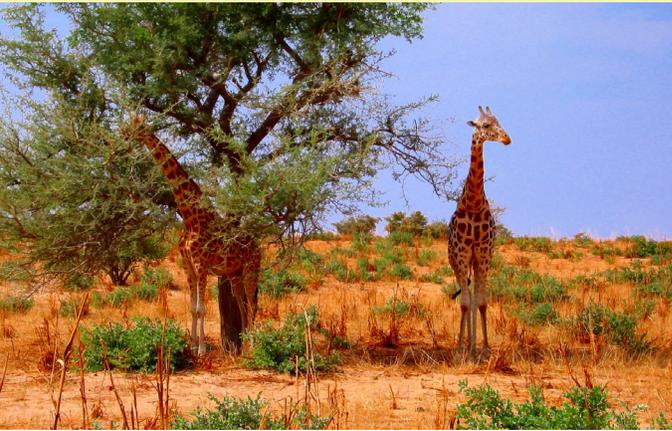




Adaptation Partnership



West Africa Regional Adaptation Workshop

Climate Services for Development

Dakar, Senegal

June 29 to July 1, 2011

Overview of the Workshop



The West Africa Regional Adaptation Workshop on Climate Services for Development took place from June 29 to July 1, 2011, in Dakar, Senegal. It was funded by the US Agency for International Development (USAID) West Africa Regional Mission, and jointly organized by USAID, CILSS (the Permanent Inter-State Committee for Drought Control in the Sahel) and AGRHYMET (Agriculture, Hydrology, and Meteorology – the science arm of CILSS) as part of the Adaptation Partnership's series of workshops on adaptation and development challenges. One hundred and six participants from 11 West African countries attended, representing a broad range of stakeholders that included government officials, climate and agricultural scientists and researchers, and development practitioners working in a variety of sectors. Key institutions associated with research, development, and implementation of climate services in West Africa were also present, including: CILSS, AGRHYMET, ACMAD, ICRISAT, IRI, FAO, IUCN, UN, FEWSNET, CARE, NASA, NOAA, and ECOWAS.

The workshop was broadly focused on the theme of expanding user-tailored climate services in West Africa. The objectives of the workshop were to:

- Strengthen awareness of and demand for climate information and capacity development (i.e., "climate services") among decision makers in agriculture, water, disaster management, coastal management, and health
- Strengthen awareness of decision-makers' needs among information and service providers
- Engage a community of practice around user-tailored climate services, strengthening linkages among providers and users of information
- Identify promising opportunities to design and deliver climate services for decision-making for agriculture, water, disaster management, coastal management, and health
- Share good practices and models
- Catalyze action and collaboration among partners across the region

The program opened with an overview of existing initiatives to build capacity in West Africa to develop, communicate, and utilize climate services. Relevant efforts and experiences were shared by regional providers of seasonal forecasts and trainings, research initiatives, disaster management organizations, and national meteorological services. A summary of these services can be found in Annex A.

To help structure the discussions identify areas for collaboration, the metaphor of a chain was presented illustrating the flow of information from generation to application:

Identify User Needs → Develop Quality Science → Identify and Translate Information
→ Deliver Information → Apply Information for Decision-Making → Make Decisions → Assess Outcomes

Participants discussed where they fit along this chain, often functioning in more than one role. They also discussed who performs the functions to either side of them, identifying those organizations upon which they depend and those organizations that depend upon them. This value chain of information for climate services emphasizes: the variety of roles that must be performed to achieve impact; the importance of feedback from both knowledge users and knowledge producers to improve science, translation, and delivery of information along the chain; the need for capacity building of translators and users as well as information providers; and the need for effective information transmission up and down the chain. Participants discussed the potential for the chain to function as a guide for effectively tailoring climate services to ensure that the right stakeholders are involved, the right capabilities are in place, and that the links in the chain are connected and well-functioning.

Sectoral Priorities: Interests, Needs, Barriers, Best Practices

The overview of existing programs and services provided participants with a sense of the existing resources available to them and provided a few examples of successful programs. Next, participants worked in small groups organized by their areas of expertise to discuss their responsibilities; whom they view as the beneficiaries of their work; and barriers and opportunities for improving the services they provide. Stakeholders from disaster management, agriculture, coastal management, environment, natural resources management, coastal management, and meteorology addressed the current state of climate information and its use as well as ideas and opportunities for improving climate services for application in each sector.

The findings of each group on the interests, needs, barriers, and best practices in their sector are summarized below.

Agriculture

The key needs in the agricultural sector can be broadly described in terms of the need for improved technologies, and the need for improved communications. The most important technological need is for improved meteorological systems that can better predict seasonal variability, onset and cessation dates for rainfall, and provide short-term (2-15 day) forecasts for pastoralists. They also noted the need for improved irrigation methods. The absence of timely and accurate communications between climate information providers and users was identified as another prominent barrier to agricultural adaptation. Participants suggested the provision of climate information in local languages, and the development of coordinated drought warning systems, to improve information dissemination. They strongly emphasized the importance of training (for service providers, trainers, journalists, and media) so that knowledge is transmitted in a clear and precise way. Collaboration with regional bodies such as the International Research Institution for Climate and Society (IRI), ACMAD, and AGRHYMET could facilitate and streamline training. Participants also recommended methods of data collection that involve service users and suggested that governments invest in networks of data collection and dissemination.

Natural Resources

Participants identified several priority areas for research, including: rainfall data and predictions, water availability and management, commercial species production, pasture management, forest and agro-forestry management, and bushfire management. Work must also be done to ensure that research, when produced, is unbiased, communicated in a timely fashion, and available in local, simple language. Users and producers of data need to collaborate to ensure that research is relevant and usable. Success in natural resource management is strongly related to the availability and utility of data. Areas with successful natural resource management typically have an extensive network of rainfall observing stations and have developed hydro-climatic predictions using this data. They have also ensured that such information is transferred to resource users successfully, through the use of SMS warning systems, weather radio stations, and other technologies.

Disaster Mitigation and Management

The disaster mitigation and management group noted that greater coordination and improved modeling were key needs for their sector. In particular, they identified a need for longer lead-time in seasonal forecasting (ideally six months) to improve early warning

systems; and the need for more accurate, user-friendly climate and hydrological models. Participants commented that coordination between meteorological and hydrological service providers, national organizations, and institutions has the potential to improve communication and raise awareness of climate products. Greater collaboration between meteorological centers would also improve the quality of information: there are currently multiple – sometimes contradictory – seasonal forecasts, which creates confusion among users. Participants suggested that ACMAD or AGRHYMET could produce consolidated forecasts to send to end-users. Participants came up with several examples of best practices in disaster planning and management. They noted that Mali and Mozambique have collected data related to natural disasters using DesInventar (www.desinventar.org) an open-source, free disaster information system. Extending the use of this system to the whole of West Africa would improve regional coordination while providing a valuable database for planning and forecasting. The group also noted that the Red Cross has a successful help-desk designed to improve user understanding of forecasts, and suggested that this desk could be used as a model for improving information dissemination. Participants also emphasized the need to involve end-users in planning and management by sending delegates to knowledge centers, or by investing in the capacity of users to forecast and take early actions (i.e., training people to plant trees in mountainous areas to minimize flood risks).

Environment

Participants working in the environment group described information dissemination and the improvement of meteorological services as sectoral priorities. Understaffing in meteorological bureaus has led to gaps in observation networks, insufficient spatial coverage of regions, and delays in information analysis. Inefficient extension services and knowledge dissemination systems that don't account for users' needs have also been problematic. In order to address these barriers, the group proposed finding funding sources for technical improvements in meteorological services, including the PRESAO (Programme de Renforcement et de Recherche sur la Sécurité Alimentaire or West Africa Food Security Capacity Strengthening and Research Program).

Coastal Zones

The coastal zone group identified research as the most pressing sectoral priority. The sector lacks data on climatic elements (such as wind speed), and insufficient research has been done on currents, tides, temperature, rainfall and wind. Information on sea level rise, salt water intrusion, the exploitation of coastal resources (such as mangroves and fisheries), and algae blooms would also be useful. Participants were also concerned that existing research is not relevant to the most pressing problems identified by inhabitants and resource users in coastal regions, and noted that improved communication between resource users and researchers could reduce this problem. The most important factor in coastal management is education: participants noted that educating local communities about coastal protection, and demonstrating the relevance of climate data to this effort, has proven highly successful. Collaboration between meteorological departments, port authorities, communities, and other stakeholders needs to be improved to decrease the risk of duplicating efforts and to better coordinate interventions.

Water

The most difficult barrier facing the water sector is the gap between academic and applied use: there is a pressing need to develop user-friendly interfaces for water data. Participants in the water sector also noted that partnerships between scientists, experts, and users should be a key priority for development. Such partnerships would enable scientists to translate research into usable information, while allowing users to give feedback on the accuracy of predictions and advice provided by experts. To achieve this, material needs to be readily available through SMS, radio, and online; in addition, training on the use of climate tools and products is necessary for both communities and decision-makers. Finally, existing hydrological data should be used to develop seasonal water flow predictions, and to improve irrigation systems.

Meteorology

One of the main priorities in West African meteorology is adapting models and climate services to users' specific needs. This requires improving the availability and accessibility of climate data, and supporting the development of climate databases at national and regional levels. This can be achieved by creating data-sharing policies for observational networks; conducting capacity building and training on data management and processing; and attaching end-users and researchers to climate centers to learn on the job. Attention should also be paid to the quality of equipment at weather monitoring stations: meteorological services should receive adequate funding to conduct research and maintain equipment in good working order.



Priorities and Next Step

Two key themes came out of the sectoral discussions as cross-cutting priorities for the immediate future: collaboration and information dissemination. Collaboration between knowledge producers and users is necessary in order to share resources and lessons learned, improve the quality and utility of research and climate services, and increase the successful transmission of climate information. The importance of following the value chain as a structure for such collaboration was reaffirmed, as it provides a useful framework for developing and assessing plans to tailor climate services.

To improve information dissemination among participants and stakeholders, participants suggested that a central working group should meet regularly to share information and develop products and services that are relevant to user needs. This group should be interdisciplinary, and have an online presence that is accessible by all stakeholders. One of the tasks of this group could be to collate and disseminate the results of climate change workshops in the region, increasing awareness of other initiatives, and reducing duplication of efforts. It is important to focus on translating scientific information into simple terminology in local languages and disseminate that information via a broad range of technologies – including radio and television, SMS, and print media – tailored to different audiences.

Participants also suggested adopting Mali's weather information dissemination system (see annex a as a model of a successful, user-tailored climate service). The project follows the user-tailored model for success: it addresses the needs identified by users (i.e., has timely access to easily comprehensible climate information for farming), produces scientific data and analysis of these needs, and then presents the results in a clear and user-friendly way. Participants suggested trying to extend this project first into Chad, Burkina Faso, and Niger, which already have the necessary capacity to carry out such an initiative. The Adaptation Partnership is conducting a lessons-learned evaluation to of the Mali project to identify the factors in its success so they can be replicated in other countries and sectors.

The Adaptation Partnership is also working with other organizations to identify successful models of developing and delivering information to decision makers. This effort, linked to the Global Framework for Climate Services, will help identify opportunities to deliver climate services for a variety of sectors and locations.

Annex A

Regional Programs

1) WECARD

The West and Central African Council for Agricultural Research and Development (WECARD)'s climate change strategy includes developing an empirical inventory of climate change effects on livelihoods; producing adaptation technologies for sustainable food production; strengthening the capacities of National Agriculture Research Stations to develop and disseminate knowledge; promoting policies and institutions that facilitate the adoption of appropriate technologies; and creating tools to strengthen mitigation capacity. WECARD is currently in the process of generating country reports for West Africa, which will assess agricultural vulnerability to climate change and its implications for national policies and programs. WECARD also intends to establish a framework for periodic discussions, geared towards contributing to continental and international debates on adaptation.

2) AGRHYMET

The West and Central African Council for Agricultural Research and Development (WECARD)'s climate change strategy includes developing an empirical inventory of climate change effects on livelihoods; producing adaptation technologies for sustainable food production; strengthening the capacities of National Agriculture Research Stations to develop and disseminate knowledge; promoting policies and institutions that facilitate the adoption of appropriate technologies; and creating tools to strengthen mitigation capacity. WECARD is currently in the process of generating country reports for West Africa, which will assess agricultural vulnerability to climate change and its implications for national policies and programs. WECARD also intends to establish a framework for periodic discussions, geared towards contributing to continental and international debates on adaptation.

3) ECOWAS

The Economic Community of West African States (ECOWAS) aims to promote economic integration between member states. ECOWAS manages the West African Climate Change Vulnerability Reduction Program, which was designed to improve resilience and adaptive capacity to climate change and extreme weather events. The program funds decision-making tools for adaptation that can be used at national and local levels; technical and scientific capacity building initiatives; Directorates for Early Warning, Disaster Management, Agricultural and Rural Development; and a Center for Water Resources Coordination.

4) ACMAD

The African Center of Meteorological Applications for Development (ACMAD) creates climate and environmental products and services that address socioeconomic needs. These climate data products include the RANET system, which increases access to meteorological information in rural communities using radio, internet, and solar energy. The system is coordinated by Meteorological or Hydrological services at the national level, which disseminate climate products to regional and local centers. Another data product of ACMAD is ClimSoft, a software program that facilitates the management of climate information. The Centre also produces the PRESAO seasonal rainfall forecasts, and has delivered workshops on PRESAO, PRESAC, and CCDARE climate modeling.

ACMAD also contributes support to the following regional projects:

- i. AfriClimServ: This project aims to develop physical climate infrastructure (i.e. observation sites); improve access to climate observation networks; operationalize climate information systems and improve information dissemination; conduct climate impact assessments; and provide technical and professional training.
- ii. AEWACS: The African Early Warning and Advisory Climate Services (AEWACS) project aims to improve access to climate information throughout Africa. AEWACS is conducting pilot demonstrations on the following themes: food security, water resources and river flow, health, coastal zones, and life and property protection.
- iii. WMO's Regional Climate Center (RCC): The Center provides operational data services and activities in support of climate monitoring; long-range forecasting; and training in the use of RCC products and services.

Climate Services Programs

1) NASA/GISS - AgMIP

The Agricultural Model Intercomparison and Improvement Project (AgMIP) provides a framework for the development of highly distributed, transdisciplinary climate scenario simulations. AgMIP produces gridded observational climate data, regional climate models, and climate scenarios for agricultural simulations. It aims to enhance adaptive and scientific capacity in developing and developed agricultural regions; improve crop models to simulate the effects of management changes; develop a framework for assessing regional adaptation strategies; and link to on-going local and international efforts.

2) FEWS NET

Famine Early Warning Systems Network (FEWS NET) is an internet-based early warning system for worldwide transient livelihood shocks. The FEWS NET Data Portal makes available numerous data products, including: geo-spatial data, satellite imagery, and derived data products that are used in FEWS NET monitoring projects. It provides biannual food security outlooks, and issues alerts and warnings when shocks are imminent. FEWS NET intends to expand its mandate to assess food security and adaptive measures on longer timescales.

3) Red Cross - Senegalese River Basin Initiative

The Senegalese River Basin Initiative conducts regional training on vulnerability and capacity assessment, and has reached 220 communities in five years. The program has collected data on the river valley hydrological system, the status of natural resources in the Guinean part of the basin, cartography, and bush fires. Program activities are concentrated on five themes: Food security/nutrition/livelihoods; Water/Sanitation; Health; Disaster Management; and Organizational Development.

4) SERVIR

SERVIR is a joint USAID-NASA project that enables decision-makers to use NASA's remotely sensed observations, ground data, and forecast models to monitor environmental change and improve disaster responsiveness. Users can request that SERVIR search for specific data using the EO-1 satellite; the project also shares satellite data, including flood mapping; forecasting; Rift Valley fever mapping; and coral reef mapping. In its target regions (Mesoamerica, East Africa, and the Himalayas), SERVIR generates real-time hydrological models; conducts fire monitoring; and develops and delivers training programs for scientists, educators, project managers and policy implementers. Its aim is to improve science-based decision-making in the sectors of climate change, health, agriculture, environment, water and weather.

5) IIPACC

The Innovative Insurance Products for Adaptation to Climate Change (IIPACC) program provides economically sustainable weather index insurance in Ghana. This form of insurance uses weather and crop information, rather than individual site visits, to determine payouts. The Ghanaian meteorological agency collects and processes climate data for insurance purposes, which is then made available to the National Insurance Commission for development of insurance products. Investment in meteorological infrastructure, data collection, and analysis are necessary to further develop these insurance schemes.

Practical, User-driven Models of Climate Services

1) Red Cross/Crescent Climate Center

The Climate Center is a reference center that provides support to countries seeking to integrate climate information into disaster management and decision-making. This is made possible through the Climate Center's partnership with the International Research Institution for Climate and Society, which provides assistance in obtaining and interpreting climate data (atmospheric, oceanic, hydrological, topographical). The Center has identified shorter-term and more localized forecasting as a key climate data need. The Center was responsible for the Preparedness for Climate Change Program, which recently ended. This program built capacity to manage climate risks, and to assess and address the consequences of climate change. It also participates in the Partners for Resilience alliance (with other international NGOs) to improve community resilience to disasters.

2) UNISDR - Climate Risk Management Program

The Climate Risk Management program works with hydro-meteorological organizations to strengthen cooperation between climatologists and disaster managers, and provide climate data for disaster early warning systems, contingency planning, and advocacy for disaster mitigation. The UNISDR uses climate, hydrological, and historical data from ACMAD to develop and disseminate seasonal forecasts for planning. These forecasts are supplemented by forecast updates and warnings on a monthly basis, and by short-term early warnings. There is a need for more data on rain distribution within rain cycles, as this relates to crop maturation and grain drying.

3) CGIAR (Consultative Group on International Agricultural Research)

The Climate Change, Agriculture, and Food Security (CCAFS) research program of the CGIAR aims to decrease the vulnerability of rural communities to climate change. It assesses and tests pro-poor adaptation and mitigation practices, while also developing technologies and policies for food systems and rural livelihoods. CCAFS is currently focused on three regions: East Africa, West Africa, and the Indo-Gangetic Plain.

The program uses and makes available a range of climate data, including downscaled climate grids that collect monthly data for use in crop or agricultural modeling, disease burden studies, biodiversity and forest monitoring, and/or flood management. They also maintain a database, AgTrials, of different agricultural technologies used in the developing world, and generate daily simulations of rainfall, solar radiation, and temperature data using MARKSIM.

4) Climate Information in Agriculture: Kaffrine, Senegal

The national weather service of Senegal, working with CCAFS in the Kaffrine region of Senegal, has sought to address the fact that few farmers have benefited from the information contained in the AGRHYMET's PRESAO forecasts on seasonal rainfall. The program involved the reworking of this data into a more user-friendly format, through consultations with farmers and user training.

5) Radio Broadcasts in Rainy Season: Mali

The National Directorate of Meteorology in Mali manages a participatory weather service program for rural populations in support of agricultural planning. Seasonal and monthly forecasts are received from ACMAD and AGRHYMET, and then discussed in an inter-departmental committee of officials from various government ministries, including agriculture, meteorological environment, and transport, and interpreted in a form easily understandable by farmers. Their outputs are then published and distributed in regular information bulletins. These are translated into local languages and written simply for maximum clarity. A sample bulletin could include advice about when to plant, based on the crop being planted, the date and the amounts of rainfall (farmers have access to inexpensive rainfall gauges through the program). These bulletins are transmitted by radio, mail, and traveling lectures in local languages. Questions are also answered during frequent meetings, and extension workers and farmers can transmit questions and concerns about climate to researchers at the national level. The project has set up a demonstration plot for experiential learning.