Preliminary sector studies of climate change adaptation in Africa

Successful climate negotiations for all of Africa (NECTAR)

Summary for decision-makers
The “Successful climate negotiations for all of Africa” project (Négociations Climat pour Toute l’Afrique Réussies, NEC-TAR) project aims to contribute to the involvement of Francophonie states and governments in the negotiations of COP15, the United Nations Climate Change Conference (Copenhagen, December 7-18, 2009), and the various United Nations’ and African steps leading up to the forum. The Institute of Energy and Environment of La Francophonie (The Institut de l’énergie et de l’environnement de la Francophonie, IEPF), a subsidiary body of the International Organisation of La Francophonie (Organisation internationale de la Francophonie, OIF), has initiated a follow-up and assistance mission for French-speaking nations on the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol in an effort to guide African stakeholders in negotiation processes and support states in their cooperative efforts to establish proposals that meet their sustainable development needs and expectations.

The mission led to six preliminary studies to define concrete and viable options to strengthen the positions of Francophone negotiators in post-Kyoto regime discussions. This document aims to provide an overview of the conclusions and recommendations of the studies, which address the following themes:

- **Agriculture**, conducted by the Institut Sénégalais de Recherches Agricoles (ISRA)
- **Construction**, conducted by GRET
- **Water and sanitation**, conducted by WWF-WAFPCO, Niger
- **Forests**, conducted by WWF-WAFPCO, Niger
- **Transport**, conducted by WWF-WAFPCO, Niger
- **Energy**, conducted by ENDA Programme Énergie, Environnement et Développement

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### Acronyms

- **AWF**: African Water Facility
- **CDM**: Clean Development Mechanism
- **COP**: Conference of the Parties
- **FCPF**: Forest Carbon Partnership Facility
- **GDP**: Gross domestic product
- **GEF**: Global Environment Facility
- **GHG**: Greenhouse gas
- **IEPF**: Institut de l’énergie et de l’environnement de la Francophonie
- **IPCC**: Intergovernmental Panel on Climate Change
- **IUCN**: International Union for Conservation of Nature
- **IWRM**: Integrated water resources management
- **LDC**: Less developed countries
- **MDG**: Millennium Development Goals
- **MRV**: Measureable, reportable and verifiable
- **NAPA**: National Adaptation Programmes of Action
- **NAMA**: Nationally-Appropriate Mitigation Actions
- **NTS**: National Transport Strategy
- **ODA**: Official Development Assistance
- **REDD**: Reducing Emissions from Deforestation and Forest Degradation
- **UNDP**: United Nations Development Programme
- **UNEP**: United Nations Environment Programme
- **UNFCCC**: United Nations Framework Convention on Climate Change

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SUMMARY

The regime defined in the United Nations Framework Convention on Climate Change (UNFCCC) adopted in 1992 at the Rio Summit and the Kyoto Protocol signed in 1997 does not enable the true integration of the main climate and development issues that developing countries face.

The extent and severity of climate change reported in IPCC studies and acknowledged at the 13th Conference of the Parties in Bali compelled UNFCCC Parties to commit to consistent mitigation and adaptation actions to protect the quality of life (climate, sea level rise), subsistence (access to water, agriculture) and survival of populations and environments (forest, ecosystems).

Developed countries must therefore agree to ambitious GHG emissions reduction objectives of 50% by 2050 so as not to exceed critical atmospheric CO$_2$ thresholds. But these efforts alone do not guarantee a solution to the climate issue. Today, it is understood and recognized that any climate accord that does not adequately consider developing countries, including African nations, will fail in the long and medium terms. Developing countries are therefore mobilizing to contribute to climate efforts. African states, in view of the Copenhagen conference, have recently adopted a common position for voluntary commitments, conditional upon international funding that matches their efforts and the increased accountability of industrialized nations with regard to their emissions.

Although the implementation of climate change programmes has become a priority for Africa, it should not eclipse the importance of development aid and the fight against poverty, which impact mitigation and adaptation in all sectors in terms of sustainable development and the attainment of the Millennium Development Goals (MDG).

Adaptation options will constitute the basis of African priorities and should include the sectors that are most likely to be affected by climate change: agriculture, forests, water, energy and waste management. Their development must be efficient and equitable and generate few GHG emissions. Because of the inertia of existing climate change impacts, adaptation has become crucial and must be systematically taken into account in national and regional development programmes. A great many common links and priorities bind adaptation and mitigation programmes and demonstrate the need to consider climate change as a global development issue. The synergistic implementation of National Adaptation Programmes of Action (NAPA), mitigation measures and complementary multilateral accords, especially with regard to issues such as biodiversity and desertification, must be endorsed by underscoring the significant need for institutional follow-up, public and private funding, and technical support (research, technology transfer, information, training).

African mitigation measures are also a high priority in negotiations, especially as they pertain to the establishment of regulations guaranteeing the access and funding of many varied sectoral projects as part of potential (NAMA, REDD) and existing mechanisms, like the CDM, which must be fundamentally enhanced to better meet African needs. These projects will require highly complementary sources of funding (public funding, equity, project compensation), strategies that foster local community support and the capacity building of relevant institutional frameworks. Negotiations to fund African efforts should also include funding sources (taxes, voluntary funds, grants), the governance of their attribution (potential Convention stewardship), and the matching roles of the public and private sectors. In the African context, adaptation is also a question of development aid.

The recommended methodological approach in the IEPF sectoral studies is rooted in the notion of promoting sectoral and local approaches to create synergetic climate change and sustainable development actions in priority areas: a clean energy transi-
ion based on renewable resource use and the sound management of bioenergetic resources through the implementation of programmes to protect areas, species and population lifestyles in African forests. The studies also shed light on the fact that immediate priority should be given to agricultural adaptation and mitigation methods, especially with regard to drinking water, whose impacts are indissociable from development, poverty and nutrition issues. Access to drinking water, like access to energy and public infrastructures that provide minimum standards of living, will depend on countries’ abilities to establish integrated land management, ecological urban planning and sustainable development policies whose principles and terms are already recognized, understood and controlled but which continue to require funding, technology transfers and the capacities necessary to ensure concerted and coordinated intersectoral measures. These synergies stress the importance of negotiations on complementary international objectives in view of an ambitious accord to counter climate change and foster sustainable development in developing countries.
INTRODUCTION

The NECTAR (Négociations Climat pour Toute l’Afrique Réussies) project aims to contribute to the involvement of Francophone states and governments in the negotiations of COP15, the United Nations Climate Change Conference (Copenhagen, December 7-18, 2009), and the various United Nations’ and African steps leading up to the conference. The Institute of Energy and Environment of La Francophonie (The Institut de l’énergie et de l’environnement de la Francophonie, IEPF), a subsidiary body of the International Organisation of La Francophonie (Organisation internationale de la Francophonie, OIF), has initiated a follow-up and assistance mission for French-speaking nations as part of the Initiative Francophone Climat Développement (IFCD) on the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol in an effort to guide African stakeholders in negotiation processes and enhance the capacities of African leaders in climate change negotiations while assisting them in the elaboration of action proposals that meet their sustainable development needs and expectations. As part of the NECTAR project, the mission led to six preliminary study documents to assess Convention and Protocol climate provisions with regard to each priority sector in order to define viable options in the post-Kyoto regime to strengthen the positions of Francophone negotiators through key elements. This document aims to provide an overview of the conclusions and recommendations of the sectoral reports and highlight the intersectoral and climate change-sustainable development synergies in Africa.

During COP15, through an effective accord, the Parties will have to put into practice findings on the climate emergency declared by the Intergovernmental Panel on Climate Change (IPCC), which predicts global warming of over two degrees Celsius if global greenhouse gas (GHG) emissions are not cut by 50% by 2050. Though it posts the lowest rates of GHG emissions, the African continent is particularly vulnerable to climate change, which by 2020 threatens to expose between 75 and 250 million Africans to water stress, reduce rainfall by half, jeopardize food security, and generate great expenses due to a rise in sea levels and the extension of arid zones. According to the most recent climate studies confirming these trends, the need to adapt to the effects of climate change has become imperative for developing nations, which will be among the hardest hit. These concerns led Africa to establish a common negotiations front through regional and international cooperative efforts developed during the preparatory stages of COP15.

African countries do not possess the financial means or technical skills to commit to stringent and quantifiable mitigation objectives. In addition, the development and economic growth needs of these nations are of the utmost importance, unlike industrialized countries whose climate responsibility is manifest. In keeping with the polluter pays principle of the Convention, developed countries must shoulder the greater part of the climate efforts of the post-2012 regime that will be negotiated. For this reason, Africa has chosen to defend the voluntary commitments of developing countries in the international climate effort, conditional on the support of industrialized nations through funding, technology transfers and capacity development. For African countries, the priority will be to implement programmes that contribute to sustainable development, counter poverty and lead to the attainment of the Millennium Development Goals (MDG).

The vulnerability of African nations to climate change makes adaptation an urgent priority that must account for the different negative impacts faced by developing countries in order to protect the least advanced nations, small island developing states and countries affected by natural disasters. The categorization of states with respect to adaptation will therefore be a fundamental and hotly discussed topic. African adaptation must be focussed on National Adaptation Programmes of Action...
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(NAPA), which will establish clean and renewable energy, climate risk monitoring and follow-up, and ecosystem service payment projects through enhanced access to North-South and South-South technology transfers. In light of the high adaptation costs, increased transparency of northern and southern countries will be required to guarantee appropriate and effective use of funds in these technical, environmental and economic actions. Based on the recognized principle of common but differentiated responsibility, African nations must be integrated into collective GHG emissions reduction efforts through programmes such as Reducing Emissions from Deforestation and Forest Degradation (REDD), Nationally-Appropriate Mitigation Actions (NAMA) and Clean Development Mechanism (CDM) initiatives. Though NAMA provide new and interesting possibilities, the question of their regulation remains unanswered since developing countries want a voluntary system that is not subject to assessment, and that features project approval criteria that are as broad as possible. The scope and funding of REDD programmes, which could be supported through special funds or market mechanisms, will also be discussed. In addition, the CDM’s processes must be reviewed to recognize a greater number of varied sectoral initiatives and small-scale projects.

These efforts should never constitute a barrier to the development and growth of African countries, which stress their crucial need for vital, internationally-funded adaptation measures. To this effect, key discussions will be held on the commitments of developed countries, the scope of their funding, the ways in which the funds will be collected and distributed, and their governance structure. The contributions of industrialized nations should centre around public development aid and remain in keeping with various national and private programmes and the existing and potential funds created to support climate initiatives. Negotiations will also address the levels of obligation and grant conditions, which developing nations wish to be legally binding and transparent. The African group has estimated a minimum required amount of US$67 billion/year until 2020. Funding sources could be direct taxes (% GDP), indirect taxes (on carbon markets) or national contributions that are proportional to GHG emissions. Finally, the responses to the immense technological challenges of Africa’s participation in climate efforts must necessarily be rooted in technology transfers and the development of adapted capacities based on the establishment of new UNFCCC mechanisms (position of the G-77) or the restructuring of existing institutions (position of industrialized countries).

ENERGY

Current and future trends

The energy sector is key for Africa. Its proper functioning ensures the adaptation of all economic and social development sectors and the success of each country’s climate efforts. But Africa suffers from acute energy poverty marked by insufficient supply and access (access rates range between 3 and 35%, with the exception of North Africa) and an excessive use of biomass, underscoring the pressing need for adapted infrastructure and policies. These important contributions are expected mainly through funding and technology transfers that are adapted to UNFCCC Annex I states. In light of African countries’ vulnerability to climate change and significant energy development needs, they must undertake negotiations to ensure viable energy options to preserve their resources and populations, and create incentives for a low-emission economic upswing with the support of shared technologies.

Synergies

A cross analysis of development and climate change needs reveals a strong potential synergy of actions in five areas, which would each boost the socioeconomic situation of African countries and depend, in one way or another, on sustainable energy supply: large-scale infrastructure projects (public, industrial, transportation), equipment projects (industrial, household, vehicles), regional
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equipment projects that foster technology sharing, CO₂ sequestration projects (biomass, soils, reforestation, agriculture) and waste management projects (recycling, by-product valorisation).

Today, the urgency and precedence of energy investments focus on sustainable African development supported by a transition towards clean energy (regional and international cooperation programmes call for between 50 and 100% of Africans to have household and community access to energy by 2015 as part of the MDG). NAPA assessments have demonstrated that energy is essential to carrying out adaptive actions. Widespread access to energy should therefore be integrated into the climate effort through the determination of the possibilities offered by NAMA by giving priority to the use of renewable resources. Irrigation clearly illustrates this complementarity since its energy use management creates synergies between advances in agricultural development, adaptation and mitigation.

Proposed solutions as part of the negotiated mechanisms

Africa possesses 10% of the world’s oil reserves, 7.9% of gas reserves and significant coal potential, but its resources are unevenly distributed between countries (oil and gas in northern, central and western areas and coal in South Africa). The continent is a net exporter of energy but there is a major gap between production and consumption that is essentially linked to poverty and which leads to an excessive use of biomass. This development failure leads to energy insecurity aggravated by a lack of means, drought, conflicts and outdated and diverse installations. However, Africa holds vast renewable energy resource potential, which requires investments and infrastructure development through international financial support. In order to meet these needs, the CDM and other mechanisms should foster the implementation of tangible energy projects (even small-scale ones), broader regional access, and national efforts to reorganize national legislative frameworks and increase the attractiveness for public and private capital inflows.

Mitigation

So as to increase populations’ limited access to energy, African countries must promote clean energy sources based on their resources, technological maturity and mitigation potential. Negotiations will therefore focus essentially on NAMA (whose funding is currently estimated to be $200 billion by 2030) to guarantee the voluntary, quantitative and recorded participation of nations as part of measurable, reportable and verifiable (MRV) actions. To strike a balance between the climate efforts and energy needs of an economic recovery, it will be necessary to focus mitigation actions on the mobilization of renewable resources for energy production, the introduction of conventional low-carbon energies (e.g. natural gas) and the energy efficiency of supply and demand (production, transport, distribution). These focal points may be rooted in energy options that include solar (strong potential but few large-scale applications), wind energy (especially in North African and island regions), hydropower (a source that can meet continental needs and which regulates water levels, irrigation, food and water), geothermal (still being explored) and bioenergetic (biomass use must still be streamlined). In addition, access to clean energy that is not based on biomass would curb its household use, thus reducing the GHG emissions linked to deforestation and human impacts on the biodiversity of forest areas. Finally, household and industrial energy efficiency projects offer interesting mitigation opportunities, especially in the construction sector, as does the development of industrial cogeneration (80-90% of the energy output).

Adaptation

Adaptation is marked by significant funding needs to counter countries’ vulnerability in terms of sustainable development. The UNFCCC therefore recommends the implementation of NAPA in which energy is of lesser importance as compared to other sectors. Access to clean energies to enhance adaptation options in other sectors and the enhanced
resilience of the energy sector constitute important avenues in the African development effort. The resulting actions must first be focused on increasing access to electricity, which is currently curbed by dispersed populations and the lack or absence of infrastructures. This would also enable support for the different sectoral adaptation options. In addition to the development of national networks, there are decentralized options that include the extension of interregional networks and the implementation of photovoltaic solar, micro-hydro and wind installations. Streamlining access to cooking fuels and modern cooking technologies and their management is also a priority, since over 600 million people currently use biomass for their cooking needs. Finally, enhancing sectoral resilience is important in light of the climatic threats to hydroelectric and bioenergetic resources.

**Specific sectoral needs to develop proposals**

**Technology transfer**

The success of technology transfers and the enhancement of renewable energy and energy efficiency capacities will chiefly depend on the implementation of long-term policies and legislation to develop sustainable energy sources and support innovative projects that enhance the capacity of African markets to be transformed into goods and services industries, which must learn from positive past experiences and determine the infrastructures that will best initiate sectoral technical development.

**Funding**

These programmes require between $6 and $15 billion/year, and the current investments of industrialized countries are far from meeting this target. In addition, the regional distribution of funds is marked by significant disparity. The limited success of CDM projects led to the consideration of Programmatic CDM, which would have to be sustained by additional funding such as an African renewable energy fund (from oil or carbon market tax). The efficient use of fuel wood must be taken into account in REDD strategies given its importance to the forest sector. Finally, adequate energy sector funding rests solidly on the integration of the potentials outlined solidly on the integration of the potentials outlined in countries’ national and international development policies.

**TRANSPORT**

**Current and future trends**

International oil consumption currently generates carbon emissions totalling some 7 billion tonnes – 27% of the total CO2 emissions of the world’s energy system. Africa holds only 5% of the planet’s merchandise and public transport fleets, but transport constitutes a rapidly increasing source of GHG emissions, especially in urban areas where local air quality and noise pollution are affected. Given the advanced age of the African vehicle fleet, fuel inefficiency is also an issue in sub-Saharan African. Transport will continue to intensify in developing countries in the next decades as air and road traffic increase. The future rise in emissions will be determined by the choice and intensity of transportation modes in Africa.

**Synergies**

National Transport Strategies (NTS) developed as part of National Poverty Reduction Strategies aim to ensure access to modern mobility options for disadvantaged people. These sectoral transportation programmes seek to break the isolation of landlocked countries and reduce GHG emissions by enhancing trans-border transportation, thereby contributing to sustainable development and to the achievement of the MDGs.

**Proposed solutions as part of the negotiated mechanisms**

**Mitigation**

The sector’s climate issue is chiefly determined by countries’ economic and demographic growth. Given the advanced age of the car fleet, public transport constitutes a good alternative on national
roads, but remains underdeveloped across the continent. Individual modes of transport could enhance their environmental performance through the use of biofuels, though this entails forest conservation and restoration issues (better for mitigation than biofuel production) as well as food security issues (land used by non-subsistence crops, price increases).

Very few sectoral projects have been implemented as part of the CDM (0.2% of CDM projects), which must be revised in order to be applicable in Africa. Until now, projects were mainly centred on enhancing highway infrastructure to avoid traffic-related emissions, creating an incentive to use polluting types of transportation. It would be best to focus future projects on vehicle registration so as to better manage the car fleet, the implementation of fuel, road and parking taxes, and investments in public transportation options, which are urgently needed in urban areas in view of environmental and sanitary conditions. A realistic mitigation objective would be to reduce emissions by 30% over the next ten years. Adaptation measures do not apply in the transport sector given its relative immunity to climate conditions. However, road enhancements will lead to the better adaptation of populations to environmental disasters through better prevention options.

Specific sectoral needs to develop proposals

Technology transfer

New technology transfers should focus on the development and import of low-cost hybrid cars that run on biofuel and on the multimodality of attractive personal and public transportation options through efficient territorial planning. By 2030, these transfers could be made for new generations of hybrids and biofuels. As part of NAMA, investments should be made in catalytic and electronic fuel injection mechanisms to enhance the performance of African fleets.

Funding

In Africa, adequate financial support instruments for the transport sector must be defined as part of sectoral strategies at the national level and sub-regional transportation programmes at the regional level. This funding should focus on a potential decrease in new personal vehicle consumption of 30% in 15 years. Several possible technical enhancement options (biofuels, batteries, etc.) exist.

CONSTRUCTION

Current and future trends

Home and tertiary-use construction represents 80% of Africa’s energy consumption and emissions (including the firewood used for cooking) and could become the world’s largest source of GHG emissions. But sector projects have received virtually no financial support from the CDM or adaptation funds. From the perspective of clean sectoral development, considerations on what would constitute clean building to enhance populations’ living conditions and comfort level are still in their infancy. Until now, sectoral modernisation was carried out based on the construction models of countries with temperate climates and yielded buildings that provide hardly any quality of life for their inhabitants (lack of ventilation, insulation and protection from the sun). Squatter settlements are still widespread across the continent, and there is little control over the quality of life offered by these buildings or their durability. The mitigation/adaptation distinction does not apply in the construction sector since the two efforts are mutually beneficial: the sector is decisive given the long lifespan of buildings, affects energy production and remains essential for populations (cooling, cooking, etc.).

Proposed solutions as part of the negotiated mechanisms

African building needs are different from those of temperate countries (heat protection). The continent
therefore has significant GHG-reduction potential. To enhance quality of life and reduce energy consumption, the sector aims to create indoor micro-climates in Mediterranean and tropical zones and protection from the sun with powerful ventilation systems in equatorial regions. All construction and building stakeholders (industrial groups, artisans, informal construction) must be restructured to foster mitigation and adaptation to climate change in African regions.

The increasing comfort (cooling) and energy needs necessary to ensure that populations adapt to climate change require technical tools throughout the entire life cycles of new and existing buildings. Firstly, these tools will impact building design, taking into account the space, use, climate, choice of land, orientation, joint ownership and other aspects. Buildings should also be optimized by selecting the right materials, insulation, solar protection, ventilation systems, and cooling options. Various household uses (hot water, windows, appliances, lighting), including cooking, an essential element of sector impacts (energy wood use and appliance efficiency), must all be factored in. Efforts should also be focused on education and awareness-building for stakeholders and populations on living choices that have the lowest possible impacts on energy, climate and water.

To date, support mechanisms for less developed countries (LDC) have contributed very little to the sector’s climate efforts. No NAPA have been implemented despite the fact that they involve climate change adaptation through urban development, land-use planning and local policies. At the same time, a small number of large-scale projects were funded through energy efficiency and renewable energy CDM projects, generating few carbon credits. In fact, the CDM is not adapted to the sector and must be broadened in order to cover entire construction projects (reductions in fuelwood use, renovations, new and efficient homes, household waste) and direct national and sectoral projects. Relying on Programmatic CDM as described in the Bali roadmap is also a viable solution for sanitary hot water distribution (solar collectors) and the enhancement of household lighting and appliances.

But new climate negotiation mechanisms, the NAMA and REDD+, open new doors since they seem adapted to multiple small-unit projects. NAMA could provide important sectoral opportunities since they entail tangible projects with relevant technical aspects. In this case, REDD+ mechanisms could help support projects to enhance cooking fires and therefore contribute to mitigation and forest conservation while avoiding excessive fuel wood consumption.

**Specific sectoral needs to develop proposals**

With regard to new buildings, the challenges are, first and foremost, institutional (public engagement), technical and informational (lack thereof), methodological (adaptation measures), and especially financial in view of the sector’s significant need for enhancement incentives and investments. For existing buildings, the necessary measures are less efficient but crucial, especially to increase the energy and climatic efficiency of public buildings. Finally, the cultural element is also a potential obstacle, as is changing traditional cooking methods that rely on wood.

**Technology transfer**

Technology needs assessments for climate change constitute a key starting point for sectoral negotiations. It is also necessary to call upon research and supply chain programmes to foster the use of local materials and equipment (especially through public-private partnerships). Technology transfers could also be carried out through pilot operations in various sub-sectors (public and tertiary public housing, hotels, bathroom equipment, etc.) with the eventual support of NAPA or industry.

**Funding**

Gathering international support for the construction sector is challenging given the small size and disparity of projects. It therefore appears necessary
to implement multiple funding sources and scales and prioritize major programmes by grouping individual operations (e.g. the nationwide replacement of low-efficiency appliances) and the construction of new carbon-neutral buildings. Financial support for each type of project should primarily be ensured through existing measures rather than potential ones (NAMA). In the meantime, guiding projects towards funding that is proportionate to their GHG emissions reductions should be the priority. Large demonstration building projects could be directly supported by the CDM or grouped as part of the Programmatic CDM to enhance household cooking, cooling and ventilation systems. Two massive energy-neutral or -positive building investment prioritzie programmes major could be part of the Programmatic CDM or NAMA or receive support from the adaptation fund. NAMA are an excellent way of investing in the installation of photovoltaic energy production systems and supporting demonstration operations. Given the recent involvement of development banks in climate issues, ODA could be put towards promoting new building designs (architecture, legal and regulatory aspects, training, industrial projects to manufacture materials and appliances). Decentralized horizontal cooperation between municipalities and regions should also be planned along with public-private partnerships for the projects requiring specific funding.

**FORESTS**

**Current and future trends**

African forests represent biomass production and conservation that are crucial to the continent’s ecological and climatic balance. At present, they are subject to excessive and non-viable commercial development. In fact, two-thirds of the timber is used for household firewood and cooking fuel and represents annual deforestation estimated at several hundred thousand hectares in many African countries. Considering the increased need for forest resources and carbon sequestration, a combination of economic incentive instruments and adapted regulatory measures are necessary to ensure the sector’s sustainable development. The success of such measures is crucial to African climate mitigation since it fosters the maintenance of biodiversity and water access and has positive impacts on the energy, agriculture, water and construction sectors. Protecting African forests requires an inclusive African sustainable development strategy that supports the links between forest adaptation to climate change and energy mitigation efforts while regulating elements such as biomass use.

**Synergies**

First, it is necessary to focus on the basic needs of populations in order to set priorities in the development of synergetic projects with other sectors. A livelihood and forest programme could serve this purpose. In sub-Saharan Africa, the key is to link conservation farming and agroforestry on arable land so as to increase carbon sequestration and ensure the livelihood of populations. Such synergies require efficient decisional mechanisms and significant start-up contributions. From a broader perspective, it may be constructive to align climate efforts and commitments with other strategies such as countering desertification or biodiversity protection, two issues that are relevant to forest and land management. Such cross-cutting actions could lead to in-depth work on themes such as REDD-agriculture links, the food and energy uses of forest resources, biofuels, the commercial development of timber for the construction sector, and water management.

**Proposed solutions as part of the negotiated mechanisms**

**Mitigation**

Like the Kyoto Protocol, the UNFCCC states that forests constitute a sector that contributes to climate change management through the enhancement and protection of carbon sinks and pools, maintenance of managed and virgin forests, reforestation, and land management and plant coverage. Four categories of options have been advanced to foster sectoral mitigation:
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- Maintaining or extending forest areas, curbing deforestation and forest degradation and fostering reforestation (disincentive for commercial forest development);
- Maintaining or increasing existing tree population density by curbing forest degradation and implementing forest management measures;
- Maintaining or increasing carbon density at the landscape level through the implementation of forest conservation and management measures;
- Increasing off-site carbon-stocks in wood products and promoting product and fuel alternatives to curb the use of fossil fuels.

Until now, CDM projects have been the only levers of the Kyoto Protocol for African countries, with forest conservation projects being ineligible. Afforestation and reforestation were fostered through CDM but transaction costs were inflated and projects were therefore rare. This limitation clearly demonstrated the fundamental need for relevant national policies. Nowadays, the inclusion of projects to reduce deforestation rates in the CDM is being reconsidered in order to make them profitable through the payment of the environmental services created (this aspect will have to be progressively integrated into the new climate regime). These payments would be supported by institutional mechanisms such as special or incentive funds. Mechanisms could be based on multiple-use planting, agroforestry, reforestation on degraded land, industrial afforestation, wood energy recovery activities, the increased efficiency of the wood industry, and the conservation of vast stocks. In order to carry out these types of large-scale projects, technical, institutional and legal (especially land rights) issues must be resolved.

REDD strategies constitute viable mitigation solutions but must take into consideration the multiple and sometimes conflicting needs of the agriculture, forest and energy sectors in order to be efficient. Deforestation rates impact this efficiency and countries with lesser forest areas will have little interest in implementing them. The African REDD network must therefore put forest management and use regulations into practice and monitor the impacts and results of forestry activities in unsupervised wooded areas. It will also be important to ensure that the definition of REDD is broadened in the UNFCCC, which still excludes the dry woodlands found mainly in Africa.

Adaptation

Though forest sector measures impact adaptation less directly, the IPCC report underscores its importance in view of water stress, aridity, and the changes in tree species and productivity due to climate change. Two main adaptation measures must be implemented: management practices that reduce the vulnerability of forests to climate change, and forest measures that curb the impacts of these changes on the vulnerable populations that depend on forest resources. These measures could be part of NAPA, determining access to the Convention’s adaptation fund. Two additional sectoral funds have been established: an intersectoral sustainable forest management fund and the fund to attain the Millennium Development Goals (MDG).

Specific sectoral needs to develop proposals

Technology transfer

To enhance forest management, sectoral technology transfers should focus on remote sensing technologies to monitor forest coverage. Given the magnitude of the required investment, the contribution of industrialized nations is unshirkable.

Funding

In addition to REDD strategies and altering the CDM to include conservation measures, the Forest Carbon Partnership Facility (FCPF: World Bank) enables the implementation of strategies and training to disseminate and apply best practices within the sector. A second possible solution lies in the creation of an international compensatory mechanism for the implementation of zoning, conservation
easement use, planning and training projects leading to the systematic remuneration of stakeholders for creating additional climate and forest benefits. Because the forest is the livelihood and economic basis of many rural communities, it is vital to apply a methodology that accounts for all ecosystems and ensures the equitable remuneration of populations for their conservation and reforestation initiatives. This remuneration should be determined based on carbon annuity compensation mechanisms and yield direct payments to communities.

**AGRICULTURE**

**Current and future trends**

Because of its strong dependence on rain (95%), African agriculture is particularly vulnerable to climate change. One-third of the continent comprises often low-yield arable land and pastures due to a lack of soil nutrients and water. In 2006, the sector represented approximately 15% of Africa's GNP. Though it is a significant part of the continent's economy, it is, first and foremost, the sector of an essential issue: food security. For Africa's agricultural areas, climate change means drought, especially in arid and subhumid zones. It threatens production by shortening growth periods and reducing cultivated areas, which leads to land-use adjustments and the reassignment of property rights. It also jeopardizes water yields and the future of crop-producing ecosystems.

**Synergies**

Two-thirds of the population in sub-Saharan Africa directly depend on agriculture and forestry for their daily livelihood, making the sector central to the synergy of actions to attain the MDGs, enable adaptation and curb climate change. In addition, sectoral climate change efforts are primarily impacted by water availability. As crops and pastures increase evaporative demand, and irrigation is vital in arid and semi-arid regions, agriculture represents the most important long-term area of adaptation. African water management efforts can therefore be coordinated with desertification convention implementation strategies. Agriculture also has major impacts on the forest sector: it can have a positive or negative effect on ecosystem management, land use and deforestation, the use of more cost-effective species, better forest fire management, higher-nutrient fodder for ruminant livestock, better animal waste management, organic soil management and conservation practices. The sector also consumes energy (e.g. for irrigation) that is often generated from non-renewable resources. Extending the use of renewable resources is therefore a priority for sustainable development in Africa, which possesses the necessary resources on its territory. Finally, the sector must take action to reclaim its waste as part of an overall and integrated plan to maintain sustainable agriculture.

**Proposed solutions as part of the negotiated mechanisms**

**Mitigation**

To mitigate the emissions that cause climate change, agriculture must be studied from the perspective of land use, land reassignment and forestry by examining the major challenges deforestation, degradation, and sustainable management and stock increases pose. African mitigation efforts must remain voluntary, especially as part of NAMA, which are relevant to the sector because of their adaptability to geographic conditions, flexible implementation methods and quality verification options (MRV).

With regard to the CDM and agriculture, the Kyoto Protocol recommends GHG emissions reduction projects, the creation of carbon sinks through afforestation and reforestation, and projects to substitute fossil fuels with wood. However, to date, Africa has been responsible for only a small share of the CDM market, whose criteria are too restrictive. Only a few projects focused on agricultural waste reclamation and the use of methane from manure have been carried out. In addition to the CDM, voluntary carbon offset markets supported certain agricultural mitigation projects, each with their own approval criteria.
To valorize the mitigation initiatives of local communities, agricultural projects should be integrated into REDD, whose mechanism was technically accepted in Bali but whose implementation conditions have yet to be defined. From an agricultural standpoint, it is important to establish a clear methodology when estimating stocks and the project carbon capture, and to broaden as much as possible the definitions of the types of actions that could be integrated into the mechanism (avoided deforestation, land management, wood energy substitution, etc.) in order to determine the agricultural practices that should be disseminated. REDD could also be supported through a preservation and reforestation fund to sponsor carbon sequestration (especially in soils that contain five times more GHG than biomass using biochar), waste management (methane reclamation, landfilling, recycling, composting) and renewable resource development projects (through biofuel research, development and use on a case-by-case basis to avoid competition with food crops).

**Adaptation**

Given its vulnerability to reduced weather reliability and more frequent and intense weather-related natural disasters, the sector tends to attract the majority of the necessary adaptation initiatives. The UNFCCC text states that agricultural adaptation plans should be drawn up in relation to deforestation and desertification. These plans will necessarily stem from enhanced research, technological monitoring of climate variations and their impacts on the continent’s agricultural capacity, and from data and information sharing between all Parties of the Convention and the post-Kyoto climate accord.

These measures chiefly depend on strengthening early warning systems for natural disasters and extreme weather variations in order to protect populations. It is also vital to enhance crop diversity and the resistance of cultivated plant species. Production cycles must be adjusted for long-term water savings (irrigation techniques, recycling, recovery) and forest resource preservation, especially through agroforestry and organic farming.

**Specific sectoral needs to develop proposals**

**Technology transfer**

The agricultural sector must focus transfers on what is most urgent: the enhancement of adaptation capacities, which can be successfully combined with mitigation measures. The sector has the advantage of being able to invest in technical projects that impact both GHG emissions reduction (agricultural practices, manuring, energy) and carbon capture by the soil and cultivated or preserved biosphere. Agricultural technology transfers remain a financial challenge that could be met with actions involving public and private stakeholders and by prioritizing local initiatives. It is also important to highlight Africa’s potential to develop appropriate technologies adapted to its development conditions.

**Funding**

Africa’s position on the necessity of common but differentiated national responsibility is very important. It underscores the need for special funds to support agricultural and forest measures that can be combined with REDD-driven national accounting systems and/or an extension of the carbon market to the agricultural and forest sectors. The diversity of local and/or NAMA-focused projects constitutes a strong potential for sectoral funding but requires significant financial resources. These could potentially be taken from ODA from industrialized nations that have made agriculture and the climate major priorities or from existing Convention funds.

**WATER AND SANITATION**

**Current and future trends**

As IPCC studies on water resources have demonstrated, climate change has direct impacts on harvests, alters surface runoff (decreases in southern and northern regions and increases in eastern and semi-arid regions) and water availability causing more droughts, augments
the frequency of floods, and threatens the existence of many plant and animals species and the livelihoods of mostly poor African populations (65% of the population will be affected by water stress in 2025). Climate-induced changes have already been observed (Sénégal and Niger Rivers) as desertification spreads. An increase in the number of natural disasters is forecasted along with greater risks of disease. Africa’s main water resources are groundwater resources that could progressively dry out (especially in the dry season) as demographic, water management and health factors intensify climate impacts. Cooperative regional protocols are therefore necessary in order to avoid conflicts around shared basins and to optimize resource distribution to ensure viable development.

Synergies

Many African countries rely on hydroelectricity, a form of energy that is now threatened by climate change, especially in subhumid zones. The forest sector is also affected by water availability, and many plant species are threatened by habitat loss or changes due to these variations.

Proposed solutions as part of the negotiated mechanisms

Mitigation

Mitigation should be carried out in sectors that impact water resources and especially hydropower, discharge management and wastewater treatment. Wastewater transport technologies affect GHG emissions and systematic wastewater reuse is therefore recommended. The development and promotion of sanitary and sewage treatment facilities in all relevant sectors (construction, waste, energy, etc.) can also mitigate water shortages.

Adaptation

Though the Kyoto Protocol lists wastewater treatment as waste among the sources of GHG in Annex A, there are few references to the sector in UNFCCC and Protocol texts. Raising these issues during post-2012 climate regime negotiations is recommended.

The determination of the sectoral elements that should be considered for adaptation involves the directions of the African Ministerial Conference on Water (Tunis, April 2008). These consist in the application of adaptation measures to ensure water safety, promote cooperation in the development of alert systems, foster efficient use and include climate change in integrated water resource management (IWRM) and the regional programmes of basin organizations.

Sectoral adaptation is an immediate priority and requires the extended applicability of carbon credits, development and dissemination of indigenous knowledge to manage resources, and systematization of adaptation in national sustainable development policies. In the area of sanitation, the recommendations and action plan of the pan-African sanitation conference (AfricaSan2008) should be followed, and the promotion of interstate cooperation, water reclamation and waste management should be enhanced. UNFCCC Parties should also prepare the rehabilitation of regions affected by drought, desertification or flooding. A specific water and sanitation programme is currently being implemented along with regional water and climate change discussions coordinated by the IUCN and several spontaneous regional initiatives.

Countries committed to the sector have several viable adaptation options. The variability of water availability firstly requires collective management involving all of the Parties with a stake in resource distribution. These resources must be protected and better monitored by building new equipment and implementing monitored parameters. IWRM measures must be adopted as part of national and regional strategies and supported by better forecasting, alert systems and management tools to increase the storage and groundwater recharge capacities of bodies of water. Modern adaptation methods favor the spread of resistant crops whose methods are already known over the traditional migration of retention techniques. Access to water could be enhanced through efficient water utilisation systems, waterworks management, the maintenance and creation of infrastruc-
tures and the development of wastewater collection mechanisms. Implementing adapted irrigation systems (drip irrigation) and awareness-building campaigns could also lead to savings. Sectoral adaptation will depend on capacity building, local action plans and significant funding.

**Specific sectoral needs to develop proposals**

**Technology transfer**

Technology transfers should focus on adaptation technique replication, capacity transfers and technical education, which all require an institutional framework and specific aid and funding programmes for basin organizations and national water management services so that they may develop their research and forecasting activities.

**Funding**

Priority should be given to increasing participation in the African Water Facility (AWF), which mobilizes resources for the environmental advancement of the sector in order to promote NAPA and regional programmes. This financial instrument could be used as a framework for ODA.

**CONCLUSION**

The sectoral studies that have been carried out demonstrate the need for the renewed efforts of African countries to successfully merge development and climate change objectives. These efforts imperatively imply a strong accountability of Annex I nations for emissions reductions and technology transfers so as to foster a sustainable development synergy in Africa and the attainment of the MDGs. The new regime should facilitate these actions through simple regulations supported by sufficient financial resources and focus on the implementation of a combination of dedicated funds and market mechanisms yielding concrete results that impact populations at every level.

African adaptation measures must be mainstreamed into national and regional policies and programmes as part of the three priority areas defined during the African Ministerial Conference on the Environment in Nairobi: disaster reduction and risk management, sectoral planning implementation, and strengthening economic and social resilience. NAPA and climate risk management by Clim-Dev Africa should therefore focus on minimizing impacts on poorer countries and integrating this type of management into political decisions. Studies have found that, of all sectors, agriculture, forests and water and sanitation have the most potential and adaptation needs. The success of their contributions to adaptation in Africa depends on their geographic and institutional cooperation capacities and the strength of their synergies with analogous mitigation policies.

In Africa, these mitigation policies should be viewed as relative GHG emissions reductions conditioned by tangible technology, fund and capacity transfers. NAMA and REDD mechanisms and CDM projects will only prove efficient once their access conditions have been revised and broadened and their governance has become the responsibility of the Conference of the Parties. These tools could primarily be applied in the energy, transportation, forest and construction sectors, in which mitigation possibilities are greater. In general, with strong public monitoring and commitment, the sectoral approach is significant, enabling the implementation and funding of larger-scale concrete projects with concerted objectives. However, setting sectoral objectives may, depending on their limitations, lead to less significant comprehensive results and a leveling-down of stakeholder efforts.

Each sector’s mitigation efforts could also lead to local successes through the development of ecological urban planning (building clean or carbon-positive cities) in partnership with municipal governments, enhanced living conditions through win-win policies for populations and the climate, and the integration of climate change into local short- and medium-term policies. Articulating these programmes increases the value of the links...
Successful climate negotiations for all of Africa (NECTAR)

between each country’s climate change and sustainable development measures.

The question of technology transfers remains chiefly a financial one and must first be resolved at the local community level with the support of the private sector. These transfers must meet the socioeconomic requirements of sustainable development in Africa and focus on strengthening capacities through institutional programme monitoring, management and assessment. From a financial perspective, the sectoral studies revealed the need to foster source complementarity since none of the mechanisms (CDM, NAMA, REDD, etc.) meet the investment and support needs required for the implementation of effective projects. In addition, the eligibility and compensation criteria of the negotiated mechanisms must be significantly broadened to ensure their success. Current funding for Africa totals only one-tenth of the means necessary for the climate efforts of less developed countries. New sources, such as the implementation of carbon taxes, direct or indirect grants (share of proceeds) and special tariffs on the sale of GHG-intensive products must be determined.

Though funding should focus on attaining African MDGs, it should also account for areas in which there are strong synergies between the MDGs and climate change objectives. In addition, in many respects, programmes that combine mitigation and adaptation strategies foster the attainment of Convention objectives for desertification and biodiversity. These synergies provide key negotiation areas anchored in complementary international objectives for an ambitious climate accord that merges the climate change and sustainable development strategies of less developed countries.
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<th>Options for adaptation and their implementation</th>
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<td><strong>Arguments</strong></td>
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<td><strong>Cooking</strong></td>
<td>– Deforestation caused by excessive use of firewood and charcoal</td>
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<td></td>
<td>– Improvements of domestic work conditions for women (water and wood gathering)</td>
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<td></td>
<td>– Reducing wood consumption as fuel (replacing with butane, improved fireplaces...)</td>
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<td>– Economic incentives for the use of LPG in the context of climate policies with international support</td>
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<td></td>
<td>– Distribution of improved fireplaces and other cooking methods</td>
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<td><strong>New construction</strong></td>
<td>– Research</td>
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<td></td>
<td>– Integration of energy efficiency standards in law</td>
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<td>– Implementation of a progressive construction quality standardization respecting mandatory standards in public markets</td>
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<td></td>
<td>– Integration of aspect and insulation recommendations in construction standards</td>
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<td></td>
<td>– Encourage property developers and project managers to integrate climate change issues in construction</td>
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<td>– Encourage respect of regulations</td>
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<td></td>
<td>– Pilot operations</td>
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<td>– Development of local production and jobs to replace imports</td>
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<td>– Development and implementation of solutions that avoid air conditioning</td>
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<td><strong>Urbanism</strong></td>
<td>– Demographic pressure</td>
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<td></td>
<td>– Restructuration of old and peri-urban districts</td>
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<tr>
<td><strong>Rehabilitation of existing housing</strong></td>
<td>– Rehabilitation of existing housing for better climate adaptation</td>
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<td>– Rehabilitation of equipment in old buildings</td>
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<td></td>
<td>– Develop cheap, low energy consumption and high quality new construction</td>
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<td></td>
<td>– General promotion of sustainable development</td>
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<td><strong>Behaviour</strong></td>
<td>– The lack of knowledge of equipment running costs</td>
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<td><strong>Domestic and tertiary equipments</strong></td>
<td>– Reduce energy related expenses</td>
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<td>– Reduce power cuts</td>
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<td>– Develop sanitary hot water without greenhouse gas emissions</td>
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<td></td>
<td>– Distribution of low energy consumption light bulbs, efficient electrical appliances, solar panels, office equipment</td>
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<td>– Availability and accessibility of high-performance equipment</td>
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<td>– Implementation of standards on imported products and product design</td>
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<td>– Development of energy efficiency in every equipment</td>
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### Water and Sanitation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Arguments</th>
<th>Concrete projects</th>
<th>Financial Mechanisms</th>
</tr>
</thead>
</table>
| **Development of master plans on IWRM and action plans** | - Integrate CC issues on IWRM and NAPA  
- Reduce vulnerability of water resources (WR) to pollution  
- Propose quality control for WR for pollutant inventories in national communications  
- Promote appropriate technology with regard to sanitation in urban and rural areas | - Development of master plans by each country for WRM  
- Strengthening capacity for disaster management (floods, drought) risk management and early warning systems  
- Rehabilitate and increase capacity of weather forecasting stations | Government  
local community  
GEF  
UNEP UNDP  
African Development Bank  
World Bank |
| **Development of promotion of best practices in waste management / sanitation** | - Consultative planning (multidisciplinary) | - Implement best practices in water management strategies  
- Correction factors developed locally  
- Developing quality control on waste data | Government,  
local community  
GEF  
UNEP UNDP  
African Development Bank  
World Bank |
| **Promote interstate cooperation and coordination of WRM** | - Avoid conflicts about WR  
- Pollution prevention  
- Promotion of shared vision and management  
- Promote efficient and sustainable use of WR  
- Share economic opportunities of WR | - Development and implementation of trans boundary agreements on shared water resources | Government  
GEF  
UNEP UNDP  
Local community  
African Development Bank  
World Bank |
| **Control and management of invasive and alien plants (IAP)** | - Link to CC  
- Depletion of WR  
- Threatening food security | - Develop IAP control or management programs  
- Develop and implement MOUs based on interstate management of IAPs | Government  
GEF  
UNEP UNDP  
Local community  
African Development Bank  
World Bank |
| **Promotion of water harvesting systems** | - Control soil erosion, land degradation, flooding  
- Reduce vulnerability to water scarcity, increasing food security | - Construction of relevant and appropriate infrastructure  
- Technology transfer | Government  
GEF  
UNEP UNDP  
Local community  
African Development Bank  
World Bank |
| **Protection of WRs** | - Ensuring quality of WR  
- Implementation and respect of interstate agreements  
- Ensuring adequate quality water for domestic and agricultural use, increasing food security | - Develop local standards for water quality, in particular surface run off from roads and other infrastructure  
- Raise awareness of local population with regard to WR management  
- Develop guidelines for protection of water resources e.g. wells, boreholes etc. | Government  
GEF  
UNEP  
Local activities  
African Development Bank  
World Bank |
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<tr>
<th>Activity</th>
<th>Arguments</th>
<th>Concrete projects</th>
<th>Financial Mechanisms</th>
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</thead>
<tbody>
<tr>
<td>Water Management</td>
<td>– Climate adaptation</td>
<td>– Fresh water storage by several water collection techniques such as reservoirs must be multiplied at community level</td>
<td>Local development funds, Decentralized cooperation, states, FAO, GEF</td>
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<tr>
<td></td>
<td>– Drought impacts reduction</td>
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<td></td>
<td>– Support to small and local producers</td>
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<td></td>
<td>– Climate vulnerability reduction</td>
<td>– Water saving techniques (for example aerobic rice-growing, which consists in one or several drainings during growing cycle) should be broadened at a larger scale</td>
<td>FAO, GEF, UNEP, WB, EU, USAID</td>
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<tr>
<td>Research</td>
<td>– Climate adaptation</td>
<td>– Developing resistant species to warmer temperatures, droughts and soil and water salinity</td>
<td>FAO, WB, EU, adaptation fund</td>
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<tr>
<td></td>
<td>– Dissemination and transfer of knowledge</td>
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<td></td>
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<td>– Popularize available short cycle plants (70-75 days)</td>
<td>FAO, WB, EU, USAID</td>
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<td></td>
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<td>– Request development partners to support developing countries in the creation and running of national committees on climate change</td>
<td>UNEP, UNDP, OIF, AFD, EU</td>
</tr>
<tr>
<td>Urbanism</td>
<td>– Pollution reduction and prevention</td>
<td>– Valorisation of urban waste that contributes to environmental and soil fertility improvements</td>
<td>Local development funds, Decentralized cooperation, states, GEF, WB, Japanese cooperation, GTZ, USAID</td>
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<td></td>
<td>– Increase soil fertility</td>
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<td>Agricultural</td>
<td>– Climate vulnerability reduction</td>
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<tr>
<td>Techniques</td>
<td>– Increase production</td>
<td>– Agroforestry promotion</td>
<td>NAMAs, ECOWAS, FAO</td>
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<td>– Dissemination of knowledge</td>
<td>– Urban forestry promotion</td>
<td>FAO, states, NAMAs</td>
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<td></td>
<td>– Climate vulnerability reduction</td>
<td>– Soil fertility improvement by introducing leguminous plants</td>
<td>FAO, GEF, WB, NAMAs</td>
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<td></td>
<td>– Increase production</td>
<td>– Popularization of non-erosive techniques for cultivation protection</td>
<td>FAO, NAMAs, WB, GEF</td>
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<td>– Soil protection</td>
<td>– « Zaï » technique popularization</td>
<td>NAMAs, FAO, WB, GEF</td>
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<td></td>
<td>– Dissemination of knowledge</td>
<td>– Hydroponic growing, market gardening and micro-gardening techniques dissemination</td>
<td>Local development funds, Decentralized cooperation, NAMAs, state, NGOs, FAO</td>
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<tr>
<td></td>
<td>– Climate vulnerability reduction</td>
<td>– Reduction of GHG emissions</td>
<td>NAMAs, adaptation fund, biocarbon fund</td>
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<td></td>
<td>– Increase production</td>
<td>– Pollution reduction and prevention</td>
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<td>– Soil protection</td>
<td>– Input cost reduction</td>
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<td>– Dissemination of knowledge</td>
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<td>– Climate vulnerability reduction</td>
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<td>– Increase production</td>
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<td>Activity</td>
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<td>Concrete projects</td>
<td>Financial Mechanisms</td>
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</tbody>
</table>
| Construction and buildings | - Quality of new construction  
- Rehabilitation of existing buildings  
- Positive-energy buildings in Africa | - Training of designers  
- Industrialization of materials | Beginning by PDAs, then PPP Construction Programs based on emissions reduction, extended CDM |
<p>|                         | - Avoided air conditioning                                                | - Conception and insulation                   | Extended CDM                              |
|                         | - Solar hot water                                                         | - Dissemination of solar water heaters         | CDM, development banks, NAMAs             |
| Access to electricity   | - Extension of electric grids                                             | - Connection to network                        | PDA + PPP                                 |
|                         | - Reduce power failures                                                   | - Development of renewable energy             |                                           |
| Household usage         | - Low-consumption lighting                                                | - Dissemination program                       | CDM                                       |
|                         | - Energy efficiency in electricity use                                    | - Standards for imports                       |                                           |
|                         | - Improvement and substitution of fuel wood                               | - Dissemination of improved cooking stoves, LPG | Prevented deforestation for cooking wood |
| Electricity production  | - Development of renewable energy                                         | - Photovoltaic, hydraulic, wind-powered programmes | PAD+ CDM, NAMAS                           |
|                         | - Geothermal in the African Rift                                          | - 9 GW                                       | PAD + PPP; Guarantee funds                |
|                         | - Use of low-carbon fossil fuels                                         | - Gas turbines and cogeneration                | PDA + PPP + CDM                           |
|                         | - Interconnection of electric grids                                       | - Investments                                 | PDA and PPP                               |
| Transportation          | - Development of biofuels                                                 | - Outcome improvement                         | PDA                                       |
| Waste                  | - Urban waste management through methanisation                           | - Creation of controlled dumps, recycling, methanisation | Already operational CDM and PPP       |</p>
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<th>Activity</th>
<th>Arguments</th>
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<tr>
<td>Increase afforested areas</td>
<td>- Reducing deforestation and forest degradation</td>
<td>- Inventory of existing forest degradation</td>
<td>Government</td>
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<tr>
<td></td>
<td>- Promotion of reforestation</td>
<td>- Community managed afforestation and reforestation projects</td>
<td>GEF</td>
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<td>- Maintain / increase carbon sequestration</td>
<td>- Promotion of agroforestry where applicable</td>
<td>UNEP, MDP, NAMA</td>
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<td></td>
<td>- Aforestation projects</td>
<td>Local activities</td>
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<td>African Development Bank</td>
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<td>World Bank, UNDP</td>
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<tr>
<td>Maintain and/or increase density of forests</td>
<td>- Maintain carbon sinks</td>
<td>- Management of existing forests</td>
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<tr>
<td>Encourage use of alternative energy sources</td>
<td>- Reduce energy dependence on biomass and maintain forest density</td>
<td>- Use of energy efficient technologies (efficient gas, stoves, bio-fuel and solar)</td>
<td>Government</td>
</tr>
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<td></td>
<td>- Build local capacity to encourage transfer of appropriate technologies</td>
<td>- Development of training centre on energy of climate change issues</td>
<td>GEF</td>
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<td>UNEP, MDP, NAMA</td>
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The International Organisation of La Francophonie (IOF) was founded on the basis of French as a shared, common language, and common values. It comprises 56 member states and governments and 14 observers. Represented on all five continents, the IOF represents nearly a third of United Nations Organisation members.

The IOF supports its members in policy development and engages in multilateral cooperation activities, in keeping with its mission outlined at the Francophonie Summit: promoting the French language and cultural and linguistic diversity; promoting peace, democracy and human rights; supporting education, training, higher education and research; developing cooperation at the service of sustainable development and solidarity.

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14 observers
Austria • Croatia • Czech Republic • Georgia • Hungary • Latvia • Lithuania • Mozambique • Poland • Serbia • Slovakia • Slovenia • Thailand • Ukraine

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La Francophonie at the service of sustainable development
The Institute of Energy and Environment of La Francophonie (IEPF), a subsidiary body of the International Organisation of La Francophonie (IOF), emerged in 1988 from the desire of the heads of state and governments of francophone countries to develop concerted actions aimed at the development of the energy sector in member countries. In 1996, this act was broadened to include the environment.

Based in Quebec City, the Institute’s mission is to contribute to national capacity building and partnership development in the fields of energy and the environment.

Improved management and utilization of energy resources, integration of the environment in national policies with a sustainable and equitable outlook: These are the goals of the specific interventions the IEPF – training, information, field activities and coordination – conducted in synergy with the other programmes of the IOF, in particular those of mission D of the 10-year Strategic Framework of La Francophonie: “Develop cooperation at the service of sustainable development and solidarity”.

The IEPF’s programming in 2006-2009 aims to:

– improve the conditions for the development and implementation of national sustainable development strategies,
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– increase the capacity of francophone developing countries to participate in international negotiations on environment and sustainable development.

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ith the implementation of the post-Kyoto climate regime in December 2009, the Copenhagen Conference will be a forum that rallies the attention and hopes of every continent to trace an equitable and viable development course for all human societies. The global governance of these issues no longer matches that of the major climate conferences of the 1990s and today includes the active voice of less developed countries. African negotiators must take advantage of the opportunity to promote and engage in discussions on the directions of Africa’s joint position on climate change: the voluntary participation of developing countries in mitigation and adaptation efforts with the greater financial support of industrialized nations committed to sharing, transferring and developing technologies and capacities with vulnerable states. In fact, Africa is already vulnerable, facing increasing periods of drought, food shortages, deforestation and natural disasters.

This review aims to contribute to these efforts by providing African negotiators with an overview of the key debates in six priority sectors: energy, transportation, construction, forests, agriculture, and water and sanitation. It contains assessment summaries and recommendations focused on merging adaptation and mitigation programmes that are tailored to the African context through existing (CDM) and potential (NAPA, NAMA, REDD) climate mechanisms. By examining the financial and technological challenges that these programmes pose, this document seeks to contribute to a pro-African climate commitment that supports the continent’s sustainable development.