

► The West African Protected Areas Newsletter



“La lettre des aires protégées en Afrique de l’Ouest”

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Protected areas and climate change



EDITO

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The facts...

More than in any other region of the world, the climate change issue is particularly important in Africa not only because of the specific richness of this continent, but also because human populations' livelihoods are still very dependent on the services and products provided by the ecosystems, which are themselves dependent on the climate. The vulnerability of Africa face to climate change is recognized and there is a fear that the impacts on species, ecosystems and persons will be stronger on this continent.

There are few available studies and data on climate change impact in Africa, but there may already be impacts on biodiversity. The species of the IUCN Red List are already threatened, and they are yet more vulnerable than any other species. For example, elephants are threatened by poaching; their distribution and numbers are decreasing, limiting their adaptation capacities in case of major environmental changes.

Impacts are also socioeconomic and particularly affect the sectors of health (with the so-called “climatic” diseases) and of agriculture with all the risks regarding food security.

...the possible answers...

Fortunately, there are answers to climate change-related risks:

- on the one hand, the **preservation** and **restoration** of ecosystems and forest protected areas, in particular, enable and increase their **resilience**, that is their capacity to reconstitute themselves after having been disturbed. Those protected areas could thus preserve all the functions that would enable them resist to adverse climate change effects;
- on the other hand, well-managed protected areas (particularly forest PAs, as they have a great capacity of carbon sequestration) can be an effective **mitigation** solution. It then appears to be important to assess PAs' management effectiveness in order to correct imperfections, but also integrate these protected areas in broader conservation strategies, at the scale of terrestrial or marine landscapes.

Of course, « *well-managed* » also implies that good governance aspects are all taken account; what is unfortunately not always the case in many countries of the region that do not yet (or badly) integrate such values. It is moreover logical to think that adaptive answers to the issue of climate change will not be effective unless they are integrated in a real process of planning and policy development for the environment or forests protection within countries or at the regional level.

...the race against climate.

At last, **future starts today** and one of the next decades greater challenges will be to keep on looking for the most adapted solutions to limit the negative effects of climate changes on natural ecosystems, species and men. Even if it is not possible now to accurately quantify the long-term effects given the uncertainties related to climate forecast, it is clear that the development and analyses of **scenarios** can enable predict changes and thus assess the future possible impacts. They can thus enable to raise decision-makers' awareness regarding the emergency of the issue. Anyway, it is necessary that measures against climate changes, be they of mitigation or adaptation, receive a firm commitment and an unequivocal will from the States to implementation them.

Enjoy the reading.

The project on the *Evolution of PA systems with regard to climate change in the West Africa region - "PARCC - West Africa"*

Papaco, with the support of GEF, through UNEP-WCMC, is starting a new project on protected areas and climate change in West Africa. The project is shortly described below.



PROJECT RATIONALE

All civil society stakeholders (scientists, NGOs, practitioners, etc.) grant a more and more important place to the issue of climate change, as its potential impact on individuals, species and ecosystems is acknowledged. Protected areas are considered as one of the most effective tools for the conservation of biodiversity. The ecosystems they contain, as well as the already limited associated services yet have to face many pressures, including that of climate change which is considered as one of the main threats on biodiversity.

It is mainly a project for developing scientific tools at the regional scale in view of improving protected areas management systems as a response to climate change impacts. Transboundary collaboration will also play an important role in the project's activities because it might offer more effective solutions.

The main elements of the response to climate change threats will be provided by the project by:

- Identifying risks to PAs as a consequence of climate variability and change;

- Planning for adaptive measures that should be undertaken to minimise those risks.

PROBLEMS TO BE SOLVED

Threats on protected areas

The threats on PAs reduce their effectiveness in providing ecosystem services and their role in *in situ* conservation. The main two consequences of PAs degradation could be:

1. The PAs will no longer be able to provide vital ecosystem services at the maximum of their capacity and consequently:
 - *In situ* conservation of habitats and other species will be affected; the PAs will be degraded and this could lead to an important biodiversity loss;
 - PAs will no longer play their role in protecting communities from environmental threats; those populations will then become more vulnerable;
 - National economies will suffer from the degradation of PAs which are a source of revenues generated by tourism and/or fishing.
2. The capacity of PAs to contribute to carbon sequestration will be reduced.

The causes of threats

- climate change itself which is seen through the increase in global average temperatures, the increase in sea levels, the change of rainfall patterns;
- reduced capacity of PAs to adapt to climate change: the decrease in PA systems' effectiveness make them unable to adapt to climate change, and to continue to provide crucial ecosystem services;
- low connectivity: regional cooperation is limited and more focused on linking the countries rather than trying to harmonize policies at the regional level;
- low understanding of the scale of climate change impacts: the impacts on species distribution and the composition of ecosystems is little understood;

- low human capacity for scientific or management issues related to climate change: this is linked to a lack of leadership, good governance or efficient technical capacity;
- the difficulty of dealing with the climate change issue: because (i) the impacts can be felt very late; (ii) there is uncertainty about what the impacts will be and; (iii) there is uncertainty on the better way to manage these impacts. The project will propose solutions for the last two problems.

At last, the project will face some **barriers** which it will have to remove in order to better address the above-identified problems:

- there are very few data and information on the climate change issue in West Africa, and those data, when existing, are poorly managed: the project will endeavour to strengthen the capacities of national structures in data collection and management;
- little understanding of the links between PAs, CC and communities: through training and regional studies, the project will enable to better understand the vulnerability of PAs and persons and how to improve their management face to the threat of climate change; and identify the measures that can be taken to make PAs resilient to the effects of CC;
- there is no regional structure to coordinate the wide-scale responses regarding the climate change issue;
- there is little financial and political support for PA management: the project will deal with the issue of political support through directly involving national governments in the project. Other political decision-makers will be informed of the project through various channels: periodical newsletters, regional meeting intended for decision-makers, etc.



assessment and adaptation to climate change impacts.

The **objective of the project** is to *enhance the regional (transboundary) and national PA management through strengthened scientific and technical capacities* in the following issues: a) assessment of climate change-related risks, b) development of planning and guidelines for adaptation, and c) mainstreaming risk-based adaptation into PA management.

Technical partners of the project

Many **partners** will participate in the implementation of the project. The main partners are:

- **UNEP-WCMC** which implements the project at the global level
- **PAPACO** which is the main partner of UNEP-WCMC in the implementation of the project. It is the regional manager of the project
- The **governments of the following five pilot countries**: Mali, Chad, The Gambia, Togo and Sierra Leone.

Those countries will participate through their ministry in charge of protected areas-related issues. National partners will also include national meteorological services. At the regional level, future partnerships will also be envisaged. Three other countries are also involved in the project as part of transboundary activities: Burkina Faso, Côte d'Ivoire and Ghana.

- **IUCN-Species Programme** (Cambridge): it will conduct evaluations on vulnerability to climate change and also work with the IUCN Commission on species survival to update and fill in the Red List assessments' gaps in the region
- **International** (Birdlife International and Africa programme) and **national NGOs**
- **Academic institutions**: The University of Durham which will work on climate change modelling, species and PAs in collaboration with Birdlife; and the Durrel Institute for Conservation and Ecology (DICE, University of Kent) which will work on conservation planning
- The **Hadley Centre** (the United Kingdom national meteorology service) which will conduct the studies on climate models and the development of scenarios

SUMMARY DESCRIPTION OF THE PROJECT

Objectives of the project

The **aim of the project** is to *improve the protection and sustainable management of representative PA ecosystems in West Africa through strengthened*

- The national experts of the five pilot countries will work in collaboration with the international partners mentioned above

Components of the project

Component 1: vulnerability assessment and risk reduction strategies for existing protected areas systems

This component will seek to comprehensively assess the extent to which protected areas in West Africa have been affected or could be affected by climate change. This will be addressed by:

- assessing the vulnerability of protected areas and developing adaptive strategies for those most at risk;
- assessing future climate change scenarios through appropriate tools and guidelines;
- developing adaptive strategies for those most at risk;
- determining how to apply adaptive management strategies and developing tools for monitoring the results of adaptation strategies.

Component 2: gap analysis/ studies and spatial planning

This component focuses on climate change related studies, assessments and preparation of maps, all of which are required to inform decision-makers and recommend practical interventions they could make for specific situations. Maps will include the ideal placement of new protected areas (single-country and transboundary). They will be based upon assessment of the status of globally threatened species at national levels, examination of ecosystems and their services, their location and the flow of their benefits (such as freshwater and carbon storage), and assessment of effects of climate change on community activities. At the regional level, information dissemination within existing West African networks will be a key aim.

Component 3: political support and implementation, pilot projects and training

This component will focus on building capacity and raising awareness of all stakeholders in order to take advantage of the tools, approaches and recommendations developed by the first two components. This will require training at different operational levels, and where appropriate, can include policy drafting and other measures to operationalize recommendations. This component will also include the design of pilot corridor management plans, involving new governance models such as communes, traditional authorities and local populations.

Component 4: knowledge management, communication and monitoring and evaluation

This component includes the development of a communication strategy with a strong emphasis on capacity building. The central point for all knowledge, information and outputs generated by the project will be the project website and data portal. This portal will be central to data management and analysis activities. It will also include a mapping application, allowing users to easily put together a wide range of outputs based on the information collected.

A long term monitoring system for the protected areas, and the benefits they deliver, will also be developed. This system could then be used in the whole region, including relevant baselines, targets and indicators of success for sustainable management of protected areas that are resilient to the effects of climate and other change factors.



Main expected results

The main results expected are the following:

- Tools to assess the vulnerability of protected areas to climate change;
- Strategies to strengthen the resilience of protected areas to the impacts of climate change;
- Building capacities in using these tools and strategies.

Implementation schedule

This project has started with the inception meeting held from 30 March to 1st April 2011 in Banjul, the Gambia. The implementation of the project will be ended in September 2015, and the plans for the next 12 months are:

- to review available data
- to organize national data collection workshops
- to organize regional training and thematic workshops
- modelling climate change
- setting up a communication strategy including developing a newsletter

- developing and regularly updating an Internet site of the project

INSTITUTIONAL ARRANGEMENT

- The agency in charge of implementing the project is UNEP-DEPI/GEF (Global Environmental Facility department) which will make the link with the GEF to guarantee funds distribution according to the calendar, as well as meeting the project's targets.
- The execution agency is UNEP-WCMC which is in charge of managing the implementation of the whole project.
- PAPACO is the main partner in the project's implementation. It is in charge of implementing the project's activities at the regional and national levels.
- At the national level, the National Liaison Officers will be responsible for the good implementation of activities; they will coordinate and supervise the project's activities at the national level, closely with PAPACO.
- The project's Steering Committee will provide for the link between the executing agency, the implementing agency, the five pilot countries, the three transboundary countries and the technical partners. The Steering Committee will meet once a year to review the outputs, make recommendations on the actions to be implemented in view of meeting the project's targets and objectives and provide relevant advice.
- The Advisory Group of technical experts which comprises all the technical partners mentioned above will provide advice on scientific applications and technical tools creation within the framework of the project.

Details on the project's evolution will be periodically provided in an information letter specially designed for this project and posted online.

The fourth GIEC assessment report

Vulnerability and risks for Africa?

The Intergovernmental Panel on Climate Change (IPCC) published its last assessment report in 2007. According to this report, the scientific **observations** show that, at the global level:

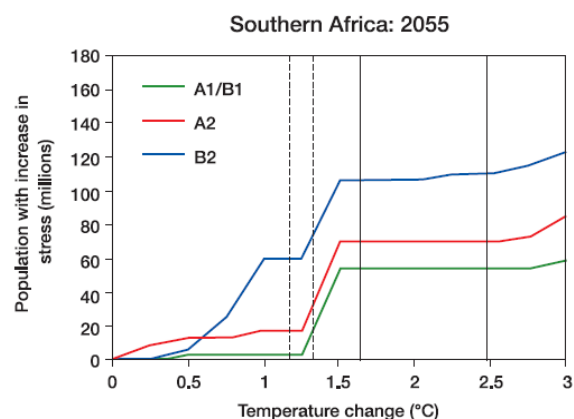
- The temperature has increased of 0.74°C between 1906 and 2005, and the increase happened almost everywhere in the world.
- The sea level has increased of 1.8 mm/year on average since 1961 and 3.1 mm/year on average since 1983 (due, among others, to glaciers melting)
- Extreme climate events such as droughts and flooding may have increased.

Natural systems already suffer the consequences of climate change: disturbance of hydrological systems with an impact on productive areas such as wetlands and the protected areas they contain; deterioration and fragmentation of habitats and displacement of the distribution of some species towards areas which are more favourable to their survival; modification of ecosystems' composition, etc.

Taking into account the fact that there are uncertainties at the continental scale, the **climate change scenarios** predict, for the 2080-2090 period, that the average annual air temperature increases of 3 to 4°C compared to the period of 1980-1999; as far as rainfall is concerned, depending on the regions, it is possible that the average annual rainfall decreases (along Mediterranean coast, in the north of Sahara and along the western coast) or increases (the tropical region of Africa and East Africa). It is also possible that droughts and flooding increase.

According to the report, Africa is one of the most vulnerable continents to climate change due to the stress it suffers because of human action. Projections on future climate evolutions do not suggest a better future on the continent. On the contrary, all the sectors of activities may be affected by the effects of climate change. For example, according to the report, **anticipated incidences** could be that:

- *By 2020, 75 to 250 millions of persons might suffer from water stress;*



Number of people (millions) with an increase in water stress (Arnell, 2006b in IPCC, 2007).

- *In some countries, the yields from of rain-fed agriculture might decrease of 50% by 2020 (with consequences regarding food security);*
- *Concerning ecosystems and species: the productivity of forest ecosystems might change, as well as species displacement; as well, migrating water birds and other aquatic species may suffer from the modification of mangroves, etc.*
- *The sea level rise will have a big impact on west African human populations living along coasts (40%)*

Future actions should be defined according to these anticipated effects and strive to develop (natural, economic, social) systems resilient to the effects of climate change. The actions should be focused on natural systems because populations much depend on them for their subsistence.



Would the implementation of ecological corridors help reduce climate change impacts on protected areas?

Ecological corridors are links/connexions between conservation blocks or sites. On the one hand, they facilitate the flow of one or more species individuals and enable their dispersion and migration; on the other hand, they increase connectivity between areas and therefore reduce the impacts of habitats fragmentation which can be a consequence of climate change.

All this contribute to reduce the loss of biodiversity by maintaining genetic variability (through flows) within a population.

Corridors should then contribute to reduce climate change impacts as maintaining this genetic variability enables those species which are likely to suffer from its effects (for example, habitats fragmentation) to adapt.

In short...International negotiations on climate - where are we now?

As a reminder: UNFCCC and the Kyoto Protocol

The United Nations Framework Convention on Climate Change (UNFCCC) has been adopted in 1992 to meet the challenges of climate change; it defines an action framework that should allow

“stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”.

The convention entered into force in March 1994 and counts 195 parties who meet annually in Conference of the Parties (COP).

The Kyoto Protocol was adopted at the COP 3 in 1997 to complement the convention; it establishes legally binding obligations for industrialized countries and countries in transition (countries of the convention annex 1). Those countries have committed to reduce their emission levels of GHG of 5% compared to their 1990 levels between 2008 and 2012 (1st commitment period). The Protocol entered into force on 16 February 2005.

The Bali action plan

In December 2007 at COP 13, the negotiations resulted in the adoption of an action plan (Bali action plan) which was the main decision of this COP. The working group set up during this conference will focus on the main four elements of the plan: mitigation, adaptation, financing and technology transfer. This is how the mechanism to Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries has been negotiated within the framework of the convention. The Bali Road Map was a two-year process, up to the COP 15 in 2009, to finalize the negotiations concerning the post-2012 period.



Copenhagen 2009 and Cancun 2010

Globally, the outputs of Copenhagen were not those expected. The discussions at Cancun on the Kyoto protocol aftermath came to no conclusion. The Cancun agreements provide for, among others, the setting up of a REDD+ mechanism after 2012 (REDD+ adds carbon sequestration REDD, therefore more carbon storage). They also provide for the establishment of a green Fund that will enable to help developing countries adapt to climate change. From 2020, it is planned to put 100 billions US dollars at the disposal of developing countries; the technical aspects of the financing of this facility still have to be defined.

From Cancùn to Durban... The Kyoto aftermath?

The next COP will be held next December at Durban and will undertake to advance the discussions on the implementation of the Convention and the Protocol, as well as the Bali action plan and the Cancùn agreements.

The first period of the Kyoto protocol commitment ends in 2012. The countries that are bound to the objectives of GHG reduction wish a new treaty that would include the other GHG emitting countries such as China or India.

Protected areas management face to the climate change challenge

In a recent study¹, some researchers have tried to identify the most appropriate strategies of adaptation to climate change for conservation sites within a conservation network (which can contain protected or unprotected sites); and also, to identify regions where, apart from the existing conservation network, an additional area could facilitate species movements through wider landscapes. Therefore, they have used models to understand how, in a context of climate changes, species distribution might change in the future: the species of a site which is suitable in the present but not in the future are *emigrants*, the species of a site which is suitable in the future but not in the present are *colonists*, and the species of a site which is suitable both in the present and future are *persistent*. On this basis, they have identified for each site, adaptation strategies to climate change (for example, to favour species persistence) and the five following corresponding priority management categories:

- habitat restoration and creation of new sites: it entails for example to restore habitats in the case of persistent species; or create new habitats for colonist species;
- disturbance-regime management: for example management of fires, flooding, pasture
- translocation: translocation to or from the site and *ex situ* conservation strategy
- increase site extent: mostly when dealing with persistent and colonist species
- matrix management for landscape permeability: for example, setting up corridors to facilitate the dispersion of emigrant species or the arrival of colonist species.

¹ Hole, D. G., et al. 2011. Toward a Management Framework for Networks of Protected Areas in the Face of Climate Changes; *Conservation Biology*, Volume 25, No. 2, 305–315

The study area is the Important Bird Areas (IBA) of the sub-Saharan Africa, a conservation network of about 2,079,306 km², including 863 sites which cover 42 countries and territories. These sites are critical for the conservation of avifauna in the region because they notably contain threatened species.

Globally, the study's results show that adaptation strategies to climate change for conservation sites will change within and among the region depending on the relative stability of each species (and ecosystems) community. For example, the adaptation strategy that favours a strong persistence of species is predominant in the Guinea-Congo region and in most of the West African region. Those regions where additional area would be necessary because they are likely to welcome colonist species are, for example, the Congo basin and a part of Southern Africa.

According to the projected displacements of the sub-Saharan area IBA species, the best management options can be envisaged and this is an important step towards new adaptation strategies to climate change. However, the authors of the study mention uncertainties linked to the use of models such as: future CO₂ emission trends; climate change variability; or ambiguous evidence of species' abilities to shift their ranges fast enough to keep pace with climate change, etc.

some figures...

(source: IPCC, UNEP-WCMC)

312 billions tons of carbon is stored in the global network of protected areas, that is, 15% of the planet's terrestrial carbon stock

It is estimated that **40%** of the West African population live along the coasts

20% of greenhouse gases emissions come from deforestation and other forms of land use change

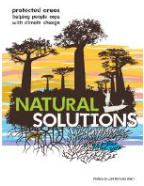
The average global temperature has increased of **0.74°C** during the last 100 years (1906-2005)

The average level of the sea has increased of **17 cm** during the 20th century.

In Africa, it is estimated that **1.39 tons** of CO₂ are emitted per inhabitant (about 87 tons/inhabitant globally)

According to the World Bank, adaptation to climate change will cost to developing countries between **75 and 100 billions \$US** per year from 2010

Some recent publications



The IUCN World Commission on Protected Areas, in collaboration with TNC, UNDP, WCS, the World Bank and WWF has published a book titled: **Natural solutions - Protected areas helping people cope with climate change or: How can protected areas meet the climate change challenge?**

The publication deals essentially with the role protected areas can play in mitigation of and adaptation to climate change.

For example, regarding mitigation:

- PAs, notably forest PAs, play an important role in carbon storage: it would be important to increase protected areas' extent, particularly in high-carbon areas;
- PAs have the capacity to sequester CO₂, thus reducing greenhouse gases, provided that the habitats are not degraded. It is therefore important that these PAs be maintained in a good state of conservation.

The publication can be downloaded at <http://data.iucn.org/dbtw-wpd/edocs/CEM-009.pdf>



The natural fix? The role of ecosystems in climate mitigation

This UNEP publication deals with the issue of the contribution of ecosystems, either forest or savannah, in the fight against climate change through carbon storage. It puts forwards the high potential of these contributions in the fight against poverty (linked or not to climate effects) in all the sectors of activity and for sustainable development.

One of the conclusions is that to stabilize the concentrations of greenhouse gases in the atmosphere, it is important to:

- reduce emissions from fossil fuel use, for example by using technologies which enable to store the greenhouse gases produced at concentrated emission points such as power stations;
- another option, as the previous might not be sufficient, is to provide for effective management of the carbon which is in natural ecosystems through, for example, best management practices of land use.

The publication is available at: http://www.unep.org/publications/contents/pub_details_search.asp?ID=4027



Building resilience to climate change Ecosystem-based adaptation and lessons from the field

Through 11 case studies covering worldwide ecosystems, this contribution of IUCN commission on ecosystem management gives examples of actions and adaptation strategies implemented for conservation but also for human populations likely to be affected by the climate change effects. The publication promotes the *ecosystem-based adaptation* concept, specifying its numerous advantages but also its limits, as the fact that there are uncertainties, mainly due to the low knowledge of the concept's implementation thresholds in improving the vulnerability levels of a system to climate variations and changes.

The publication is available at: <http://data.iucn.org/dbtw-wpd/edocs/CEM-009.pdf>

Announcement

The Climate Development Knowledge Network (CDKN) is delighted to announce its second global research call, valued at about £4 million, on the themes of climate compatible development and disaster risk management and resilience. Proposals will concern:

Theme 1: Climate Compatible Development, including three subthemes:

- 1 - Designing and delivering climate compatible development
- 2 - Decision paths, tools and processes for climate compatible development
- 3 - Low Carbon Policies on Development and Growth

Theme 2: Disaster Risk Management and Resilience, including four subthemes:

- 1 - Design of disaster risk management systems
- 2 - Disaster Responses that build resilience
- 3 - Risk financing leading to risk reduction
- 4 - Costs and benefits of risk management strategies

In this call, sub-theme research areas are specified, and researchers are invited to submit research questions of their choice under the subtheme. Applications are invited for projects with a value between £400,000 and £500,000, with exceptional projects able to apply for funding of up to £1 million.

CDKN funds research of the highest scientific standards with clear policy impact pathways. **For full details, including research questions, eligibility criteria and application processes, please see the research call documentation on the CDKN website.**

► APAO Newsletter ◀

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