li> <li>◆ It is likely to significantly increase the challenges and burdens placed upon African health systems.</li> <li>◆ It is expected to reduce the quality and quantity of drinking water, and exacerbate malnutrition among children, particularly in sub-Saharan Africa.</li> </ul>
<b>7. Ensure environmental sustainability</b>	<p>Climate change will alter the quality and productivity of natural resources and ecosystems, some of which may be irreversibly damaged. These changes will also reduce biological diversity and compound existing environmental degradation.</p>
<b>8. Develop a global partnership</b>	<p>Climate change is a global challenge, and responding to it requires global co-operation, especially to enable developing countries to tackle poverty and inequality. It heightens the need for donors to honour their ODA commitments, and to provide additional resources for adaptation.</p>

Sources: adapted from Oxfam (2007), Sperling (2003) and Reid and Alam (2005)

## Fact Box 4: Climate Change, Technology Transfer and Trade

A new agenda where climate change, international trade, and technology transfer issues intersect has attracted increasing attention. This note highlights the issues most relevant to low-income countries.

### Climate change and technology transfer<sup>1</sup> (TT)

The UNFCCC regime has adopted a framework on TT, established an Expert Group on Technology Transfer (EGTT) and created the Special Climate Change Fund (SCCF) to support adaptation and TT. There was also renewed attention on TT at the Bali meeting. In practice, the transfer of hard technologies has remained woefully inadequate. The lack of progress with international climate mitigation negotiations has contributed to this state of affairs. Other factors impeding climate TT are: i) the unwillingness for private companies in developed countries to share their technologies without commercial benefit, ii) weak intellectual property rights (IPR) regimes in many developing countries and iii) concerns that domestic firms would lose competitiveness to foreign competitors in countries that do not undertake strong climate mitigation efforts. While most of the concerns about TT are more applicable to mitigation technologies, they also affect technologies for adaptation that are particularly important to help Africa and other developing countries reduce their vulnerability and enhance their resilience. Promoting TT would require a number of actions both from recipient countries and their external partners:

- i) A more proactive approach in recipient countries including technology needs assessments and building the capacity to identify appropriate technologies given local conditions;
- ii) Strengthened IPR regimes and, in parallel, consider the creation of mechanisms to compensate losses from weak IPR protection for climate-friendly technology;
- iii) A more strategic use of ODA to assist in technology areas where the private sector is not active. The Canada Climate Change Development Fund, the US Climate Technology Partnership and the Netherlands' Miliev Program are good illustrations of this approach.

### Climate change and international trade

Besides its potentially negative impacts on the production of traded goods and services, climate change has competitiveness implications. The basic concerns are of two types: i) stringent climate measures might disadvantage domestic producers relative to foreign competitors that do not face similar measures and ii) strong regulations could lead domestic firms to relocate to other countries (known as the leakage problem). Recent analysis has shown that these impacts are real -- but relatively unimportant. This, however, has not prevented serious consideration in both the European Parliament and the US Congress of offsetting border measures that address international competitiveness and "free rider" concerns. Rising political support for some kind of border measure provision in climate legislation may eventually have implications for African exports.

With the prominence of climate change as a global policy issue, there is active interest in explicitly identifying goods and services that are directly relevant to climate change mitigation or adaptation and including them as climate change issues on trade negotiating agendas. A recent study by the World Bank<sup>1</sup> found that the removal of tariff and non-tariff barriers can increase the diffusion of clean technologies in developing countries. The study also found very large trade potential between developing countries in promoting clean energy technology.

Contributed by the Africa Partnership Forum Support Unit

<sup>1</sup> Useful references to the topics discussed in this note are: Deborah Murphy, John Van Ham and John Drexhage, *Climate Change and Technology*, International Institute for Sustainable Development, August 2005 and Thomas L. Brewer, *Climate Change Policies and Trade Policies: the New Joint Agenda*, January 2008.

<sup>2</sup> The World Bank, *International Trade and Climate Change: Economic, Legal, and Institutional Perspectives*, 2008.

## Fact Box 5: The Effects of Climate Change on Small Holder Farmers

The debate on climate change (CC) adaptation has insufficiently focused on poverty - specifically, *rural* poverty. More than 50% of the population in sub-Saharan Africa live in rural areas, and poor smallholder farmers (farming between 1-10 hectares) constitute approximately 70% of the poor. 95% of smallholder and mainly subsistence farmers depend on rain-fed agriculture for their livelihood and income and are vulnerable to CC challenges.

### IMPACT OF CLIMATE CHANGE ON SMALLHOLDER FARMERS

- **Increased likelihood of crop failure.** The most visible impact of climate change has been increased variability in rain patterns, drought and flash floods. The economic impact on smallholder farmers can be catastrophic.
- **Need for new and costly inputs.** In the face of increasingly fragile ecosystems, regional food security in arid and semi-arid areas increasingly depends on costly irrigation, new varieties, and increased fertilizer and pesticide use. Africa currently utilises less than 15% of the average fertiliser use in the rest of the developing world.
- **Increased human and animal diseases, mortality of livestock, forced sales of livestock at low prices.** The 1968-1988 period of drought in West Africa demonstrated the devastating impact that unpredictable climatic changes could have on small-scale herders and agro-pastoralists. As rainfall decreased, rangelands turned to desert. Smallholders were forced to sell livestock at a loss, increasing poverty at a time of drought.
- **Increased livelihood insecurity, resulting in asset sale, indebtedness and out-migration.** More than two thirds of the population of Africa depends on agriculture for their livelihoods. Stagnant or falling yields with variable rainfall have contributed to a growing debt burden. Smallholders often resort to selling their land and livestock and moving to cities in search of jobs, accompanied by increased pressure on urban centres and urban poverty.
- **Downward spiral in human development indicators in rural areas, such as health and education.** Climate change has had far reaching impacts on quality of life in Africa, for example increased hunger, reduced resources for health and education, and both spread and increased incidence of some diseases, for example malaria.

### WHAT CAN BE DONE?

**Sustainable land and natural resource management.** Local, participatory approaches to sustainable land, forest and natural resource management (NRM) are essential. Within the context of the AU/NEPAD CAADP programme, adaptation is being supported within the framework of a Regional Partnership on Sustainable Land Management (TerrAfrica) and its Strategic Investment Programme (SIP). IFAD, CIRAD and ICRAF are working together to address climate change in a number of countries through sustainable NRM using innovative Smallholder Conservation Agriculture Promotion (SCAP).

**Water use and management.** Increasing access to small-scale irrigation and improving maintenance and equitable access to large scale irrigation schemes ensure sustainable access to agricultural water. Small-scale irrigation in Burkina Faso and drip irrigation in Senegal demonstrate the success of such approaches.

**Promotion of smallholder economic and livelihood diversification to better manage risk.** Support to agricultural diversification, access to market, rural finance services and off farm activities.

**Crop and index-based weather insurance schemes.** Climate related insurance schemes are one tool for support climate risk management, if they are viable sustainable and accessible to all rural poor.

**Risk preparedness and early warning.** Support to risk preparedness activities and community-based Early Warning Systems (EWS) which can disseminate information and promote response in a timely way.

**Innovation and technology development.** Promoting the development of and improved access to technologies, and sharing knowledge on sustainable and climate-friendly farming practices is vital. The adaptation of a new drought and pest resistant variety of rice - New Rice for Africa (NERICA) promises to increase food security and reduce poverty for many.

### WHO NEEDS TO DO WHAT?

**African Governments** should 1) lead the facilitation of adaptation of smallholder agriculture to climate change and mitigation of impacts at the country level within the context of the AU/NEPAD CAADP programme. 2) Define the policy/programme framework to minimize risk and establish early warning systems that respond to the needs of poor smallholders and vulnerable groups - especially for women and youth.

**Private sector actors** can ensure the financial viability of agriculture in a context of climatic variability through 1) supporting small farmers, rural/producer organisations and private input and output suppliers 2) sharing local knowledge 3) adopting new cropping patterns 4) increase access to seed varieties and fertilisers 5) advocating for policy change.

**Bilateral and multilateral donors** should 1) developing national and international CC policies and approaches to ensure the involvement of the rural poor in decision making 2) develop locally appropriate adaptation and mitigation programmes 4) support innovation and adoption of new technologies and practices to combat climate change.

Contributed by K.Hussein with R.Roy, C.Calvosa and Global Environmental Facility Unit, IFAD

## Fact Box 6: Gender and Climate Change

Climate change impacts directly affect the natural resources available to women and men. But the effects in women's and men's lives are different - particularly in rural communities - because of their different roles and resources in the household. Women tend to depend more on the natural environment for their livelihoods than men do, and so are more vulnerable than men to climate variability and change. It's essential to take account of these differences in planning effective adaptation.

**Women are affected differently and more severely by climate impacts.** Women and men have different roles in the household, and different resources to deliver them with. In providing food, fuel, water and care for the family, women have:

- more dependence on natural resources – like water, reliable rainfall, fertile land, firewood - but...
- fewer physical resources – they are unlikely to own land, lack irrigation to manage erratic rainfall, and have fewer assets (like tools, machinery, or a bicycle) to use for earning off-farm incomes .
- fewer human resources – less education, agricultural training, or access to climate information
- fewer financial resources – little savings or cash, and poor access to credit and markets
- less powerful social resources – social norms tend to limit women's mobility and authority, reinforce their household roles and prevent their voice being heard in community decision-making.

**The impact of climate change on agricultural yields could have a particularly negative effect on women's incomes and household food security.** Women make up over 50% of the agricultural work force in Africa and are responsible for 70-80 percent of household food production. They are therefore key players in the agriculture sector and highly dependent on subsistence farming for livelihoods. The frequency and severity of climate extremes may leave women unable to cope due to the fact that women often have to juggle their reproductive roles and productive roles. Women's crops may also fail faster due to the fact that women typically face problems of access for the most basic resources in agricultural production, land use, agricultural inputs and tools. Women's crops are generally grown on less fertile, common land, and without irrigation so women quickly have to find alternative ways to feed their families, such as searching for wild foods.

**Water scarcity may create an increased workload for women in times of climate stress.** Women and girls are typically the ones responsible for collecting fuel wood and water, creating an increased workload for women in times of climate stress. Water scarcity means diseases like cholera and diarrhoea may intensify (especially for children and pregnant women) increasing caring work for women. Women in many African communities have responsibilities for collecting water, storing, cleaning, and maintaining water systems. In times of drought, women are likely to spend many more hours collecting water and caring for sick children and parents, and so also risk their own health due to fatigue.

**Adaptation policies must take account of different impacts on women and men.** Women may be more vulnerable to climate impacts, but they are also the key to designing successful adaptation strategies because of their intense use and knowledge of natural resources. Climate change clearly offers an opportunity to rethink gender inequities and to involve both women and men in finding 'new' avenues and solutions that can respond to today's profound environmental challenges. Some entry-points for integrating gender concerns into adaptation policies and practice include:

- The UNFCCC should invest in and promote gender-focused climate-change research, and promote gender-disaggregated indicators for national reporting to the UNFCCC.
- National Adaptation Programmes of Action (NAPAs for the LDCs) and National Adaptation Strategies for all countries should be designed to take account of the different impacts of climate change, and climate policies, on women and men.
- Finance channelled through the Adaptation Fund should be directed to the most vulnerable communities in developing countries, and should promote poverty-reducing, gender-sensitive programmes.
- Local government, donors and NGOs must ensure that any plans for adapting to climate change involve women at the heart of adaptation consultations, planning and implementation.

Within communities, women and men must be equally involved in building adaptive capacity, to ensure that both women's and men's interests – their differing roles and resources – are taken into account. In this way, adapting to climate change can help reduce gender inequalities and so promote long-term development too.

Authored by: Kate Raworth (Oxfam GB) and Fatima Denton (IDRC - Senegal)

## Fact Box 7: National Adaptation Programmes of Action (NAPAs)

### WHAT ARE NAPAS?

**NAPAs provide a process for countries to identify priority activities** that respond to their urgent and immediate needs with regard to adaptation to climate change. The rationale for NAPAs rests on the limited ability of Less Developed Countries (LDCs) to adapt to the adverse effects of climate change. In order to address the urgent adaptation needs of LDCs, a new approach was needed that would focus on enhancing adaptive capacity to climate variability, which itself would help address the adverse effects of climate change. The NAPAs take into account existing coping strategies at the grassroots level, and builds upon that to identify priority activities. In the NAPA process, prominence is given to community-level input as an important source of information, recognizing that grassroots communities are the main stakeholders.

### FOCUS OF NAPAS

**The NAPAs focus on urgent and immediate needs** – those for which further delay could increase vulnerability or lead to increased costs at a later stage. NAPAs should use existing information and must be action-oriented and country-driven and be flexible and based on national circumstances. In order to effectively address urgent and immediate adaptation needs, NAPA documents should be presented in a simple format, easily understood both by policy-level decision-makers and by the public.

### THE NAPA PROCESS

**The steps for the preparation of the NAPAs** include synthesis of available information, participatory assessment of vulnerability to current climate variability and extreme events and of areas where risks would increase due to climate change, identification of key adaptation measures as well as criteria for prioritizing activities, and selection of a prioritized short list of activities. The development of a NAPA also includes short profiles of projects and/or activities intended to address urgent and immediate adaptation needs.

### Africa and NAPAs

**To date there are a total of 22 completed NAPAs in Africa<sup>1</sup>** - the majority of which were completed in 2007. The endorsement of NAPAs in Africa demonstrates the commitment of African governments to combat the adverse effects of climate change.

The primary concern of the NAPAs are current climate risks and observed trends. The most common key areas that have emerged as high priority adaptation actions by African countries include, *inter alia*;

- *strengthening of early warning systems*
- *adaptation of land use practices (crops, fish and livestock)*
- *coastal erosion and storm protection, and;*
- *disaster risk reduction (e.g. drought coping strategies)*

The preparation of the NAPAs in Africa has been a country driven process based on the principle of participation and the involvement of national and local stakeholders. NAPAs therefore not only raise awareness about climate change but also hope and expectations. A number of projects have been submitted to the Global Environment Facility (GEF) for funding. Successful and immediate implementation of the set of NAPA projects will serve to demonstrate the need to integrate climate change issues into the development planning process.

The national NAPAs submitted to date are available for download at [http://unfccc.int/national\\_reports/napa/items/2719.txt.php](http://unfccc.int/national_reports/napa/items/2719.txt.php)

**Brief assessment:** There are several barriers that may hamper the implementation of these activities, and there is need to address these for the smooth implementation of the proposed activities. Some of these include:

**Inadequate financing and underestimation of adaptation costs:** financial constraints are limiting the scope of governments and financing provisions are unrealistically low.

**Project-based bias:** Small-scale project-based interventions are designed to address the urgent needs of the most vulnerable, however effective adaptation planning needs has to be developed through national programmes.

**Weak links to human development:** Some NAPAs do not provide a basis for integrating adaption into national poverty strategies. NAPAs should not be regarded as an isolated action but should be integrated into sectoral development programmes and national planning.

<sup>1</sup> The 22 African countries that have completed their NAPAs are: Benin, Burkina Faso, Burundi, Cape Verde, Comoros, Djibouti, Eritrea, Guinea, Lesotho, Madagascar, Malawi, Mali, Mauritania, Niger, DRC, Rwanda, Sao Tome, and Principe, Senegal, Sudan, Tanzania, Uganda, Zambia

**Source: Adapted from the UNFCCC website and the UN Human Development Report (2007/2008) : Fighting Climate Change: Human Solidarity in a Divided World.**



## Fact Box 8: A Case Study of NAPA: Rwanda

The Republic of Rwanda has finished its report on National Adaptation Programmes of Action to climate change, "NAPA", in conformity with the guidelines prepared by the Least Developed Countries Groups of Experts (LEG) and adopted by the November 2001 Assembly of the Conference of Parties to the United Nations Framework Convention on Climate Change (Decision 28/CP.7).

The strategy for adequate response to climate change reached by NAPA Rwanda is articulated on six (6)-priority adaptation options to climate change which include:

- ❖ An Integrated Water Resource Management – IWRM;
- ❖ Setting up an information system to early warning of hydro-agro meteorological system and rapid intervention mechanisms;
- ❖ Promotion of non agricultural income generating activities;
- ❖ Promotion of intensive agro-pastoral activities;
- ❖ Introduction of species resisting to environmental conditions;
- ❖ Development of firewood alternative sources of energy.

From these priority options, 17 projects have been identified from which 7 high priority projects, hence urgent and immediate, have been selected and their profiles developed.

In order to speed up the next phase which is implementation of the NAPA and to facilitate its integration in the EDPRS - Economic Development and Poverty Reduction Strategy and consequently in the wider GoR's budgetary process, a national consultant was hired to develop the projects profiles in detail. To be ready for implementation on ground, detailed stakeholder and gap assessments, risk and barrier assessments, activities and budget, logframe and monitoring and evaluation plan were developed.

The detailed projects are the following:

1. Land conservation and protection against erosion and floods at the level of Districts of vulnerable regions to climate change (duration - 5 years; estimated BUDGET: US\$ 1.45 million)
2. *Establish* the mastering hydro meteorological information and early warning systems to control extreme phenomena due to climate change: - Installation and rehabilitation of hydrological and meteorological stations (duration - 4 years; BUDGET: estimated US\$ 1.9 million)
3. Development of irrigated areas by gravity water systems from perennial streams and rivers in often vulnerable zones to prolonged droughts (duration- 4 years; estimated BUDGET: US\$ 750 thousand)
4. Support Districts of vulnerable regions to climate change in planning and implementing measures and techniques related to conservation and water harvesting and intensive agriculture, and promoting existing and new resistant varieties of crops adapted to different bioclimatic soil (duration-4 years; estimated BUDGET : US\$ 560 thousand)
5. Increase adaptive capacity of grouped habitat "Imidugudu" located in vulnerable regions to climate change by the improvement of drinking water, sanitation and alternative energy services, and the promotion of non agricultural jobs. (Duration: 4 years; estimated BUDGET: US\$ 1.65 million)
6. Increase food and medicine modes of distribution to respond to extreme climate change and sensitize to stocking and conservation of agriculture products (duration: 2 years; estimated BUDGET: US\$ 850 thousand);
7. Preparation and implementation of woody combustible substitution national strategy to combat the deforestation and erosion as well (duration - 4 years; estimated BUDGET: US\$ 950 thousand).

As indicated in the official gazette of the Republic of Rwanda, the law determining the state finances for the 2008 fiscal year has taken into account the NAPA priorities which are also included in the EDPRS by planning, for example, the following but not exhaustive activities:

- a) Master plan of land use management (RWF 700,000,000);
- b) Rehabilitation and protection of river banks and lakes shores (RWF 910,000,000);
- c) Detailed studies on Nyabarongo watershed management ( RWF 27,000,000);
- d) Weather forecasting (Expand hydrometeorological stations network & data bank modernisation and management system.

**Contributed by Rwanda Environmental Management Agency, Government of Rwanda**

## Fact Box 9: The ClimDev Africa Programme

Africa's political leaders have expressed explicit commitments to tackle the climate change challenge. At the 8<sup>th</sup> Ordinary Session of the African Union held in January 2007, African Heads of States and Government expressed grave concern on the vulnerability of Africa's socio-economic and productive systems to climate change. In their decision and declaration on climate change, they called upon Africa's cooperation partners to support the member States and Regional Economic Communities (RECs) to effectively integrate and implement adaptation and mitigation measures into their development plans.

The African Union Commission (AUC) was requested to work with the United Nations Economic Commission for Africa (ECA) and the African Development Bank (AfDB) to develop and implement a major plan on climate change and development in Africa: **Climate Information for Development in Africa (ClimDev Africa)**. In April 2007, the Fortieth session of the ECA Conference of African Ministers of Finance, Planning and Economic Development adopted a Resolution engaging African Member States and development partners to support the implementation of the same plan.

### What is ClimDev Africa?

ClimDev Africa is an African development programme to integrate Climate Risk Management (CRM) into pertinent policy and decision processes through the continent. It will be implemented under the direction of the joint AUC-ECA-AfDB Secretariat with support from a number of sources. ClimDev Africa aims to enhance economic growth and progress towards the MDGs through mitigating climate variability and climate change, and to ensure that development achievements are climate-resilient in the longer term. It is envisaged to run over a period of 6 years and result in the development and integration of long-term CRM strategies into national development plans.

The overall purpose of ClimDev is to strengthen the climate-resilience of economic growth and the MDGs through main-streaming climate risk management in sensitive sectors. This fits with national poverty reduction strategies (PRSs) in Africa oriented towards the MDGs. It also accords with AU/NEPAD plans for improved agriculture and food security, disaster risk reduction and environmental action, and the global programme on adaptation to climate change agreed at COP12 in November 2006. ClimDev Africa is thus meant to respond to the needs for an integrated approach and collective action to address issues of climate-related data and observation, information services, policies and risk management practices in building climate-resilience capacity.

### Expected outputs/outcomes

The expected outcome from the Programme is improved availability, exchange and use of quality climate information and services addressing the needs of local, national and regional scale decision-makers and stakeholders, in support of sustainable development and achievement of the MDGs, particularly in critical climate-sensitive sectors and areas in Africa. This would include tangible results in:

- a) **Policies:** Political engagement of African States in developing and implementing policies that integrate CRM into climate-sensitive sectors to ensure best adaptation to climate change;
- b) **Practices:** Enhanced CRM practices and long-term CRM strategies in priority climate-sensitive sectors such as agriculture and food security, water resources, health, energy and environment, from local to regional scale in Africa;
- c) **Information Services:** Improved sectoral CRM decision-making and community responses to climate risk through the provision of adequate information services on CRM practices to relevant stakeholders (public sector, private sector and civil society) at national and regional levels;
- d) **Observations, Data and Infrastructure:** Improved availability of, and access to, climate-related data and analytical products for a) sectoral CRM, b) monitoring climate variability and c) detecting climate change, with strengthened observation networks and service centres in Africa; and
- e) **Local Community Engagement:** Enhanced capacity of local communities to adapt to climate change through access to useable information packages.

### The African Climate Policy Centre

As part of the ClimDev Programme Policy component, the ECA has committed to establishing an African Climate Policy Centre. The purpose of the Centre is to create a capacity hub to generate, assemble and administer an adequate base of knowledge to strengthen efforts and capacities of African countries to address the challenge of climate change. The Centre will contribute to enabling African countries to a) mainstream climate-related concerns in their development policies, frameworks and plans, b) better manage resources in a sustainable manner and c) participate more effectively in international discussions on climate change that will influence their economic and social development.

### Financing

The G8 countries have noted the importance of climate monitoring and undertaken to work to strengthen existing climate institutions in Africa with a view to developing fully operational climate centres in Africa. ClimDev-Africa is specially designed for multi-donor engagement, and is predicated on major donor support. The estimated budget for the programme is US\$ 830 million.

Source(s): ECA/AU Commission Report on Climate Change: African Perspectives for a post 2012 Agreement (March 2008) and UNECA website ([http://www.uneca.org/eca\\_programmes/sdd/climate.htm](http://www.uneca.org/eca_programmes/sdd/climate.htm))

## Fact Box 10: The Road to Copenhagen

*The Road to Copenhagen in 2009 - the negotiation process from now to the 15th meeting of the Conference of the Parties (COP15) to the UN Climate Change Convention (UNFCCC) in Copenhagen in December 2009.*

At the 13<sup>th</sup> UNFCCC-conference in Bali in December 2007, the Parties adopted the Bali Action Plan as the roadmap for the negotiation process towards the conclusion of a new, post-2012 climate change agreement. The Bali Action Plan defines a negotiating framework for consultations between the Parties in 2008 and 2009. The outcome of these consultations shall be presented for adoption at the 15<sup>th</sup> Conference in Copenhagen in December 2009.

The Bali Action Plan provides a comprehensive framework for all the topics to be considered as part of the negotiations. It identifies five topics, which must be addressed as part of the negotiation process: a common vision, enhanced action on mitigation, on adaptation, on technology development and transfer, and on provision of financial resources.

The negotiation process after Bali has only just begun. A complex and difficult process lies ahead. It is important to keep a firm focus on the process already established in the UN-framework.

The Bali Action Plan includes a calendar for the negotiation process in 2008. The calendar envisages that all topics will be considered in parallel at the ordinary and extra-ordinary sessions. In addition to the ordinary meetings among the Parties in June and December 2008, two extra-ordinary meetings (inter-sessional meetings) among the Parties will be convened in April and August/September.

The first session of the *Ad-Hoc* Working Group on Long-Term Co-operative Action, a new body established at COP 13 at Bali, will take place from 31 March – 4 April in Bangkok. The purpose of the meeting will be to develop the Group's work programme. A more detailed time-table for the negotiations for each of the five topics may be adopted at this meeting. (Access to the meeting's agenda at: [http://unfccc.int/meetings/intersessional/awg-lca\\_1\\_and\\_awg-kp\\_5/items/4288.php](http://unfccc.int/meetings/intersessional/awg-lca_1_and_awg-kp_5/items/4288.php)). The 5<sup>th</sup> session of the *Ad-Hoc* Working Group on further commitments for Annex I parties under the Kyoto Protocol will also be held at the same time.

The 28<sup>th</sup> sessions of 2 UNFCCC subsidiary bodies are scheduled to take place from 2 – 13 June 2008 in Bonn (the Subsidiary Body for Implementation and the Subsidiary Body for Scientific and Technological Advice). It is expected that the 2<sup>nd</sup> meeting of the first *Ad-Hoc* Working Group above, and the resumed 5<sup>th</sup> session of the second *Ad-Hoc* Working Group will also be held.

Various other meetings are also scheduled. The 28<sup>th</sup> session of the Inter-Governmental Panel on Climate Change will take place in Budapest from 9 – 10 April. The Panel will make recommendations on key elements of the future IPCC work programme, and in particular working group structure, main types of reports, and timing of future reports. G8 Environment Ministers will be in Kobe, Japan from 24 – 26 May in preparation for the G8 Summit to be held on 7 – 9 July in Hokkaido.

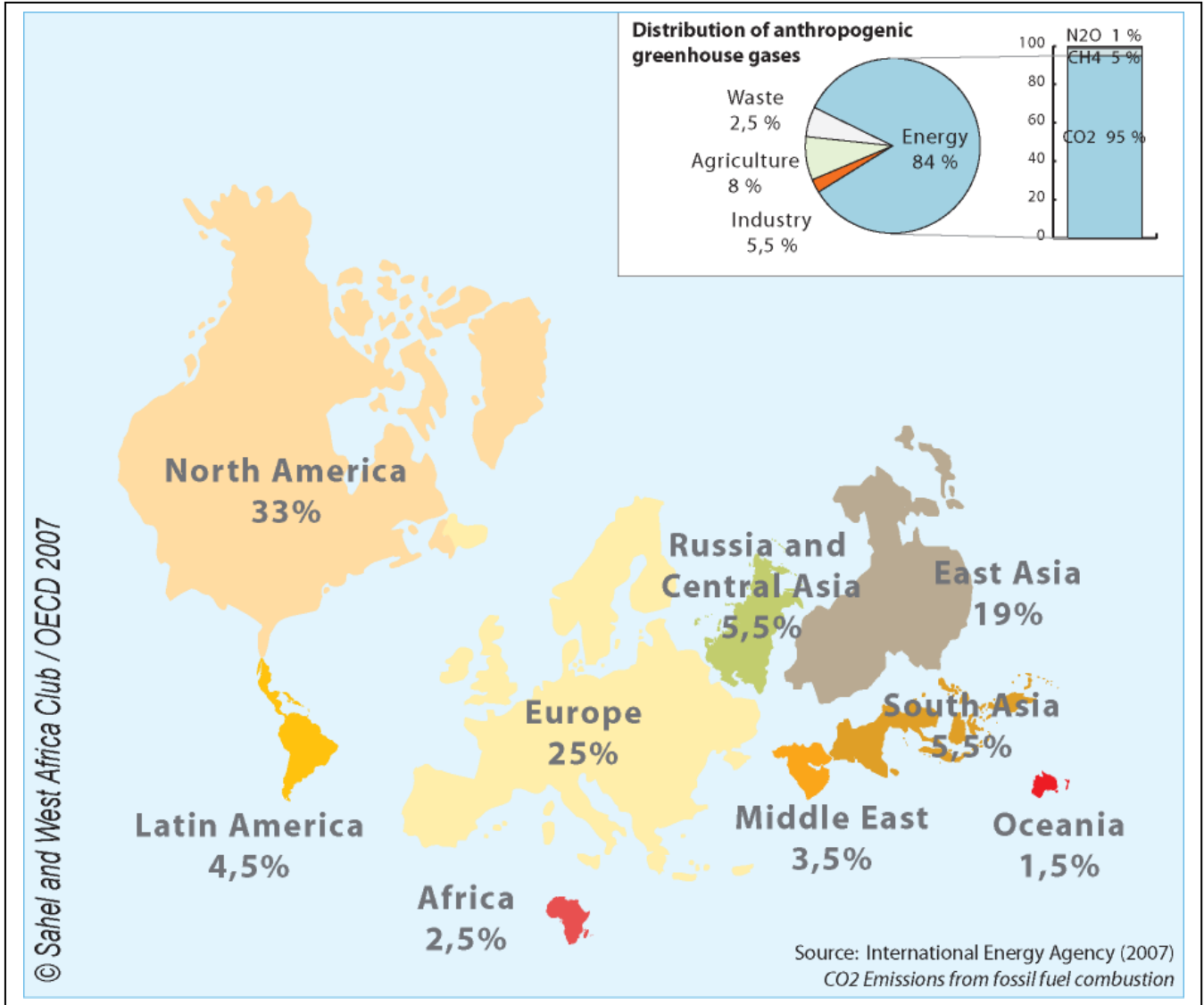
A number of key meetings will also be taking place in Africa throughout the year, including the Conference of African Ministers of Finance Planning and Economic Development in March/April.

During the course of 2008 agreement should be reached on a range of issues for adoption at the COP14 meeting in Poznan in Poland in December 2008. Depending on the status of the negotiations, the Parties may decide at the Poznan-meeting to further intensify the negotiation process in a number of extra-ordinary meetings during 2009.

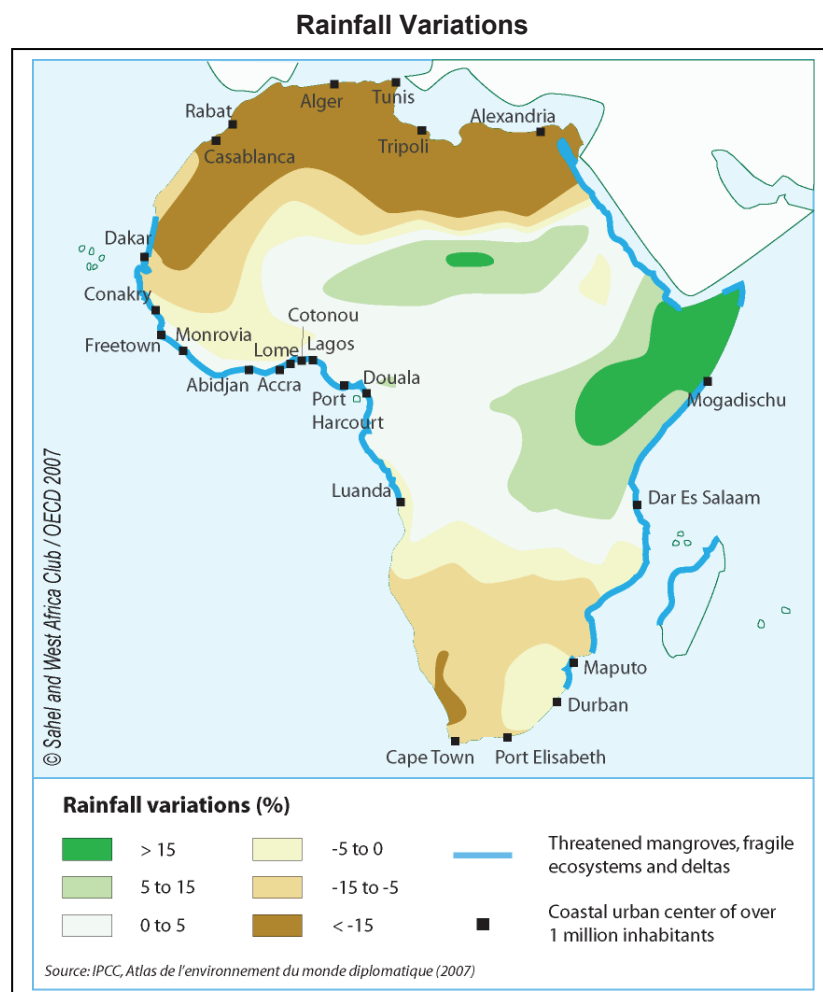
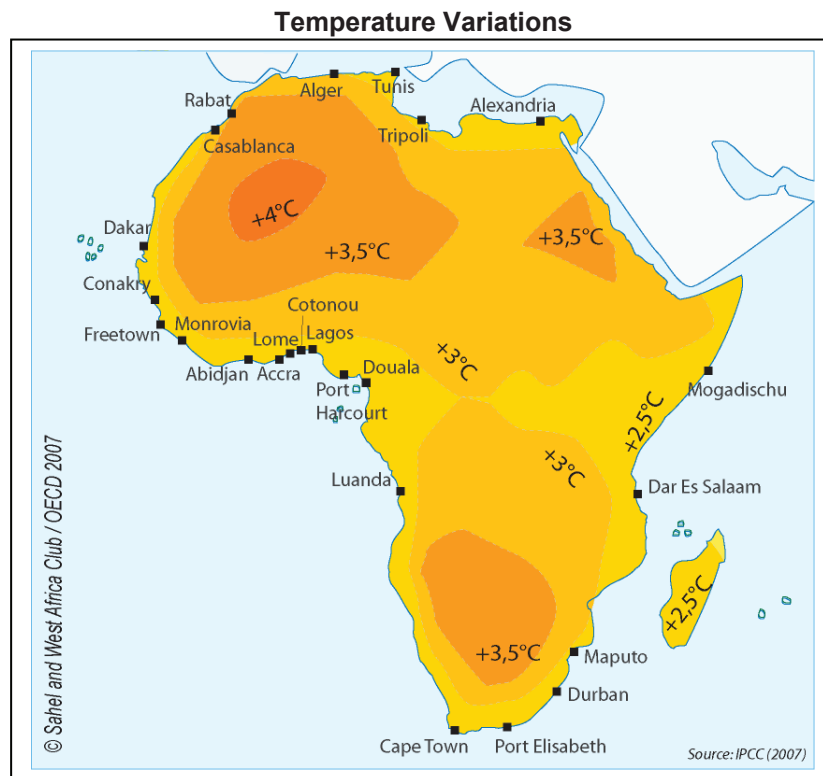
All countries – not least countries that are particularly vulnerable to the effects of climate change – have a strong interest in a successful outcome in Copenhagen in 2009. Countries need to be actively involved in international negotiations and initiatives regarding climate change issues. Denmark is committed to facilitate the involvement of African countries in the international negotiation process.

**Contributed by the Government of Denmark  
Additional material from the UNFCCC website**

**Africa contributes the least to climate change....**

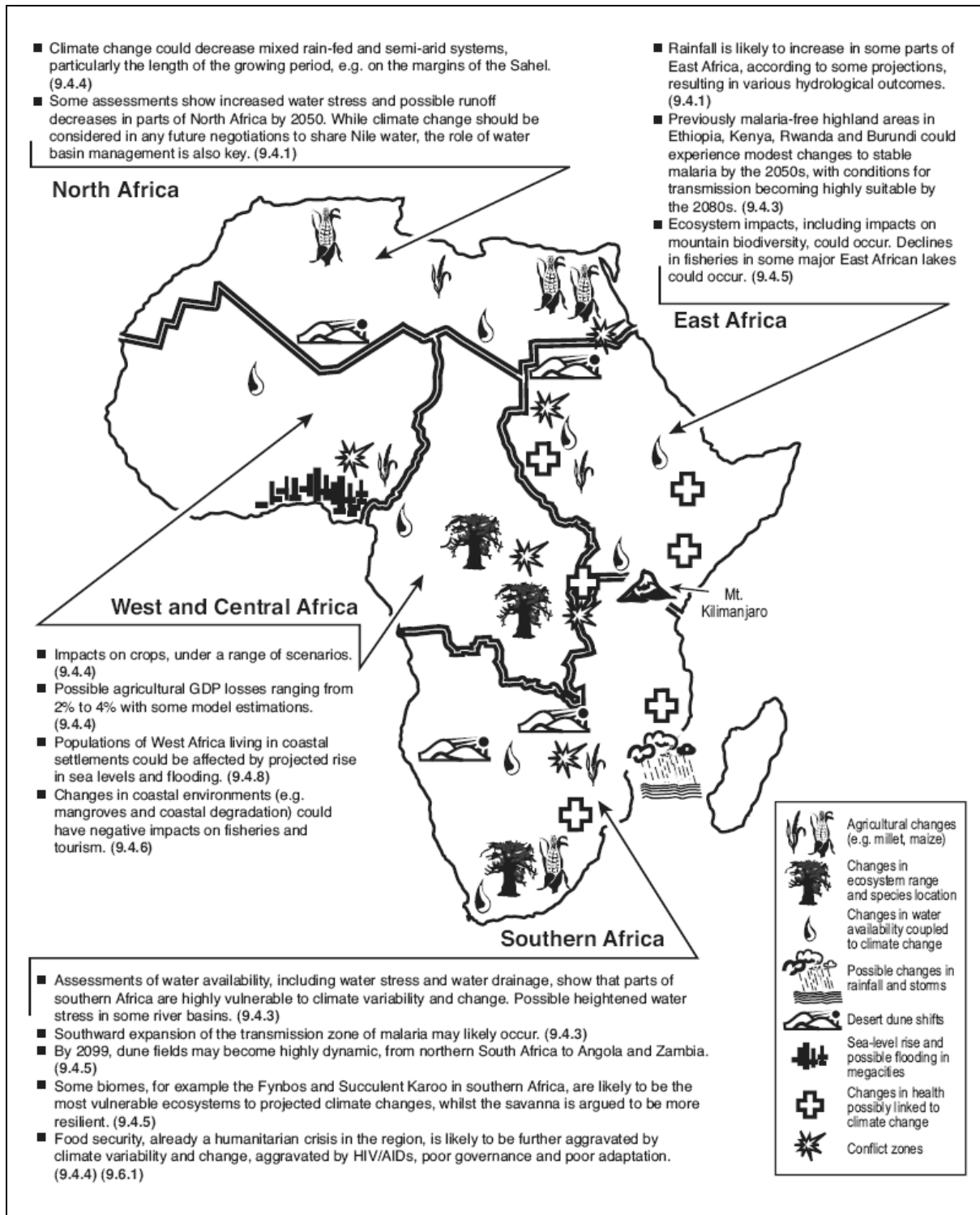


# Climate change will affect both temperature and precipitation on the continent....



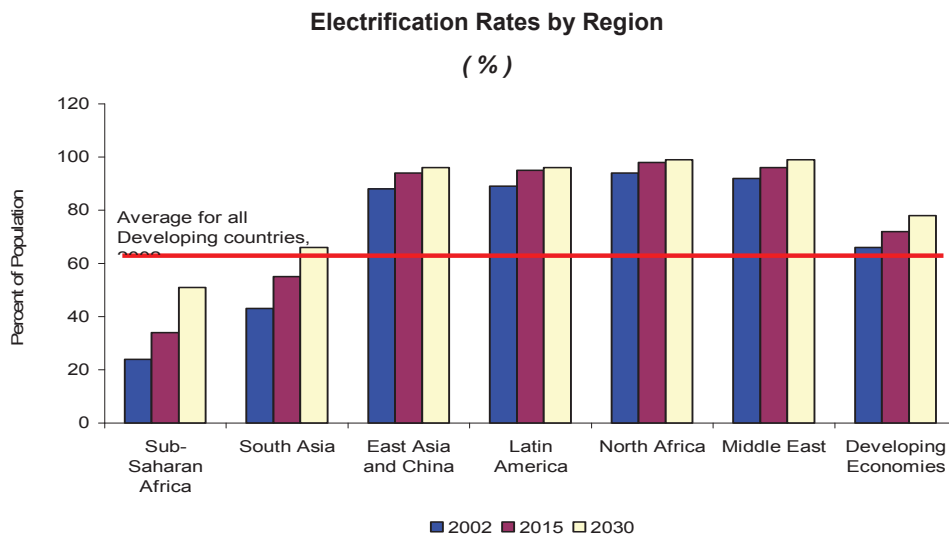
## ...Making Africa acutely vulnerable to its impacts

### Examples of current and possible future impacts and vulnerabilities associated with climate variability and climate change for Africa



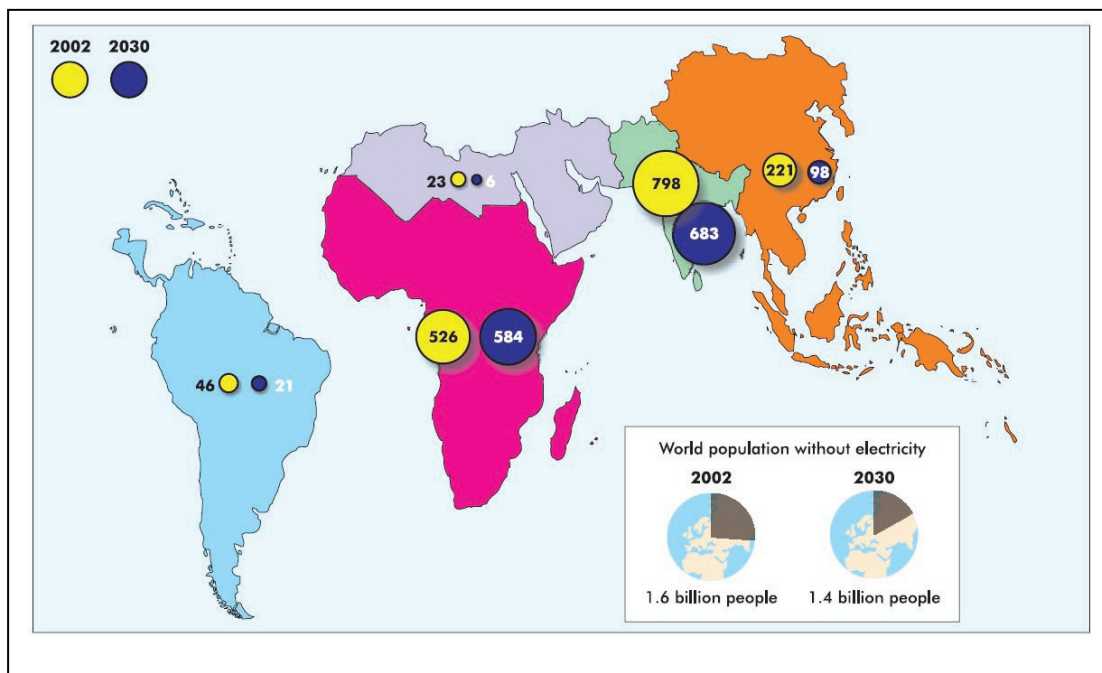
Source : IPCC (2007)

# Africa has the greatest need to develop its energy sources....



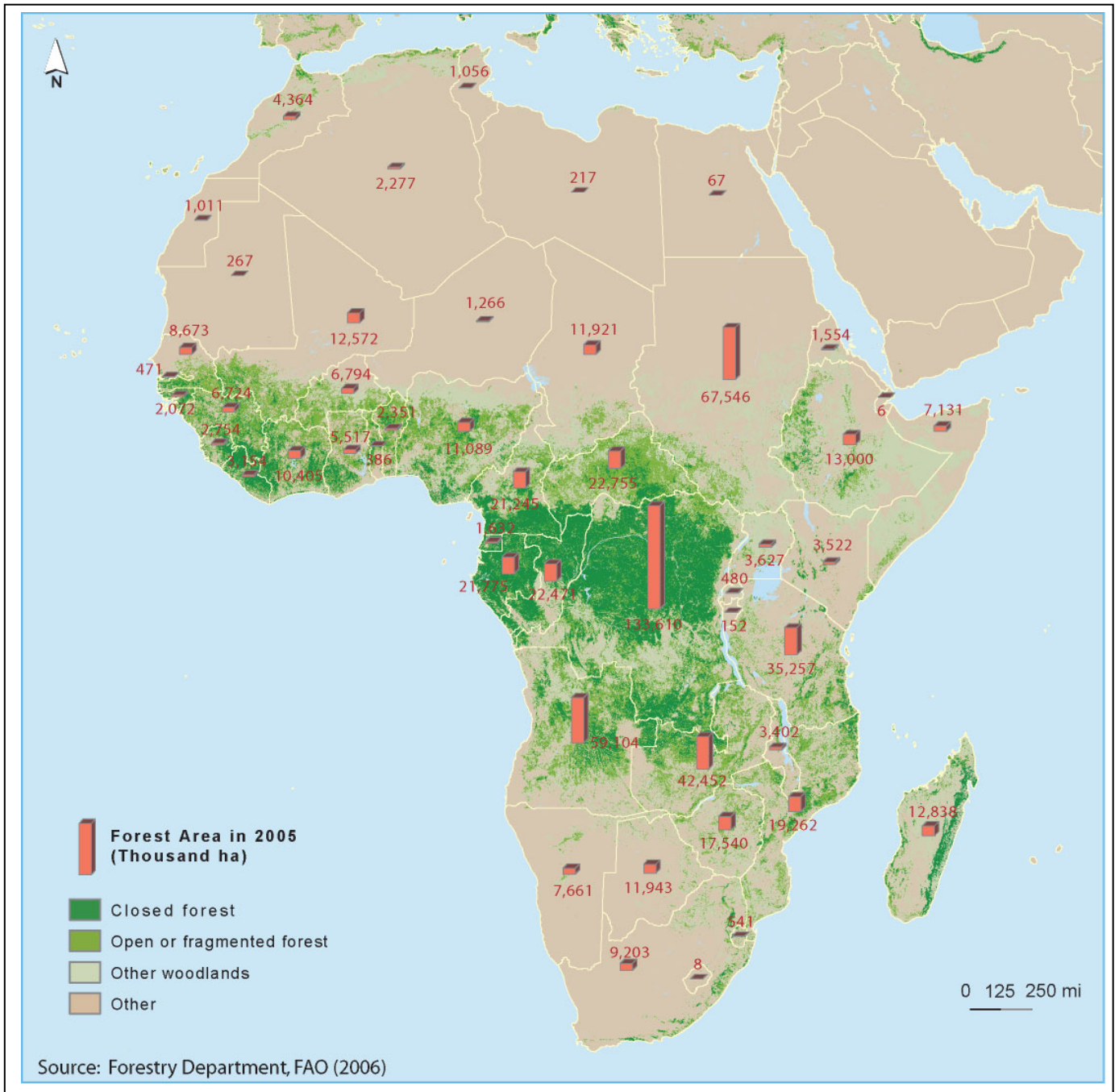
Source: IEA World Energy Outlook 2004, reference scenario

### Global Electricity Deprivation (millions of people)



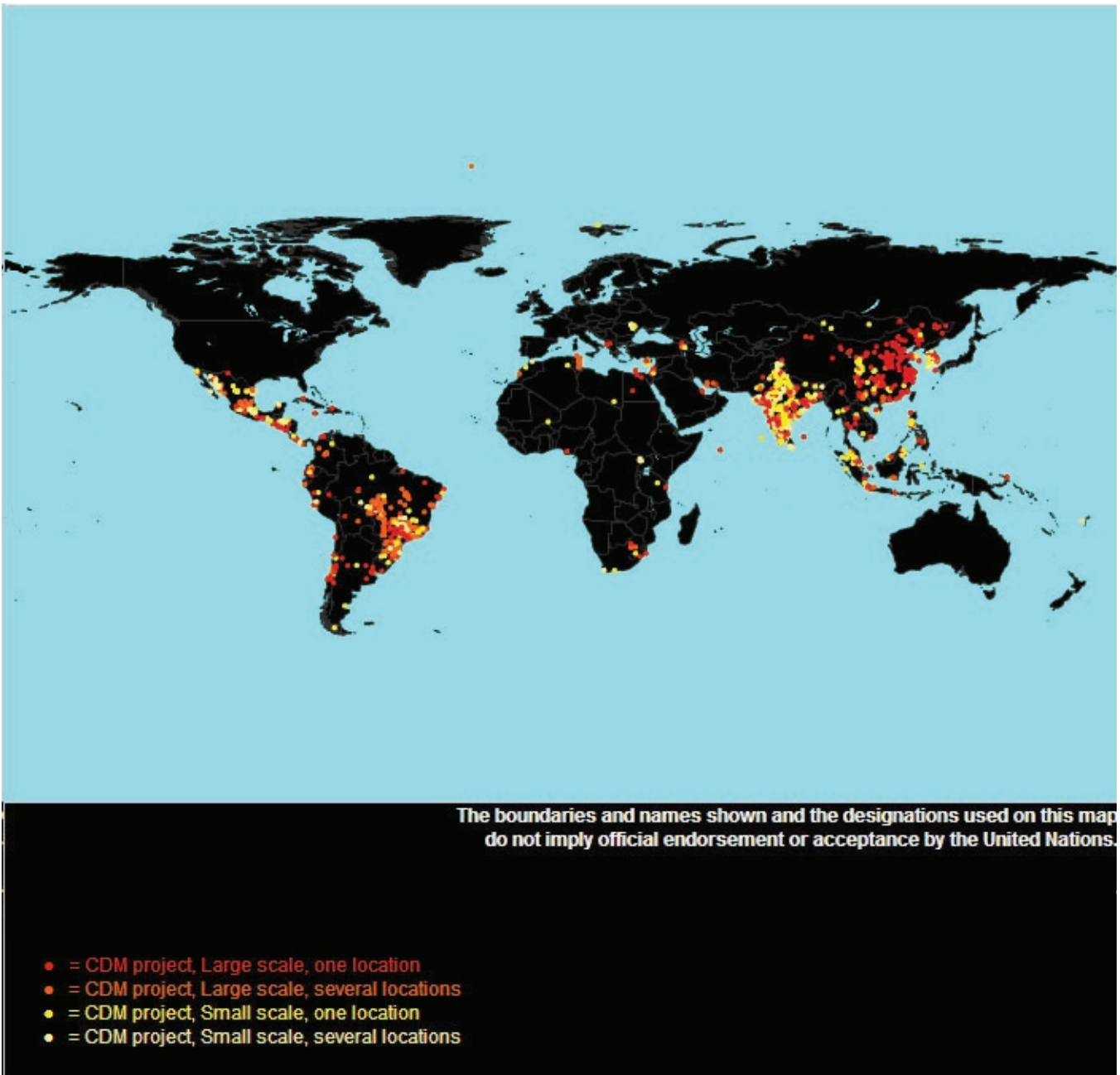
Source: IEA, World Energy Outlook, 2004

...and great potential to contribute to global efforts to reduce emissions....





...Yet it is the continent that receives the least support from carbon finance mechanisms



Source: UNFCCC, CDM Project Locations, <http://cdm.unfccc.int/Projects/MapApp/index.html>

Advance unedited version

Decision -/CP.13

## Bali Action Plan<sup>1</sup>

*The Conference of the Parties,*

*Resolving* to urgently enhance implementation of the Convention in order to achieve its ultimate objective in full accordance with its principles and commitments,

*Reaffirming* that economic and social development and poverty eradication are global priorities,

*Responding* to the findings of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change that warming of the climate system is unequivocal, and that delay in reducing emissions significantly constrains opportunities to achieve lower stabilization levels and increases the risk of more severe climate change impacts,

*Recognizing* that deep cuts in global emissions will be required to achieve the ultimate objective of the Convention and emphasizing the urgency<sup>2</sup> to address climate change as indicated in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,

1. *Decides* to launch a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012, in order to reach an agreed outcome and adopt a decision at its fifteenth session, by addressing, inter alia:

- (a) A shared vision for long-term cooperative action, including a long-term global goal for emission reductions, to achieve the ultimate objective of the Convention, in accordance with the provisions and principles of the Convention, in particular the principle of common but differentiated responsibilities and respective capabilities, and taking into account social and economic conditions and other relevant factors;
- (b) Enhanced national/international action on mitigation of climate change, including, inter alia, consideration of:
  - (i) Measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all developed country Parties, while ensuring the comparability of efforts among them, taking into account differences in their national circumstances;
  - (ii) Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner;
  - (iii) Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and

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<sup>1</sup> This is an advance unedited version of the Bali Action Plan taken from the UNFCCC website via the following link: [http://unfccc.int/files/meetings/cop\\_13/application/pdf/cop\\_bali\\_action.pdf](http://unfccc.int/files/meetings/cop_13/application/pdf/cop_bali_action.pdf). The final official report will soon be published, and will be available for consultation on the UNFCCC website (<http://unfccc.int>)

<sup>2</sup> Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Technical Summary, pages 39 and 90, and Chapter 13, page 776.

- the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries;
- (iv) Cooperative sectoral approaches and sector-specific actions, in order to enhance implementation of Article 4, paragraph 1(c), of the Convention;
  - (v) Various approaches, including opportunities for using markets, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing countries;
  - (vi) Economic and social consequences of response measures;
  - (vii) Ways to strengthen the catalytic role of the Convention in encouraging multilateral bodies, the public and private sectors and civil society, building on synergies among activities and processes, as a means to support mitigation in a coherent and integrated manner;
- (c) Enhanced action on adaptation, including, inter alia, consideration of:
- (i) International cooperation to support urgent implementation of adaptation actions, including through vulnerability assessments, prioritization of actions, financial needs assessments, capacity-building and response strategies, integration of adaptation actions into sectoral and national planning, specific projects and programmes, means to incentivize the implementation of adaptation actions, and other ways to enable climate-resilient development and reduce vulnerability of all Parties, taking into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, especially the least developed countries and small island developing States, and further taking into account the needs of countries in Africa affected by drought, desertification and floods;
  - (ii) Risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance;
  - (iii) Disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change;
  - (iv) Economic diversification to build resilience;
  - (v) Ways to strengthen the catalytic role of the Convention in encouraging multilateral bodies, the public and private sectors and civil society, building on synergies among activities and processes, as a means to support adaptation in a coherent and integrated manner;
- (d) Enhanced action on technology development and transfer to support action on mitigation and adaptation, including, inter alia, consideration of:
- (i) Effective mechanisms and enhanced means for the removal of obstacles to, and provision of financial and other incentives for, scaling up of the development and transfer of technology to developing country Parties in order to promote access to affordable environmentally sound technologies;
  - (ii) Ways to accelerate deployment, diffusion and transfer of affordable environmentally sound technologies;

- (iii) Cooperation on research and development of current, new and innovative technology, including win-win solutions;
- (iv) The effectiveness of mechanisms and tools for technology cooperation in specific sectors;
- (e) Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation, including, inter alia, consideration of:
  - (i) Improved access to adequate, predictable and sustainable financial resources and financial and technical support, and the provision of new and additional resources, including official and concessional funding for developing country Parties;
  - (ii) Positive incentives for developing country Parties for the enhanced implementation of national mitigation strategies and adaptation action;
  - (iii) Innovative means of funding to assist developing country Parties that are particularly vulnerable to the adverse impacts of climate change in meeting the cost of adaptation;
  - (iv) Means to incentivize the implementation of adaptation actions on the basis of sustainable development policies;
  - (v) Mobilization of public- and private-sector funding and investment, including facilitation of carbon-friendly investment choices;
  - (vi) Financial and technical support for capacity-building in the assessment of the costs of adaptation in developing countries, in particular the most vulnerable ones, to aid in determining their financial needs;

2. *Decides* that the process shall be conducted under a subsidiary body under the Convention, hereby established and known as the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, that shall complete its work in 2009 and present the outcome of its work to the Conference of the Parties for adoption at its fifteenth session;

3. *Agrees* that the process shall begin without delay, that the sessions of the group will be scheduled as often as is feasible and necessary to complete the work of the group, where possible in conjunction with sessions of other bodies established under the Convention, and that its sessions may be complemented by workshops and other activities, as required;

4. *Decides* that the first session of the group shall be held as soon as is feasible and not later than April 2008;

5. *Decides* that the Chair and Vice-Chair of the group, with one being from a Party included in Annex I to the Convention (Annex I Party) and the other being from a Party not included in Annex I to the Convention (non-Annex I Party), shall alternate annually between an Annex I Party and a non-Annex I Party;

6. *Takes note* of the proposed schedule of meetings contained in the annex;

7. *Instructs* the group to develop its work programme at its first session in a coherent and integrated manner;

8. *Invites* Parties to submit to the secretariat, by 22 February 2008, their views regarding the work programme, taking into account the elements referred to in paragraph 1 above, to be compiled by the secretariat for consideration by the group at its first meeting;

9. *Requests* the group to report to the Conference of the Parties at its fourteenth session on progress made;

10. *Agrees* to take stock of the progress made, at its fourteenth session, on the basis of the report by the group;

11. *Agrees* that the process shall be informed by, inter alia, the best available scientific information, experience in implementation of the Convention and its Kyoto Protocol, and processes thereunder, outputs from other relevant intergovernmental processes and insights from the business and research communities and civil society;

12. *Notes* that the organization of work of the group will require a significant amount of additional resources to provide for the participation of delegates from Parties eligible to be funded and to provide conference services and substantive support;

13. *Strongly urges* Parties in a position to do so, in order to facilitate the work of the group, to provide contributions to the Trust Fund for Participation in the UNFCCC Process and the Trust Fund for Supplementary Activities for the purposes referred to in paragraph 12 above and to provide other forms of in kind support such as hosting a session of the group.

ANNEX

**Indicative timetable for meetings of the Ad Hoc Working Group on  
Long-term Cooperative Action under the Convention in 2008**

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<b>Session</b>	<b>Dates</b>
Session 1	March/April 2008
Session 2	June 2008, in conjunction with the twenty-eighth sessions of the subsidiary bodies
Session 3	August/September 2008
Session 4	December 2008, in conjunction with the fourteenth session of the Conference of the Parties

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