PARCC West Africa
News & Updates

The newsletter of the project *"Protected Areas Resilient to Climate Change in West Africa (PARCC)"* provides information on latest updates on project's and related initiatives' activities and results.

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Gallery forest – PAs Complex of Gallé/Limakolé, Mali ©Christophe Pollot

Roan antelopes, Zakouma national park, Chad ©CURESS, Tchad

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New website for the PARCC project!

The PARCC project has now a new website:

www.parcc-web.org

The PARCC website and data portal is the central point for all knowledge, information and outputs generated by the project. Given its large geographic scale, it is essential to keep national, regional and international partners up-to-date with activities across the project. All outputs from the project will be made available through this site. In addition, external references and resources relevant to the project will also be found.

The new website is more comprehensive and interactive than the previous one. It also includes a data portal, which is central to data management. Through a search engine, the portal will soon provide access to all the project reports, as well as external references. Notably, the data portal will allow project participants to both upload and download relevant documents. Project participants will soon be notified on how to login to the website to upload new documents or retrieve password-protected documents.

The new website is now live; we encourage you to explore the site, and would welcome any suggestions to improve it!

Finally, at a later stage, the website will also integrate a mapping tool, which will allow users to easily put together a wide range of maps based on the data collected throughout the project.

National Data Collection

The project aims at designing scientific tools to help make protected areas more resilient to climate change (CC), and at developing capacity in the countries to use these tools. In order to provide these tools, which will be made available to all stakeholders including decision makers, notably through the project website and online mapping tool, all best available information and data are necessary.

Thus, one of the first activities of the project was to collect data that is needed to conduct studies on climate modeling, red-listing assessments, vulnerability assessments, and development of scenarios. Data collection activities were conducted by national consultants in each of the five project countries in order to collect the missing data useful for the project.

The data collection focused on five thematic areas, namely protected areas, species, climate, vegetation & fire, and socio-economics. Data on protected areas included updating the protected area data present in the World Database on Protected Areas (WDPA) by working in collaboration with the WDPA managers at UNEP-WCMC.

The consultancy highlighted widespread issues encountered in the core project countries regarding the availability of data:

- Data acquisition
- Scarcity of data on biodiversity
- Lack of knowledge on biological resources
- Problem with accuracy of data
- Difficulty in accessing data from data holders (institutions or individuals)

Below is a summary of data collected in the countries and/or information available on the themes mentioned above. The full reports[1] on data collection for each country will soon be available on the project website www.parcc-web.org

[1] Note that most parts of the reports only mentions which data were obtained or collected. Not all the data collected (reports, thesis, project documents, maps, etc) could be added to the reports as annexes. But they are available as soft copies at UNEP-WCMC and IUCN PACO.

Data collection in Chad

Data holders in Chad include, among others:

- The Ministry of environment and fisheries resources through its technical Directions
- The Direction of Water resources and Meteorology
- The Chadian institute of Research for Development (ITRAD), the *Office National pour le Développement Rural* (ONDR) and the *Société de Développement du Lac* (SODELAC)
- The *Centre National d'Appui à la Recherche* (CNAR) and the National Institute of Statistics and Demography (INSEED)
- African Institute for Economic and Social Development (INADES)
- The Lake Chad Basin Commission

Decrees of creation of the **protected areas** were collected; boundaries for the following PAs were determined: Chadian part of Lake Chad, Lowland of Massenya, Lowland of Logone and Toupouri depressions, Flood plain of Barh Aouk and Barh Salamat.

Since the 2008 assessment of the management effectiveness of the PAs network of Chad, the situation has not evolved in a positive way; instead, poaching has increased, especially in Sena Oura national park were elephant populations are decreasing. However, the populations of other species like buffalos, roan antelope, hartebeest, kob, etc. have increased during these last years.

Some limited lists of **species per PA** were provided in management plans, for the PAs which had one. Data on species, boundaries, vegetation, and threats were provided for the following PAs: Sena Oura, Manda, Biosphere Reserve of Lake Fitri, Chadian part of Lake Chad, Lowland of Massenya, Lowland of Logone and Toupouri depressions, Flood plain of Barh Aouk and Barh Salamat.
Only six PAs have elaborated a management plan, some of them are still draft documents (e.g. the one from Sena Oura).

The climate data that has been gathered included:

- List of hydrological stations
- List of agro – meteorological stations
- List of climatologic and rainfall stations
- Data on rainfall and temperature

Moreover, Chad is taking action towards the mitigation of the effect of climate change; the country has submitted its first national communication to the UNFCCC and the second one is under preparation; the country has also adopted a National Adaptation Plan of Action (NAPA).

There are three main phytogeographic domains in Chad with specific **vegetation types**: the Saharan domain, the Sahelian domain, and the Sudanian domain. Data collected on vegetation include:

- Natural resources situation in Chad
- Study on the biodiversity of Lake Chad
- Environmental perspectives in Chad

In conclusion, in Chad data are not archived in a database; generally only hard copies are available, which does not make the data collection easy.

Recommendations from the study included:

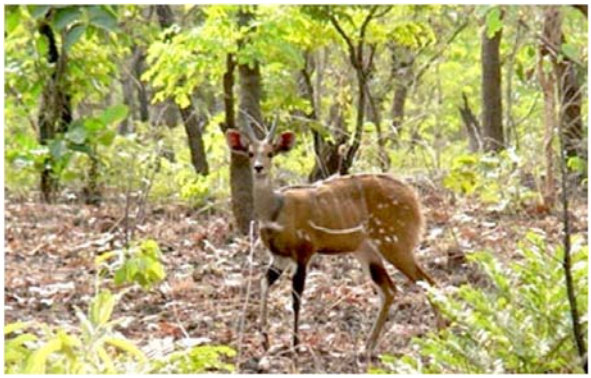
- Setting up a monitoring and data collection system at the sub-national, national, and regional level;
- Strengthening capacities in data collection and the use of tools, as well as provision of appropriate equipment to collect, process and analyze data.

Data collection in Mali

The main **data holders** in Mali are: the *Direction Nationale des Eaux et Forêts* (DNEF), *Système d'Information Forestière* (SIFOR), Projects like *Opération du Parc National de la Boucle du Baoulé (OPNBB)*, *Conservation et valorisation de la biodiversité du Gourma et des éléphants (PCVBG-E);* the Malian Association for Wilflife and Environment Conservation (AMCFE), Wetlands international, IUCN Mali Office, Observatory of Human Development, National Institute of Statistics (INSAT), National Meteorology.

For each **protected area**, GPS coordinates and a list of main **animal and plant species** were collected. Furthermore, management effectiveness data has been collected for two protected areas using the Management Effectiveness Tracking Tool (METT): Sousan fauna reserve, and Wongo national park.

There are no **transboundary PAs** in Mali, however, the idea of a transboundary biosphere reserve has been initiated between Mali and Guinea (Bafing-Falémé), and is still under discussion. There are transhumance corridors in the Boucle du Baoulé Biosphere Reserve and the Gourma Elephant Reserve, but these corridors are degraded.



Bushbuck in the de Gallé/Limakolé PAs complex, Mali © Christophe Pollot

Mali attempts to **mitigate the effects of climate change** and has prepared its first and second National Communication to the UNFCCC. Mali is also currently implementing adaptation measures and has elaborated a NAPA.

The list of all **meteorological stations** present within or outside the PAs with the GPS coordinates was collected, as well as the observed variables, and the period for which the information is available. Three types of meteorological stations have been identified: climatological stations (42), agro meteorological stations (9), and the synoptic stations (20).

The study also provided a **vegetation map** of Mali, as well as information on **bush fires** from December 2011 to May 2012.

Socio economic data that could be used to assess the vulnerability of people to the effects of climate change have been collected

as well. These data include: incidence of poverty per administrative region, poverty index by administrative region, prevalence of chronic malnutrition, birth rate, etc.

The main recommendations that emerged from the study are:

- To gather all documents on PAs and make them available within the DNEF
- To set up of a national body responsible for PAs management
- To conduct inventories of biodiversity in all PAs.

Data collection in Sierra Leone

The report on PA data in Sierra Leone provides information on management plans, boundaries, maps, main species present across all taxa, including threatened species, for all the PAs of the proposed network. This network is composed of the following PAs: Gola Rainforest National Park, Western Area Peninsula Forest Reserve, Loma Mountains non-hunting Forest Reserve, Outamba-Kilimi National Park, Kangari Hills non-hunting Forest Reserve, Kambui Hills North Forest Reserve, Tiwai Island Wildlife Sanctuary, which is home for the rare and endemic pygmy hippopotamus and wild chimpanzees.

In Sierra Leone there are potentials for the creation of **transboundary PAs and corridors** (for instance, the trans-boundary peace park between Sierra Leone and Liberia - Gola Forest Reserves of Sierra Leone and the proposed Gola National Forest of Liberia).

The meteorological department under the Ministry of Transport and Aviation is the Focal point of **climate change** issues. The department provided coordinates of the locations of all meteorological stations, and data on temperature and rainfall variables. There are 11 weather stations in Sierra Leone, but none of them are situated within PAs, and most of them have not been recording data continuously.
Sierra Leone is taking action to mitigate the effects of CC. For instance, the country has submitted its first national communication to the UNFCCC, and is in the process of developing the second one. Sierra Leone has also developed a NAPA, and is involved in preparatory activities to implement REDD, REDD+ and Non-REDD Carbon Trading.

Some of the mitigation efforts in Sierra Leone include:

- Increasing conservation efforts, notably with the establishment of a network of twelve Protected Areas by 2015
- The establishment of a national secretariat for climate change (NSCC)
- Improving forest governance to maintain the proportion of land area covered by forests to at least 3.4 million ha by 2015

There are two **vegetation zones** in Sierra Leone: the Sudan-Guinea savannah and the Guinea-Congo forest biomes. The Sudan-Guinea savannah occurs in the north with components of grassland and woodland savannah. The Guinea-Congo forest biome occupies northeast and southeast, forming the western edge of the Upper Guinea Forest, which stretches across Liberia, Cote d'Ivoire to Ghana.

Socio economic GIS data collected included: country regions, districts, chiefdoms, major and minor roads, national parks, and drainage.

There is little information available on PAs in Sierra Leone, except for PAs like the Gola Forest that are financed by an international programme. However, another reason for the lack of data is that the network of PAs is not officially constituted yet.

Data collection in The Gambia

In the Gambia, some of the **data holders** include: the Department of Parks and Wildlife Management (DPWM), the Gambia Meteorological Service, the National Environment Agency (NEA), the *Centre de suivi écologique* (CSE), based in Senegal.
The DPWM is responsible for the management of wildlife and the establishment of PAs, while the Forestry Department is typically in charge of forest parks (not nationally recognized as PAs).

There are 8 **protected areas** in The Gambia, covering 51,240 ha or 4.27% of the total land area of the country: Abuko Nature Reserve,

River Gambia National Park, Niumi National Park, Kiang West National Park, Tanji & Bijol Islands Bird Reserve, Baobolon Wetland Reserve and Tanbi National Park.
All the 8 PAs, except Baobolon Wetland Reserve, have management plans, which have been collected. They provide information on some key species that occur within PAs.
METT assessments were collected for Tanji Bird Reserve, Kiang West National Park, and Tanbi Wetland complex; and they were conducted for other PAs, including Abuko, Baobolon, Bolon Fenyo, Niumi National Park and Tanbi. Boundaries of Baobolon, Niumi, Tanbi, Tanji and Bijol Islands Bird Reserve and Abuko were updated in collaboration with the WDPA team. The GPS limits of Bijol Islands, part of Tanji Bird Reserve, were also determined.
All data for The Gambia has now been updated in the World Database on Protected Areas (WDPA).


Waterfall and riverpool in the Gola Rainforest National Park ©Gola Forest Programme

Efforts to mitigate the effects of **climate change** include the preparation of the First National Communication to UNFCCC, and the NAPA, which includes projects that aim at addressing urgent and significant climate threats.

Regarding climate data, only data on rainfall, temperature, relative humidity and maximum wind speed for the 1981 to 2010 period were available from the Gambia Meteorological Service and were collected.

There are currently ten meteorological stations in the country, five of which are located close to protected areas.

Data collected include:
- Monthly rainfall
- Mean monthly maximum and minimum temperature
- Mean monthly maximum and minimum relative humidity, and
- Monthly maximum wind speed

The Gambia is composed of woods, forest, swamp, grassland and mangrove. A digital **vegetation map** was provided by the study.
It is assumed that **bushfires** are mainly caused by the clearing of new land. In 2008-2010 more than half of the forest got burnt; 79% of the area of forest affected by fire once or more times every year, 12% once every two years, 8% once every five years and 1% once every ten years.

Other **socio economic** data include details on the communities living within and around PAs, including the socio-economic activities of settlements close to PAs, number of villages surrounding PAs, employed persons by broad occupation in settlements close to protected areas.

The study **recommends** that the Gambia standardize the data and information on its PAs. It also recommends looking at the establishment of more protection corridors and transboundary PAs, as they can increase their resilience to climate change.

Data collection in Togo

Data holders in Togo include:
- Technical services of the ministries e.g. wildlife, forestry, planning, meteorology, statistics, health, etc.
- Research institutes e.g. Faculty of Sciences, Togolese institute of agronomy
- NGOs: AGBO ZEGUE, *Action Environnementale pour le Développement* Durable (AE2D), *Jeunes Volontaires pour l'Environnement* (JVE), Friends of the Earth-Togo
- Private companies: *Société Togo Faune*, Franz Weber Foundation

- International institutions : *Agence pour la Sécurité de la Navigation Aérienne en Afrique (ASECNA)*

The following data were collected in Togo for **protected areas**:

- Digital maps of 7 PAs
- An atlas on mapping information of the Oti-Kéran-Mandouri (OKM) complex
- Coordinates of the boundaries of 14 PAs
- Management plans of 3 PAs (Bayémé, Missahoé and Assimé).

The study provides information on some **species** that occur in the OKM complex and threats. The establishment of the OKM complex seeks to achieve "regionality" and aims at facilitating the seasonal displacement of elephants and other big mammals. It is an opportunity for a corridor in a transition zone between North and South ecosystems.
Furthermore, the complex is established to connect Oti-Kéran-Mandouri PAs and the Arly national park in Burkina-Faso, the Pendjari national park in Benin, and the W national park in Niger, which form the WAP complex.
This interconnexion and **transboundary aspect** of the complex ensures the conservation of biodiversity at the regional level.

There are other opportunities for the creation of transboundary PAs (e.g. the Fazao-Malfakassa National Park in Togo and the Kyabobo National Park in Ghana).

In the face of future **climate change** impacts, Togo has prepared its first and second national communication to the UNFCCC. The country has also developped strategies, programmes and policies, such as the NAPA or the *Programme National d'Investissements pour l'Environnement et les Ressources Naturelles* (PNIERN). These tools integrate climate change considerations and the vulnerability of the environment and natural resources.

The study collected the coordinates of the **meteorological stations** by administrative region. There are 19 climatological stations, and 9 synoptic stations. They provide information on minimal, maximal and mean data on evaporation, insolation, wind speed, temperature, rainfall, relative humidity, from 1967 to 2010 for the 9 stations. There are also daily data (rainfall and temperature) for the Lomé meteorological station from 1951 to 2009.

The main **recommendations** that emerged from the study include:
- Improving the knowledge on PAs and species
- Setting up a unit for the management of data and information on PAs
- Setting up an expert group for the elaboration of a national red list of IUCN
- Creating incentives for the creation of other transboundary PAs.

The full data collection reports for each country will be available soon at: www.parcc-web.org

The reports were drafted by the following national consultants: Mr Adjonou Kossi (Togo), Mr (Mahamane Maiga (Mali), Mr Sheikh Sowa (Sierra Leone), Mr Worgue Yemye (Chad), and Mr Camara (The Gambia).
They worked in collaboration with the national liaison officer (NLO) in their country and other experts on the different thematic issues.

Updates and results

Species meetings and vulnerability assessments

Two species vulnerability assessment meetings took place in July in Lomé, Togo. The meetings were lead by IUCN Species Programme and aimed at assessing the vulnerability of some species taxa to climate change using the Traits-based Vulnerability Assessments method described in the section below.

The first meeting focused on assessing the extinction risk of Reptiles of West Africa and

gathered regional and international reptile specialists to assess the conservation status and vulnerability to climate change of a total of 316 native species. For the first time, during this meeting, Red List and Climate Change Vulnerability assessments were combined in a single and successful exercise.

Pseudopontia gola, Gola National Park, Sierra Leone
©Gola Forest Programme

The second assessment concerned freshwater fishes and mammals of West Africa, and only used the Climate Change Vulnerability assessments framework, as Red List assessments had already been done for these species. Many data were collected on life history and ecological traits associated with vulnerability to climate change for these taxa.

Analyses of the data collected and reports on vulnerability to climate change at the species level are under way by IUCN species programme. The results will be made available in the next issue of the newsletter and on the website.

Scientific and technical reports

In June 2012, an extraordinary two-day Technical Advisory Group (TAG) meeting was hold with a number of international experts on ecological assessment of species and protected areas vulnerability to climate change. The objectives were: (i) to determine the relevant scale and approaches to climate change modelling of species and protected areas, and (ii) to develop a generic method for the integration of vulnerability traits and bioclimatic models.

The work resulted in the development of a **conceptual methodology** on how the integration of the two approaches could be implemented.

Two main methods to assess protected areas vulnerability to climate change will be used in the project:

1. Traits-based Vulnerability Assessments (TVA), and
2. Species Distribution Modelling (SDM).

These two methods are described in a report (which will be made available to project participants) highlighting objectives, strengths and weaknesses of the two methods and proposing a framework methodology to carry out the assessments.

The first approach (TVA) aims to assess species-specific biological traits that may increase or decrease the effects of climatic changes on a species. This is based on the IUCN climate change vulnerability assessment framework, which considers three components:

- **Sensitivity:** the lack of potential for a species to persist,
- **Poor adaptability:** inability to avoid the negative impacts of climate change through dispersal and/or micro-evolutionary change), and
- **Exposure:** the extent to which each species' physical environment will change.

Species which combine a high sensitivity and degree of exposure, and a low capacity to adapt will be most vulnerable to climate change. TVAs also allow identifying such species and the broad regions where they are concentrated, which can therefore provide insights into the adaptive management options that may be most appropriate for each species.

The possible of this method are:

- Ranks, continuous scores or binary values for individual vulnerability components, used to derive a final vulnerability score;
- Broad-scale maps showing concentrations of vulnerable species.

The second approach (SDM) is so far the most used approach to assess species vulnerability to climate change. In this method, the assessment of the vulnerability of species to climate change is based on their current and predicted future distribution.
Models are developed and applied to future climate change projections in order to produce forecasts of species' potential future ranges. The method provides useful information on the spatial and temporal pattern of projected impacts.


Abuko Nature reserve, The Gambia

Outputs of the SDM are:
- Maps of projected distribution at different time-points (i.e. spatial and temporal patterns of distribution) for each species.
- Projected changes in community composition at a site- or local-scale.

Both methods have different strengths and weaknesses. SDM strength is that it produces spatially explicit maps of current and future species range, while in the TVA, details of biological traits relevant to climate change vulnerability at the species level are provided. Weakness of SDM mainly relates to the fact that it does not consider constraints on distribution due to inherent biological traits of the species, or factors such as dispersal barriers. In the TVA, spatially explicit maps of future distribution under climate change are not produced.

The study has therefore tried to use the best elements of each method in order to produce an integrated framework that would provide improved vulnerability analyses. This framework also suggests how both approaches can inform adaptive management planning and spatial conservation prioritization.
Both methods are indeed useful to guide conservation practitioners on which adaptive management activities may be most suitable for each species: the SDM guides appropriate responses at a site scale through identifying which species management should be targeted (i.e. persistence, colonization or a balance between the two); and the TVA guides appropriate responses for each species through identifying the components of susceptibility.
The integration of both approaches will provide stronger and more robust climate change risk assessments for biodiversity, so that better informed adaptation plans and interventions can be implemented.

The study therefore provides a conceptual framework on how SDMs and TVAs can be integrated to assess climate change impacts on species and protected areas, and use these as inputs into systematic conservation planning.
This conceptual framework will help identify vulnerable species and broad region of concern. It will enable to identify the PAs that are the most likely to be affected by climate change and the most important conservation sites in terms of mitigating the impacts of climate change.

Adaptation planning will therefore be the main focus for conservation planners:
- Identify sites to protect and safeguard: target sites that contains vulnerable species, include species with a range of climate change responses;
- Identify management actions needed: identify species whose persistence is dependent upon a specific habitat and invest in this habitat (which might itself be affected by CC) in order to protect the species.

The full report on this integrated methodology will be made available on the website once finalised.

Protected Area Management Effectiveness: A regional framework and additional METT module for monitoring the effects of climate change

Given the likely impacts of climate change, it is important to make sure that the management effectiveness of PAs is also assessed taking into account climate change considerations and the likely impacts of CC on PAs.

Thus the project is currently developing an additional module for the Management Effectiveness Tracking Tool (METT) to integrate questions that are specific to climate change.

Additions to the original framework developed by IUCN's World Commission on Protected Areas (WCPA), have been suggested as the basis of the amended METT tool, with the addition of a new climate change component.

Two new questions have been proposed as additions to the existing METT to assess whether the PA is likely to adapt to the impacts of climate change:

1. Whether the PA has been designed or planned to consider the actual or probable impacts of climate change, and
2. Whether it is being specifically managed for the actual or probable impacts of climate change.

For each question, four indicators were developed.

For the first question, the proposed indicators are:

- *1.0:* Climate change has not been taken into consideration in any way during the PA design.
- *1.1:* The likely impacts of climate change has been discussed during the planning phase but not taken into account in the PA design.
- *1.2:* The PA has been designed taking into account some aspects of climate change.
- *1.3:* The PA has been planned and designed primarily to be able to face the likely effects of climate change.

For the second question, the proposed indicators are:

- *1.0:* There have been no efforts to consider adaptation to climate change in management.
- *1.1:* Some initial thought has taken place about likely impacts of climate change, but this has yet to be translated into management plans.
- *1.2:* Detailed plans have been drawn up about how to adapt management to predicted climate change, but these have yet to be translated into active management.
- *1.3:* Detailed plans have been drawn up about how to adapt management to predicted climate change, and these are already being implemented

The tool is still being developed in collaboration with several other institutions, and will be revised by as many stakeholders as possible that are involved in management effectiveness. The project management team will then seek official endorsement of the new METT tool by the GEF, WWF and The World Bank, as well as the WCPA.
It is hoped that the new version will then be used worldwide to assess the management effectiveness of protected areas, including with respect to climate change.

Publications

Protected Planet Report 2012: Tracking progress towards global targets for protected areas

This is a new report compiled by UNEP-WCMC in cooperation with IUCN and other partners. Financial support was provided by UNEP, the Spain-UNEP Partnership for Protected Areas in support of the LifeWeb Initiative, the CBD Secretariat, and the Finnish Ministry of the Environment. The report reviews progress towards the achievement of the protected area targets of the Convention on Biological Diversity (CBD). Building on the work of the CBD-mandated Biodiversity Indicators Partnership (BIP), the report includes a set of indicators of protected area coverage, representativeness, effectiveness, management and governance.

The report is available for downloading in English, French and Spanish at: http://www.unep-wcmc.org/ppr2012_903.html

New World Heritage site in Chad

During the 36th World Heritage Committee meeting in St. Petersburg six outstanding natural sites were given World Heritage status, including one site in Chad following the recommendations of IUCN: **Lakes of Ounianga** (picture below).

The site includes eighteen interconnected lakes in the hyper arid Ennedi region of the Sahara desert covering an area of 62,808 ha. It constitutes an **exceptional natural landscape** of great beauty with striking colours and shapes. The saline, hyper saline and freshwater lakes are supplied by groundwater and are found in two groups 40 km apart. Ounianga Kebir comprises four lakes, the largest of which, Yoan, covers an area of 358 ha and is 27 m deep. Its highly saline waters only sustain algae and some microorganisms. The second group, Ounianga Serir, comprises fourteen lakes separated by sand dunes. Floating reeds cover almost half the surface of these lakes reducing evaporation. At 436 ha, Lake Teli has the largest surface area but is less than 10 m deep. With their high quality freshwater, some of these lakes are home to aquatic fauna, particularly fish.
http://whc.unesco.org/fr/list/1400/

Ounianga Kebir, Chad ©CNAR, Tchad

Consultancy announcement

This is a national consultancy to be conducted in each of the five core countries of the project (Chad, Mali, Togo, The Gambia and Sierra Leone).

IUCN PAPACO is seeking a national expert to conduct **an analysis of the links between climate change, protected areas and communities.** The main objectives are to assess the vulnerability of communities living around PAs to CC and the possible impacts of community activities on PAs, and on the services provided by the PAs as a consequence of climate change.

The full Terms of Reference will soon be available on the project website. In the meantime, please contact bora.masumbuko@iucn.org for more information and to send your technical proposal.

Deadline: January 31, 2013

Links to partners' web sites:

UNEP-DEPI www.unep.org/depi
UNEP-WCMC www.unep-wcmc.org
IUCN-PAPACO www.iucn.org/papaco ; www.papaco.org
IUCN species programme www.iucn.org/about/work/programmes/species/
Met Office Hadley Centre www.metoffice.gov.uk/
DICE University of Kent /www.kent.ac.uk/dice/
Birdlife www.birdlife.org
Durham University www.dur.ac.uk

All meeting and other technical and scientific reports will soon be available on the project website:

http://www.parcc-web.org

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We welcome any contribution relevant to the subject in the form of articles, news, announcements, photos, events, etc.

Thanks in advance for contributing.

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