

Climate Change Adaptation in Africa Programme

INSTITUTIONAL FRAMEWORK IN RELATION TO CLIMATE CHANGE IN WEST AND CENTRAL AFRICA

Consultant: Dr Isabelle Niang, UCAD

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REPORT ON THE EXISTING INSTITUTIONAL FRAMEWORK IN RELATION TO CLIMATE CHANGE IN WEST AND CENTRAL AFRICA

Executive summary:

Climate change is viewed as one of the gravest threats to the future of humanity. In Africa, which is one of the continents most vulnerable to the impacts of climate change, the issue of climate change is often confined to organisations dealing with environmental matters. It is rarely understood by the people or by the local authorities, so that, in the end, little progress is achieved in terms of integrating this issue into national development policies.

The CCAA programme (Climate Change Adaptation in Africa) should not only demonstrate the relevancy of research-action in the area of adaptation to climate change, but also build the capacities of the different actors across the continent.

Adaptation to climate change is a complex issue that can be viewed from the standpoint of various geographical levels (from the continental scale to the local scale) and therefore of various levels of governance (subregional institutions, governments, local government, and the people). Adaptation is also a development issue and should therefore be taken into account by various ministries as well as by various actors (private sector, associations and non-governmental organisations, etc.). It is also crosscutting across sectors.

The situation in West Africa promotes the development of strategies to improve the response capacities of countries and people to the impacts of climate change. This is due in part to the decisions of the latest summit of the African Union, which asked the States to integrate climate change issues into their national development policies. In addition, at the subregional level there is an initiative aimed at developing a subregional strategy to reduce the impact of climate change.

This report is a map of political, economic and research organisations and structures, non-government organisations and programmes that are involved in issues strongly linked with climate change, mostly in West Africa. In the subregion, we met with some fifteen organisations or individuals and, based on a questionnaire, attempted to assess their strengths and weaknesses and how to improve partnerships, in particular between researchers, decision-makers and local people, as well as their needs in terms of coordination and exchanges of experience.

As a result of this consultation, which focused on institutional mapping and potential needs in terms of inter-institution coordination, we have issued the following recommendations:

- The development of one or more mechanisms (frameworks) for coordination and exchanges between the different institutions working in areas related to climate change. The aim here is to establish relationships between political institutions,

research institutions and the grass roots level (civil society, NGOs, etc.) but also to ensure coordination and exchanges on different subjects. In this respect, partnerships need to be reinforced and extended. The existing programmes and the international organisations working in the subregion need to be involved in the coordination and exchange process. These could include one or more formal organisations, which could be housed by one of the institutions in the subregion, but could also include developing more informal exchange networks and making them operational;

- Support for and furthering of the emergence of centres of excellence. Certain centres that are already recognised in the subregion should be supported, particularly in terms of training, financial support, and provision of equipment. Others should be called upon to cover various themes but also the different regions. The criteria that should be used to select these centres of excellence should include the number of staff members, the themes addressed, their geographical location and their involvement in these areas.

The process should include knowledge requirements in terms of climate change scenarios, impacts and potential for adaptation to climate change. These needs are still substantial and relatively decisive for policy-makers' positions. Taking account of traditional knowledge (especially where adaptation is concerned) is an important element in the elaboration of this body of knowledge. There is therefore a need to reinforce the academic structures and attempts to form networks that already exist.

- Considerable efforts to raise awareness need to be made at various levels. Suitable communication tools need to be developed to meet the needs of the different actors by raising their awareness of climate change issues. This will entail the setting in place of genuine awareness strategies based on needs, levels of understanding, and national languages and cultures, with a view to developing appropriate communication tools.

LIST OF ACRONYMS

ACCCA: Advancing Capacity to support Climate Change Adaptation
ACMAD: African Centre of Meteorological Application for Development
AfDB: African Development Bank
AGRHYMET: Agro-Hydro-Météorologie
AIACC: Assessments of Impacts and Adaptations to Climate Change
AMCEN: African Ministerial Conference on Environment
AMCOW: African Ministerial Conference on Water
AMMA: African Monsoon Multidisciplinary Analyses
ANBO: African Network of Basin Organizations
ARC: Agrhymet Regional Centre
AUC: African Union Commission
CC: Climate Change
CCAA: Climate Change Adaptation in Africa
CIDA: Canadian International Development Agency
CEMAC: Economic and Monetary Community of Central African States
CEN-SAD: Community of Sahel-Saharan States
CERMES: Centre of Medical and Sanitary Research
CGIAR: Consultative Group on International Agricultural Research
CIFOR: Centre for International Forestry Research
CILSS: Permanent Interstate Committee for Drought Control in the Sahel
CSRFP: *Commission Sous-Régionale des Pêches* / Sub-Regional Commission on Fisheries
DFID: Department for International Development
EAMAC: *Ecole Africaine de la Météorologie et de l'Aviation Civile* (ASECNA aviation school)
EIER: *Institut Supérieur Inter-Etats de formation et de recherche* (inter-state engineering school)
ENDA-TM: *Environnement et Développement pour le Tiers Monde*
ETSHER: *Ecole Inter Etats de Techniciens Supérieurs de l'Hydraulique et de l'Équipement Rural* (hydraulic and equipment engineering school)
ECCAS: Economic Community of Central African States
ECOWAS: Economic Community of West African States
FAO: Food and Agriculture Organisation
FEWS: Famine Early Warning System
FIBA: *Fondation Internationale du Banc d'Arguin*
FIRMA: *Fonds d'Incitation à la Recherche Météo en Afrique* / Meteorological Research Incentive Fund for Africa
GCOS: Global Climate Observing System
GEF: Global Environment Facility
GHENIS: Upper Niger Hydro-Ecological Management Project
GIRENS: Upper Niger Integrated Water Resource Management
GLOMIS: Global Mangrove Database and Information System
GWP/WAWP: Global Water Partnership/West Africa Water Partnership
HYCOS: Hydrological Cycle Observation System
ICRISAT: International Crops Research Institute for the Semi Arid Tropics
IDRC: International Development Research Centre
IRD: *Institut de Recherche pour le Développement* (French development research institute)
IRI: International Research Institute for Climate and Society
INBO: International Network of Basin Organizations
INSAH: *Institut du Sahel* / Sahel Institute
IPCC: Intergovernmental Panel on Climate Change
IWRM: Integrated Water Resource Management
KP: Kyoto Protocol
LCBC: Lake Chad Basin Commission

LDC: Least Developed Countries
MEA: Multilateral Environmental Agreements
NAPA: National Adaptation Programme of Action
NBA: Niger Basin Authority
NEPAD: New Partnership for Africa's Development
NESDA: Network for Environment and Sustainable Development in Africa
OECD: Organisation for Economic Cooperation and Development
OMVS: Organisation for the Development of the Senegal River Basin
OSS: *Observatoire du Sahel et du Sahara / Sahara and Sahel Observatory*
PCAE: *Politique Commune pour l'Amélioration de l'Environnement / WAEMU common environmental policy*
PIREM: *Plate Forme des Institutions Régionales pour l'Environnement et la Météorologie / Platform of Regional Institutions for Meteorology and the Environment*
PMEDP/SFLP: *Programme pour des Moyens d'Existence Durables dans la Pêche / Sustainable Fisheries Livelihoods Programme*
PRCM: *Programme Régional pour la Conservation des zones Côtières et Marines / Regional Program for the Conservation of Coastal and Marine Protected Areas in West Africa*
PRELISS: *Projet régional de lutte intégrée contre les sauteriaux au Sahel / Regional Project for Grasshopper Control in the Sahel*
PRESAO: *Prévision Saisonnière en Afrique de l'Ouest / Seasonal Forecast for West Africa*
RAMPAO: *Réseau des Aires Marines Protégées de l'Afrique de l'Ouest / West African Marine Protected Areas Network*
RIPIECSA: *Recherche Interdisciplinaire et Participative sur les Interactions entre les Ecosystèmes, le Climat et les Sociétés d'Afrique de l'Ouest / Interdisciplinary and Participatory Research on the West African Ecosystems, Climate and Societies*
ROPPA: *Réseau des Organisations Paysannes et de Producteurs de l'Afrique de l'Ouest / Network of Peasant Organizations and Producers in West Africa*
ROSELT: *Réseau d'Observatoires de Surveillance Ecologique à Long Terme / Long Term Ecological Monitoring Observatories Network*
SWAC: Sahel and West Africa Club
THORPEX: The Observing system Research and Predictability Experiment
TroFCCA: Tropical Forests and Climate Change Adaptation
UICN: World Conservation Union
UNDP: United Nations Development Programme
UNEP: United Nations Environment Programme
UNECA: United Nations Economic Commission for Africa
UNFCCC: United Nations Framework Convention on Climate Change
WADB: West African Development Bank
WAEMU: West African Economic and Monetary Union
WAMER: West Africa Marine Eco Region
WHO: World Health Organization
WMO: World Meteorological Organization
WWF: World Wildlife Fund

**REPORT ON THE EXISTING INSTITUTIONAL FRAMEWORK IN RELATION TO
CLIMATE CHANGE IN WEST AND CENTRAL AFRICA**

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I. INTRODUCTION

Climate change is viewed as one of the gravest threats to the future of humanity. This perspective is accepted in developed countries, which are already committed to policies that take account of climate change at both national and local levels. Even in the United States, which refused to ratify the Kyoto Protocol, certain States (such as California) have committed themselves to policies aimed at reducing greenhouse gas emissions. In Africa, which is viewed as one of the continents most vulnerable to the impacts of climate change, the issue of climate change is often confined to organisations dealing with environmental matters. It is rarely understood by the people or by the local authorities, so that in the end, little progress is achieved in terms of integrating this issue into national development policies.

In this context, the DFID-IDRC initiative known as the CCAA programme (Climate Change Adaptation in Africa) is particularly welcome. It should not only demonstrate the relevancy of research-action in the area of adaptation to climate change, but also improve the capacities of the different actors across the continent.

This report is a map of political, economic and research organisations and structures, non-government organisations and programmes that are involved in issues strongly linked with climate change, mostly in West Africa.

In Chapter II, the methodology used, which mainly comprised visits to and interviews with various organisations operating in West Africa, preceded by the sending of a questionnaire, is briefly presented. Chapter III recalls the continental context in which any adaptation policy in Africa should be envisaged. The G8 summit at Gleneagles, where the CCAA project was born, and the results of the latest African Union summit, which focused partially on climate change, demonstrated the importance of the issue for Africa. The role of UNECA in putting these resolutions into practice was pointed out. The NEPAD environmental plan also includes a section on projects relating to climate change. Finally, we noted that it is important to recall the role of ACMAD as a continent-wide meteorological centre. In Chapter IV, a brief introduction to the subregional context is presented, and it was noted that there were more experiences and greater involvement in the West African subregion compared to Central Africa. While that may justify the fact that the rest of the text focuses on the former subregion, still it does not obviate the need to conduct the same type of investigation in the latter subregion. In the next chapter (Chapter V), we presented the principal institutions, organisations and programmes working on the subregional scale in West Africa, essentially in the sectors of agriculture, water resources and, to a lesser extent, forestry, coastal zones and health. In Chapter VI, we attempted to analyse these structures with their strengths, their weaknesses and the means whereby they may be reinforced. Finally, in chapter VII, based on our questionnaires and interviews, we have attempted to make proposals to improve the subregional institutional framework in relation to climate change.

II. METHODOLOGY USED

The methodology applied (see Appendix 2 for details) can be broken down into the following four major activities:

- Data gathering: this was accomplished by consulting existing documentation and websites (some of which are included in our references). This consultation enabled us to identify the principal institutions, organisations and programmes working in areas linked to adaptation to climate change;

- Questionnaire distributed to the principal institutions in West and Central Africa (Appendix 3): the questionnaire was sent to 19 institutions, organisations or programmes in the subregion. Sixteen responses were received and processed. The questionnaire was used to assess the strengths and weaknesses of the different institutions and programmes and envisage responses to issues such as communication between researchers, the people and policy-makers, etc.;

- Visits/interviews were carried out with certain actors to take the analysis further. We travelled to Niamey and Ouagadougou from 19-24 March 2007, where we met with and interviewed 15 institutions and individuals (Appendix 4). Beforehand (14 March), we met with the representative of Global Water Partnership/West Africa Water Partnership.

- An analysis of all of the above information was carried out with a view to preparing suggestions/recommendations in order to meet the expectations of the CCAA programme.

III. THE CONTINENTAL CONTEXT

It can be considered that the beginning of the debates and commitments relating to climate change in Africa dates back to the G8 summit at Gleneagles in 2005. During that summit, Africa was viewed as the priority continent, particularly due to its difficulties in achieving the Millennium Development Goals by 2015. Not only were decisions made to reduce Africa's debt, but commitments were also made to promote more sustainable energy policies in the G8 countries, while supporting efforts contributing to the reduction of African countries' vulnerability to climate change. Among these decisions, we can note:

“in particular, work to strengthen the existing climate institutions in Africa, through GCOS (Global Climate Observing System), with a view to developing fully operational regional climate centres in Africa” (GCOS/UNECA/AUC, 2006).

Similarly, the World Bank made a commitment to take account of climate risk in its investment portfolio and a recommendation was made to curb illegal logging, as it was recognised that the forests of the Congo basin store substantial amounts of carbon dioxide.

The CCAA programme (Climate Change Adaptation in Africa / ACCA in French) financed by DFID and IDRC may be seen as a product of the G8's commitment to support Africa, especially in its efforts to reduce vulnerability to climate change (IDRC/DFID, 2007).

On 29-30 January 2007, the Assembly of the African Union met in Addis Ababa with “climate change in Africa” as one of its two themes (Appendix 5). A decision was

made by the Assembly that specifically urged all of the actors to integrate climate change considerations into development strategies and programmes at national and regional levels and to implement the Plan on Climate Change and Development in Africa. In addition, a declaration was made on the same theme, which further specified a certain number of needs linked to climate change (climate information, renewable energy, agriculture and forestry, technology transfers, etc.). The Commission was asked to consult with the African Ministerial Conference on the Environment (AMSEN) to ensure the necessary mechanisms to follow up the implementation of the Declaration, in collaboration with the United Nations Economic Commission for Africa (UNECA) and the African Development Bank (AfDB).

The recommendations also included the following:

UNDERTAKE targeted awareness raising amongst policy, decision makers and civil society with the view to ensuring that climate change considerations are taken into account in all sustainable development initiatives

In the decision on climate change, the United Nations Economic Commission for Africa and the African Development Bank were asked to develop and implement to develop and implement the Plan on Climate Change and Development in Africa and to report on progress biannually to the African Union (AU) Assembly.

III.1 NEPAD and its environmental action plan

On the initiative of the Conference of African Ministers of the Environment (AMCEN), a plan of action for the NEPAD environment initiative was prepared and adopted by the second Assembly of the AU at Maputo in July 2003. It covers the first decade of the 21st century. The plan of action includes six programme areas (the fifth of which is entitled "Combating Climate Change in Africa") as well as crosscutting issues including assessment and early warning systems for natural disasters. The programme area on climate change revolves around three priorities:

- (a) Firstly, ecosystems, regions and people most vulnerable to climate change need to be identified;
- (b) Secondly, adaptation strategies need to be developed for the identified regions and sectors;
- (c) Thirdly, demonstration and pilot projects need to be implemented to show the way forward. Simultaneously, capacity-building support will have to be provided to enable important institutions to function effectively.

Eleven subregional projects have been proposed in the framework of this programme in addition to the eight projects that already exist (see Appendix 6).

It is also important to note that The Abuja Ministerial Declaration on Water, adopted in April 2002, established the African Ministerial Conference on Water (AMCOW). In February 2003, the Conference adopted an African Regional Programme of Action on Freshwater.

III.2 United Nations Economic Commission for Africa (UNECA)

The Commission was set in place in 1958 by the United Nations Economic and Social Council, as one of its five regional organisations. Its mandate is to further the economic and social development of the member countries, promote intra-regional integration and encourage international cooperation for the development of Africa. The themes addressed include regional integration, achieving the Millennium Development Goals, and science and technology for development.

The Commission has 5 subregional offices, including one for West Africa (ECA-WA), based in Niamey, and another for Central Africa (ECA-CA), based in Yaoundé.

It should be noted that the West Africa office, in collaboration with CILSS, ACMAD and IRI, organised an “International Conference for Reduction of Vulnerability to Climate Change of Natural, Economic and Social Systems, in West Africa”, in Ouagadougou on 24-27 January 2007. This involvement stemmed from its awareness of the potential risks of climate change for African economies. The situation requires an examination of long-term economic policies (i.e.: the viability of cotton growing; the need to diversify the economy).

The United Nations Economic Commission for Africa shares a secretariat with the African Union Commission and the African Development Bank, which predisposes it to play a role in raising the awareness of various African decision-makers about climate change issues.

III.3 African Centre of Meteorological Applications for Development (ACMAD)

ACMAD is based in Niamey and serves all 53 African countries. Founded in 1987 by UNECA and the WMO, since 1992, it has been working essentially on weather forecasts (PRESAO programme: seasonal forecast for West Africa) on different time scales (daily to monthly) and over different geographical scales (continental to national). It achieves this by receiving satellite images (especially METEOSAT generation 2, and Envisat) and using/developing weather forecast software. It produces weather reports and weather forecast reports, particularly on monthly and ten-year scales. It also participates in the development of early warning systems (such as for locust control).

ACMAD is a stakeholder in four major research programmes: FIRMA (Meteorological Research Incentive Fund for Africa), RIPIECSA (Interdisciplinary and Participatory Research on Interactions between the West African Ecosystems, Climate and Societies), AMMA (African Monsoon Multidisciplinary Analyses) and THORPEX (The Observing system Research and Predictability EXperiment).

It is also involved in weather forecast communication methods (RANET network) and training, especially continuing education, by taking in numerous interns (especially at national weather services) and students.

ACMAD also has PRECIS software, which has been validated (Kamga and Buscarlet, 2006) and can generate regional climate change scenarios. However, some equipment is still lacking to allow it to run properly.

From a broader perspective, one of ACMAD's missions is to produce information for the implementation of policies to reduce vulnerability and improve adaptation to climate variability and change.

ACMAD possesses a databank on climate change and adaptation (best practices). The Centre co-organised the conference in Ouagadougou on reducing the vulnerability of West African countries to the impact of climate change and contributed to the African Union declaration on climate change. In keeping with its mandate, ACMAD is committed to climate change issues.

The main partners of ACMAD are the national weather services, subregional economic communities (including ECOWAS and CEMAC), specialised subregional institutions (such as CILSS), international scientific centres (ICRISAT, IRD, Météo France, etc.) and international organisations (FAO, WHO, UNEP and UNDP). Finally, ACMAD is involved in various projects at the subregional scale such as the health and climate project in West Africa (WHO and WMO), the African monsoon project (AMMA), and, on the continental scale, the project aimed at encouraging meteorological research in Africa (FIRMANet).

IV. THE SUBREGIONAL CONTEXT

At the West African level, there is a set of institutions with clear and distinct (although sometimes overlapping) mandates. They include political institutions, whose function is to define subregional strategies and which are very strongly influenced by the Heads of State and their concerns (CILSS, WAEMU, shared basin organisations); scientific institutions, which are either emanations of the political institutions (AGRHYMET), or independent; research and training institutions (CERMES, universities) which may be more or less independent according to their status. To these, we can add the international institutions (especially the research institutions) such as ICRISAT and IRI; and finally the international NGOs (WWF, UICN, Wetlands International, ENDA TM). Civil society is not very organised at the subregional level, with the possible exception of ROPPA.

Numerous partnerships are currently ongoing between the different structures.

In Central Africa, it seems that there are fewer subregional institutions working in areas related to climate change. This could be due to the fact that the concerns they experience are different from those encountered in West Africa, which is faced with the problem of desertification. In Central Africa, the chief concerns are linked to deforestation and loss of biodiversity. The subregional institutions are still in the organisation process. However, an interest in climate change is beginning to develop, especially at the level of the Economic Community of Central African States (ECCAS). It is for those reasons that Central Africa is not addressed in this report, while West Africa is; however, we will read with interest the questionnaire filled in by the ECCAS Senior Coordinator of environment and resource management (appended to this report).

Finally, in light of the fact that most of the projects selected focus on the field of agriculture, information from the agricultural sector was our priority, which does not mean that there are no initiatives in the other sectors (water, health, forests and coastal zones).

V. KEY INSTITUTIONS IN THE WEST AFRICA REGION

In the West Africa region, the key institutions working in areas related to adaptation to climate change, or which can be considered full-fledged stakeholders, belong to at least one of four broad categories: economic and political institutions, basin organisations, scientific and research institutions, peasant and producer organisations, or international NGOs and research organisations (Fig. 1). We have attempted to identify a certain number of programmes operating in the region that focus on climate change.

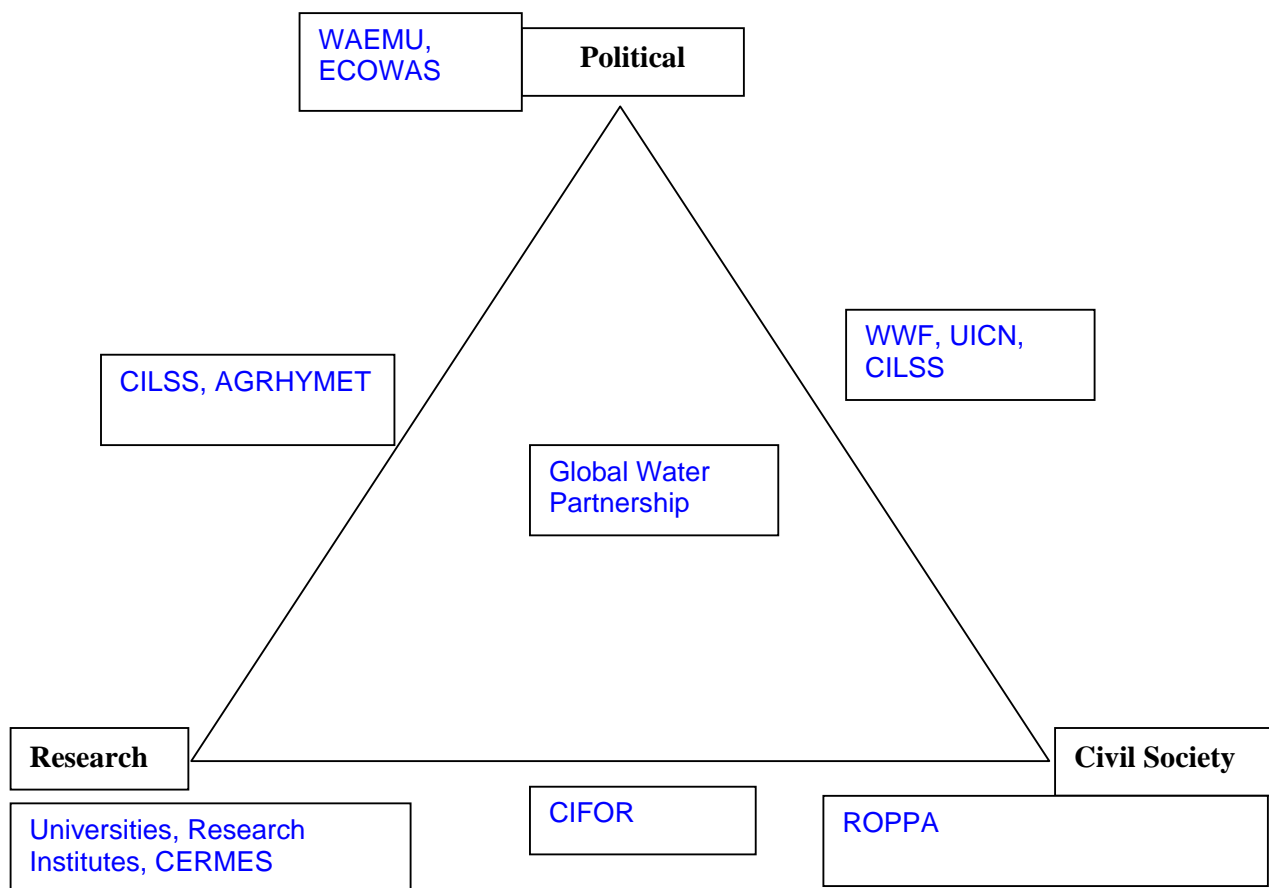


Figure 1: Structures, organisations and institutes involved in climate change in the West African subregion

V.1 Economic and political institutions

In the West Africa region, three subregional organisations have mandates and responsibilities in terms of managing the environment: WAEMU, ECOWAS and CILSS (Fig. 2). In addition, these structures, especially ECOWAS, are responsible for transposing the AU and NEPAD action plans in the subregion. We can also add SWAC, which serves as a link to the OECD.

WAEMU includes 8 States (Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo) covering a surface area of 3 505 326 km², while ECOWAS includes 15 countries (the abovementioned and Cape Verde, The Gambia, Guinea, Liberia, Ghana, Nigeria and Sierra Leone) and covers a surface area of 5 081 000 km². CILSS covers nine countries: Burkina Faso, Cape Verde, Chad, The Gambia, Guinea Bissau, Mali, Mauritania, Niger and Senegal.

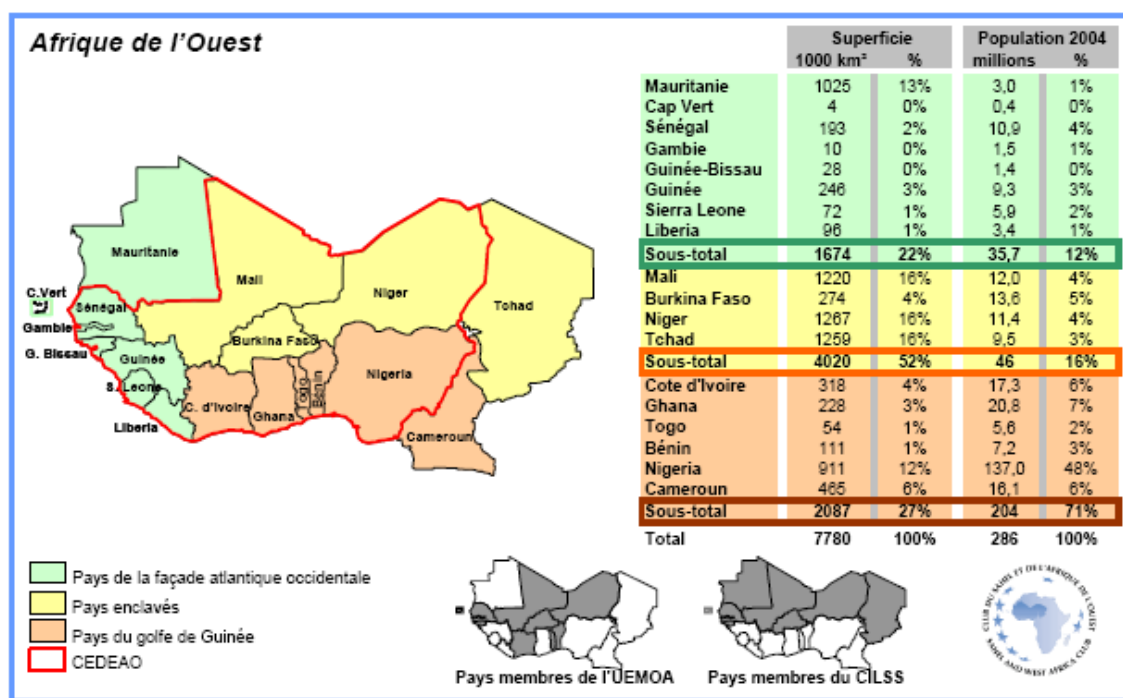


Figure 2: The principal political and economic organisations in West Africa (SWAC, 2004)

The countries represented are the member countries of SWAC, ECOWAS / CEDEAO (outlined in red), WAEMU / UEMOA and CILSS (at bottom).

ECOWAS is the subregional organisation in charge of implementing NEPAD and the Economic Partnership Agreements with the European Union. Work is being done to clarify the roles of the different subregional structures and should lead to a redefinition of the missions of CILSS and WAEMU.

V.1.1 Economic and Monetary Community of West African States (ECOWAS / CEDEAO in French)

ECOWAS was founded in 1975 and includes 15 States in the subregion. Its mandate is to promote cooperation and economic integration in the subregion, particularly through the promotion of common policies or activities in various sectors, including the environment, agriculture, energy, industry and mining.

ECOWAS also has a common agricultural policy, which it adopted in 2005. Other common policies focus on areas such as trade and mining. It recently entrusted CILSS with a mandate to handle environmental issues for its member countries.

V.1.2 West African Economic and Monetary Union (WAEMU / UEMOA in French)

From its inception, under its first-generation environment programme, WAEMU promoted eight sub-programmes: controlling desertification, combating coastal erosion, preserving biological diversity, pollution management and improving the quality of life, management of transboundary ecosystems, water resource management, promotion of alternative energy, and capacity building.

WAEMU is currently in the process of adopting a community policy on the environment (*Politique Commune pour l'Amélioration de l'Environnement* (PCAE)) which is to be examined during the summit in March 2007. The objective of the PCAE is to “stabilise the environment, reverse the serious trends towards degradation and depletion of natural resources, and rehabilitate and maintain a healthy, liveable and productive environment in the subregion, thereby improving the living conditions of the people of West Africa”. This was necessitated by the need for greater coordination and more effective synergy, especially in the development and use of shared resources. It is based on four strategic aims:

- Contributing to sustainable natural resource management to reduce poverty and food insecurity;
- Managing human settlements and fighting pollution and nuisances to promote a healthy and sustainable environment within the community space (with harmonisation of national laws and regulations on the environment);
- Capacity building for concerted and sustainable management of the environment (improving teaching, education, awareness and demonstration for development and eco-citizenship);
- Following up on the implementation of the Multilateral Environmental Agreements (MEA) and promoting sustainable partnerships to that purpose (coordination and cooperation of approaches and actions at the subregional level).

A medium term (2005-2010) action plan has been put forward with the following priorities:

- Capacity building for the environmental department of the WAEMU commission and the establishment of an environmental observatory within WAEMU;
- Studies to determine whether it is possible to create a West African Environment Agency and a subregional fund for the environment;
- Identification and designation of reference centres and expert networks;
- Creation of a permanent consultation framework on the environment within WAEMU;
- Reinforcement of cooperation between WAEMU, ECOWAS and CILSS.

Elements of PCAE strategic aim no. 4: Following up on the implementation of the Multilateral Environmental Agreements (MEA) and promoting sustainable partnerships to that purpose (coordination and cooperation of approaches and actions at the subregional level).

- Support and hasten the implementation of conventions on the environment and natural resource conservation
 - Promote understanding and knowledge of Climate Change issues
 - Develop national and subregional capacities for optimum use of the mechanisms of the CC convention and the KP
 - Promote the development and implementation of models of adaptation to extreme climatic effects in the subregion
 - Develop and promote operational national and subregional emergency and alert programmes to protect the people
 - Promote clean development and resource-use models to increase the subregion's participation in carbon sequestration
- Activate the implementation of conventions on hazardous or dangerous products, waste and processes
- Support regional concertation on follow-up and impetus to the implementation of the conventions
- Promote partnerships to improve subregional cooperation on MEAs

V.1.3 Permanent Interstate Committee for Drought Control in the Sahel (CILSS)

CILSS was originally founded in 1973 by nine countries in the Sahelian belt (Burkina Faso, Cape Verde, Chad, The Gambia, Guinea Bissau, Mali, Mauritania, Niger and Senegal) to combat desertification in the Sahel, with a strong focus on food security. Its mandate is to seek food security and fight drought and desertification, to achieve a new ecological balance in the Sahel. CILSS includes six major programmes focusing on: food security policies and strategies, policies and strategies on natural resource management and controlling desertification, agro-hydro-meteorological information, training on the foregoing topics, agro-socio-economic research, and population-development research.

CILSS has a strategic framework on sustainable food security in the Sahel, which it adopted in 2002, and a subregional action programme to control desertification in West Africa and Chad.

CILSS has two affiliated institutions: AGRHYMET, based in Niamey, and the Sahel Institute (INSAH) based in Bamako.

CILSS recently (21 December 2006) received a mandate from ECOWAS to handle all environmental issues throughout the countries of the subregion. To this end, an activity programme for the ECOWAS space is under preparation.

CILSS is a member with observer status of the conventions on the fight against desertification and climate change. It recognises the food security risks posed by climate change (CILSS, 2004). The 21st CILSS open house event (12 September 2007) focused on "The Sahel faced with climate change".

An international conference took place in Ouagadougou on 24-27 January 2007 at the initiative of UNECA (United Nations Economic Commission for Africa), CILSS, ACMAD and IRI, where CILSS, in collaboration with ACMAD, ECOWAS and UNECA, was entrusted with the development of an action plan to reduce the vulnerability of West Africa's natural, economic and social systems to climate change. ECOWAS and CILSS were also mandated to work towards the adoption of the programme by the Heads of State of the subregion. A consultation process was undertaken, with the formation of a committee that will be in charge of developing an initial programme.

V.1.4 Sahel and West Africa Club (SWAC)

The Sahel Club was founded in 1976 by the OECD. It initially included the Sahelian countries, but later was extended (in 2001) to cover all of the countries in the subregion, plus Chad and Cameroon, thereby growing to a total of 17 countries (14 LDCs) stretching across 7.8 million km² and taking the name of Sahel and West Africa Club. It serves as a bridge between the countries of the subregion and the OECD. It is currently working on four poles, including medium- and long-term development perspectives and transformation of agriculture and sustainable development. Currently, it is focusing on the issue of: "Where and how will some 430 million West Africans live in 2020?" SWAC headquarters are located in Paris.

V.2 Basin organisations

The three major river basins in the subregion are the Niger River Basin, the Senegal River Basin and the Lake Chad basin. These three transboundary basins are currently managed by basin agencies: the Organisation for the Development of the Senegal River Basin (OMVS) based in Dakar, the Niger Basin Authority (NBA) based in Niamey and the Lake Chad Basin Commission (LCBC) based in Ndjamena. The first two basin organisations participated in the development of a subregional water resource strategy covering the ECOWAS countries and Chad (Niasse *et al.*, 2004). They are all stakeholders in IWRM (Integrated Water Resource Management), which was developed under the aegis of the Global Water Partnership (GWP), which also has a West African branch, the West Africa Water Partnership (WAWP). Generally speaking, all of the basin organisations need to deal with the management of climate variability, but so far, little has been done to deal with issues linked to climate change.

It should be noted that most of the basin organisations in West Africa belong to the African Network of Basin Organizations (ANBO) (www.riob.org) which was created in Dakar in 2002 and includes 42 members and observers.

V.2.1 Niger Basin Authority (NBA)

Created in 1980 to replace the Niger River Commission, the Niger Basin Authority's original mandate was to promote interstate cooperation for the integrated development of the natural resources of the river basin and the harmonisation of the national development policies relating to those resources. Its objectives were revised in 1986 to include sustainable and shared development of the Niger River Basin. It comprises nine member states: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire,

Guinea, Mali, Niger and Nigeria, and its headquarters are located in Niamey (Fig. 3). Since 2002 and January 2004, the organisation has been engaged in a process of elaborating a “shared vision for the sustainable development of the Niger basin” by 2025. In April 2004, it adopted the Paris Declaration on the principles of good governance and management for sustainable and shared development of the Niger Basin. Later, in May 2005, a shared vision statement was adopted. Currently, after having developed its Sustainable Development Action Plan (*Plan d'Actions de Développement Durable*, or PADD) the organisation is seeking funding. A five-year investment project (up to 2015) and a charter on water are expected to be submitted to the next council of ministers for adoption.



Figure 3: The Niger River Basin and the member countries of the Niger Basin Authority

Furthermore, a Niger Basin Environmental Observatory, which is directly linked to the Executive Secretariat, was set up following a decision by the Council of Ministers of the NBA, in their meeting in January 2004. The Observatory is made up of one coordinator and five experts in various fields and began operating in 2006. Its functions are to provide the States, the NBA and various partners with information (including socioeconomic information) on the status of the environment in the basin, to act as an environmental watchdog to facilitate decision-making, to monitor changes in the basin in the sense of sustainable development and to measure the environmental impact of achievements (past, ongoing and future).

The NBA has developed numerous partnerships with institutions in the subregion such as ECOWAS (water resources observatory being set up), the AU (Fouta Djallon observatory), the OSS (underground water resources), AGRHYMET and ACMAD (for hydro-climatic seasonal forecasts). The NBA is also the headquarters of the Niger-

HYCOS project, which is developing a network of hydrological and physicochemical measurements on the Niger River. Regarding the purely environmental aspects, there has been collaboration with WWF, UICN, Birdlife and Wetlands International. Outcomes have included the NigerWet project (WWF's freshwater programme) which is an initiative to monitor the environment in wetlands in the Niger Basin and which has made it possible to produce a biodiversity map of the Niger Basin.

V.2.2 Organisation for the Development of the Senegal River Basin (OMVS)

The Organisation for the Development of the Senegal River Basin is a basin organisation founded in 1972, but it followed on a number of initiatives to improve the management of the basin, which began as early as 1938, with the creation of the *Mission d'Aménagement du fleuve Sénégal* (MAS, the mission for the development of the Senegal River). It currently includes four countries bordering on the basin: Mauritania, Senegal, Mali and Guinea (Fig. 4).

The missions of the OMVS are: to achieve the goal of food self-sufficiency for the people of the basin; to secure and improve the revenue of the people of the valley; to preserve the balance of the ecosystems in the subregion and especially in the basin; to reduce the vulnerability of the economies of the Member States of the Organisation to climate risks and external factors and, finally, to boost the economic development of the Member States.

The OMVS is the current President of the International Network of Basin Organisations (INBO: www.riob.org). It also has an Environmental Observatory.



Figure 4: Map of the Senegal River Basin (UNESCO, 2003)

V.2.3 Lake Chad Basin Commission (LCBC)

The Lake Chad Basin Commission was created following the adoption of the Fort Lamy Convention of 22 May 1964 by the Heads of State of the four founding countries: Cameroon, Niger, Nigeria and Chad. These initial countries were joined by

the Central African Republic in 1994 and by Sudan in 2000 (under ratification). The headquarters of the Commission are located at Ndjamen in Chad. The principal objectives of this subregional cooperation organisation are to better manage the resources of the basin, and particularly its water resources, to develop project and programme cooperation and coordination, but also to develop regulations on the subregional scale and to promote security on the subregional scale (it should be noted that the commission has been involved in conflict management within the basin). The Lake Chad Basin covers a very large surface area (approximately 2.4 million km², see Fig. 5), but the area under the responsibility of the LCBC is much smaller (967 000 km²).

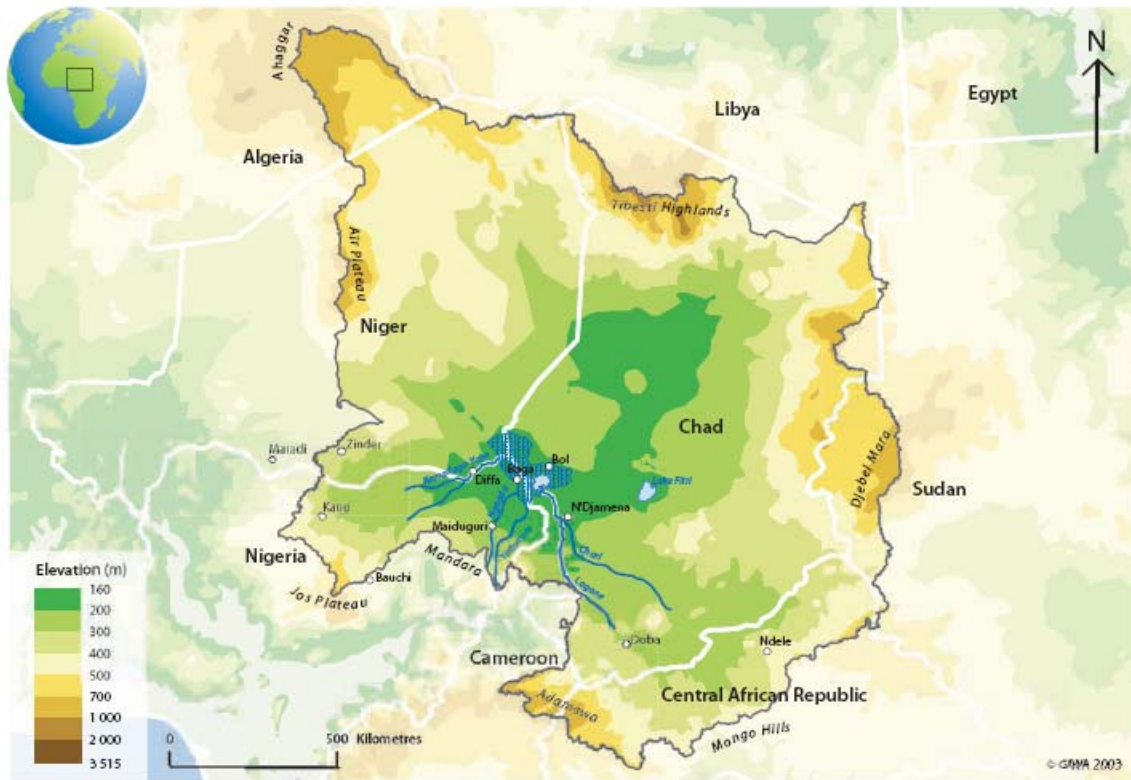
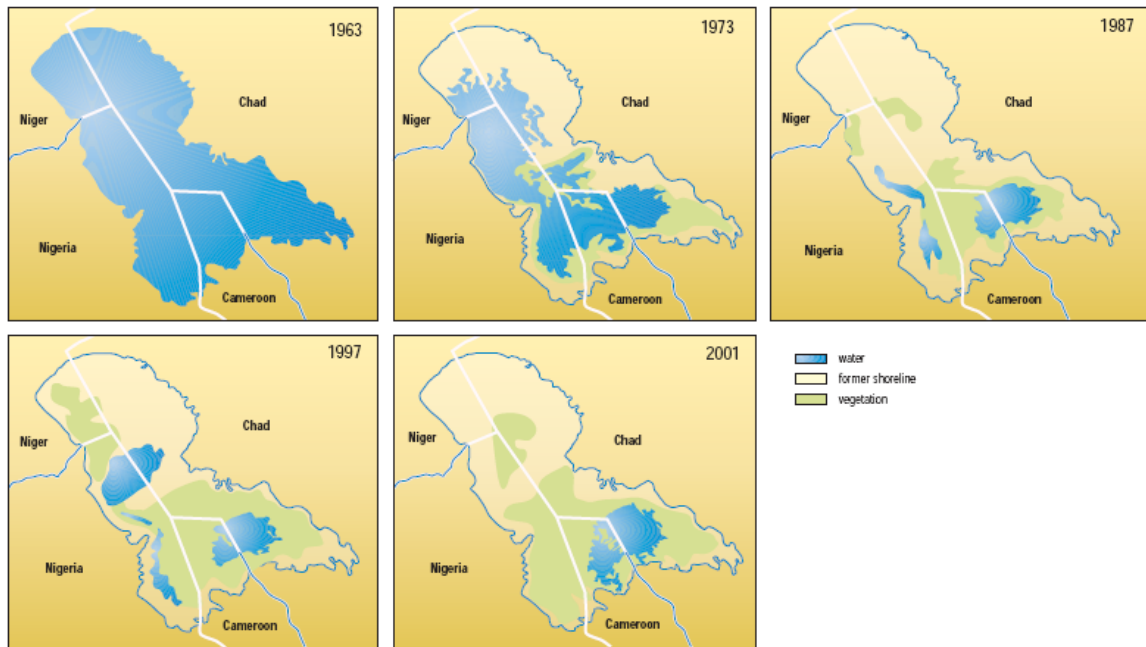


Figure 1 The Lake Chad Basin.

Figure 5: Map of the Lake Chad Basin (UNEP, 2004)

The shrinking of the surface area of Lake Chad itself, which has dwindled from 25 000 km² in 1964 to 3 536 km² in 2002 (Fig. 6) makes this lake a symbol of the impact of drought on water resources, although human activities, notably the development of irrigated farming, are also responsible for the change. In this context, major climate change impacts can be expected, especially requiring the implementation of an integrated water resource management (IWRM) policy.



Source: UNEP 2002, data from GSFC 2001

Figure 5: Change in Lake Chad between 1963 and 2001 (AMCEN/UNEP, 2006)

V.3 Scientific Institutions

V.3.1 AGRHYMET Regional Centre (ARC)

The Centre is a specialised institution of CILSS created in December 1974, which works in fields of science and technology applied to the sectors of agricultural development, rural land development and natural resource management. Its headquarters are in Niamey. It is organised around four departments, three of which are scientific:

- The first department (information and research) produces information to assist in decision-making and focuses on two themes: food security and natural resource (water) management, and the environment in the Sahel and in West Africa. Methodologies have been defined for use on the national scale in order to produce tools to support decision-making (forecast reports).

- The second department (training and research) trains management-level personnel in the following areas: hydrology, agro-meteorology, instruments and microcomputing, and plant protection. A Masters in Natural Resource Management, recognised by the African and Malagasy council for higher education (CAMES), was launched this year (2007). The focus is on integrating climate change into pre-existing training so that all executives and technicians are trained with this component. There is also a continuing education system.

- The third department (technical support) develops and maintains a subregional database on a certain number of parameters used for the missions of the institution. These essentially include climatologic, agro-meteorological, hydrological, pastoral and plant-health data as well as data on natural resources (soil, water,

forests). Efforts are being made to produce a meta-database to manage the existing databases (security, decentralisation) and improve the flow and exchange of data. AGRHYMET has a staff of approximately one hundred employees, including 34 management-level staff.

AGRHYMET has partnership agreements with numerous institutions and organisations (around thirty) such as WMO, FAO, IRD, and universities (Niamey, Bobo Dioulasso, Reading). It is also part of the Platform of Regional Institutions for the Environment and Meteorology (PIREM), which also includes ACMAD, NBA, CRESA (a regional teaching centre specialising in agriculture), EAMAC (a well-known African school of meteorology and aviation), CERMES and ICRISAT. It has national branches.

In addition, AGRHYMET leads a project financed by CIDA entitled: "Support for climate change adaptation capacities in the Sahel", which has worked on two components:

- A component aimed at producing information to support decision-making relating to adaptation to climate change. Two approaches were adopted: a simulation approach, consisting of working on climate change scenarios and examining the potential impacts in order to deduce vulnerability and adaptation options. Two themes were chosen: agriculture (leader: Benoit Sarr) and water resources (leader: Abou Amani). The second approach was based on pilot projects (five projects distributed across Mali, Niger and Burkina Faso) where local adaptation approaches were focused on, along with interaction between scientists, decision-makers and the people (see www.agrhymet.ne/websippcc/index.htm website). These sites cover five themes: integrated water resource management, combating water erosion, pastoralism, agro-pastoralism, agricultural production and soil fertility management.

- A capacity-building component: two experts were trained in each country on impacts of and vulnerability to climate change and were given equipment. In addition, journalists were trained and a network was created in the countries, but the network is not yet operational due to insufficient financial resources.

The institution participates in major subregional projects such as AMMA, PRESAO, and PRELISS (Regional Project for Grasshopper Control in the Sahel). It also collaborates with FEWS (Famine Early Warning System) Net.

There are also plans to create an IPPC-Sahel, whose function would be to support African negotiators in the scientific area, but it has been held up due to a lack of funding.

Following the meeting in Ouagadougou on reducing vulnerability to the impacts of climate change and in light of the mandate given to CILSS to deal with environmental issues for the ECOWAS space, AGRHYMET was asked to prepare a subregional programme on adaptation to climate change, which will probably be developed over 2 years.

V.3.2 The Sahara and Sahel Observatory (OSS)

OSS is an independent international organisation founded in 1992. Its members include nine West and Central African countries: Burkina Faso, Cape Verde, Chad,

The Gambia, Guinea Bissau, Mali, Mauritania, Niger and Senegal, as well as two subregional organisations: CILSS and CEN-SAD. Its original mission was to serve as a platform for North-South-South cooperation to combat desertification and poverty in Africa. In order to achieve this, it intended to implement Agenda 21 and the Convention to Combat Desertification. OSS's strategy for 2010 extended its areas of interest to include NEPAD, the Johannesburg plan of action and the other international environmental conventions. In this framework, OSS has developed, as part of its scientific and technical focus and its environmental monitoring programme, a component on "Climate change, drought and desertification" that will act on two levels: assessing ecosystem vulnerability to the impacts of climate change, and adaptation to climate change. Over the medium term, plans have also been made to develop drought early warning systems and climate modelling. The organisation has acquired experience in joint management of shared aquifers and ecological monitoring systems through ROSELT (Long Term Ecological Monitoring Observatories Network; especially in Mali and Niger). More generally, OSS intends to develop an African space for research and development, particularly on desertification issues, in order to integrate scientific experiences into development activities.

V.3.3 Other research and training structures

Universities

In each of the countries in the subregion, there are universities where specific teams or researchers are involved, to varying extents, in fields linked to adaptation to climate change. While most of the structures and researchers are isolated, an initiative is in progress to form a network of researchers and institutes working in such fields. This initiative, known as the Marrakech 2006 Academic Initiative: Climate Change and CDM in University (contact: bbkganta@yahoo.com), could help the academic world better organise and coordinate to increase its effectiveness.

Institut Supérieur Inter-Etats de formation et de recherche (EIER), which focuses on Water, Energy, the Environment and Infrastructures, is an interstate school of engineering based in Ouagadougou. It includes 14 member states from West and Central Africa (francophone countries only: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Gabon, Guinea, Mali, Mauritania, Niger, Senegal and Togo). It uses the Bachelors-Masters-Doctorate system and offers one training programme for Rural Equipment Engineers and four post-university training programmes leading to advanced graduate diplomas (DESS):

- Water for agriculture and community water supply;
- Energy Engineering and Industrial Refrigeration;
- Sanitary Engineering and Environment;
- Computer Science applied to Water Science.

One of its stated priorities is water and the environment, and particularly "the impact and mitigation of the effects of climate change and human activities".

The EIER is currently housed with ETSHER (an interstate school of hydraulics and rural equipment) as part of a structure known as 2iE, which is a Centre of Higher Education located on the campus of the University of Ouagadougou and on the Kamboinse site. In addition to classic training, it offers various continuing education options, through the CEFOC (Centre de Formation Continue, a continuing education

centre) and also boasts a design office that offers consulting (Cellule de Formation Professionnelle à l'Ingénierie, CFPI).

The Centre of Medical and Sanitary Research (CERMES) is a research centre in Niger under the supervision of the Ministry of Public Health and the Fight against Endemics. It was created in 2002 after the dissolution of the OCCGE, an organisation aimed at controlling major endemics which was managed by the IRD. It is part of the international network of Pasteur institutes and focuses essentially on malaria and meningitis. It is the only known centre in the subregion that studies the relationship between climate and health.

The Centre has 57 employees including 4 technical assistants, 1 international volunteer, 13 civil servants, 29 contract employees and 10 who are completing their civic service. The health, environment and climate unit has 7 management-level employees and 2 investigators. The budget was 567 368 666 CFA F in 2005, mostly allotted to research projects.

The health, environment and climate unit has developed partnerships (PARSAC-Sahel, a health and climate partnership in the Sahel that covers Niger, Mali and Burkina Faso) to enable it to gather the data it requires to analyse the relationships between the climate, the environment and the principal diseases, which are malaria and meningitis. It works with the AMMA project to study the impacts of the African monsoon on health, in collaboration with the *Centre de Suivi Ecologique* (CSE, or ecological monitoring system) based in Dakar. The unit uses a variety of remote sensing tools and geographic information systems that have enabled it to contribute to the meningitis epidemic monitoring network (demonstrating relationships between dust and meningitis, and ESA EPIDEMIO project, see p. 31 of the progress report); and to a study on the transmission of malaria to help develop a tool to predict epidemics (relationship between the disease and various climatic parameters (an RBM-Sahel project). It also uses an ARGOS system to gather climatic and epidemiological data in various villages in Niger.

Attempts have been made to try to link the principal diseases with the climate, but there is still work to be done to establish more relevant climatic parameters. More progress has been made on meningitis than on malaria.

V.4 Peasant Organisations

The only subregional peasant organisation that was identified is ROPPA (Network of Peasant Organizations and Producers in West Africa) which was founded in 2000 and currently has members from the following countries: Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea Bissau, Mali, Niger, Senegal, Sierra Leone and Togo. ROPPA has partnerships with WAEMU, WADB (the West African Development Bank, which is linked to WAEMU) and CILSS. ROPPA is still in the organisation stage.

V.5 International non-governmental organisations

There are a certain number of international non-governmental organisations in the subregion that operate in fields linked to biodiversity or in activities linked to climate change. The links these organisations develop with the people make them important actors in dialogue between scientists, political decision-makers and civil society with a view to adaptation to climate change.

It should be noted that WWF, IUCN, Wetlands International and FIBA (Fondation Internationale du Banc d'Arguin) have formed an alliance that led to the creation of a Regional Programme for the Conservation of Coastal and Marine Protected Areas in West Africa (PRCM), which is presented below.

V.5.1 WWF (World Wildlife Fund)

WWF operates in West Africa through two offices:

- the Niamey office, which has developed, with Wetlands International and the Nigerian Conservation Foundation (NCF) a partnership for the Niger Basin, in the framework of the Freshwater Program for West Africa. It has also signed a cooperation agreement with the NBA, Birdlife International, Wetlands International and UICN, and developed the NigerWet project.
- the Dakar office (WAMER) focuses more on conditions for sustainable fisheries. Its flagship project at the Kayar site has developed a participatory approach and implemented sustainable fishing strategies (regulation of catches, biological rest periods, etc.). WWF is also involved in the PRCM.

V.5.2 UICN (World Conservation Union)

UICN has a regional office for West Africa based in Ouagadougou. It also has offices in the other countries in the subregion where it runs projects.

UICN is committed to a global programme aimed at adapting water management to climate change (Bergkamp *et al.*, 2003).

In West Africa, UICN has collaborated with CILSS, the Dialogue on Water and Climate and the Global Water Partnership/West African Water Partnership (GWP/WAWP), and received assistance from the basin organisations (Senegal, Gambia and Niger), to develop a subregional strategy to reduce the subregion's vulnerability in terms of its water resources (Niasse *et al.*, 2004).

V.5.3 Wetlands International

Wetlands International is an international NGO whose members are governments. Its activities essentially focus on wetland conservation (in the broadest sense). Its headquarters are located in the Netherlands, but it has a West African office in Dakar and two branch offices in Mali and Guinea Bissau. It has partnership agreements, particularly with the Ramsar, Biological Diversity and Migrating Species Conventions. The NGO has developed a 10-year strategic plan (2005-2014) based on 4 main thrusts: knowing wetlands (including the development of a database), relationships between wetlands and sustainable development through wetland development under poverty reduction programmes, integrated water resource and coastal area management (involvement in PRCM) to improve wetland conservation and use (Upper Niger River Basin project), and finally improving conservation of biodiversity through initiatives for wetlands that are critical habitats or are used by migrating species (GEF project on bird migratory routes between Europe and Africa). Wetlands International recognises the risk that climate change constitutes for wetlands.

V.5.4 ENDA Tiers Monde

ENDA Tiers Monde, and especially its energy, environment and development team and its vulnerability and adaptation team, is involved in a series of activities and projects aimed at supporting countries to develop their policies on adaptation to climate change. The team recently contributed to the creation of tools to assess vulnerability and adaptation to climate change and variability (C3D tool), it is also involved in support work for UNFCCC NAPAs and National Communications. This year, it initiated a short-term scholarship programme on the theme of vulnerability, adaptation and sustainable lifestyles. ENDA TM is a member of the ACCCA project management team.

V.6 Foreign partners working in West and Central Africa

V.6.1 ICRISAT (International Crops Research Institute for the Semi Arid Tropics)

The headquarters of this non-profit organisation is located at Patancheru, India, but it also has two regional centres including one in West Africa, based in Niamey, with personnel including 11 management-level staff. ICRISAT works in the area of agricultural research to help the most underprivileged deal with famine, poverty and environmental degradation in arid tropical areas. Four major research themes have been identified up to 2010: markets, policies and impacts; harnessing biotechnology for the poor; crop improvement, management and utilisation for food security; and agro-ecosystems with a special focus on watersheds.

ICRISAT is a member of the Consultative Group on International Agricultural Research (CGIAR), which has 15 centres.

The Institute is involved in the Desert Margins Program, which receives 16 million in GEF funding, of which 60% is spent in Africa, including West African countries (Niger, Mali, Burkina Faso and Senegal). The programme's objective is to identify the best management practices for combating desertification and conserving biodiversity. Furthermore, ICRISAT has participated, in collaboration with AGRHYMET, in one of the pilot projects of the programme to support climate change adaptation capacities, which focused on community management of pasturelands in the Sudano-Sahelian area in a context of climate change in the Fakara, Niger. ICRISAT also participates in the CLIMAG-West Africa project, which is a network for the harmonisation of weather predictions to mitigate the impact of global changes in the Sudano-Sahelian portion of West Africa. It also participates in the Echel-eau project, which works on integrated water resource management tools in various river basins including the Niger and the Limpopo.

ICRISAT has also had a leadership role in two other projects involving the subregion (see table below).

Project title	Lead organisation	Actors and partners in the project	Countries involved	Project status
<i>Financed and operational</i>				
<i>“Mesure et évaluation de la séquestration du carbone dans les sols par les systèmes agricoles dans les pays en développement – composante Afrique de l’Ouest” (in English: measurement and evaluation of carbon sequestration in the soil by agricultural systems in developing countries)</i>	ICRISAT	Univ. Florida (LC), U. Hawaii (LC), ICRISAT, ILRI, IER, SARI, ISRA, NARI	Cape Verde, Gambia, Ghana, Mali, Senegal	Financed by USAID/SM-CRSP US\$ 2,000,000
<i>Accepted for the development of a complete proposal</i>				
<i>“Clues From The Landraces – positioning local knowledge on plant management of climate uncertainty at the heart of adaptive agricultural strategies”</i>	ICRISAT, Agrhymet	ICRISAT (LC), Agrhymet, CIRAD, IER, SARI, IUCN, AMEDD, U. Sherbrooke, Ouranos Consortium, U. Florida	Ghana, Mali, Niger, West Africa	Concept note accepted by the CCAA, Complete Proposal under development US\$ 1,045,000

A “Challenge programme” on climate changes is being developed by Peter Cooper of ICRISAT-Nairobi, which should include elements of mitigation and adaptation.

V.6.2 CIFOR (Centre for International Forestry Research)

CIFOR, which is part of CGIAR, has an office in Ouagadougou in the framework of its TroFCCA project (Tropical Forests and Climate Change Adaptation). This project operates on three continents (Asia, Africa and Central America). In Africa, its project on the dry forests of West Africa involves Burkina Faso, Mali and Ghana. It focuses on four sectors: water, bio-energy, non-wood forest food products and health care. The project will assess the vulnerability of forests and poor rural communities to climate change and analyse the adaptation policies developed at the community level with a view to integrating them into appropriate adaptation policies. It uses remote sensing tools and geographical information systems.

This project has developed its own methodological approach. It establishes links with NAPA and National Communication focal points. It also has partnerships with ACMAD and AMMA.

V.6.3 Famine Early Warning Systems Network (FEWSNET)

The goal is to help reinforce the capacities of African countries and regional organisations in terms of managing risks of food insecurity. In order to achieve this, it publishes regular warning bulletins in the event of a risk of food crisis, and monthly reports, especially for certain Sahelian West African countries. It also uses maps, satellite images and data (Vegetation Index, position of the International Tropical Convergence Zone).

West Africa, especially the Sahel, is covered by a centre (Sahel West) that includes Burkina Faso, Chad, Mali, Mauritania, Niger, Nigeria and Senegal.

V.6.4 International Research Institute for Climate and Society (IRI)

Located at Columbia University, USA, this Institute focuses on climate risk management in developing countries. It helps create tools and strategies to fit local needs and conditions, while disseminating results to a wider audience. The principal areas IRI works in include health, water, agriculture, and food security. It recently published a book on climate risk management in Africa (Hellmuth *et al.*, 2007), which is also available on its website (<http://portal.iri.columbia.edu/climateandsociety>). IRI also contributed to the organisation of the meeting in Ouagadougou in January 2007 on adaptation to climate change in West Africa.

V.6.5 IRD (*Institut de Recherche pour le Développement*)

The French research institute for development, *Institut de Recherche pour le Développement* (IRD, formerly ORSTOM) has offices in each of the countries in the subregion with specialties that vary slightly according to the country, but with strong components on hydraulic resources, mangroves and fisheries. IRD is currently responsible for two subregional research programmes linked to climate change, which are presented below: AMMA and RIPIECSA.

V.7 Programmes on climate change and variability

V.7.1 AMMA (African Monsoon Multidisciplinary Analyses)

This is an international project combining researchers from the North and South, whose principal objective is to improve the understanding and prediction of the African monsoon and its socio-economic impacts. It is particularly interested in the relationships between the monsoon and health, water resource and food security issues. The AMMANET network of African scientists works with this programme. AMMA is supported by the WMO through the World Climate Research Programme (WCRP), and the CLIVAR, THORPEX, GCOS, GOOS and GEWEX projects. In addition to understanding how the monsoon works, understanding the water cycle linked to the monsoon and improving forecasts, one of AMMA's five working groups focuses on determining the mechanisms of extreme climatic events linked to the monsoon, such as floods, in order to improve observation systems.

V.7.2 THORPEX (THE Observing system Research and Predictability EXperiment)

This project seeks to reduce the impact of natural disasters of meteorological, hydrological or climatic origin by disseminating reliable and precise forecasts on the 1-14 day scale. It seeks to further the goal set by the World Meteorological Organisation, to reduce the number of victims of natural disasters of meteorological, hydrological or climatic origin by half over the next 15 years. In order to achieve this, it intends to develop weather forecasts as decision-making support tools for the principal natural disasters with major socio-economic impacts (flooding, cyclones, heat or cold waves, etc.). THORPEX was launched in 2003 for a 10-year period. A THORPEX Programme action plan for Africa was designed in Ouagadougou, Burkina Faso, on 10-12 February 2007.

V.7.3 RIPIECSA (Interdisciplinary and Participatory Research on the West African Ecosystems, Climate, and Societies)

This project is a “priority solidarity fund” financed by the French Ministry of Foreign Affairs. A founding workshop took place in Bamako from 4-6 February 2007. The purpose of this project is to develop a scientific foundation for policies on adaptation to climate change that may be accepted by governments and societies. It therefore aims to establish relations between scientists, political decision-makers and the people. It mainly includes two types of projects: projects known as targeted projects, which aim to strengthen the database and monitoring system established by AMMA in order to better study climate variability, and projects for which tenders will be made focusing on specific aspects linked to impacts of and adaptation to climate change. The project will be implemented by the IRD with support from Cnrs-Insu and Météo France.

V.7.4 Sustainable Fisheries Livelihoods Programme (SFLP or PMEDP in French)

This programme covered the 1999-2006 period. It was a partnership between the Department for International Development of the United Kingdom (DFID), the United Nations Organization for Food and Agriculture (FAO) and 25 West and Central African countries (from Mauritania to Angola, including five landlocked countries). The programme was financed by DFID and implemented by the FAO. The primary objective of the programme was to help fishing communities improve their livelihoods by reinforcing their human and social capital. It also attempted to integrate certain provisions of the FAO Code of Conduct for Responsible Fisheries into development policies, especially poverty reduction strategies, and supported communities by helping them create links with various local structures (NGOs, local government institutions, etc.). Finally, the SFLP also aimed to develop a regional structure for information and communication to take advantage of programme experiences and achievements. It promoted the adoption of specific measures for women and positioned itself in the sustainable management of the environment, resources and ecosystems. It worked through a certain number of community-based projects, three pilot projects and one institutional support project. The programme is currently finished and it is not known whether another phase will be developed.

V.7.5 CLIMAG West Africa

This project is a network for the harmonisation of climate forecasts to mitigate the impacts of global changes in the Sudano-Sahelian area of West Africa. Its objective is to contribute to the optimisation and harmonisation of efforts to reduce food insecurity and agro-ecosystem vulnerability due to the interacting impacts of global climate change, resource degradation and seasonal climate fluctuations in the Sudano-Sahelian area of West Africa.

V.7.6 Regional Program for the Conservation of Coastal and Marine Protected Areas in West Africa (PRCM)

PRCM (in French, *Programme Régional pour la Conservation des zones Côtières et Marines*) is a programme aimed at preserving coastal and marine areas in seven West African countries: Mauritania, Senegal, The Gambia, Guinea Bissau, Guinea, Sierra Leone and Cape Verde. It was born of a coalition of four major NGOs working in those areas: IUCN, WWF, Wetlands International and the *Fondation Internationale du Bassin d'Arguin* (FIBA), associated with the Sub-Regional Commission on Fisheries (CSRP). During its first phase, this programme worked in the following areas: governance, protected marine areas, species and habitat conservation, sustainable tourism, fisheries management, oil prospecting and scientific research (prospective evaluation). During the Third PRCM Forum, held in Praia in April 2007, the main thrusts of the next phase (2008-2013) were outlined and the West African Marine Protected Areas Network (RAMPAO) held its constitutive general assembly.

V.7.7 ACCCA (Advancing Capacity to support Climate Change Adaptation)

This programme, financed by the European Commission, DEFRA and the ETC Foundation of the Netherlands, is based on a previous programme (AIACC: see www.aiaccproject.org). Its goal is to finance projects in Asia and Africa to assist in the development of adaptation measures aimed at reducing vulnerability to climate and environmental change. To achieve this goal, ACCCA promotes projects that put scientists in contact with the different actors, including community-based actors. A launching seminar was held on 17-20 January 2007 in Ouagadougou. There are currently nine projects in Africa, of which four are located in West Africa (Mali, Ghana, Nigeria and Niger). Another group of five African projects has been financed by the CCAA project, including one in Burkina Faso and another in Central Africa (Cameroon).

VI. ANALYSIS OF THE INSTITUTIONS PRESENT IN WEST AFRICA

A questionnaire was prepared and submitted to the principal institutions working on themes linked to climate change/variability in the subregion (see Appendix 3). Fifteen responses were received. They came from the following organisations: Global Water Partnership; Agrhymet; CERMES, CIFOR, UICN-WARO, WAEMU, IRD, OSS, ENDA TM, ICRISAT, ACMAD, WWF, NBA, OMVS, and ECCAS (the latter is a Central African organisation). These structures make up a representative sample of the subregional organisations working in these areas, as they include political and economic institutions that define policies (WAEMU, ECCAS), research or observatory institutions (ACMAD, AGRHYMET, CERMES, OSS), river basin organisations more interested in climate variability (NBA, OMVS), NGOs (ENDA, UICN, WWF) and structures that are members of international organisations (CIFOR, ICRISAT).

The answers to the questionnaire provided us with information on the main problems encountered by these organisations but also with relevant proposals on subjects such as promoting communication between researchers, people and political decision-makers. A review in relation to the mandate that was set for us is presented below.

VI.1 What do the different institutions do in relation to adaptation to climate change?

The involvement of the various bodies we identified was reviewed in the light of the areas in which they worked, their involvement in programmes, their publications as well as the number of staff members involved (tables 1a and 1b). The political and economic organisations (WAEMU, CILSS, ECCAS) are not represented here because their role, while it is important, is essentially focused on common policies (such as the WAEMU common environmental policy or PCAE) meant to serve as a general framework for subregional policies. At this level, **the issue of the coordination of these different common policies, in light of the number and variety of institutions of this type, could be raised.**

Table 1a: Fields and areas of intervention of the principal subregional organisations

Organisations	Science	Impacts	Adaptation	Areas, others
NBA	Clim. scenarios, forecasts. Socioeconomic scenarios	Water resources, agriculture, hydroelectricity, navigation	Basin development; bank restoration, dune fixation, refilling aquifers, reforestation	Niger Basin
ACMAD	Climate forecasts, modelling and scenarios		Water management, food security, agriculture (seasonal forecasts)	Africa Development of tools for awareness Training, communication tools
AGRHYMET	CC scenarios	Water resources, agriculture and herding	Clim, hydrol. forecasts and other adaptation strategies (early warning systems)	Sahel
CERMES		Health (malaria and meningitis)	Adaptation (health policies)	Sahel/Niger
CIFOR			Adaptation (forests)	Mali, Ghana, Burkina Faso
ENDA TM		Agriculture, water resources, forestry, etc.	Adaptation in different sectors, integration of traditional techniques and local knowledge	Arid areas, Sahel, wetlands and mangroves Awareness Tools for assessments on V&A to CC
GWP		Water resources	Water resources	West Africa Facilitating role
ICRISAT	Climate scenarios, forecasts	Agriculture, water resources	Adaptation in agriculture and herding sectors	Sahel, arid and semi-arid areas
IRD/Burkina	Climate modelling	Agriculture	Techniques to combat desertification, soil rehabilitation, NRM, traditional techniques (zai)	Arid to semi-arid areas, Burkina

OMVS	Climate forecasts	Agriculture (rain-fed, irrigated), water resources, vegetable cover, fauna	Water resource management and forecast models, agriculture, fisheries, energy, protection of ecosystems	Fouta Djallon Senegal River Basin Natural disaster management plan
OSS	Early warning systems	Agriculture and water resources	Agriculture and water resources, early warning systems	Circum-Sahara areas Desertification and CC
UICN-WARO		Water resources, forests	Adaptation, same sectors Project impact on people's adaptation capacities	Arid zones, West Africa
WWF/Niger Initiative		Wetlands, endangered species	Wetland resource development	Niger Basin

Tableau 1b: The programmes of the principal subregional organisations

Organisations	Programmes completed	Subregional programmes
NBA	AfDB Project to combat sand encroachment in the Niger, GEF Project to reverse the trend of degradation of land and water	Niger-Wet, PAGIRE/CEDEAO, AMMA
ACMAD	AIACC, Preparation Ouagadougou meeting	Preparation West Africa adaptation strategy
AGRHYMET	Subregional CC Project (CIDA)	AMMA RIPIECSA Water and Climate Dialogue
CERMES	AMMA, RBM-Sahel, ESA-Epidiemo	AMMA, Afrique-Santé (networks, workshop, working groups, PIAF)
CIFOR	TroFCCA	TroFCCA
ENDA TM	C3D, LCA, ACCCA, KTGAL	C3D, NAPAs, ACCCA
GWP (facilitator)	Subregional strategy to reduce water resource vulnerability to CC	West African Regional Dialogue on Water/CC
ICRISAT	Desert margins programme, CIMAG-West Africa,	Dialogue on Water and Climate
IRD/Burkina	Desert Margins Programme	Dialogue on Water and Climate, CCAA, AIACC RIPIECSA
OMVS	CC adaptation measures in West African watersheds (ENDA)	
OSS	North African drought alert system, ROSELT	CCAA, GCOS/ClimDEV
UICN-WARO	Subregional strategy to reduce water resource vulnerability to CC	Dialogue on Water and Climate, CCAA, AIACC
WWF/Niger Initiative	NBA GEF Project	RIPIECSA

In terms of themes, only 7 organisations of the 13 identified worked on the science of climate change and most of them focused more on climatic and hydrological forecasts (particularly the basin organisations) than on climate scenarios *per se* (four of the seven). In terms of impact, most of the organisations considered here worked in the areas of agriculture and water resources, some of them on health, forests and biodiversity. On the other hand, they all worked in different ways in areas relating to adaptation to climate change, either in early warning systems or in specific adaptation in certain sectors. Some of the organisations (AGRHYMET, CERMES, CIFOR, IRD (zai system in Burkina Faso), OSS, ENDA TM, ICRISAT) integrated traditional adaptation techniques (local and indigenous knowledge).

A certain number of projects and programmes, some of them completed and others ongoing, should be taken into account in order to work in the subregion, and these include:

- A subregional strategy to reduce water resource vulnerability to CC, developed by the UICN and CILSS, which has been extended through the Dialogue on Water and Climate and its West African branch, which offers a space for partnership and dialogue (Niasse *et al.*, 2004);
- A project on "Support for climate change adaptation capacities in the Sahel" carried out by AGRHYMET on CIDA financing. Results available on the following site: www.agrhymet.ne/websippcc/index.htm;
- Ongoing projects: AMMA, RIPIECISA, ACCCA;
- Training activities, especially those conducted by ENDA in the framework of the C3D project financed by the European Union.

Finally, we should recall the **mandate given to AGRHYMET, in collaboration with ACMAD, UNECA and CILSS to develop a subregional programme on adaptation to climate change.**

The information on the staff members involved should be taken with a grain of salt, since while some organisations did provide the number of staff members who have been stakeholders in projects relating to climate change, others simply provided the number of staff members in their organisation, which does not necessarily coincide with the actual number of staff members with climate change experience or expertise.

In terms of publications, while many structures mentioned publications, most were either internal reports or presentations made during meetings, and there were very few publications in scientific journals or other journals. **This relatively low number of publications seems to contribute to the lack of visibility of the structures** in their efforts to deal with climate change.

VI.2 What are the strengths and weaknesses of the various institutions?

All of the institutions recognised strengths and weaknesses, which can be described as follows.

The strengths identified by the institutions varied (Table 2). While some mentioned their strong *network(s)* (GWP, UICN, WWF) or their *partnerships* (Agrhymet, Icrisat,

OSS), others spoke of their *expertise*, particularly expertise acquired through project implementation (Agrhymet, Cermes, Cifor, IRD, Enda), while certain other structures, essentially those responsible for policy design, took strength in their *mandate* (WAEMU, ACMAD).

The weaknesses recognised were unanimously *insufficient human resources*, a problem that could be resolved by providing capacity building and increased financial resources for the structures.

VI.3 Centres of excellence in the subregion

Based on the questionnaire responses, it appeared clearly that two organisations are viewed as centres of excellence in terms of climate change in the subregion: the Agrhymet centre and ACMAD (they were cited respectively 9 and 8 times by the respondents). Other organisations were also cited, but more occasionally. These include UICN, EIER, the Universities (and the *Laboratoire de Physique de l'Atmosphère*, a laboratory of atmospheric physics in Dakar), CIFOR, OSS, Enda TM, CILSS, IRD and IRI. Naturally, the idea that certain structures are centres of excellence depends on the experience of each respondent and different responses might have emerged if we had surveyed, for example, climate change focal points or certain research institutes.

The principal areas in which it was considered that these centres of excellence could contribute to processes relating to climate change differed according to the respondents, but covered all areas relating to climate change science, impacts and adaptation. They can be summarized as follows:

- Gathering and providing relevant data;
- Developing research in various areas (climate science, impacts and adaptation in different sectors) with a focus on applied research;
- Production of scientific research on climate change and its impacts;
- Capacity building and sharing of experiences, particularly in training on forecast tools and resource monitoring, management and planning tools;

The principal elements that were considered important to maintain and develop these centres are:

- Large pools of expertise and human resources;
- High-performance equipment;
- Secure funding and satisfactory working conditions;
- Strong partnerships, especially with similar structures in the North.

Certain respondents stressed the importance of sensitising political decision-makers to CC so that they grant full attention to the centres. In addition, it was hoped that the findings of research activities would be used to attract the confidence of the partners, especially financial partners. Others proposed encouraging students to focus on related research topics.

VI.4 Involvement of subregional organisations in climate change

The responses varied according to the organisations as to what was seen as strong involvement of subregional organisations in climate change issues and what was

seen as the opposite, i.e. insufficient involvement. Overall, the NGOs tended to feel that there was insufficient involvement, whereas organisations that had already benefited from projects or programmes relating to climate change often felt that involvement was strong. However, some felt that there was a need for greater coordination amongst the subregional organisations. In addition, there still remained many efforts to be made to be able to include adaptation on the national political agendas and sensitise NGOs and local government to the usefulness of adaptation to climate change for development at both the national level (defining development policies) and the local level (where adaptation takes place).

The causes of lack of involvement

Several causes have been put forward to explain the lack of involvement of subregional organisations in climate change. These include:

- Lack of knowledge and understanding of the problems linked to CC;
- Low level of awareness;
- Lack of expertise and financial resources;
- Lack of consultation and coordination of efforts, resources and skills;
- Lack of political will;
- Limited resources directly allotted to peasants;
- Problem of the mandate of the organisations;
- The fact that climate change issues are not priorities for the States.

VI.5 Links with political decision-makers

Almost all subregional organisations have links with political decision-makers, but these ties are very different according to whether they are with political organisations such as WAEMU and CILSS, where the heads of State are at the root of decisions; with organisations that benefit from structures in which political decision-makers are represented at the highest level, such as the basin organisations (OMVS, NBA); with organisations under government supervision (AGRHYMET, CERMES) or on the other hand with more independent structures, such as NGOs.

According to certain respondents, these links seem to suffer from the lack of awareness, support and promotion of research findings, but also of exchanges.

According to some NGOs, research findings are taken into consideration through consultations and participatory processes. According to others, participation in capacity building for the preparation of National Communications and National Adaptation Programmes of Action facilitates links with political decision-makers (Enda is also preparing a summary document on climate change for local decision-makers).

It remains that there is still a chronic lack of communication between political decision-makers and researchers.

Some respondents stressed the fact that efforts still need to be made to explain the content and use of output, facilitate its dissemination and obtain comments. In addition, the research and findings available are not always sufficiently explicit and useable for decision-making, not to mention the fact that too many uncertainties remain, whereas decision-makers need solid information with figures. Furthermore, the development of tools to support decision-making would promote the involvement of political decision-makers in climate change issues.

Ways of establishing links:

At this level, it can be observed that multiplicities of means were deployed by the organisations to develop links with local decision-makers. They ranged from publications (GWP quarterly review, quarterly electronic bulletins and various other types of bulletins) to arranging political dialogues (CIFOR), through participation in local to international meetings (i.e. Conference of UNFCCC Parties), and organising open houses or press conferences.

In any case, the issue has been raised that more communication channels are needed (bulletins, memos, TV, Internet, press, etc.) that are tailored to the needs of political decision-makers and that they can understand.

The principal obstacles to the use of findings by decision-makers:

The following obstacles were mentioned:

- Issues of comprehension and appropriate communication of findings. In this sense, it is important to provide decision-makers with reasonings backed up by figures (figures for the cost of inaction and not only the cost of adaptation);
- Problems of lack of information and comprehension of uncertainties linked to findings;
- The existence of a gap between long-term timescales, which are those of climate change, and the short-term perspectives of political decision-makers (next term in office, for instance);
- The lack of interest or political will and the lack of appropriate institutional frameworks seem to proceed from the first two types of obstacles identified above.

VI.6 Partnership

The subregional organisations with which we met all had longstanding partnership experience and recognised in general that partnerships were necessary since none of the structures had the skills to meet all needs. These partnerships particularly involved universities and research centres. However, it seems that partnerships should be extended and intensified. Certain organisations complained for instance that certain structures tried to overstep their mandate (or role); furthermore, NGOs, especially international NGOs, while they were sometimes involved in certain studies, tended to be "minimised".

Partnership was highly prevalent in the subregion, as most organisations had already established partnerships with each other. Partnerships were also developed with Northern institutions. However, it seems that the partnerships are somewhat compartmentalized and depend on existing networks and projects. It was observed for example that international NGOs tended more to garner support from the networks of their own organisation rather than building partnerships with others, although they were sometimes nearby.

VI.7 Links with vulnerable populations

Due to their mandate, some subregional organisations have no relationship with the people (WAEMU, for instance, or OSS). Others do have ties to the people, either through projects of which they are beneficiaries (CIFOR, Agrhymet, UICN, ICRISAT,

and WWF), or through decentralised structures (i.e. OMVS with its national/local coordination cells; GWP plans to set up local water partnerships). A single organisation mentioned relations through peasant associations. Indeed, it seems that the representation of vulnerable populations at the subregional level is an issue due to the dearth of organisations of that kind, excepting ROPPA (*Réseau des Organisations de Paysans et de Producteurs de l'Afrique de l'Ouest*, or Network of Peasant Organizations and Producers in West Africa).

The principal difficulties in establishing and maintaining such links with the people seem to be communication problems and the difficulty of translating knowledge about adaptation into a language that can be readily understood by the people (communication issues). Overall, there are needs in terms of environmental awareness and education. For certain organisations, there is also a lack of funding to meet the numerous expectations of local people but also to organise ongoing consultations and a lack of time to develop frameworks for dialogue.

The chief benefits gained from links with local people consisted of information about local and indigenous experiences in adaptation to CC, sociological constraints and requirements that could hamper the implementation of adaptation measures and CC and climate variability adaptation priorities and emergencies. For other organisations, the benefits were chiefly better knowledge of the expectations of the people, information about trends in local practices and mastery of the social and physical data pertaining to the ecosystems. These links also facilitated ownership of microprojects by the people and social mobilisation.

Links with the local people make it possible to take advantage of traditional knowledge; indeed, there are local-level success stories in terms of adaptation.

VI.8 Coordination / Exchange Mechanism

All of the subregional organisations were in favour of the establishment of a coordination mechanism, and some even proposed to act as that mechanism whereas others (UICN-WARO) showed an interest in helping facilitate a Dialogue on climate change impacts and response strategies. It therefore seems that the issue of the coordination of actions and exchanges of experiences has already been raised in the subregion. This issue should be taken into consideration in the context of the establishment of a subregional programme to reduce the vulnerability of individual countries to the impact of climate change, which has been entrusted to CILSS and AGRHYMET, in association with ACMAD and UNECA. This opportunity should be seized.

A coordination and exchange mechanism would make it possible to exchange experiences (lessons, failures), to better capitalise on knowledge about adaptation and to have a broader vision. Indeed, as OSS has pointed out, isolated actions are not enough; there needs to be synergy and a common and harmonised approach, at least on the regional scale.

Proposed approaches:

Several have been proposed, including:

- Establishing a subregional programme for West Africa, taking account of the issues of coastal countries. An implementation mechanism should also

be defined (by the actors); a coordinating structure should be appointed based on a regional consensus; a representative should be chosen from each regional structure;

- Reinforcing networks and multidisciplinary working groups;
- Visiting scientists and fellowship programmes;
- Mutual participation in events organised by partner structures;
- A site for communication and exchanges;
- Organising a workshop for exchanges between different institutions and programmes working on the issue. Identifying people able to ensure such coordination.
- Developing actor awareness and training activities on CC and adaptation mechanisms.

VI.9 Comments and Suggestions

The majority of the respondents made suggestions to improve local adaptation to the impact of CC, to facilitate interactions between researchers, the people and political-decision-makers.

VI.9.1 To improve the adaptation of vulnerable populations to the impact of CC

The principal proposals were the following:

- information, awareness and education for local people on CC issues (causes & effects);
- improving knowledge about CC and its impacts; uncertainties give the impression that there is no emergency; and envisaging integrated research-development (natural resources, agriculture, environment, health);
- adopting genuine bottom-up approaches with full involvement of the people; encouraging the involvement of NGOs that are more in contact with the people;
- promoting the self-adaptive capacities of local people; supporting good adaptation practices at the local level;
- involving and coaching the people in seeking anticipative and curative measures to adapt to CC;
- providing adequate funding for the implementation of projects to reduce the impact of CC;
- generally speaking, fighting against poverty, which contributes to the vulnerability of vulnerable populations.

ICRISAT has made practical proposals for measures to promote rural adaptation: developing infrastructure (roads) to reduce the isolation of villages; building wells for water and for storing fodder and food; facilitating access to inputs; developing irrigation, facilitating access to equipment to work the land; developing markets to promote the sale of farm produce; and diversifying crops and cropping systems.

VI.9.2 To improve communication between researchers, people and political decision-makers

The issue of communication between the different actors is crucial. Lack of action and involvement is often linked to problems of communication between the different stakeholders. The respondents provided the following orientations:

- Reinforcing the scientific capacities of African organisations working in fields linked to CC and establishing functional interfaces between those structures, political decision-makers and local communities. It is also important to think about the best channels of communication to use; more data and decision-making tools are also needed to influence development strategies and policy;
- Creating a subregional framework for consultation involving the different actors to discuss and exchange on issues and gains in terms of CC in the subregion and reducing the dispersion of financial resources, efforts and partners;
- Developing means of communication (bulletins in a simplified form accessible to decision-makers and the people, rural radios, brochures to disseminate information on technologies);
- Creating a network for researchers and research centres working on adaptation to promote synergy;
- Regular seminars or information, training or capacity-building workshops for the different actors but also for journalists.

VI.9.3 To improve integration of CC by political decision-makers

Several proposals were also made on this subject:

- Involving local elected representatives and developing appropriate communication tools;
- Raising awareness through flyers on CC issues and involving decision-makers in national, continental and international events on CC; the issue of using and translating scientific information into a suitable language for decision-makers is crucial. It is also necessary to prove the interest of adaptation, for instance by indicating the cost of doing nothing and through advocacy addressed to decision-makers so that they take account of CC in the design and implementation of development programmes and projects;
- Developing documents for decision-makers to support them in their decision-making and organising a series of information and communication events to provide them with all of the information they need to understand the advantages and disadvantages of implementing CC adaptation activities.
- National capacity building on gathering and processing data and information on CC and adaptation (environment, planning and economic development);
- Avoiding compartmentalisation of services and promoting better visibility for institutions working on CC in relation to aid organisations. Passing on two messages to the decision-makers: CC is not tomorrow, it is now; adaptation to CC is not just an environmental issue, it is necessary to avoid compromising development and poverty reduction efforts. Also communicating with the technical advisors of political decision-makers.

VII. RECOMMENDATIONS

Adaptation to climate change is a complex issue that can be broken down on different spatial levels (from the continental scale to the local scale) and therefore different levels of governance (subregional institutions, governments, decentralised structures, the people). Adaptation is also a development issue that can be integrated by different ministries but also different actors (private sector, non-governmental associations and organisations, etc.). It is also crosscutting across sectors.

The situation in West Africa is favourable to the development of strategies that can improve national and individual capacities to respond to the impacts of climate change. Positive elements include the decision and declaration issued by the latest summit of the African Union, which asked the States to consider climate change issues in their national development policies. At the subregional level, the initiative of developing a subregional strategy to combat the impact of climate change is a very favourable context for the development of coordination between organisations working on the issue. In addition, West African institutions, research organisations and ongoing programmes already demonstrate a dynamic of taking account of climate change.

However, the large number of institutions working in areas linked to climate change raises the need to develop a mechanism or mechanisms (frameworks) for coordination and exchange between them. These mechanisms should link political institutions, research institutions and the community level (civil society, NGOs) but they should also enable coordination and exchanges between different subject areas. Partnerships should be reinforced and extended. Indeed, while some institutions collaborate quite easily with others, they are often unaware that other partnerships are possible. It is also important that not only the institutions of the subregion, but also the existing programmes and international organisations operating in the subregion are involved and integrated in coordination and exchange processes, thereby allowing them to rationalise their experiences and investments. This could involve one or more formal structures, which could be housed in one of the institutions in the subregion, but also the development and operationalisation of networks that would enable the different actors, on different levels, to exchange more informally and perhaps more regularly.

The trend to the emergence of centres of excellence should be supported and furthered. Thus, centres such as AGRHYMET or ACMAD, which already have a critical mass of researchers and equipment, should be reinforced, taking account of their needs and capacities and considering the comments that were made on the conditions for maintaining such centres of excellence (see Chapter VI-3). In this respect, three points are very important for maintaining the centres:

- Ensuring sufficient and sustainable financial mechanisms (not project dependent)
- Human resource capacity building on chosen topics;
- Support for the use of the outputs of the centres both in the form of scientific publications and tools to popularise the centres' findings.

However, both AGRHYMET and ACMAD are located in Niger and focus essentially on meteorology, agriculture and water resources. Other potential centres of excellence need to be identified that are located in other countries in the subregion and work on different issues (health, coastal areas, forests, etc.). The criteria used should include the number of staff members, the issues addressed, geographic location and their involvement in these areas.

It also needs to be understood that the need for knowledge about climate change scenarios and about the impact and potential for adaptation to climate change is still very substantial and somewhat determines the positions of decision-makers. Taking account of traditional knowledge (especially in the area of adaptation) is an important

element in the development of such a body of knowledge. It is therefore necessary to reinforce the existing university structures and attempts to build networks.

Considerable efforts to raise awareness need to be made at various levels. It has been recognised that the different actors (essentially political decision-makers and local partners) are generally little informed about climate change and its impacts on national policies but also on their everyday lives. This is partly due to the complexity of climate change. Communication tools need to be developed that are tailored to the needs of these different actors to sensitise them to climate change issues. This would suppose setting up real awareness strategies that are based on needs, levels of understanding, national languages and cultures, etc., to develop appropriate communication tools (theatre, videos, films, radio, music, etc.) according to the different targets.

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WWF Freshwater programme for West Africa; see site: <http://www.panda.org>

ACMAD publications:

- Kamga, F. and Buscarlet, E. (2006). Simulation du climat de l'Afrique de l'Ouest à l'aide d'un modèle climatique régional. *Journal de la Météorologie*, 52.
- Kamga, F. et al. (2005). Evaluating the US National Center for Atmospheric Research Climate System Model: present day and 21st century A1 scenario. *J. Geophysical Research*

PRCM Publications:

PRCM. Regional Coastal and Marine Conservation Programme for West Africa. Annual Report 2006. With a cd.

Regional Strategy for the Marine Protected Areas of West Africa. 73 pp.

IX. APPENDICES

Institutions/Persons met in Dakar and during the mission to Niamey and Ouagadougou

Dakar

14 March 2007 (Dakar)

Global Water Partnership (West Africa)

Mr Madiodio NIASSE, President of GWP/WAWP, BP 16911, Dakar Fann (Senegal)

Email: madiodio.niasse@gmail.com

Mission to Ouagadougou and Niamey: 19-24 March 2007

Meetings with 15 organisations

19 March 2007 (Niamey)

AGRHYMET

Mrs Mathieu BADOLO m.badolo@agrhyment.ne

Hubert N'DJAJA OUAGA (coordinator of climate change pilot projects)

n.ouaga@agrhyment.ne

Mr SIDIBE, Interim Director b.sidibe@agrhyment.ne

Mr Faustin GNOUMOU, Director, Department of training and research

Mr SONGOTI Henri and Mr KALLAMOU Mama, Database and software engineering division

NBA (Niger Basin Authority)

Idé BANA (technical director and interim director) bana@abn.ne or

idebana@hotmail.com

Robert Y. DESSOUASSI (head of the Niger Basin Observatory) dessouassi@abn.ne

or dessouassi2003@yahoo.fr

Henri Claude ENOUMBA (head of the planning and studies division)

hcenoumba@abn.ne

CERMES

Mme Isabelle JEANNE, head of the health, environment and climate unit (SEC).

ijeanne@cermes.org

Dr Suzanne CHANTEAU, director of CERMES

ICRISAT

Mr Tabo RAMADJITA, Assistant to the Regional Director and member of the agro-ecosystems team. r.tabo@cgiar.org

20 March 2007 (Niamey)

WWF; Niger Basin Initiative

Mr Tounao KIRI, Officer responsible for civil society. tounao_kiri@yahoo.fr

IRD: RIPIECSA project

Arona DIEDHIOU aronadiedhiou@ird.ne

NBA (Niger Basin Authority/Environmental Observatory)

Robert Y. DESSOUASSI (Head of the Niger Basin Observatory)

dessouassi@abn.ne or dessouassi2003@yahoo.fr

Jean COMPAORE (environmental expert)

Abdoulaye DOUMBIA (hydraulic modelling expert) abdoumbia@yahoo.fr

ACMAD

Mr A. KIGNAMAN-SORO Director General dgacmad@acmad.ne

Mr Mohammed KADI Secretary General Mohamed_kadi@acmad.ne and kadi_metdz@yahoo.com

Mr Leonard N. NJAU, head of the climate and environment team njau@acmad.ne and njogunjau2006@yahoo.com

Mr André KAMGA FOAMOUHOUE akamgaf@yahoo.com and lkamga@acmad.ne

Mme Mariane Kane DIOP mariane@env.leeds.ac.uk and riane_diopkane@yahoo.fr

21 March 2007 Return to Ouagadougou

22 March 2007 (Ouagadougou)

WAEMU

Environment Branch: Mr Issaka HACHIMOU: issaka.hachimou@uemoa.int

Institut d'Applications et de Vulgarisation en Sciences

Mr Elie OUEDRAOGO yambaelie@yahoo.fr

Website: <http://iavs.refer.ne>

CIFOR

Mr Johnson NKEM, Regional Coordinator, TroFCCA project j.nkem@cgiar.org

UNECA / West Africa

Mr Halidou OUEDRAOGO hued@yahoo.com

23 March 2007 (Ouagadougou)

UICN

Mrs Jean Marc GARREAU (regional programme coordinator) jean-marc.garreau@iucn.org and Aliou FAYE (head of the mission, UICN office in Mali) aliou.faye@iucn.org

ICRISAT

Mr Tabo RAMADJITA (Assistant Director of ICRISAT) r.tabo@cgiar.org and Dougbedji FATONDJI (soil science researcher) d.fatondji@cgiar.org

24 March 2007

WAEMU

Environment Branch: Mr Hachimou ISSAKA, in charge of the department of the environment, rural and environmental development. issaka.hachimou@uemoa.int

CILSS

Mr Dramane COULIBALY, Coordinator, regional programme on support – food security – combating desertification – population and development dramane.coulibaly@cilss.bf

EIER

Professor YONKEU

Addresses and Websites

ACMAD (African Centre of Meteorological Applications for Development)
85 avenue des Ministères, BP 13184 Niamey, Republic of Niger
Tel: (227) 20 73 49 92
Website: www.acmad.ne

AGRHYMET, BP 11011, Niamey, Republic of Niger
Tel: (227) 20 31 53 16
Email: admin@agrhymet.ne
Website: <http://www.agrhymet.ne>

CERMES:
BP 10887, 634 Bd de la Nation, YN034 Niamey, Niger
Tel: (227) 20 75 20 40 / 45; email: cermes@cermes.org
Site web: <http://www.cermes.net>

CIFOR/
Regional Office for West Africa
06 BP 9478 Ouagadougou 06, Burkina Faso
Tel: (226) 5030 4742
Email: j.nkem@cgiar.org
Website: www.cifor.cgiar.org/trofcca

CILSS
Executive Secretariat of CILSS, 03 BP.7049, Ouagadougou 03, Burkina Faso
Tel: 226 3067 58
Website: www.cilss.bf or www.cilssnet.org

CLUB DU SAHEL ET DE L'AFRIQUE DE L'OUEST (CSAO / SWAC, Sahel and West Africa Club)
Le Seine Saint Germain, 4 boulevard des îles, 92130 Issy Les Moulineaux, France
Tel: 33(0) 1 54 24 89 87; Email: sahel.contact@oecd.org
Website: www.oecd.org/sah

2iE Groupe EIER-ETSHER
01 BP 594 Ouagadougou 01 (Burkina Faso)
Tel: (226) 50 30 20 53 or 50 30 71 16/17
www.eieretsher.org

ECOWAS
Executive Secretariat, 60 Yakubu Gowon Crescent, Asokoro District, PMB 401,
Abuja, Nigeria
Tel: 234 9 31 47 647 / to 649
Website: www.ecowas.int

ENDA TM / Programme Energie, Environnement et Développement
54, rue Carnot, BP 3370, Dakar
Tel: (221) 822 59 83, 822 24 96
Email: enda.energy@orange.sn
Website: <http://energie.enda.sn>

Global Water Partnership for West Africa (GWP/WAWP), 03 BP7112 Ouagadougou
03, Burkina Faso
Tel: (226) 50 36 62 12
Email: watac@fasonet.bf

ICRISAT (International Crops Research Institute for Semi Arid Tropics)
Regional Centre, Niamey, BP 12404, Niamey, Republic of Niger
Tel: (227) 722529 or 722725
Email: icrisat@cgiar.org
Website: www.icrisat.org

IRI (International Research Institute)
The Earth Institute, Columbia University, Lamont Campus, 61 Route 9W, Monell
Building, Palisades, NY 10964-8000 USA
Tel: 1 845 680 4532
Contact: Alessandra GIANNINI, Associate Research Scientist
Email: alesall@iri.columbia.edu
Website: <http://iri.columbia.edu>

UICN (West Africa Regional Office-WARO), P.O. Box 1618, Ouagadougou 01,
Burkina Faso
Tel: (226) 50 32 85 00
Email: jean-marc.garreau@iucn.org or brao@iucn.org
Website: <http://www.iucn.org>

NBA (Niger Basin Authority)
Executive Secretariat, BP 729, Niamey, Republic of Niger
Niger Basin Observatory
Tel.: (227) 20 31 52 39 (Mr Dessouassi)
Website: www.abn.ne

OMVS (Organisation for the Development of the Senegal River Basin)
Environmental Observatory
Tamsir NDIAYE (director)
(221) 842 02 16/17
Email: tamsir.ndiaye@omvs.org or ndiayetamsir2002@yahoo.fr

OSS (Sahara and Sahel Observatory)
Bd du leader Yasser Arafat, BP31 – 1080 Tunis, Tunisia
Tel: (216) 71 206 633
Website: www.unesco.org/oss

PRCM (Regional Program for the Conservation of Coastal and Marine Protected Areas in West Africa)

Website: www.prcmarine.org

ROPPA (Network of Peasant Organisations and Producers in West Africa)

09 BP 884 Ouagadougou 09, Burkina Faso

Tel: (226) 50 36 08 25

Website: www.roppa.info

Contact in Dakar: Mr Saliou Sarr

UNECA (United Nations Economic Commission for Africa)

www.uneca.org

Subregional Offices:

-West Africa Office (ECA-WA): P.O. Box 744, Niamey, Niger;

Telephone: (227) 72 29 61/72 27 88

Email: srdcwest@eca.ne

-Central Africa Office (ECA-CA): P.O. Box 14935 Yaoundé, Cameroon;

Telephone: (237) 223 14 61 / 222 08 61 / 222 08 56

Email: sroca@uneca.org

WAEMU (West African Economic and Monetary Union)

380, rue Agostino Neto, 01BP 543 Ouagadougou 01 BP, Burkina Faso

Tel: 226 50 31 88 73 / to 76;

Email: commission@uemoa.int

Website: www.uemoa.int

Environmental Branch: Mr Malick Diallo (director): malick.diallo@uemoa.int

Wetlands International / West Africa Office

P.O. Box 8060, Yoff

Dakar (Senegal)

Tel: (221) 820 64 18

Email: wetlands@sentoo.sn

Website: www.wetlands.org

WWF Niger Basin Initiative

Coordination Office, 65, boulevard Mali Béro, Plateau II, Box 13427, Niamey,

Republic of Niger

Tel: (227) 20 35 00 97

Email: wwf@iniger.ne

Website: www.panda.org