

Adaptation

Climate Change Adaptation in Africa

Working Paper N° 1

COP 15: What's at stake for Africa?



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In preparation for the 15th Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 15) in Copenhagen this December, the international community is mobilizing to achieve progress on the climate agenda. Africa has much at stake in global discussions and the issues are many and complex due to the continent's high level of vulnerability to climate change and its low level of resources.

Negotiating points focus on mitigation, adaptation, finance, technology transfers and capacity building.

Current talks on mitigation goals for 2020 have revealed that industrialized countries' commitments to reducing greenhouse gas emissions remain below the levels demanded by African countries.

Adaptation to climate change and financing of adaptation to climate change, which are priorities for the African continent, are delayed by the difficulty of industrialized nations' making a clear commitment to a level of financial support commensurate with the needs of African countries to deal with the impact of climate change.

Technology transfers, which should enable Africa to reconcile its development needs with voluntaristic greenhouse gas emission reduction policies, are subject to controversies over intellectual property rights and modes of financing. Activities that should benefit from capacity building, which is both a central element and a cross-cutting theme for the implementation of the other points, have yet to be identified.

However, negotiations have resulted in considerable progress since the meeting in Bali in 2007, especially during 2009. Africa, in particular, has worked to refine its positions and flesh out their content with concrete proposals.

This paper addresses the four key areas under negotiation — mitigation, adaptation, finance and technology transfers/capacity building — providing an African perspective on the issues at stake and the positions advanced by various parties.

I. Background

Ratified in 1998, the Kyoto Protocol entered into force in 2005. According to its terms, signatory industrialized countries (Annex 1 countries) undertook to reduce greenhouse gas emissions between 2008 and 2012 by an average of 5.2% from their 1990 level. The protocol, which is nearing expiry, needs to be renegotiated based on new scientific developments.

An assessment of progress on Kyoto Protocol implementation would be premature as the commitment period has just started. However, some efforts have shown promising results. For

example, by 2007, the European Union (EU) had achieved a 4.3% reduction against their overall 8% target within the protocol reference period.¹

In 2007, during the 13th Conference of the Parties (COP 13) held in Bali, Indonesia, the international community set itself an ambitious goal: to finalize a new commitment to follow the expiry of the first phase of the Kyoto Protocol commitments no later than the scheduled date of the 15th Conference of the Parties (COP 15) in Copenhagen in December 2009. A body known as the Ad Hoc Working Group on Long-term Cooperative Action was formed to build on the contents of the Bali Road Map, based on proposals made by the parties, and prepare a text for negotiation in Copenhagen.

From 30 pages that culminated in the Kyoto Protocol in 1997, the document expanded to 200 pages only scant months before talks on the post-Kyoto Protocol, then was reduced to half that size at the Bangkok² meeting in October 2009. The increased size reflects the fact that the issues have become more sensitive and the stakes have risen.

II. An amended Kyoto Protocol or a new protocol?

At talks in Bangkok, controversy over the nature of a post-Kyoto agreement emerged between developed and developing countries: should it be an amendment to the existing protocol or a new protocol³? In later discussions in Barcelona, developing countries categorically opposed the opening of discussions on a new protocol, which would potentially undermine the core principal of “common but differentiated responsibility” that underlies the Kyoto Protocol.

This principle, which was adopted during the Rio conference in 1992, stipulates that “developed countries acknowledge the responsibility that they bear in the international pursuit to sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.”⁴ This principle is also stated in Article 3 of the United Nations Framework Convention on Climate Change (UNFCCC).

¹ Annual European Community greenhouse gas inventory 1990–2007 and inventory report 2009. Submission to the UNFCCC Secretariat, 2009.

² Five meetings to prepare for Copenhagen were held in 2009: three in Bonn, one in Bangkok and the last in Barcelona, 2–6 November.

³ International Institute for Sustainable Development. 2009. *Earth Negotiations Bulletin*, 12(439).

⁴ Principle 7 of the Rio Declaration on Environment and Development. United Nations Environment Programme, Washington, DC, USA.

III. Negotiating points

The global agenda evolved into four major negotiating points pertaining to mitigation, adaptation, finance and technology transfers/capacity building. Although adaptation and financing of adaptation are top priorities for African countries, mitigation strategies cannot be ignored, as climate change can only be reversed over the long term if both preventive measures — adaptation and mitigation — are fully addressed, with particular emphasis on mitigation.

Finance and technology transfers/capacity building can be viewed as cross-cutting issues in relation to adaptation and mitigation.

IV. Mitigation: positions, issues and the African perspective

IV.1. Positions of industrialized nations⁵

Increasing atmospheric concentrations of carbon dioxide (CO₂) are causing world temperatures to rise, threatening human life. Mitigating the effects of this rise requires reversing the human-induced causes of climate change by reducing the concentration of CO₂ and other greenhouse gases in the atmosphere.

In its fourth report, published in 2007, the Intergovernmental Panel on Climate Change stated that to stabilize the average global temperature increase at 2°C, the concentration of greenhouse gases must be reduced to 450 parts per million. This means that greenhouse gas emissions must be reduced by 25–40% by 2020 and by 80–95% by 2050, compared with 1990⁶ levels. Within the Kyoto Protocol, 1990 levels are used as the base for comparisons.

In December 2008, the European countries meeting in Brussels undertook, through the Energy and Climate Package, to reduce emissions by 20% by 2020. They signalled that this goal could be raised to 30% in Copenhagen if other industrialized countries made comparable efforts and emerging countries positioned themselves accordingly. This position was reaffirmed on behalf of the EU by Sweden in August 2009 in Bonn. The proposal is one of the most ambitious to emerge from the industrialized countries thus far.

In June 2009, the United States Congress passed a bill to cut greenhouse gas emissions 17% from 2005 levels by 2020, which corresponds to a reduction of 3% from the level recorded in 1990.⁷

At the Bonn preparatory meeting, Canada, which signed the Kyoto Protocol, presented its reduction targets of 20% by 2020 and 60–70% by 2050,⁸ but using a base year of 2006.

⁵ See appendix for commitments of parties to date.

⁶ Contribution of Working Group III to the fourth Assessment Report of the Intergovernmental Panel on Climate Change.

⁷ Jan von der Goltz. High Stakes in a Complex Game: A Snapshot of the Climate Change Negotiating positions of Major Developing Country Emitters. 2009

⁸ International Institute for Sustainable Development. 2009. *Earth Negotiations Bulletin* August 2009

Japan set a target of 25% reduction of emissions by 2020, compared with the level in 1990.⁹

In Aquila, Italy, in July 2009, the G8 countries expressed their “willingness to share with all countries the goal of achieving at least a 50 percent reduction of global emissions by 2050, recognizing that this implies that global emissions need to peak as soon as possible and decline thereafter.” This commitment did not set an intermediary target for 2020.

Coming out of final pre-COP meetings in Barcelona in November 2009, Annex 1 countries agreed to total reductions of 16–23% by 2020, based on 1990 levels.¹⁰

IV.2. African issues and perspectives on mitigation

Africa’s contribution to global greenhouse gas emissions is marginal compared with that of the other continents: in 2009, it was estimated at 3.1% of global emissions from fossil fuels.¹¹ However, Africa remains the most vulnerable continent to climate change in light of the fragility of its economies.

At COP 14 in Poznan, the Group of 77 (G77) nations and the Least Developed Countries (LDCs) called for a reduction of emissions by industrialized countries of at least 40% by 2020 and at least 85% by 2050 compared with 1990. This position, which is upheld by African countries, maintains pressure on industrialized countries, aiming to hold them to at least a 30% reduction by 2020. These reduction targets should also be tied to a framework ensuring that flexibility mechanisms do not outweigh real reductions as in the case of the European Union Energy and Climate package, which gives EU countries the option of using such mechanisms for up to 72% of their reductions.¹² At the Bonn meeting, South Africa suggested that the next treaty should establish a ceiling on the use of flexibility mechanisms.

i. Nationally appropriate mitigation actions

The upcoming international agreement, which is based on the plan of action developed in Bali, proposes mitigation actions rather than commitments for developing countries, such as most countries in Africa. These are defined as “nationally appropriate mitigation actions” (NAMAs). Monitoring of these actions or their impact would follow the same principle as monitoring of commitments. The method would focus on monitoring, reporting and verification and will probably be tied to financial assistance that developing countries would receive for NAMA implementation.

The joint African position could take advantage of the potential for reduction highlighted by research in various areas, such as agriculture, livestock, energy and forestry. Indeed, solar energy, wind power, hydraulic power, geothermal energy, bioenergy and energy efficiency all offer significant potential in terms of mitigation.¹³ The same applies to the field of forestry,

⁹ Statement by the Japanese prime minister at the United Nations Conference of September 2009.

¹⁰ Third World Network. 2009. Barcelona News Update 2, November.

¹¹ International Energy Agency. 2009. Key world energy statistics.

¹² Anne Chetaille et al. 2009. Lutte contre le changement climatique: l’horloge tourne.

¹³ IEPF. Étude préliminaire d’adaptation aux changements climatiques en Afrique – Énergie. 2009

where industrial forestry developments, reforestation of degraded land, conservation of forest massifs and agroforestry may have considerable impact on mitigation measures.¹⁴ However, given that Africa must give priority to meeting its pressing development needs, implementation of these mitigation measures must be weighed in terms of the value they contribute to the continent's development process.

African countries could also play a major role in negotiations on the concept of "differentiation of developing countries" in terms of the reduction target for non-Annex 1 countries. This concept is founded on the principle that reduction goals may vary according to the capacities of developing countries. Under this type of plan, which is supported by most industrialized countries, including the United States and Australia, the new protocol would distinguish between three categories of countries rather than two as is the case with the Kyoto Protocol.

This proposal garners little support from emerging countries, especially India and China. The latter, which is the chief beneficiary of the clean development mechanism (34.71% of all projects registered in October 2009¹⁵) would lose its dispensation if it were moved from its current category¹⁶ to "Joint Implementation" status.

In terms of mitigation, there are two priority implementation instruments for African countries: reducing emissions from deforestation¹⁷ and forest degradation¹⁸ (REDD) and the clean development mechanism (CDM).

ii. Reducing emissions from deforestation and forest degradation

REDD will be one of the key issues in the new agreement. Work on this component is led by the Subsidiary Body for Scientific and Technical Advice. The underlying principle is that countries that reduce the greenhouse gas emissions from deforestation and forest degradation should receive financial compensation. This is all the more justified as such emissions represent nearly 20% of total CO₂ emissions in the world¹⁹ and, consequently, a reversal of the trend should result in a significant reduction of emissions.

Africa has a central role to play in this specific area, as more than a quarter of tropical forests are located in Africa, the Congo Basin is home to the second largest forest in the world in terms of surface area, variations in carbon reserves in the forest biomass point to a constant decline

¹⁴ IEPF. Étude préliminaire d'adaptation aux changements climatiques en Afrique – Forêts. 2009

¹⁵ CDM statistics. UNFCCC. Available: cdm.unfccc.int/Statistics/index.html

¹⁶ Centre d'analyse stratégique. 2009. Le Sommet de Copenhague tiendra-t-il ses promesses. Available : www.actualites-news-environnement.com/21474-sommet-copenhague.html.

¹⁷ Deforestation: A non-temporary change of land use from forest to other land use or depletion of forest crown cover to less than 10% (FAO. 1999. Development of national-level criteria and indicators for the sustainable management of dry forests of Asia: workshop report. Asia-Pacific Forestry Commission).

¹⁸ Persistent decrease in the capacity of ecosystems to provide services (FAO. Ecosystems and human well-being: policy responses).

¹⁹ Climate change 2007. 2007. IPCC, Geneva, Switzerland.

in Africa between 1990 and 2005²⁰ and repositioning of international development donor agencies, which have increased financing to the agricultural sector following the food crisis of 2008, will have consequences on deforestation in Africa.

A future REDD agreement will include scope (content), reference level (measure), financing and attribution.²¹

A review of the opportunity costs²² of stopping deforestation reveals that most users²³ earn less than USD 5 per tonne of carbon emissions, because of the change in land use. In other words, the level of remuneration in the framework of the REDD mechanism for an equivalent absence of CO₂ emissions could be a particularly strong incentive for forest ecosystem users in Africa.

Financing and distribution through the REDD mechanism could target the agricultural sector, inter alia, and promote non-expansive agriculture to the extent that agriculture most often plays a negative role in relation to forest ecosystems.

Central African countries could play a central role in this essential component of negotiations. The position of the Central African Forest Commission²⁴ countries focuses on the establishment of three types of financial mechanisms corresponding to different scales of deforestation:

- An empowerment fund aimed at capacity building supported by political action. This component is particularly important, as it is fundamental for countries to develop sufficient capacity in terms of inventories, monitoring and evaluation.
- A stabilization fund in countries where deforestation is currently low, to preserve the existing status.
- REDD incentive financing based on a combination of an historical reference emissions rate and a development adjustment factor.

In Africa, the overall trend is dynamic with increased capacities and the changes in certain Kyoto Protocol requirements, such as the decision in late 1989 not to allow projects on unstocked forests, which has been extended since Bali to the protection of existing forests from deforestation and degradation.

²⁰ FAO. 2009. State of the World's Forests. FAO, Rome, Italy.

²¹ Trivedi, M.; Mardas, N. 2009. Le petit livre rouge du REDD.

²² Minang, P.A.; Meadu, V.; Dewi, S.; Swallow, B. 2008. The opportunity costs of avoiding emissions from deforestation. ASB Partnership for the Tropical Forest Margins, Nairobi, Kenya. ASB policy brief 10.

²³ 80% in the case of a study conducted in the moist tropics: Cameroon, Peru, Indonesia, Philippines.

²⁴ Subsidiary Body for Scientific and Technological Advice. 2008. Views on outstanding methodological issues related to policy approaches and positive incentives to reduce emissions from deforestation and forest degradation in developing countries. UNFCCC. Available: unfccc.int/resource/docs/2008/sbsta/eng/misc04.pdf

iii. Clean development mechanism

The Kyoto Protocol supported flexibility mechanisms to help countries achieve reduction targets. There are three such mechanisms: tradable emission permits, joint implementation and CDM. Only the latter pertains directly to developing countries.

CDM allows industrialized countries to finance projects that reduce emissions in developing countries. Developing countries are able to carry out “clean” projects that count as commitment actions, and industrialized countries earn credits toward their reduction targets.

However, African participation in CDMs remains limited; of 1909 projects registered in December 2009, only 36 were in Africa (17 in South Africa), i.e. 1.9%, compared with 73.1% in the Asia–Pacific region and 23.5% in Latin America and the Caribbean.²⁵

Capacity building in African national institutions responsible for CDM, combined with streamlined access procedures, would facilitate increased African participation in CDMs. North Africa (Algeria, Egypt, Morocco and Tunisia) has made progress in this direction by setting up designated national authorities responsible for CDM promotion and management.²⁶

V. Adaptation, a critical priority for Africa

The issue of adaptation emerged during international negotiations and research on climate change. Today, it has become a central issue on the global agenda, particularly for vulnerable countries, such as those on the African continent.

The difficulty of integrating adaptation into national and local planning has been the subject of considerable research. In addition, the problem of distinguishing between adaptation and development initiatives has impeded the ability to attract significant official development assistance funding. Risk reduction could be a major defining feature of adaptation; however, as adaptation activities are intended to sustain development activities, the distinction remains unclear. Climate change impacts have the potential to derail development efforts and increase the cost of adaptation.

Integrating adaptation into development policies could be facilitated through systematic integration of risk-management activities at the national, sectoral, project and local levels. At the international level, development assistance could create financial niches that complement UNFCCC action in the field of adaptation.²⁷ In both cases, innovative financial support mechanisms that depend on existing national planning instruments need to be developed.

²⁵ CDM statistics. 2009. UNFCCC. Available: cdm.unfccc.int/Statistics/index.html

²⁶ Convention OSS/ACCA-CRDI. 2007. Cartographie institutionnelle de l’adaptation en Afrique du Nord. IDRC, Ottawa, Canada. Available : www.idrc.ca/acca/ev-142264-201-1-DO_TOPIC.html

²⁷ *Ibid.*

These mechanisms could be in the form of horizontal adaptation funds²⁸ within the national budget or the medium-term expenditure framework, usable by different sectors. The most appropriate planning instruments are short- and medium-term policies (as in Rwanda²⁹) and multi-year development plans.

One of the four chapters of the negotiating text that will be discussed during the Copenhagen conference focuses specifically on stronger action and measures regarding adaptation and implementation methods. It is divided into six sections: targets, the role of the UNFCCC, guiding principles, implementation of adaptation measures, institutional arrangements and monitoring and review of actions and support. The issue of financing is addressed in a separate chapter.

Thus far, the most notable implementation instruments include decision 1/CP.10 on establishment of the *Buenos Aires Programme of Work on Adaptation and Response Measures* and, above all, the *Nairobi Work Program on Impacts, Vulnerability and Adaptation to Climate Change*.

The five-year Buenos Aires program was adopted at COP 10 in 2005. It focuses on adaptation and response measures and its goal is to support developing countries through financing, insurance and technology-transfer mechanisms and by minimizing the negative consequences of response measures. Implementation is monitored by the Subsidiary Body for Implementation.

The Nairobi work program aims to assist all parties, but especially developing countries, to improve their understanding and assessment of impacts, vulnerability and adaptation to climate change and to adopt practical adaptation actions and measures to respond to climate change on a sound scientific, technical and socioeconomic basis.

The program is divided into two phases: 2005 to June 2008 and June 2008 to 2010. It includes nine sub-themes that can all be tied to adaptation: methods and tools; data and observations; climate modelling, scenarios and “downscaling”; climate related risks and extreme events; socioeconomic information; adaptation planning and practices; research; adaptation technologies; and economic diversification. The program is led by the Subsidiary Body for Scientific and Technical Advice.

To date, a compendium of **methods and tools** that can be used to assess the impact of climate change as well as vulnerability and adaptation has been developed. This compendium, which is particularly descriptive, is available online.³⁰

²⁸ OCDE. 2009. *Adaptation au changement climatique et coopération pour le développement*. Organisation for Economic Co-operation and Development, Paris, France.

²⁹ *Ibid.*

³⁰ Compendium on methods and tools to evaluate impacts of, vulnerability and adaptation to, climate change. UNFCCC. Available: unfccc.int/adaptation/nairobi_workprogramme/compendium_on_methods_tools/items/2674.php

Recommendations resulting from phase one of the program spurred African researchers to develop guidelines and interactive mechanisms to enable users to exchange information on solutions. It is apparent that without a participatory approach involving end users in the design of these tools, their practical use is problematic. The participatory action research (PAR) method will, therefore, be central to the development and implementation of these tools. The Climate Change Adaptation in Africa program has made PAR the primary method used in supported adaptation research projects.

Regarding ***climate modeling, scenarios and downscaling***, global climate models, which are credible at the continental level and on a larger scale, provide reliable estimates only for certain variables, such as temperature, but not precipitation. However, rainfall is the crucial variable for planning socioeconomic activities in Africa, but downscaling to produce local climate forecasts is difficult because the data are aggregated.³¹

A review of the performance of global climate models across the Sahel region, recently completed by the West African agro-meteorological centre³² as part of the project *Appui aux capacités d'adaptation du Sahel aux changements climatiques*³³ revealed several weaknesses, particularly in terms of simulation of precipitation (i.e., number of days of rainfall, average intensity of precipitation). A statistical downscaling method (Statistical DownScaling Model), used at the regional and local scale, was found to be more appropriate.

Tools to assess and forecast ***climate related risks and extreme events*** have been developed in the areas of agriculture, water resources, coastal areas and health to improve forecasting and mitigate the impacts of adverse events, consistent with a policy of disaster risk reduction.

The completion of the second phase of the Nairobi program in 2010 raises the issue of what instrument will be used to implement adaptation. However, this issue will likely take a backseat to talks on financing at Copenhagen. The final review of the program by the Subsidiary Body for Scientific and Technical Advice will be done in December 2010 during COP 16.

³¹Blankespoor, B.; Pandey, K.; Wheeler, D. 2009. Forecasting local climate for policy analysis: a pilot application for Ethiopia. World Bank, Washington, DC. Policy research working paper WPS 5004.

³²Centre régional AGRHYMET web site: www.agrhymet.ne/

³³Atelier de restitution de résultats du projet "Appui aux capacités d'adaptation du Sahel aux changements climatiques. 2009. Centre régional AGRHYMET. Available : www.agrhymet.ne/PDF/Rapport%20general%20atelier%20CC%20Version%20finale.pdf

VI. Financing

Financing is undoubtedly one of the most important issues for African countries. It encompasses financing of mitigation, technology transfers and, more fundamentally, adaptation.

African countries are calling for a commitment from developed countries of 1.5% of gross domestic product (GDP) to finance adaptation and mitigation efforts in developing countries. For Africa, this need is estimated at USD 65 billion annually.³⁴

The EU recently estimated that EUR 100 billion a year would be needed to meet such a commitment to developing countries in the next 10 years.³⁵ During the Barcelona meeting, the chief negotiator for the European Commission argued that, on the basis of the EU's 10% contribution to global greenhouse gas emissions, its contribution would be approximately EUR 5 billion, or EUR 15 billion if calculated on the basis of GDP.

It should be recalled that, currently, a variety of financing mechanisms apply to African countries:

- **Strategic Priority on Adaptation Trust Fund:** The aim of this USD 50 million fund, managed by the Global Environment Facility (GEF), was to support pilot projects that show how adaptation planning and assessment can be translated practically into full-scale projects. All of these funds have now been committed to 22 projects, with 18% going to Africa. The fund is now closed.
- **Special Climate Change Fund³⁶ (SCCF):** Set up in 2001, this fund finances projects focusing on adaptation; technology transfer and capacity building; mitigation in the areas of energy, transportation, industry, agriculture, forestry and waste management; and economic diversification. To receive SCCF funding, projects must be long-term response strategies rather than short-term reactive measures. As of October 2008, SCCF had mobilized USD 94.4 million³⁷; USD 58.6 million has been distributed. Six of the 14 approved projects are in Africa (Egypt, Ethiopia, Kenya, Mozambique, Tanzania and Zimbabwe) for a total value of USD 14.9 million.
- **Least Developed Country Fund:** Like the SCCF, this fund was set up in 2001 at COP 7 to support the LDCs in the preparation and implementation of their national adaptation programs. As of 2 October 2008, USD 132.2 million³⁸ had been marshalled by the fund's operating body, the GEF, and USD 31.8 million had been distributed as of June 2009. Of the

³⁴ Déclaration des pays africains au Forum Mondial sur le Développement Durable tenu en Octobre 2009 au Burkina Faso.

³⁵ Third World Network. 2009. *Barcelona News Update*, 8, November.

³⁶ The Special Climate Change Fund. UNFCCC. Available: unfccc.int/cooperation_and_support/financial_mechanism/special_climate_change_fund/items/3657.php

³⁷ Special Climate Change Fund. Available: www.climatefundupdate.org/listing/special-climate-change-fund

³⁸ Least Developed Countries Fund. Available: www.climatefundupdate.org/listing/least-developed-countries-fund

62 projects supported by the fund, 12 have been implemented so far, including nine in Africa — in Burkina Faso, Cape Verde, DR Congo, Djibouti, Eritrea, Malawi, Sierra Leone, Sudan and Zambia.

- **Adaptation Fund:** Unlike the other funds linked to the convention on climate change, this fund backs adaptation projects and programs in developing countries that are parties to the Kyoto Protocol. Expected to be operational in 2009,³⁹ the Adaptation Fund is undoubtedly the most important and the most strategic fund for African countries in light of its financing mechanism, which should ensure its sustainability. The fund is financed through a 2% levy on certified emission reductions earned by CDM projects and by voluntary contributions. If CDMs continue, the fund is expected to receive USD 80–300 million a year between 2008 and 2012 and USD 1–5 billion a year between 2013 and 2030.⁴⁰ Difficulties in accessing funds through executing agencies will be unheard of, as beneficiary countries will have access to financing directly through national bodies whose configuration will be discussed at Copenhagen. This change in access to funding is an enormous issue as it ends the top-down relationship that has traditionally prevailed between donors and recipient countries.

Assuming that the adaptation financing needs of developing countries are in the area of USD 10–20 billion dollars a year,⁴¹ it is important to ensure regular and increasing financing for the Adaptation Fund. One way that has been proposed for achieving that growth in funding is for developed countries to commit to high levels of reductions. This would increase the demand for credits through flexibility mechanisms and, thus, increase the Adaptation Fund. Extending the 2% levy to the other two flexibility mechanisms would also strengthen the fund.

For the time being, this financing proposal remains problematic, as several countries do not agree. Significant reduction commitments by emerging countries, such as China and India, would also help address the financing challenge.

VII. Technology transfer and capacity building

To reconcile their development needs with energy policies featuring reduced greenhouse gas emissions, developing countries need support in terms of capacity building and clean technologies. In the text to be negotiated at COP 15, technology transfer and capacity building, previously included in the same chapter, are separated into two different chapters.

The issues surrounding the technology transfer component involve intellectual property rights (IPRs) and the mode of financing.

³⁹ For more information on the latest progress, see Germany to host the Adaptation Fund Board. 2009. Available: www.adaptation-fund.org/pressreleases.html

⁴⁰ Estimate based on annual trading by 2012 of 300 to 450 million CERs at a market price of euros 10-25 (*Climat Sphère*, 14, 2008). On February 2009, the CER price was approximately EUR 13 per ton (See report of the seventh meeting of the adaptation fund Board).

⁴¹ *Étude Climat*, 17.

In recent years, global investments in clean technologies have risen significantly, skyrocketing from USD 22 billion in 2002 to USD 93 billion in 2006 and USD 148 billion in 2007.⁴² Despite a slight dip in 2008 due to the financial crisis, this upward trend has continued, reaching USD 155 billion⁴³ in 2008.

However, technology transfers from industrialized to developing countries, especially “green” technologies, seem to be impeded by the current IPR system. Developing countries have proposed IPR reforms, such as reducing tariffs or the duration of IPRs⁴⁴ for environmentally friendly technologies. The United States and Japan are opposed to such reforms. Patents filed by those two countries alone represented 51.3% of the total for 2008.⁴⁵ South Africa, Egypt and Morocco have the highest rate of patent registration among African countries, although the figures are marginal compared with those of China: in 2008, 6089 patents were filed in China and 376 in South Africa.

A 2005 study⁴⁶ indicated that protection of rights in the form of patents, combined with effective application mechanisms, could have a positive impact on investment in high technology in developing countries⁴⁷ by increasing the number of licensing agreements between firms in industrialized countries and firms in developing countries.

Intellectual property may be protected by copyright or it may be industrial property.⁴⁸ In the framework of the ongoing COP negotiations, the issue is industrial property. This includes inventions (patents), industrial design, trademarks and geographic indications.⁴⁹

Intellectual property is protected by the international agreement on Trade-Related Intellectual Property Rights, which can be found in Annex 1C of the agreement establishing the World Trade Organization.⁵⁰

Technology transfers are also linked to the issue of financing mechanisms. At the Bangkok meeting, the G77 reiterated the need to establish a multilateral financing mechanism devoted

⁴² UNEP. Global Trends in Sustainable Energy Investment 2009.

⁴³ Ibid.

⁴⁴ Africa Partnership Forum. 2009. Enhanced action on technology development and transfer. Available: www.oecd.org/dataoecd/30/36/43550982.pdf

⁴⁵ World Intellectual Property Organization. 2008. Report on the international patent system. WIPO, Geneva Switzerland.

⁴⁶ Lippoldt, D.; Park, W. 2005. International licensing and the strengthening of intellectual property rights in developing countries during the 1990s. Organization for Economic Co-operation and Development, Paris, France. OECD economic studies 40.

⁴⁷ ⁴⁷ Davison, H. Climate change technologies: the new IP battleground. In *Climate of opinion*. Stockholm Network, Stockholm, Sweden. p.5. Available: www.stockholm-

⁴⁸ World Intellectual Property Organization. n.d. Understanding industrial property. WIPO, Geneva, Switzerland. Available: www.wipo.int/freepublications/en/intproperty/895/wipo_pub_895.pdf

⁴⁹ Ibid.

⁵⁰ Accord instituant l'Organisation mondiale du commerce. Available : www.wto.org/french/docs_f/legal_f/04-wto.pdf

to technology transfer. According to China, the fund should come primarily from public resources.⁵¹

Capacity building, which, in principle, should be a cross-cutting theme tied to each of the other themes, is addressed in a separate chapter. Talks in this area focus on principles, scope and institutional implementation mechanisms.

Regarding scope, the G77 and the EU are in favour of identifying and focusing on emerging areas in which countries will need capacity building; these include NAMAs and carbon capture and storage. In the view of other countries, the scope should include emerging fields, the Bali Road Map building blocks and all aspects of the convention.

It should be noted that in terms of institutional capacity building, Africa should be targeted as a priority. Indeed, there is a real risk that the focus on technical capacity building may not get off the ground without a foundation of strong organizational skills. In Africa more than anywhere else, institutional capacity building needs support.

VIII. Conclusion

The post-Kyoto Protocol agreement, which should be finalized in Copenhagen, should serve as a strategic orientation and operational document for countries in terms of climate change up to 2020.⁵² Thus, it is important for Africa, as the continent most vulnerable to climate change, to present a position that bears on all of the negotiating points.

Looking past all current differences, the negotiations offer Africa a unique opportunity to reflect on the direction it wants to take in its development model and the means it intends to use to achieve it.

With a view to sustainable development that integrates the challenges of climate change, Africa needs institution building, institutional capacity building and strong African leadership.

In a context where certain countries are calling out for equity, Africa must approach the problem with solidarity, but it must not risk technological isolation by excluding partnerships with emerging countries and industrialized countries.

⁵¹ International Institute for Sustainable Development. *Earth Negotiations Bulletin*, 12(439).

⁵² During the talks, several countries expressed a preference for an eight-year term for the post-Kyoto Protocol, in other words, for a commitment period running from 2012 to 2020.

Appendix: Information relating to possible quantified emissions limitation and reduction objectives as submitted by Parties*

This table contains updated information provided by Annex I Parties relating to their possible quantified emission limitation and reduction objectives (QELROs). It contains values or ranges of these pledges, the base year to which they refer, and information on their status. The information was submitted October 9 to the AWG-LCA and AWG-KP

Party	Information relating to possible QELROs			
	Range or single value by 2020, %	Reference year	Inclusion of LULUCF	Status
Australia	-5 to -15 or -25	2000	Y	Officially announced
Belarus	-5 to -10	1990	TBD	Officially announced
Canada	-20	2006	TBD	Officially announced
Croatia†	+6	1990	Y	Under consideration
European Union	-20 to -30	1990	N for -20% Y for -30%	Adopted by legislation
Iceland	-15	1990	Y	Officially announced
Japan	-25	1990	TBD	Officially announced
Liechtenstein	-20 to -30	1990	N	Officially announced
Monaco	-20	1990	—	Officially announced
New Zealand	-10 to -20	1990	Y	Officially announced
Norway	-30	1990	Y	Officially announced
Russian Federation	-10 to -15	1990	TBD	Officially announced
Switzerland	-20 to -30	1990	Y	Officially announced
Ukraine	-20	1990	TBD	Under consideration

Note: LULUCF = land use, land-use change and forestry, N = no, QELRO = quantified emission limitation and reduction objective, TBD = to be determined, Y = yes.

Source: unfccc.int/files/kyoto_protocol/application/pdf/awgkpjointqelrosubmission091009.pdf (accessed 3 December 2009).

*In November 2009, during the Barcelona meeting, Kazakhstan announced a commitment to a 15% reduction by 2020 and 50% by 2050.

†During the Bangkok meeting, Croatia suggested an update of its commitment to -5%. This was not accepted by South Africa, Federal States of Micronesia and Brazil.

Abbreviations and acronyms

Annex I countries	Industrialized countries that adopted emission reduction targets for the 2008-12 period under the Kyoto Protocol
COP	Conference of Parties
UNFCCC	United Nations Framework Convention on Climate Change
CDM	clean development mechanism
EU	European Union
GDP	gross domestic product
GEF	Global Environment Facility
IPR	intellectual property right
LDC	least developed countries
NAMA	nationally appropriate mitigation action
PAR	participatory action research
REDD	reducing emissions from deforestation and forest degradation
SCCF	Special Climate Change Fund