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Editing

The proceedings of the ECOWAS Hydromet Forum and DRR Platform 2018 were compiled and edited by Adama Bamba, Zirra Banu, David Cheney, Carl Dingel, Alima Djuma, Gerald Fukuor, Malam Soumaila Ibrahim, Malan Ketcha Armand Kablan, Kouakou Valentin Koffi, Kouakou Kouadio, Bossombra Kouame, Thembi Kumapley, Jean Baptiste Migraine, Toure N'Datchoh, Salomon Mawenami Obahoundje, Prashant Singh, and Josephine Wilson.

Foreword

During the last three decades, over 75 percent of West Africa’s population live in areas affected at least once in every two years by flood, dust/sandstorm, and drought. With ongoing trends of climate change and variability, hydrometeorological disasters are likely to occur frequently and more severely. Furthermore, most of the countries in the region have limited resources and capacity to invest in climate- and disaster-related services and with minimal fiscal space to fund relief and recovery efforts after a major disaster event.

Many West African countries do not yet have enough meteorological and hydrological capacity to collect, process, and disseminate climate information and early warning to vulnerable communities. This situation necessitates the clarion call for the modernization and improvement of hydrological and meteorological services in the respective member states. These challenges are further compounded by the absence of adequate and reliable real-time disaster- and climate-related data and information for risk-informed planning and decision making. To effectively address the challenges, there is the need to significantly improve and modernize meteorological, hydrological, and climate services to inform adaptation planning to help strengthen climate change and disaster resilience of communities and economies in the region.

In recent years, ECOWAS has played a pivotal role in mainstreaming regional initiatives on disaster risk reduction through various policies, strategies, and action plans, notable among which include: the ECOWAS: DRR Policy and Plan of Action 2015 – 2030, Environmental Policy, Agricultural Policy, Water Resources Policy, and Early Warning Strategy. In addition, ECOWAS adopted in 2017, the ECOWAS Meteorology Program to address the hydrometeorological capacity gaps in the subregion leading to substantial improvement in the timely and accurate delivery of climate-related services to end-users.

These policies, strategies, and action plans are aligned to the Africa Agenda 2063, the Sustainable Development Goals, and the Africa Program of Action for the Implementation of the Sendai Global Framework for DRR, the Global and National Frameworks for Climate Services, and the Paris Climate Change Agreement.

In consolidating its efforts at improving and modernizing hydrometeorological and DRR services during the past years, ECOWAS, with technical support from the World Bank and other key partners, convened the West Africa Hydromet Forum and DRR Subregional Platform from September 19 – 21, 2018, as part of the project dedicated to “Strengthening the Capacities of African Regional Economic Communities and the member states in Coordination, Planning and Policy Advisory Capacity for Disaster Risk Reduction” funded by the ACP-EU.

The forum witnessed key presentations and best practices from the private sector, academia, civil society, media, and other non-state stakeholders and river basin organizations. The outcomes of these engagements, in terms of shared vision and values, necessitates the full engagement of all relevant actors from diverse fields of expertise and backgrounds, and their full and active involvement toward the improvement and modernization of hydrometeorological and DRR services in West Africa.

The forum is a good initiative that will create a platform to strengthen and support the meteorological, hydrological, and disaster management services to contribute to the initiatives and programs in the region to improve adaptation to climate change and build the resilience of key economic and social sectors to enhance



sustainable development and poverty reduction gains in West Africa. Thanks to all the partners and participants who contributed to the success of the forum.

ECOWAS reaffirms its collective commitment to support the delivery of climate services to the end-users of the different sectors in West Africa, taking into full account, national development imperatives and priorities.

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Abbreviations and Acronyms

ACMAD: African Center for Meteorological Applications for Development

ACP-EU: The African Caribbean and Pacific group of nations-European Union

AFD: Agence Française de Développement

AfDB: African Development Bank

AGRHYMET: AGRrometeorology, HYdrology, METeorology Center of CILSS

AMCOW: African Ministerial Council for Water

AMCOMET: African Ministerial Conference on Meteorology

ASECNA: Agence pour la sécurité de la navigation aérienne en Afrique et à Madagascar

ARC: African Risk Capacity

AU: African Union

AWOS: Automated Weather Observing System

CILSS: Permanent Interstate Committee for Drought Control in Sahel

CoP: Community of practice

CREWS: Climate Risk & Early Warning Systems Initiative

DRF: Disasters Recovering Framework

DRM: Disaster Risk Management

DRR: Disaster Risk Reduction

DWD: German meteorological service (Deutscher Wetterdienst)

ECOWAS: Economic Community of West African States

EU: European Union

EUMETSAT: European Organisation for the Exploitation of Meteorological Satellites

FANFAR: Reinforced cooperation to provide operational flood forecasting and alerts in West Africa

FEWS: Flood early warning system

GEF: Global Environment Facility

GFCS: Global Framework for Climate Services

GFDRR: Global Facility for Disaster Reduction and Recovery

GIS: Geographic Information System

GWE: Global Weather Enterprise

HRC: Human Rights Campaign

IFRC: International Federation of Red Cross and Red Crescent Societies

IRD: Institut de Recherche pour le Développement

IRI: International Research Institute for Climate and Society

KNMI: The Royal Netherlands Meteorological Institute

LCBC: Lake Chad Basin Commission

LDAS: Land data assimilation system

LDC: Least Developed Countries

NFCS: National Frameworks for Climate Services

NGOs: Nongovernmental organizations

NMHS: National Meteorological and Hydrological Services

NWP: Numerical weather prediction

OMM/WMO: World Meteorological Organization



OMVS: Organisation pour la mise en valeur du fleuve Sénégal

OTT: Over-the-top

PADRE: Platform for Assessment Disaster Risk and Environment

PDNA: Post Disaster Needs Assessment

PPCR: Pilot Programme for Climate Resistance

PRESASS: PRÉvisions Saisonnières en Afrique de l'Ouest

POA: Plan of Action

PPPs: Public-private partnerships

RCCs: Regional Climate Centers

REC: Regional Economic Communities

ROPPA: Network of Farmers Organizations and Agricultural Producers of West Africa

SFM: Sustainable Forest Management

SODEXAM: Société D'exploitation de Développement Aéroportuaire Aéronautique Météo

SWFDP: Severe Weather Forecasting Demonstration Project

TAHMO: Trans African Hydro Meteorological Observatory

TAMSAT: Tropical Application of Meteorology Using Satellite Data and Ground-Based Observations

UFHB: University Felix Houphouet Boigny

UNDP: United Nations Development Programme

UNISDR: United Nations International Strategy for Disaster Reduction

UNITAR: United Nations Institute for Training and Research

WACE: West African Climate Extremes Database

WA-SWFDP: Severe Weather Forecasting Demonstration Project

WA-FFGS: West Africa Flash Flood Guidance System

WASCAL: West African Science Service Center on Climate Change and Adapted Land Use

WB: World Bank

WFP: World Food Programme

WHYCOS: World Hydrological Cycle Observing System

WMO: World Meteorological Organization

WMO hydrohub: Global Hydrometry Support Facility of WMO

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Executive Summary

The **ECOWAS Hydromet Forum and Disaster Risk Reduction (DRR) Platform** gathered some 225 participants—representatives from West African governments, academic institutions, regional, and river basin organizations, as well as global institutions such as UN agencies, development banks and bilateral partners, technical institutions, civil society, academia, the private sector, and user groups—during 19–21 September 2018 in Abidjan, Côte d’Ivoire. The purpose was to deliberate and set priorities on how weather, water, climate information, and disaster risk management strategies and services can be strengthened and their service delivery improved to achieve sustainable development and reduce disaster and climate risk in the region.

The forum was convened and organized under the leadership of the Economic Community of West African States (ECOWAS) in partnership with the Republic of Côte d’Ivoire and the World Bank and with support and technical contributions from AMCOMET,¹ WMO,² CREWS,³ EUMETSAT,⁴ UNISDR,⁵ CILSS,⁶ WASCAL,⁷ GFDRR,⁸ African Development Bank, and French Development Agency. The forum was organized in close coordination with the AMCOMET Bureau and technical meetings, the EUMETSAT user forum, and the ECOWAS sub-regional platform for disaster risk reduction. The ECOWAS Hydromet Forum and DRR Platform was

supported by the ACP-EU⁹ Program for Strengthening Disaster Resilience in Sub-Saharan Africa.

The objectives of the ECOWAS Hydromet Forum and DRR Platform were to:

1. underscore regional leadership for strengthening weather, water, and climate services in their global public good function for climate risk management, climate adaptation, and disaster risk management;
2. serve as a platform for exchanging knowledge, information, and ideas—and assessing progress in modernizing the hydromet services in the region;
3. become a listening post for development partners on the needs of sectors and user groups to customize programs and investments and discuss concrete regional and national initiatives and programs to support these needs;
4. convene a platform for governments, regional organizations, donors, the private sector, civil society, academia, technical communities, and youth and gender groups to discuss and design the future course of hydromet service modernization and strengthening disaster risk management in West Africa; and
5. connect academia and global and regional initiatives in support of weather, water, and climate.

Program

The ECOWAS Hydromet Forum and DRR Platform brought together representatives from ministries and government entities responsible for meteorology, hydrology, disaster risk management and finance, academia, civil society (including youth and gender groups), and the private sector. It

¹African Ministerial Conference on Meteorology

²World Meteorological Organization

³Climate Risk and Early Warning Systems

⁴European Organization for the Exploitation of Meteorological Satellites

⁵United Nations International Strategy for Disaster Reduction

⁶Permanent Interstate Committee for Drought Control in Sahel

⁷West African Science Service Center on Climate Change and Adapted Land Use

⁸Global Facility for Disaster Reduction and Recovery

⁹African Caribbean and Pacific group of nations and the European Union



was cohosted by the Minister of Transport of Côte d'Ivoire and the ECOWAS Commissioners for Social Affairs and Gender, as well as by the ECOWAS Commissioner for Agriculture, Environment and Water Resources and the heads of the European Union (EU) delegation and the World Bank office in Côte d'Ivoire.

The forum began with a plenary, in which participants discussed the status and challenges of hydromet and disaster risk management in the region. Participants discussed ways to strengthen collaboration among regional institutions and how to finance hydromet and early warning services.

The second day consisted of a series of technical discussions and knowledge-sharing and learning events on such issues as early warnings for floods in the region; meteorological applications to food security; global frameworks for climate services; sharing best practices for community-driven campaigns, for gender and youth-inclusive weather, water, and disaster risk management services. Other topics included linking the academic network to weather, water, and early warning practice; disaster risk finance and recovery planning; and several project-specific and project-related sessions.

On the third day, the AMCOMET Bureau meeting and the forum/platform plenary ran simultaneously and synergistically, focusing on possible solutions, innovations, and private sector engagement. The high-level discussions were conducted jointly with a session on closer collaboration among institutions in the region, notably ECOWAS and CILSS/AGRHYMET, which is on its way to becoming the regional climate center for West Africa and the Sahel.

At the high-level closing plenary, organized jointly with AMCOMET, the conference communiqué was presented and adopted, and the Secretary General of WMO offered closing remarks.

Key Findings and Messages

The main messages of the ECOWAS Hydromet Forum and Regional DRR Platform (“forum”) were presented at the summary plenary in the Communiqué.

1. Weather, water, and climate, and early warning services are critical for sectors that drive the region’s economies and directly support:
 - climate-smart agriculture and food security;
 - water resources for irrigation, hydropower, renewable energy, and water supply;
 - better planning for health services;
 - better access to safe air, marine, and road transport;
 - reducing the socioeconomic impacts of floods, drought, and other natural hazards; and
 - strengthening effective decision making on weather, water, and climate risks.
2. The combined efforts of national governments and regional institutions—including ECOWAS, CILSS, and river basin organizations, as well as technical and financial partners—are required to strengthen and modernize these services and overcome critical capacity gaps. Forum participants discussed in various technical sessions how projects and initiatives such as CREWS West Africa, FANFAR (reinforced cooperation to provide operational flood forecasting and alerts in West Africa), Strengthening DRR Policy, Planning and Coordination Capacity of ECOWAS, and ECOWAS Hydromet Initiative, as well as the Africa Hydromet Program can help fill the gap and benefit from synergies among different initiatives to contribute to effective early warning.
3. Forum members acknowledged regional achievements of recent years. Specifically, ECOWAS has played a stronger role in integrating regional initiatives on disaster risk reduction through its: DRR policy and DRR Plan of Action 2015–2030, its Environmental Policy, Agricultural Policy, Water Resources Policy, Early Warning Strategy, and Hydromet Program. It has also, building on the Africa Agenda 2063, integrated the Sustainable Development Goals, Africa Program of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction, and Paris Agreement commitments.
4. Forum participants noted that ECOWAS should play a leading role in developing a policy framework for weather, water, climate, and disaster



risk management services, and ensure closer coordination—as well as horizontal and vertical integration of policies and institutions in the region. This would include the establishment of CILSS/AGRHYMET as a regional climate center for West Africa and the Sahel.

5. The forum acknowledged the continued need for adequate investments in modernizing and integrating hydromet systems. Programs and partnership initiatives, such as the Africa Hydromet Program (a partnership of the World Bank, WMO, AfDB, and other organizations) was highlighted. The idea of establishing an adequate ECOWAS hydromet initiative was acknowledged.
6. Forum members recognized that private sector, academic, civil society, media, and other non-state stakeholders have a key role in strengthening regional and national hydromet, early warning, and disaster risk management services. The forum provided a platform for discussing best practices for community-based, gender and youth, inclusive weather, water, climate, and disaster risk management services in West Africa and acknowledged the joint statement of the civil society organizations. A number of private sector initiatives supporting hydromet and early warning services were presented, including Rain Cell, a joint initiative of Orange Mali, Institute of Research for Development (IRD), and the national meteorological service of Mali.
7. Participants appreciated the strong presence of the research and academic network and partners from across West Africa (including the WASCAL network) and called for a stronger science-policy interface and coordination to make the applied research as relevant as possible for ECOWAS and Member States. The forum called for professionalizing capacity-building efforts on DRR and promoting the exchange of information among researchers in the region.
8. Participants called for technical support to develop adequate risk financing strategies and a strategy for recovery planning and support for monitoring the global Sendai Framework for DRR in the region.

Communiqué

Abidjan, Côte d'Ivoire
21 September 2018

We, representatives of ECOWAS Member State institutions, Members of the Bureau of AMCOMET and other stakeholders in building disaster and climate resilience; representing the Meteorology, Hydrology and Disaster Risk Management practices in West Africa, delegates at the ECOWAS Hydromet Forum and DRR Subregional Platform, convened from 19 to 21 September 2018 in Abidjan by ECOWAS and the Government of Côte d'Ivoire with the support of development partners.

Appreciate the hospitality and warm welcome accorded to the conference delegates by the government and the people of the Republic of Côte d'Ivoire and commend them for their commitment to disaster risk reduction.

Recognize that 70 percent of disasters in the ECOWAS region are caused by severe weather and climate events; that hydromet (weather, water, and climate) services are transboundary and multidisciplinary; that there is increasing demand for customized weather, water, and climate services to build resilience in communities and economies and provide effective early warning for the ECOWAS region.

Are convinced that modernizing every aspect of the entire value chain of hydromet systems and services with advanced numerical weather prediction techniques will bring innovation to the ECOWAS region to better respond to end-user needs; **further noting** that targeted capacity building for national meteorological and hydrological services through an end-user-oriented approach focused on service delivery and the last-mile connectivity is central to the provision of weather, water, and climate services for sustainable development and climate resilience.

Consider the comparative advantages, mandates, and capacities of different stakeholders, who collectively aim to enhance the production, delivery, and use of weather, water, climate, and early warning services to reduce extreme poverty and build shared prosperity by promoting socioeconomically sustainable development to cope with the impacts of climate change in the ECOWAS region.

Acknowledge the continued need for adequate investment in modernizing and integrating hydromet systems, programs, and partnership initiatives—such as the Africa Hydromet Program, a joint partnership of the World Bank, WMO, AfDB and other organizations—and the current achievements in the ECOWAS region on effective climate outlooks and early warnings, notably the Harmonized Framework for Food Security, PRESASS, collaboration on weather, water, and early warning, informed by various national and regional policies.

Recognize that the private sector, academia, civil society, media, and other non-state stakeholders have a key role in strengthening regional and national hydromet, early warning, and disaster risk management services.

Note the importance of hydromet and disaster risk management services for meeting the objectives of the ECOWAS DRR Strategy and ECOWAS DRR Plan of Action 2015–2030, ECOWAS Water Resources Policy, ECOWAS Environmental Policy, ECOWAS Agriculture Policy, ECOWAS Early Warning Strategy; the ECOWAS Hydromet Program and building on the Africa Agenda 2063, the Sustainable Development Goals, Africa

Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction, and the Paris Agreement commitments.

Having considered the extensive discussions and recommendations of international, regional, and national stakeholders and experts who participated in the forum, **we:**

- **Urge** Development Partners, including the World Bank, the African Development Bank, European Union, and UN Organizations, among others, to scale up support for modernizing hydromet and disaster risk management services, according to the needs and priorities expressed by ECOWAS, CILSS, river basin organizations, and national governments in West Africa;
- **Call for** further support from the respective governments to ensure that national meteorological and hydrological and disaster risk management services (NMHSs) have the necessary political and financial enabling environment to adequately perform their mandate, which underpins sustainable and resilient development of all sectors of the economy and all segments of society, particularly the vulnerable and the poor;
- **Request** relevant regional partners to work closely toward the convergence of meteorological, hydrological, and early warning systems and services; **further request** robust cooperation from other regional organizations working in the field to maximize synergy, economies of scale, and efficiency for the benefit of West African communities and populations;
- **Call for** a stronger horizontal and vertical integration of policies, strategies, and programs in support of weather, water, climate, and disaster risk management at the national, ECOWAS regional, and Africa continental levels. Also call for stronger collaboration among institutions and the promotion of partnerships, particularly among ECOWAS, CILSS, and river basin organizations, and for establishing CILSS/AGRHYMET as the Regional Climate Center for the ECOWAS and other communities in West Africa and the Sahel;
- **Urge the promotion of** a conducive environment for building and exchanging academic and research expertise, as well as continued professional education on weather, water, climate, and disaster risk reduction in ECOWAS Member States;
- **Will promote robust** and meaningful gender mainstreaming and the inclusion of youth, community-based organizations in the design and implementation of integrated approaches for weather, water, climate, and disaster risk management services that support sustainable development;
- **Reaffirm our support** to promote national and regional ownership for strengthening national meteorological, hydrological, and disaster risk management services; **further commit** to ensuring that the modernization of hydromet services is included among the priorities in National Development Plans and to work with our respective governments and organizations to ensure sustained resourcing of this priority;
- **Request** the Commissioners of ECOWAS present at the forum to bring this Communiqué to the attention of the President of the ECOWAS Commission and the President of the ECOWAS Parliament for endorsement and action;
- **Request** the African Union Commissioner for Rural Economy and Agriculture and the Chair of the AMCOMET Bureau to bring this Communiqué to the attention of the Fourth Session of AMCOMET and the AU Heads of State and Government for endorsement and action; and
- **Unanimously adopt** this Communiqué to show collective commitment to supporting the development of sustainable and reliable weather, water, and climate services and their delivery to end-users in West Africa; fully considering national development priorities, regional and global meteorological strategies, and other relevant frameworks.

Abidjan, Côte d'Ivoire, 21 September 2018

Introduction

West Africa has frequently been affected by floods, dust storms, and sandstorms as well as drought, affecting livelihoods and economies and jeopardizing recent development gains. With climate change, hydrometeorological disasters have the potential to occur more frequently and severely. Moreover, rising temperatures may affect water availability and energy production in the region. Many of the disasters affecting West Africa have regional impacts—for example, across the riparian countries in the Niger basin, along the major cities of the Gulf of Guinea—or are related to food security and drought in the Sahel belt. In recent years, the Economic Community of West African States (ECOWAS)¹⁰ together with other regional and continental organizations—including the African Union and Permanent Interstate Committee for the Fight against Desertification in the Sahel (CILSS)¹¹—have worked toward finding regional answers, policies, and support across West Africa to better manage weather and climate risks in the region.

The 15 member states of ECOWAS, with more than 300 million inhabitants, have National Meteorological and Hydrological Services (NMHS) and Disaster Risk Management and Civil Protection Services with a limited capacity to provide adequate services that contribute to climate-resilient development, effective early warning, and adaptation planning. This underscores the urgent need to strengthen weather, water, climate, and disaster management services in West Africa to guide and support adaptation

planning and climate and disaster resilience of communities and economies of the region.

The weather, water, and climate services provided by NMHSs, which include early warnings, alerts, and advisories for climate change adaptation, are critical for sectors that drive the region's economies supporting: agriculture and food security; water resources planning for irrigation, hydropower, renewable energy, and water supply; better planning for health services; improving access to safe air, marine, and road transport; and reducing the socio-economic impacts of floods, drought, and other natural hazards through effective risk mapping, and facilitating climate risk financing and insurance solutions.

In recent years, ECOWAS has played a stronger role in integrating regional initiatives on disaster risk reduction through the ECOWAS DRR policy and the ECOWAS DRR Plan of Action 2015–2030. In addition, the ECOWAS Meteorology Program, the decades of progress on strengthening agrometeorology and food security monitoring through CILSS, river basin observatories of the major river basin organizations of West Africa (OMVS, Volta Basin Authority [VBA], Niger Basin Authority [NBA], LCBC), the West Africa Science Service Center on Climate Change and Adapted Land Use (WASCAL), and the support to regional climate centers provided by AfDB and WMO have contributed to different initiatives aimed at strengthening hydromet, early warning, and disaster risk management services in the region.

Continental efforts and initiatives have also created the momentum to effectively support the modernization and capacity building of these services in Africa, including the African Ministerial Conference on Meteorology (AMCOMET), the African Ministerial

¹⁰ECOWAS members are Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo

¹¹Comite permanent Interétatique de Lutte contre la Sècheresse dans le Sahel



Council for Water (AMCOW), the Global Framework for Climate Services (GFCS) of the World Meteorological Organization (WMO), the African Center for Meteorological Applications for Development (ACMAD), and the African Development Bank's support for climate services in Africa.

The World Meteorological Organization (WMO), the African Development Bank (AfDB), and the World Bank Group launched a collaborative framework program to support the modernization of the African hydromet services at the national, subregional, and regional levels, the Africa Hydromet Program, in partnership with other institutions such as AFD (French Development Agency), World Food Programme (WFP), and the United Nations Development Programme (UNDP), and with the support of the government of Japan, the European Union, the multilateral Climate Risk Early Warning System (CREWS) initiative, and the Global Facility for Disaster Reduction and Recovery (GFDRR).

In 2017, the AMCOMET Africa Hydromet Forum in Addis Ababa, Ethiopia, gathered about 500 delegates (including African leaders from governments, public and private sectors, civil society, and development partners) who agreed that improved weather, water, and climate services—known collectively as hydromet—can ease disaster-related losses and boost their economies. During the forum, NGOs representing civil society users urged the WMO, the GFCS, Regional Climate Centers (RCCs), NMHSs, and other hydrometeorological stakeholders to produce climate end-users driven services, primarily those at the community level and largely engaged in climate vulnerable livelihoods, such as small-scale agriculture or pastoralism.

The ECOWAS Hydromet Forum and DRR Platform will build on this momentum and host a regional forum to connect different initiatives in the region and create a platform for strengthening and sustaining subregional and national hydromet, early warning initiatives, and disaster risk management (DRM) services to connect with regional programs, global technical expertise, and financing partners.

The ECOWAS Hydromet Forum and DRR Platform was held in close collaboration with the meeting of the AMCOMET Bureau in Abidjan, Côte d'Ivoire.

1.1 Objectives

The objectives of the ECOWAS Hydromet Forum and DRR Platform were to:

- Underscore regional leadership for strengthening weather, water, and climate services in their global public good function for climate risk management, climate adaptation, and disaster risk management.
- Serve as a platform for the exchange of knowledge, information, and ideas—and stocktaking of progress in modernizing the hydromet services of the region.
- Become a listening post for development partners on the needs of sectors and user groups to customize programs and investments and discuss concrete regional and national initiatives and programs to support these needs.
- Convene a platform for governments, regional organizations, donors, the private sector, civil society, academia, technical communities, and youth and gender groups to discuss and design the future course of hydromet service modernization and strengthen disaster risk management in West Africa.
- Connect academic, global, and regional initiatives in support of weather, water, and climate services.
- Highlight private sector initiatives in support of hydrometeorology, early warning and disaster risk management services, share good practices of private sector support, and connect potential business partners to ongoing initiatives.

Outcomes

- A forum created for climate service providers and users to identify potential solutions and mechanisms to build and strengthen networks by exchanging knowledge, sharing information and ideas on modernization, strengthening and



sustaining hydromet services and service delivery in West Africa.

- A platform created for governments, regional organizations, donors, the private sector, civil society, academia, technical communities, and youth and gender groups to discuss and design the future course of hydromet service modernization and disaster risk management.
- Opportunity created for development partners to understand the needs of various sectors and user groups to customize programs and investments in climate services and disaster risk management.
- Consensus and awareness built among stakeholders about the benefits of investments in weather, water, and climate services, and early warning systems and early response.

- Good practices illustrated by private sector initiatives supporting hydromet and early warning services.

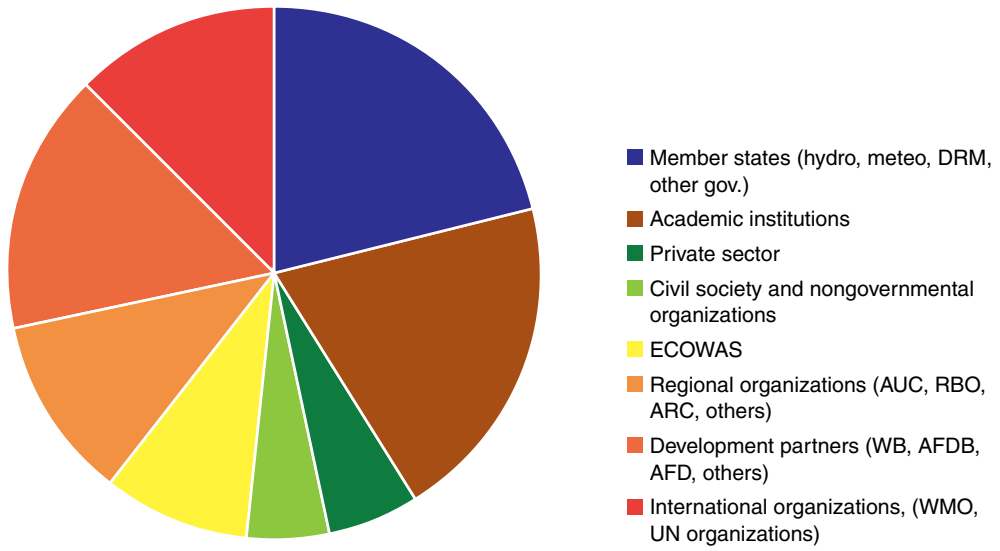
1.2 Participants

The ECOWAS Hydromet Forum and DRR Platform attracted participants with diverse backgrounds. It included experts from member states representing the national services responsible for hydrology, meteorology, DRM, and other government agencies, regional academic institutions, the private sector, civil society, the ECOWAS Commission, regional organizations, development partners, and international organizations (see table and figure below).

| <i>Background of Participants</i> | <i>Number of Participants</i> |
|---|-------------------------------|
| Member states (hydrology, meteorology, DRM, other government) | 48 |
| Academic institutions | 45 |
| Private sector | 13 |
| Civil society and nongovernmental organizations | 11 |
| ECOWAS Commission | 20 |
| Regional organizations (AUC, RBO, CILSS, ARC, others) | 25 |
| Development partners (WB, AfDB, AFD, others) | 36 |
| International organizations (WMO and other UN organizations) | 28 |
| Total | 226 |
| Total Male/Female | 188/38 |



Background of Participants



CHAPTER 2

Forum Agenda

| Day 1 – Wednesday, 19 September 2018 Hotel Azalai, Abidjan – Salle Tamarin | |
|---|--|
| 8:30 – 9:00 | Registration |
| 9:00 – 10:30 | <p>Opening and Welcome Remarks</p> <p>Welcoming remarks by representatives from ECOWAS, WMO, CILSS, EU Delegation, World Bank, AfDB, UN, and opening address by government of Côte d’Ivoire.</p> <p>Moderator: ECOWAS</p> |
| 10:30 – 11:15 | Coffee Break & Group Photo |
| 11:15 – 12:45 | <p>Plenary session: Status of weather, water, and disaster management services in West Africa</p> <p>Keynote speech: <i>Current status of meteorological, hydrological, climate, early warning, and disaster risk management services and key limiting factors for regional integration and sustainable development in West Africa</i>, by Hon. Commissioner Agriculture, Environment and Water Resources (ECOWAS), followed by technical presentation.</p> <p>Panel discussion: Challenges and opportunities in the ECOWAS region: discussion with technical experts and senior representatives from ECOWAS, WMO, CILSS, ACMAD, and member states.</p> <p>Moderator: WASCAL</p> |
| 12:45 – 14:00 | Lunch Break |
| 14:00 – 15:30 | <p>Plenary session: Toward a closer integration of policies, strategies, and institutions supporting effective early warning in West Africa</p> <p>Keynote speech: <i>Articulating and streamlining strategic planning for national, regional, and global levels to sustainably develop meteorological, hydrological, climate, and early warning capacities.</i></p> <p>Panel discussion: Opportunities and actions needed for closer integration of national and regional policies and institutions in support of effective early warnings with technical experts and senior representatives of CILSS, ECOWAS, Volta Basin Authority, AMCOMET/WMO, and member states.</p> <p>Moderator: African Union Commission</p> |
| 15:30 – 16:00 | Coffee Break |
| 16:00 – 17:30 | <p>Plenary session: Financing weather, climate, water, and early warning services in West Africa</p> <p>Ignite presentations</p> <ul style="list-style-type: none"> • Investing in hydromet service modernization in Côte d’Ivoire (Côte d’Ivoire/AFD) • Africa Hydromet Program (World Bank) • CREWS Initiative (CREWS Secretariat) • Climdev Africa (African Development Bank) <p>Discussion on mobilizing finance for an effective and sustainable modernization of hydromet, disaster management, and early warning services with representatives from AfD, World Bank, WMO, African Development Bank, ECOWAS, CREWS Secretariat, and member states.</p> <p>Moderator: African Development Bank</p> |



| Day 2 – Thursday, 20 September 2018 Hotel Azalai, Abidjan | | | |
|--|--|---|--|
| Rooms | Salle Tamarin–left | Salle Tamarin–right | Salle Caramel |
| 9:00 – 10:30 | <p>Community of practice Developing a “climate risk early warning” community of practice in West Africa</p> <p>Presentations and discussions WMO, World Bank, Meteo France, IRD, WASCAL, CILSS, and member states</p> <p>Moderator: WASCAL</p> | <p>Knowledge and learning Global Framework for Climate Services</p> <p>Presentations WMO/GFCS Senegal Côte d’Ivoire AGRHYMET</p> <p>Panel discussion Representatives from member states and civil society organizations</p> <p>Moderator: GFCS</p> | <p>DRR platform Exchange of country best practices and lessons learned on national DRR program platforms</p> <p>Presentations Status of policies and capacity of disaster risk management in West Africa (ECOWAS)</p> <p>Panel discussion Representative from member states and UNISDR</p> <p>Moderator: ECOWAS</p> |
| 10:30 – 11:15 | Coffee Break | | |
| 11:15 – 12:45 | <p>Policy dialogue Challenges and opportunities for improving hydrological services</p> <p>Panel discussion Representatives from WMO, NBA, ECOWAS, IRD, and member states</p> <p>Moderator: WMO</p> | <p>Project session Towards establishing a West Africa-wide flood forecasting framework</p> <p>Presentations Marco Hartman (WASCAL/HKV)</p> <p>Panel discussion with project partners, technical experts, and member state delegates</p> <p>Moderator: WASCAL</p> | <p>DRR platform Experience on risk financing—Opportunities for West Africa</p> <p>Panel discussion African Risk Capacity (ARC), AGRHYMET, World Bank, and member state representatives</p> <p>Moderator: ECOWAS</p> |
| 12:45 – 14:00 | Lunch | | |



| Day 2 – Thursday, 20 September 2018 (in parallel with AMCOMET) Hotel Azalai, Abidjan | | | |
|---|--|--|---|
| Rooms | Salle Tamarin – left | Salle Tamarin – right | Salle Caramel |
| 14:00 – 15:30 | <p>Project session West Africa CREWS Project</p> <p>Discussion with project partners (WMO, ACMAD, AGRHYMET, HRC, KNMI, Meteo France, DWD, AEMET, IRI, UK Reading) and beneficiary countries</p> <p>Moderator: WMO</p> | <p>Knowledge and learning Sharing best practices for community-driven, gender-and-youth-inclusive weather, climate, water, and DRR services</p> <p>Presentations Youth, female, and community representatives from Cabo Verde, Burkina Faso, Guinea Bissau, and Côte d’Ivoire</p> <p>Moderator: ECOWAS</p> | <p>DRR platform Sendai Framework – Monitoring and implementation</p> <p>Presentations Member states, UNISDR, African Union Commission, and ECOWAS</p> <p>Moderator: ECOWAS</p> |
| 15:30 – 16:00 | Coffee break | | |
| 16:00 – 17:30 | <p>Community of practice Mapping and strengthening the academic, research, and training networks for hydromet services and DRR</p> <p>Presentations Hari Prasad (UNITAR) Prof. Ahmed Balogun (FUTA)</p> <p>Panel discussion Experts from WMO, WASCAL, UNITAR, EUMETSAT, FUTA, AGRHYMET, IRD, and member states</p> <p>Moderator: WASCAL</p> | <p>Knowledge and learning Agriculture and food security applications</p> <p>Ignite presentations and panel discussion Representatives from IRI, Meteo France, WASCAL, AGRHYMET, WMO, Mercy Corps, ECOWAS</p> <p>Moderator: CILSS</p> | <p>DRR platform Planning and managing recovery at regional and national levels</p> <p>Presentations and discussion with member state delegates, AGRHYMET, ECOWAS, and World Bank</p> <p>Moderator: ECOWAS</p> |
| 18:00 | Reception and networking | | |



| Day 3 – Friday, 21 September 2018 (in parallel with AMCOMET) Hotel Azalai, Abidjan–Salle Tamarin | |
|---|---|
| 9:00 – 10:30 | <p>Plenary session: Strengthening regional initiatives, projects, and programs</p> <p>Presentations</p> <p><i>Transboundary floods in West Africa: What should national, regional, and river basin authorities do to reduce the risk?</i> by Water Research Institute, Ghana.</p> <p><i>Accessing and exploiting rapidly advancing global technologies for climate and weather monitoring and forecasting</i> by HRC.</p> <p><i>The ECOWAS Meteorology Programme: Activities and Implementation</i> by ECOWAS</p> <p>Panel discussion</p> <p>Opportunities for strengthening regional initiatives, projects, and programs with representatives from ECOWAS, CILSS, WMO, Water Research Institute Ghana, and CREWS Secretariat.</p> <p>Moderator: WMO</p> |
| 10:30 – 11:00 | Coffee Break (ignite stage) |
| 11:00 – 12:30 | <p>Plenary session: Harnessing partnerships and private sector</p> <p>Ignite presentations and panel discussion</p> <p>New financing models (WINROCK)</p> <p>Innovative partnership agreements (WeatherForce)</p> <p>Global Weather Enterprise (World Bank, WMO)</p> <p>Rain Cell (Mali-Météo, IRD, and Orange Mali)</p> <p>Views from the providers (e.g., Earth Networks, TAHMO, OTT, SUTRON, ADCON)</p> <p>Moderator: African Development Bank</p> |
| 12:30 – 14:00 | Lunch |
| 14:00 – 15:30 | <p>High-level plenary session: Toward sustainable financing for hydromet, early warning, and DRR services</p> <p>Keynote: Toward sustainable financing for hydromet, early warning, and DRR services</p> <p>Panel discussion</p> <p>Hon. Commissioner Agriculture, Environment and Water Resources (ECOWAS)</p> <p>Hon. Commissioner Social Affairs and Gender (ECOWAS)</p> <p>Hon. Executive Secretary (CILSS)</p> <p>Hon. Minister of Transport (Côte d’Ivoire)</p> <p>Hon. Minister of Agriculture and Environment, AMCOMET Bureau Chair (Cabo Verde)</p> <p>Moderator: World Bank</p> |
| 15:30 – 16:00 | Coffee Break |
| 16:15 – 17:30 | <p>Closing Session and Communiqué</p> <p>Video and summary findings</p> <p>Presentation of Communiqué (ECOWAS)</p> <p>Closing remarks by representatives from African Union Commission, ECOWAS, WMO, CILSS, EU Delegation, World Bank, AfDB, UN, and Government of Côte d’Ivoire</p> <p>Moderator: ECOWAS</p> |

Session Proceedings

3.1 Plenary Sessions

3.1.1 Status of Weather and DRM Services in West Africa

Keynote:

Hon. **Commissioner Sékou Sangare**, Commissioner, Agriculture, Environment and Natural Resources (ECOWAS): Importance of hydromet, early warning and disaster risk management for regional integration and sustainable development in West Africa, followed by technical presentation by Ulrich Diasso (ECOWAS).

Panel: Joseph R. Mukabana (WMO), Abdou Ali (CILSS/AGRHYMET), Benjamin Lamptey (ACMAD), Daouda Konaté (SODEXAM), and Johnson Boanuh (ECOWAS).

Moderator: Arona Diédhiou (IRD/WASCAL)

Introduction

The session provided an overview of the status of the national weather, water, climate, and disaster risk management services in the ECOWAS region. Participants discussed key constraints on regional integration in West Africa and strategies to overcome them. The session opened by highlighting a number of key challenges and opportunities with regard to weather, water, climate, and early warning services in the region.

The session was kicked off by a keynote speech by the Hon. Commissioner Sékou Sangare, Commissioner for Agriculture, Environment and Natural Resources (ECOWAS) and a technical presentation by Ulrich Diasso (ECOWAS). It was followed by a panel discussion with experts from the WMO, CILSS/AGRHYMET, ACMAD, ECOWAS, and the government of Côte d'Ivoire.

Key issues discussed

Participants discussed the provision of climate services—especially relating to policy, human

resources, and internal capacity, as well as infrastructure of the relevant national agencies. After a diagnostic overview on the available weather, climate, and DRR services, participants discussed challenges and opportunities with respect to national hydromet services. The capacity of national hydromet services in the ECOWAS region varies widely—ranging from 1,500 staff in Nigeria and 400 in Ghana to just a handful in other countries. The national hydrological services are even further understaffed. Most countries are getting their financial resources from the government and donors, as well as from internally generated sources. Except for Nigeria, which has an annual budget for the national meteorological services of US\$1.37 million, most of the national services have an annual budget of less than US\$300,000.

The NMHS and DRR Services in the ECOWAS region are in critical need of support to be at par with their counterparts in other developing countries. The density of the observation network is, in most countries, below the recommendations of WMO. Cabo Verde has made the most progress with weather stations



because of its size and the number of actual weather stations available. As to other observation infrastructure, rainfall radars are available in some countries, but often not, or only partially functioning (e.g., in Nigeria, only one of seven radars is working). New lightening sensor technology and proxy radars have improved now casting in some countries. But most countries rely on external facilities and regional institutions, such as CILSS/AGRHYMET and ACMAD, or MESA, PUMA, and ECOAGRIS facilities.

An urgent call was made to modernize the hydrological and meteorological observation network in ECOWAS Member States to meet WMO standards. The need for the sustainable financing support for DRR and hydromet was expressed, and the training of human resources in critical areas to improve weather, climate, and DRR services was recommended.

The discussion focused on existing subregional initiatives to highlight the efforts being made within the ECOWAS area. The ECOWAS meteorology program, the ECOWAS DRR Plan of Action (2015–30), and other regional initiatives can provide a framework for modernizing these services and addressing critical capacity gaps. The ECOWAS Commission plans to mobilize US\$20.6 million to support the implementation of the DRR Plan of Action until 2030 and establish a regional ECOWAS Hydromet Initiative.

Challenges and opportunities identified

Main challenges related to weather, climate, and disaster management:

- Limited human and infrastructure capacities in national hydromet and DRR institutions
- Inadequate financial support from national governments
- Outdated policies, laws, plans, and strategies on DRR and nonalignment with subregional, regional, and global frameworks
- Poor coordination among various development projects, partners, and responders, leading to

duplication of activities, resources, and lack of sustainability

- Lack of adequate awareness of DRR as a development imperative and priority
- Lack of an integrated hydromet and DRR platform and database
- En-masse retirement of staff with a slow replacement rate
- Packaging/tailoring of weather and climate information and inappropriate channels of dissemination to end-users

Key opportunities

Growing awareness of the public and the decision-makers of the role of the weather, climate, water resources, and natural environment.

- Recognizing the importance of hydrology and meteorology in support of DRR and climate change adaptation
- Growing demand for a range of hydrological and meteorological services by socioeconomic sector
- Strongly engaging with the private sector on customized solutions to enhance risk financing
- Developing innovative risk financing and insurance strategies to attract donor and partner funding for DRR
- Growing interest of development partners and funding agencies in meteorological and hydrological services
- Developing new technology to improve climate information
- Transforming NMHS into cost recovery and revenue generating agencies

Key solutions for overcoming setbacks

- Modernizing hydromet services
- Investing in continued education and capacity building of all staff
- Coordinating climate actions at the regional level and strengthening climate information sharing between hydromet and other stakeholders
- Investing in a hydromet observation network of stations in member states to meet WMO standards



- Allocating adequate equipment and sustainable financing support for disaster risk reduction and hydromet services at the national level
- Improving the telecommunication and ICT infrastructure for hydromet and early warning services
- Promoting state-of-the-art technology in national hydromet services, including satellite meteorology and NWP

3.1.2 Toward a Closer Integration of Policies, Strategies, and Institutions in Support of Effective Early Warning in West Africa

Keynote:

William Nyakwada, Strategic Planning and Risk Management Specialist, Integrated strategic planning for NMHSs, taking into consideration existing national, regional, and international development policies, together with the strategic and action plans of the GFCS to realize an effective early warning system.

Panel: Djime Adumb (CILSS), Ibrahim Babtunde Wilson (ECOWAS Water Resources Center), Fofana Rafatou (VBA), and Nelson Obirih-Opareh (Water Research Institute, Ghana).

Moderator: Kai Gatkuoth (AUC)

Introduction

The session provided an overview of the different roles and mandates of institutions supporting weather, water, and early warning services in West Africa. Participants also discussed challenges for collaboration (among institutions and with Member States), as well as opportunities and actions for closer integration. Participants considered the role of CILSS and ECOWAS as regional organizations, the process of “rapprochement” between CILSS and ECOWAS, regional integration and technical collaboration between member states, and the role of river basin organizations. The session highlighted, how effective policies and institutional collaboration can contribute to a level playing field for effective early warning support in the region.

The session was kicked off with a keynote address by William Nyakwada. He provided an overview of Integrated strategic planning for NMHSs, taking into consideration existing national, regional, and international development policies, together with the strategic and action plans, to realize an effective early warning system. Following the keynote

speech, the panel discussion surveyed the institutional landscape, roles, and mandates in the region and if and how regional institutions effectively support early warning. Participants also considered concrete actions (at the policy and strategic levels and institutional reform) and actions needed to better coordinate and advance the process of rapprochement between CILSS and ECOWAS.

Key issues discussed

Internal and external integration are defined as key elements to establish the exchange of knowledge, information, and ideas among the different hydromet service agencies and stakeholders in the region. Internal integration involves coordination, collaboration, and integration of operational processes within a given institution. Internal integration through solid exchanges among relevant institutions will improve collaboration, and thus the quality of hydromet services, and reduce costs. External integration involves logistical activities with such external entities as customers, suppliers, and stakeholders. Good external integration requires solid internal integration. It gives assurance to partners,



facilitates high performance, and addresses stakeholder concerns.

Good internal and external integration will promote the exchange of knowledge, information, and ideas, as well as effective strategies and policies and facilitate joint efforts to establish an early warning system. Therefore, internal and external integration are key for helping all stakeholders identify their needs in early warning and suggest the appropriate solutions.

Internal and external integration will allow regional platforms and capacity reinforcement to achieve sustainable development in the region. A harmonization of water resource policies for ECOWAS was suggested and ECOWAS water observatory is being implemented. Technical reinforcement is also ongoing for some structures (e.g., a memorandum of understanding between CILSS and AGRHYMET).

Good assessment will avoid a repeat of past mistakes and allow more objectivity and will also allow policies that take into account the population reality. In sum, effective internal and external integration will help modernize regional hydromet services, reduce costs, and ultimately improve regional early warning systems.

Challenges and opportunities identified

Key challenges

- All ECOWAS countries face policy challenges and lack capacity to provide adequate climate services
- Countries lack qualified human resources and sufficient opportunities for training and capacity building

- Technical support
- Integration of policies at the national and regional levels and difficulties in implementing policies in various countries
- Lack of environmental scientists in government ministries, which hinders the incorporation of climate concerns in each ministry's objectives
- Weak institutional cooperation
- Difficulties in information dissemination
- Problems in funding infrastructure
- Difficulties in disseminating weather forecasts to the population

Key opportunities for addressing challenges

- Facilitate joint projects
- Enhance institutional focus on objectives
- Ensure holistic institutional strategies, policies, projects, and initiatives
- Reduce the potential duplication of effort and waste of resources
- Improve leadership and teamwork to reduce conflict
- Provide more scope for successful implementation of projects to benefit all citizens

Key solutions for overcoming setbacks

- Promote internal and external integration
- Adopt good WMO integration strategies
- Develop and implement effective national frameworks for climate services
- Establish in ECOWAS early warning as a national and regional priority
- Countries must accept responsibility for further action on climate services



3.1.3 Financing Weather, Climate, Water, and Early Warning Services in West Africa

Presentations and panel: Daouda Konate (SODEXAM), Leslie Moulin (AFD), Lorenzo Carrera (World Bank), Donna Pierre (CREWS), Justus Kabyemera (ClimDev/AfDB).

Observations from the floor: Jean Claude Koya (Ministere du Plan et du Developpement, Côte d'Ivoire) and Michael Tanu (Ghana Meteorological Agency).

Moderator: Gareth Philips (AfBD)

Introduction

The session on financing weather, climate, water, and early warning information addressed the various initiatives that support the modernization and strengthening of these services. The session opened with four ignite presentations from the Government of Côte d'Ivoire and AFD, the World Bank, the CREWS Secretariat, and Climdev Africa/AfDB. These presentations highlighted the four leading regional initiatives supporting infrastructure investments, technical assistance, and regional programs. The presentations shared experiences in developing sustainable and implementable projects, while discussants from Ghana and Côte d'Ivoire joined the discussion on sustaining finance and mobilizing internal and external resources.

Participants discussed the financing of weather and climate services in West Africa. They highlighted the need for financing hydromet services to obtain accurate forecasts, which would enhance productivity and reduce the region's vulnerability to climate change. Although different projects and programs provide technical support and assistance for national hydromet services, the private sector was called on to consider contributing to partnerships so as to ensure long-term and sustainable early warning and disaster risk management.

Key issues discussed

Hydromet services in the ECOWAS region are underdeveloped and require concerted efforts of stakeholders, projects, and programs—and private sector engagement—to ensure long-term and sustainable

early warning and disaster risk management. Participants thus discussed the need for financing, including funding programs such as CLIMDEV Africa, CREWS, and the Africa Hydromet Program. Several previous and ongoing projects and programs in the region often face challenges in being sustained beyond the durations of projects, despite their importance as investments in the future. Programs, such as ClimDev Africa, are valuable in strengthening different applications for weather, water, and climate services and in investing in infrastructure for capacity building.

Challenges and opportunities

Key challenges

Funding for hydromet services is inadequate relative to the urgent need for such services to address climate change issues.

Hydromet services are inadequate in 80 percent of African countries; only 10 of the 54 countries have satisfactory services:

- Hydromet sector is underfunded, with limited capacity and a deteriorating infrastructure
- Short-term, small, fragmented projects seek only piecemeal capacity and infrastructural strengthening
- Lack of mapping and overview of project sites
- Countries face demands but overall resource constraints
- Lack of private sector investment
- Lack of long-term vision



Key opportunities for addressing challenges

Dialogue and building models

- Reinforce technical tools of the meteorological service
- Reinforce climate services with sustained funding
- Have different capacity-building and investment projects, such as CREWS and CLIMDEV Africa, and focus on technical assistance and capacity building
- Focus also on the World Bank (Africa Hydromet Program) and AfD, which can provide loans and grants to help modernize national hydromet services

Key solutions for overcoming setbacks

Support climate institutions through projects

- Enhance climate service and application
- Support investment and facilitate private investment
- Enhance the capacity of regional climate centers
- Ensure that AGRHYMET, ACMAD, WASCAL, and other regional bodies work together to provide effective capacity building

3.1.4 Strengthening Regional Initiatives, Projects, and Programs

Presentations:

- Anthony Duah (Water Research Institute, Ghana): Transboundary floods in West Africa: What should national, regional, and basin authorities do to reduce the risk?
- Johnson Buanuh (ECOWAS): The ECOWAS Meteorology Programme: Activities and implementation.
- Konstantine (Kosta) P. Georgakakos (HRC): Accessing and exploiting rapidly advancing global technologies for climate and weather monitoring and forecasting.
- Abdou Ali (AGRHYMET): Fanfar project.

Panel: Anthony Duah (Water Research Institute, Ghana), Konstantine P. Georgakakos (HRC), Abdou Ali (AGRHYMET), Donna Pierre (CREWS Secretariat), and Djeri-Alassani Bougonou (ECOWAS).

Moderator: Carl Dingel (WB)

Introduction

Presenters and panelists identified and discussed regional initiatives, projects, and programs to address some of the critical challenges in strengthening weather, water, climate, and disaster risk management in West Africa. They considered possible solutions, their relevance for the region, and how these could help close the modernization and capacity gap in hydromet services.

The session began with a presentation that looked into ECOWAS and transboundary floods in West Africa and how ECOWAS, river basin organizations, and Member States could come together to better

support flood early warning. The first presentation was on a project that is part of the ACP-EU program, “Strengthening Disaster Resilience in Sub-Saharan Africa.” The second presentation described the ECOWAS Hydromet Initiative and activities of ECOWAS to support hydromet and early warning in the region. The third presentation considered using technology, in both system building and distance training, applied to supporting of forecasters worldwide in their effort to provide effective warnings with high spatial resolution for flash flood occurrence. The final presentation addressed accessing and exploiting rapidly advancing global technologies for climate and weather monitoring and



forecasting. The presentations were followed by a panel discussion and questions from the audience exploring solutions and the remaining obstacles to closing some of the gaps.

Key issues discussed

The presentations highlighted possible solutions for modernizing national hydromet and early warning services in West Africa at the national and regional levels. The four projects presented included: the practice research and capacity building project for ECOWAS; the ECOWAS Hydromet Initiative; development of a West Africa Flash Flood Guidance system as part of the regional CREWS West Africa project; and the FANFAR project coordinated by CILSS on developing an operational early warning system for the region (over a 10-day time horizon). The West Africa Flash Flood Guidance System (FFGS) would be a flexible tool for enhancing cooperation among forecasters and disaster managers region-wide and in each country.

The FFGS provides substantial training and technology transfer and the program supports capacity building in the region. The West Africa FFGS infrastructure, which integrates remotely sensed and on-site data, provides opportunities for further improvements in addressing urban flash flood warning and ensemble seasonal to subseasonal flow prediction.

The need to coordinate and integrate the different initiatives was highlighted. The role of ECOWAS as a

regional organization would be to facilitate the coordination of initiatives at the national and regional levels, the assessment of the population's needs, and the revision of ECOWAS standards.

Challenges and opportunities identified

Key challenges

- Transboundary floods, complexity of managing transboundary, socioeconomic challenges, national hydromet networking challenges, maintenance and sustainability of basic systems
- Uncertainties over models, gaps in local data production, the gap between research and the operation

Key opportunities for addressing challenges

- Develop and implement a sustainable framework for flood management
- Set a strategic framework for establishing partnerships
- Promote closer cooperation between forecasters and decision makers
- Develop and introduce flexible technology and network collaboration with partners
- Share experiences and scientific results
- Accurately assess the needs of users and orient research outcomes toward their needs
- Take into account the environmental component, drainage network, and urbanization, and respect the cities master plan

3.1.5 Harnessing Partnerships and the Private Sector

Presentations and panel: Fillipe Lucio (WMO), Makoto Suwa (WB), Marielle Gosset (IRD), Christine David (Weather Force), Ahmed Balogun (TAHMO), Mohammade Check (Earth Networks) and Tufa Dinku (IRI).

Moderator: James Kinyangi (AfDB)

Introduction

The session highlighted a number of private sector and innovation initiatives in support of effective

weather, water, and climate services and discussed the roles and principles of private sector engagement based on the Global Weather Enterprise. The



initiatives introduced and discussed at the session include Rain Cell Africa, where cell phone providers (currently Orange) collaborate with national weather services to analyze cell phone signals to gain precipitation information, Trans-African Hydrometeorological Observatory (TAHMO) and Earth Networks.

The “Global Weather Enterprise (GWE)” aims to: develop principles of engagement for the private sector with national meteorological and hydrological services; engage the private sector beyond the provision of equipment and tailor-made service delivery to business customers; and get engaged in the entire value chain. The proposed “enterprise” encompasses all business areas of the World Meteorological Organization (WMO), including weather, climate, and water. The GWE also seeks to empower NMHSs to sustain their authoritative and official voice by enhancing the quality and relevance of services provided to, and with, the private sector.

Participants offered examples of good practices in engaging the private sector with national meteorological services in West Africa and identified initial principles defining good practice in public-private partnerships (PPPs).

Public-Private Engagement and Global Weather Enterprise (GWE)

Understanding the new realm:

- Global risks and economic and political challenges need to be addressed
- Scientific and technological advances generate fast-growing market demand and opportunities for services
- Increased need for cooperation among GWE sectors and all members of weather/climate communities
- Weather enterprise pipeline
- Business models

Rain Measurement from Cell Phone Networks and Hydrometeorological Applications in Africa (Rain Cell Africa)

- How can the private telecommunications sector help strengthen hydromet services and improve early warning?
- Transmitting information and timely (data/information/alert)
- How to share data relevant for hydromet observation

Role of TAHMO—Trans African Hydrometeorological Observatory

- Value of reliable weather data
- Develop low costs, reliable weather and climate observation instruments
- Collaborate with national hydromet services and communities (such as schools) to rapidly expand the observation network
- TAHMO project and experience shared in Africa

Leveraging PPPs for Sustainable and Enhanced National Weather Information Services

- PPP aspect of the business model
- Update on implementation in low-income countries of Sub-Saharan Africa

A key theme at the session was the need for a cost-effective weather service, public-private engagement, and the GWE to attract and retain skills for technology development. One proposal was to harmonize quality control of services provided by public and private institutions. There was a call to embrace emerging opportunities with different partners, including the private sector and academia. One suggestion was to create a transparent framework between private and public sectors for data exchange. Participants highlighted the need for capacity building on tools and data processing to allow better and more efficient data processing. They also recommended developing a partnership good practices document to guide NMHSs and to

protect the WMO-affiliated networks as a critical global good. Another suggestion was to contextualize innovation by including climate services in the curricula of schools and universities. A final suggestion was to create shared value between the public and private sector and other GWE stakeholders by addressing common global risks and economic and political challenges (e.g., protecting life and property, safeguarding the environment, and contributing to sustainable development).

Challenges and opportunities identified

Key challenges

- Lack of a specific governance or organizational level in the GWE
- Unwillingness of telecom operators to share needed data
- High cost and difficulty of digitizing old records in Africa

- Lack of market for data from a single country
- Lack of structured data storage
- Lack of manual quality control
- Lack of exploitation of data use and services
- Lack of high technology for forecasting global standards
- Difficulty in attracting and retaining skills for technology development

Key opportunities for addressing challenges

- Create additional jobs in the nonpublic sector
- Use telecom network for rain estimation
- Address real-time data flux
- Build a mutual interest model
- Use PPPs to enhance NMHS infrastructure, capacity, and sustainability
- Use existing techniques and technologies to downscale data
- Use innovative PPPs to enhance NMHS infrastructure, capacity, and sustainability

3.2 Community of Practice

3.2.1 Developing a “Climate Risk Early Warning” Community of Practice

Presentations and panel: JB Migraine (WMO), Koffi Hounkpe, Lorenzo Carrera, Philippe Rapaport (WB), Sophie Martinoni Lapierre (Météo-France), Marielle Gosset (IRD), Abdou Ali (CILSS), Snali Berte (Mali), and Siaka Traore (Mali).

Moderator: Seyni Salack (WASCAL)

Introduction

ECOWAS countries often face similar challenges in improving early warning services, including the need to enhance forecasting services; develop coherent procedures with national services for early warning (food security) and rapid warning (extreme weather, flooding); reach vulnerable communities with a differentiated approach; and coordinate food security, civil protection, and humanitarian support.

The session highlighted some key innovations currently being tested in CREWS beneficiary countries and agreed to set up a community of practice among countries and regional institutions to ensure

a harmonized approach to supporting warning services (supported either by the national budget or by donors) and for sharing ideas, good practices, technical specifications, and terms of reference. This Community of Practice (CoP) will interact closely with the WMO CREWS West Africa Steering Committee, which oversees the WMO contribution to CREWS in West Africa.

Participants discussed the contribution of innovative initiatives—such as PADRE, and Rain Cell West Africa—to disaster risk management. Online platforms have been implemented for basins and flood risk management. And to facilitate data collection



and measurement, some innovations have been made in rainfall measurement. National scale networking was recommended for addressing challenges in risk management and in setting up an early warning system. Participants discussed the challenges faced by agencies in using these platforms and identified appropriate solutions.

Key issues discussed

- Overview of the four CREWS projects in West Africa
- Sub-seasonal forecasting, climate watch, and applications for agrometeorology (Sophie Martinoni-Lapierre): Enhanced agrometeorological monitoring is being piloted in Burkina Faso by an innovative land data assimilation system (LDAS), coupling meteorological models with soil and vegetation indices captured from remote sensing (see presentation).
- PADRE, an example of a GIS tool for data sharing, institutional collaboration, and service delivery to users (Philippe Rapaport, World Bank): The open source platform enables data sharing across decentralized/deconcentrated levels, as well as between institutions at all levels. It also enables the overlay of official data with international/regional datasets. Automated processes can be prepared with different experts, allowing access to value added data. An offline tool is also available for use in low Internet bandwidth environments, working with cached layers. The tool was developed in the context of CREWS component of the Niger Disaster Risk Management PGRCDU Project to facilitate collaboration among national institutions involved in flood warning (see presentation, PADRE website, and online Niger risk portal).
- Spatial altimetry for hydrological monitoring and use of cell phone signal attenuation for rainfall estimation (Rain Cell) (Marielle Gosset, IRD): Over the last decade, it has been demonstrated that rainfall can be estimated in real time through a partnership between national meteorological services and cell phone operators, while river and lake water levels can be estimated with remote sensing techniques to complement onsite observations (see Rain Cell presentation, video (short/long) and spatial altimetry website).
- Niger (Mohamed Housseini): CREWS is developing technical capacities in Niger in meteorological, hydrological, civil protection, food security, and DRR institutions. These efforts are coupled with two investment projects (PDIPC for meteo and PGRDU for other institutions). But the pace of implementation of these two investments is very slow, resulting in some investments being jeopardized for DGRE. The experience with the PADRE platform was positive, but institutions would need more training and support to comply with formatting and enable automatic upload of local data. With regard to setting up a community of practice, Niger is amenable to exchanging technical specifications, terms of reference, and lessons learned with other countries to speed up the uptake of innovative solutions.
- Mali (Chaka Traore, Sinali Berthe): Collaboration among institutions involved in CREWS, meteorological, hydrological, food security, and civil protection services is very good. The national DRR platform is officially recognized and enables collaboration with a larger number of institutions, both in relation to capacity development with CREWS and for appraising the larger hydromet investment. Data collection and data sharing remains challenging, and Rain Cell can help improve access to rainfall data to hydrological and civil protection services. It is not yet operational, since the data flow between cell phone operators and national meteorological service is not yet in real time. The Directorate General for Civil Protection expects to improve the timeliness of warnings with a multihazard approach, to ensure that members of the National DRR Platform (from national to local levels) can receive information as soon as possible. The Directorate General for Civil Protection (DGPC) must improve communication tools, including for the collection of geolocalized and georeferenced impact information.

- CILSS/AGRHYMET (Abdou Ali): The innovations presented in the session this morning potentially can resolve some issues. But CREWS projects, similarly to other projects, run over a limited time. Resolving issues with a sustainable approach requires uptake by regional institutions who can play a role in training, scaling up pilots that have demonstrated successful outcomes at national or local levels, and ensuring a sustainable uptake by national institutions. The collaboration between regional and national institutions is very strong. A large number of good practices at the national level have been supported by regional institutions, such as the harmonized framework for food security and nutrition monitoring with national multidisciplinary working groups (GTP).
- ECOWAS: Discussions between ECOWAS and CILSS during the forum addressed the challenges identified during the different sessions and sought to ensure that Member States benefit from the support of all regional institutions in a coordinated manner.
- WASCAL (Seyni Salack): A number of small research initiatives are ongoing and could benefit from operational applications with seed funding.

Proposed roadmap for setting up a community of practice

- Participants confirmed the usefulness of exchanging information about: bottlenecks affecting EWS and NMHSs, including lack of maintenance of equipment, human resources, budget, and tools; and about examples of activities supported by CREWS, including terms of reference and technical specifications.
- Participants suggested populating the CREWS West Africa Spreadsheet (and specifically adding information about development and research projects under way in countries), as well as the CREWS websites for WMO Contribution to CREWS, Burkina Faso, Mali, and Niger.

Key opportunities for addressing challenges

- An increasing number of ECOWAS countries are engaged in designing or implementing investment projects in meteorological, hydrological, food security, and civil protection services—all of which contribute to enhancing the climate-risk early warning systems with a multihazard approach. Burkina-Faso (WBG), Mali (WBG), and Niger (AfDB/WB) benefit from technical assistance for the Climate Risks Early Warning Systems (CREWS) initiative.

3.2.2 Mapping and Strengthening the Academic, Research, and Training Networks for Hydromet Services and DRR

Panel and discussion: Prof. Euloge K. Agbossou (UAC, Benin), Prof. Zahiri Pascal (UFHB, Côte d'Ivoire), Arona Diedhiou (IRD), Prof. Emile Barrissano (EUMETSAT), Owiti Zablone (FutureClimateAfrica), and Prof. David Jimoh (FUTA, Nigeria).

Moderator: Gerald Forkuor and Aymar Bossa (WASCAL)

Introduction

This session highlighted the need to recognize, map, strengthen, and fund academic networks in the sub-region. In doing so, the appropriate stakeholders

(member states, ECOWAS institutions, and development partners) and actors (researchers, academics, and experts) should be engaged in a collaborative way.



Key issues discussed

An important issue addressed during this session was the visibility, recognition, and relevance of academic, research, and educational networks in light of the poor knowledge of existing academic, research, and educational networks in the subregion. Consequently, it is not clear how these networks are supporting national and regional programs. Participants agreed that inventorying all existing networks and identifying their strengths and weaknesses was essential for making them visible and vibrant in the subregion. Staffing of these networks was another key issue discussed. It was noted that most research and academic staff have retired or are about to do so. Thus, a new generation of scientists must be trained to take up these roles and build capacities. All of these changes cannot be achieved without financial investments from member countries.

Participants also discussed the need to harmonize DRR curricula among West African institutions offering formal training in DRR/DRM. It was recommended that under the leadership of ECOWAS, the relevant networks and institutions should be engaged to work toward developing a common DRR curriculum for adoption by all institutions. This would ensure some harmonization in DRR practice in West Africa.

The main issues discussed:

- Visibility and sustainability of networks
- Interaction between existing networks
- Financing of networks (e.g., through country contributions)
- Harmonization of DRR/DRM curricula

Challenges and opportunities identified

The main challenges:

- Poor knowledge of existing networks, their relevance, and contribution to national and regional programs/initiatives
- Poor collaboration among existing networks

- Poor financing of networks
- Lack of harmony in DRR practices across ECOWAS

Key setbacks faced by country, region, and community

The main setbacks:

- Lack of collaboration among networks
- Lack of information about some existing networks for the community of researchers and academics
- The high cost of Internet access vis-a-vis information sharing through the worldwide web
- Lack of financial support from countries for strengthening national networks

Key opportunities for addressing challenges

- Several institutions and initiatives in the region have DRR-related training programs and associated alumni networks (e.g., WASCAL, AGRHYMET, Master at UAC, Project Marema). These institutions and initiatives need to work together to form a strong network of experts in DRR/DRM.
- Development partners have consistently shown an interest in strengthening academic, research, and education networks

Key solutions for overcoming setbacks

- Publicize networks and enhance their visibility (to the community of researchers and institutions)
- Develop collaborative projects among researchers and academics
- Collaborate on curricula development, training, and capacity-building activities
- Develop financing means to sustain networks
- Encourage country-level contributions (recognition of networks)
- Have researchers take the lead in developing initiatives
- Invest in infrastructure with the support of ECOWAS
- Analyze existing national policies



3.3 Policy Dialogue, Knowledge, and Learning

3.3.1 Policy Dialogue: Challenges and Opportunities for Improving Hydrological Services

Presentations and panel: Daniel Sighomnou (WMO), Bachir Tanimoune (Hydrologist, NBA), Abdou Ali (AGRHYMET), Ibrahim Wilson (ECOWAS/WRCU), Jean-Emmanuel Paturel (IRD), and Sinali Berthe (Mali Civil Protection Service).

Moderator: Daniel Sighomnou (WMO)

Introduction

West Africa contains and intersects with six large river basins (Lake Chad, Gambia, Mano, Niger, Senegal, and Volta) running through 14 ECOWAS Member States. Flood events are often transboundary in nature and therefore call for basin-wide observation, monitoring, and forecasting capabilities. This is currently somewhat deficient and sometimes leads to misunderstanding between riparian countries, especially when dams are opened to release excess water. Participants in the session provided examples of global good practices and achieved consensus on a regional policy framework for flood risk management, supported by transboundary River Basin Organizations, within ECOWAS Member States.

The session started with an overview presentation of expected outputs, followed by a panel discussion and exchange with participants. The panelists represented the transboundary river basins authorities, national hydrological services, and specialized institutions (ECOWAS, CILSS).

Speakers and topics

- Vision and goal: The new framework of WHYCOS and its implications regarding flood risk management policies (Daniel Sighomnou, WMO)
- The current situation/baseline: The situation of hydrological activities at the national level and support received by transboundary river basin authorities, CILSS/AGRHYMET, and ECOWAS/CCRE (Diakaria Kone, Côte d'Ivoire National Hydrological Service).
- Examples of achievements, lessons learned, and perspectives with HYCOS projects (Bachir Tanimoun, Niger Basin Authority NBA)

- Toward a policy framework for flood risk management in West Africa (Ibrahim WILSON, ECOWAS/WRCC)
- Perspective from an end-user: Activating flood management emergency and contingency plans in Mali (Sinali Berthe, Directorate General for Civil Protection, Mali)

Key issues discussed

- State-of-the-art hydrological services in selected countries in the subregion
- Improving the investments of hydrological services in the subregion
- Innovation in hydrological service provision

The session focused on challenges and opportunities for improving hydrological services. The main recommendations were: the provision of good quality data to end-users (real-time and reliable data); data storage (through an accessible database); reinvestment in equipment (new equipment) and maintenance, staff, and capacity building; and the elaboration of water management policy and financing. Key issues were the provision, storage, and dissemination of hydrological data.

Challenges and opportunities identified

The main challenges to improving hydrological services

- Reliable data collection
- Lack of technological innovation in project implementation
- Sustain project achievements (continuity of existing projects)



- Upgrade equipment (renew investments)
- Access to and reliability of hydrological data
- Curricula development

Key opportunities for addressing challenges

- Support of EU, World Bank, AfD, WMO
- Expertise of WMO and reference to initiatives (WMO, WHYCOS, WMO hydrohub, ABN, IRD)
- Technological innovation (for ensuring quality services and reducing costs)

Key solutions for overcoming setbacks

- Assist countries in reliable hydrological data collection
- Focus not only on surface water but also on groundwater
- Follow-up hydrological services among countries to prevent extreme events

- Take advantage of technological innovation
- Provide real-time, reliable data to end-users (i.e., project WMO hydrohub)
- Create a database and consolidate data, ensure availability on the continent
- Gather national contributions for continuity of existing projects (subregional level)
- Renew investments, perform maintenance
- Water management policy at national and subregional levels
- Sustain financing: contribution of countries, water management fund establishment (i.e., pollution taxation)
- Training and coaching
- Develop national policy for water management
- Curricula writing

3.3.2 Global Framework for Climate Services: Investing in National Frameworks for Climate Services (NFCS) to Support Climate Services Development and Delivery to End-Users

Keynote: Pascal Yaka (GFCS) Regional Coordinator: Collaborating to Effectively Deliver Climate Information to End-Users.

Presentations and panel: Sambakhe Zkaria (ACTIONAID Senegal), Dje Kouakou (SODEXAM), Tall Dieng (URAC, Senegal), and Issoufou Porgo (ROPPA).

Moderator: Filipe Lucio (GFCS/WMO)

Introduction

Implementation of the Global Framework for Climate Services (GFCS) is making considerable progress. In collaboration with the ECOWAS Secretariat, Member States have embarked on establishing National Frameworks for Climate Services (NFCS). Commitment to invest in this mechanism aims to enhance coordination and cooperation in support of the development of climate services and delivery to end-users. NFCS are fully established in 10 countries—culminating in a signed decree in 4 countries—and are at different stages of establishment in 13 other African countries. An additional

34 African countries are currently engaged in the process.

The first GFCS projects were launched in 2012 in Burkina Faso, Chad, Mali, Niger, and Senegal. National consultations on climate services were held in each of these countries to help identify specific gaps and needs, and as critical elements for implementing climate services. The consultations promoted a better understanding between climate service providers and the various climate sensitive sectors in supporting coordinated delivery and uptake of climate information in planning processes. An example of the benefit of the NFCS process can



be seen in the cases of Burkina Faso, Mali, and Niger. In these countries, the World Bank used the NFCS and the agreed activities of the road map to inform their national investment portfolios. Furthermore, the NFCS have enabled the identification of priorities and the formulation of action plans, which have guided the investment agenda of CREWS, GFCS Sahel, and the Africa Hydromet Program.

Nonetheless, issues surrounding the generation of quality, fit-for-purpose climate services, and uptake by the user community still require significant attention. On the one hand, the Regional Climate Centers (RCCs) and National Hydrometeorological Services (NMHSs) are inadequately resourced to provide the services. On the other hand, the dialogue between the user community and the NMHSs to codesign and codevelop customized and fit-for-purpose climate services is still not fully developed. As such, the demand and availability for climate services, while necessary for planning in many sectors in the climate hot spots of the ECOWAS region, are still in their infancy. This session brings together the two communities so that they see each other as partners with mutual interests. Expected outcomes of this collaboration would be pledges for joint actions, such as sensitizing/training of relevant stakeholders, resource mobilization, codesign, and coproduction of climate services for the various user sectors.

The session opened with an overview presentation by Pascal Yaka, GFCS Regional Coordinator, who spoke about applications and challenges related to climate in West Africa and national efforts to implement NFCS. The opening was followed by a panel discussion with invited experts from the climate services provider community and recognized promoters and users of climate services.

Key issues discussed

The discussion of community management of climate information/services to prevent and manage climate disasters focused on securing the livelihoods for vulnerable communities amid climate hazards.

- Global Framework for Climate Services (GFCS): Status and challenges in West Africa and the Implementation of the National Framework for Climate Services for better planning, policy, and practice at the global, regional, and national scale
- The access of family farming to climate information and services and its accuracy
- The role of community radio in broadcasting climate information is valued, and women are recognized for playing a key role in DRR and DRM

The consideration of scientifically-based climate information and forecasts in planning, policy development, and practice processes at all levels will help DRR and DRM. It will also contribute to securing the livelihoods of vulnerable communities in the face of climate-related hazards.

The implementation of GFCS at the national level and the consideration of locally appropriate analysis, capacity building, and training—with emphasis on developing women’s leadership—were strongly recommended. A request for the promotion of partnerships between regional economic and scientific institutions was made, while the provision of adequate financial support—mainly for hydromet services—was emphasized. The integration of endogenous knowledge into modern seasonal forecasts should be promoted. A strong recommendation was made for agencies in charge of climate information dissemination to be made aware of and trained so as to better cope with preparedness plans on DRR and the impacts of climate change. Also underscored was the need for sustainable access to climate information and services for vulnerable populations through financial support. As to the key role of community radios, participants agreed it was crucial to equip radios with adequate digital recorders and computers, to continuously train journalists to fully grasp preparedness plans on DRR. A call to enable community radios to access solar energy to cope with high electricity bills was also made.



Challenges and opportunities identified

Key challenges

- Lack of sustainable access to climate information by vulnerable populations and local organizations
- Lack of coordinated work among agencies in charge of the dissemination of climate information
- Lack of will of the agencies in charge of the dissemination of climate information to cope with preparedness plans on DRR and the impacts of climate change
- Difficulty in accessing National Adaptation Funds for civil society organizations and vulnerable communities
- Lack of recognition of women’s role in adaptation
- Lack of good planning for agricultural activities
- Lack of climatic information integration in developmental projects/programs

Key setbacks faced by country, region, and community

- Implementation of the GFCS at the national level
- Inadequate financial support for hydromet agencies
- Lack of synergy among different services

- The lack in many countries of the infrastructural, technical, human, and institutional capacities to provide high-quality climate services

Key opportunities for addressing challenges

- Use of community radios
- Use of local language for diffusion of information; equip radios with point equipment
- Existence of qualified hydromet staff to train young people, especially vulnerable populations, on how to use and manage meteorological information
- Use of existing endogenous knowledge to cope with disasters
- Committing the international community to work in partnership with ECOWAS Member States for better risk and disaster management

Key solutions for overcoming setbacks

- Sustainable access to climate information and services for vulnerable populations through financial support
- Awareness and training of agencies in charge of climate information dissemination to cope with preparedness plans on DRR and the impacts of climate change
- Considering the role of women in adaptation

3.3.3 Sharing Best Practices for Community–Driven, Gender, and Youth–Inclusive Weather, Climate, Water, and DRR Services

Presentations and panel: Antonio Palazuelos (SHYAH), Alice Zongo (OXFAM Burkina Faso), Saro-Airam Mendonca (Faculty of Law, Guinea Bissau), Tosin Victoria Apiriola Ajayi (NWEYDI, Nigeria), and Yaka Fanta Kaba Fofana (ONEG, Côte d’Ivoire).

Moderator: Adama Bagayoko (ECOWAS)

Introduction

Gender is an important element in the effort to reduce climate risks and disasters. In fact, women’s individual and collective knowledge and experience

in natural resource management and other societal activities at the household and community levels have endowed them with unique skills that benefit



prevention and adaptation efforts and responses to disasters (WEDO 2007).¹²

The tendency of women and girls to rely more on natural resources for their livelihoods also makes them vulnerable. For example, climate stress on water and forest resources often leads women to travel longer distances for water or wood, exposing them to health risks (WHO 2011)¹³ and limiting their prospects for engaging in such demanding endeavors as education, politics, and business.

Children and youth are critically impacted when hazards strike but can respond effectively if included as part of the response process. The Sendai Framework (UNISDR) ensured that children and youth were included in the negotiations and consultations that led to the adoption of the Sendai Framework for Disaster Risk Reduction, in March 2015. The framework gave children and youth a host of opportunities to engage meaningfully. A child-friendly guide, whose purpose was to make the Sendai Framework more accessible—especially to those aged 10 to 14—was developed as children and youth were recognized as critical stakeholders in supporting implementation of the Sendai Framework.

Key issues discussed

- Gender-related constraints faced by women and youth in accessing hydromet information: strengths and weaknesses. Identify the specific measures to be implemented
- Gender and youth notions in the DRR: Progress and challenges
- Best female leadership practices in the DRR context: Examples of best practices
- Disaster risk reduction campaigns relevant to youth

¹²Gender, climate change adaptation and disaster risk reduction—UNDP. https://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/Training%20Modules/Gender_Climate_Change_Training%20Module%20%20Adaptation%20DRR.pdf
WEDO = wedo.org

¹³Gender, Climate change and health WHO; <https://www.who.int/globalchange/GenderClimateChangeHealthfinal.pdf>

- Cases of best female leadership practices in Burkina Faso, Guinea Bissau, Nigeria, Cabo Verde
- Adopt gender-sensitive measures to reduce the negative impacts of disasters on women and young people, particularly regarding their critical role in rural areas in providing water, food, and energy (provide health services, information, and technologies)
- Ensure that women are visibly engaged as agents of change at all levels of disaster preparedness, including early warning systems, education, communication, information, and networking opportunities
- Carry out gender-sensitive risk assessments based on gender-based vulnerability analysis
- Adapt school curricula to DRR issues
- Consider the level of women's access to technology and finance, health care, support services, housing, and security in the event of a disaster
- Take into account gender and youth notions in DRR: Progress and challenges

Challenges and opportunities identified

Key challenges

- Gender and youth discrimination or omission in DRR/DRM
- Lack of access to technology and finance
- Lack of access to health care and support services
- Lack of access to housing and security during a disaster event
- Gender-based violence during and after disaster events
- Lack of youth access to DRM education
- Lack of access to information relative to hydromet

Key opportunities for addressing challenges

- Engage women and youth as agents of change at all levels of disaster preparedness
- Consider gender and youth in planning early warning systems and information campaigns
- Make education accessible to gender and youth
- Communication accessibility to gender and youth
- Information and networking opportunities



3.3.4 Agriculture and Food Security Applications

Presentation and panel: Seydou Traoré (CILSS/AGRHYMET), Marcelin Napkon (Meteo Benin), Jose Camacho (WMO), Ruwin Pandithage (OTT Hydromet—SUTRON—ADCON), Mian Kodjenini (SODEXAM), Tufa Dinku (IRI), Sophie Martinoni Lapierre (Météo-France).

Moderator: Hubert N'Djafa (CILSS)

Introduction

According to the World Bank, agriculture is the main economic pillar in Sub-Saharan Africa. It employs 65 percent of the labor force and accounts for about a third of GDP in these countries. Small-scale farmers (less than two hectares) provide about 80 percent of the food supply in Africa. The main characteristics of production systems of these smallholder farmers include simple, rudimentary technologies, low returns, and high seasonal labor fluctuations, with women playing a vital role in production. Despite these constraints, African agriculture has enormous potential for growth. This stems from the continent's abundant natural resources, particularly land, and the large yield gap that countries can fill to increase food security and reduce poverty.

Sub-Saharan Africa has the highest proportion of rural poor and the greatest potential for smallholder agriculture-led poverty reduction. Studies have indicated that a 1 percent increase in agricultural per capita GDP reduced the poverty gap five times more than a one percent increase in GDP per capita in other sectors, mainly among the poorest people. As agriculture employs a large number of people in Sub-Saharan Africa, increasing productivity is essential for reducing poverty and food insecurity.

Western Africa, and especially the Sahelian countries, are vulnerable to climate variability extremes such as drought and floods. Thus, efficient use of climate and weather information as input for farmers' decision making is greatly needed.

CILSS and ECOWAS have devoted sustained efforts to strengthen food security and improve food production in Western Africa, including through the

development of multidisciplinary working teams, coordinated crop monitoring and reporting, and regional agricultural projects and plans.

WMO, through METAGR projects sponsored by the governments of Norway and Spain among other donors and endorsed by the WMO Executive Council, have invested time and resources together with National Meteorological Services to: support training for farmers, develop technical capacities at NMHS, improve communication skills, provide feedback from users and socioeconomical benefit studies, and, most important, raise awareness of gender issues and access to, and use of, relevant climate information by rural women.

Session participants' goals were to review institutional efforts to improve climate and weather services for agriculture (including CILSS and ECOWAS activities), develop a user perspective about how successful these efforts are (including the vision from a representative from Côte d' Ivoire), and discuss efforts to improve the quality of climate and weather services in support of West African agriculture.

The session began with an overview of expected outputs by the session lead, followed by a panel discussion and discussions with participants.

Presentations

- Seydou Traoré (CILSS/AGRHYMET): Regional harmonization and collaboration for monitoring food security and nutrition
- Marcelin Napkon (Meteo Benin): Experience implementing a METAGRI project at national scale



- Jose Camacho (WMO): Operational METAGRI services
- Dr. Ruwin Pandithage (OTT Hydromet—SUTRON—ADCON): Innovative sustainable partnership models
- Mian Kodjenini (SODEXAM): Socioeconomic evaluation of agrometeorological services in Côte d'Ivoire
- Tufa Dinku (IRI): Enhancing National Climate Services (ENACTS)
- Sophie Martinoni Lapiere (Météo-France): Météo-France support to agricultural meteorology in CREWS projects

Key issues discussed

Participants considered the relevance of climate and weather information in managing food security and agriculture. They highlighted the availability of technical resources from supporting partners at the country and region levels. They also underlined the important role played by such institutions as NMHS, AGRHYMET, WASCAL, and other international partners in monitoring food security in the ECOWAS region. Even so, most of the outcomes of the developed plans, projects, are slow in coming, or sometimes do not materialize. The need for capacity building, either for users or national and regional hydromet agencies, is great. A need for a regional program on climate and weather risk management, including drought management, for agriculture and food security has been formulated.

Session participants recognized that within the subregion, a good percentage of the population was suffering malnutrition and hunger. Thus, noting that agriculture was the solution for overcoming malnutrition and hunger, they underlined the need to modernize agriculture—which still remains mainly climate dependent. Therefore, participants called for using climate information as an agricultural input as well as fertilizer. The climate services producers were invited to work closely with end-users.

A special invitation to stakeholders was made in order to include hydromet services in all development plans and strategies. A request for adequate financial support, mainly from national governments, was made to support regional structures and national hydromet agencies. Participants also recommended emphasizing the importance of such regional centers as AGRHYMET and WASCAL to donors. Participants underscored the need for continuous capacity building of staff of hydromet agencies and end-users to understand and deliver weather forecasts.

A need to educate and train local farmers on the use of climate information was also noted. Participants emphasized the need to sensitize producers, policy makers, and farmers about the utility of climate information and services. A special recommendation was made to train journalists, community radio stations, and other media to communicate climate information and services and enhance their interpretation (using local languages) and extension support. Also important was the need to set up an updated website for easy access to information.

Participants also cited the urgent need to establish a regional plan to support Climate Smart Agriculture, one that reaches smallholder farmers and supports technically regional and national institutions. And finally, participants agreed on the crucial need to plan meetings between civil society organizations, led by ROPPA, ECOWAS, and CILSS to identify needs of users of hydrological and climate services.

Participants called for:

- Regional harmonization and collaboration for monitoring food security and nutrition in West Africa
- Food security Early Warning at AGRHYMET and in CILSS member countries
- Regional consultation frameworks among food security stakeholders
- Use of agrometeorology as a decision-support tool



- Engagement of users to improve the design and delivery of climate information and services to better serve the decision-making needs of smallholder farmers
- Climate data management by IRI; tailoring climate information for user decision making
- Provision of climate and weather information to smallholder farmers
- Use of climate and weather information in agricultural management to deliver socioeconomic benefits
- Taking into account gender aspects in projects and national plans

Challenges and opportunities identified

Key challenges

- Lack of awareness of climate information and services and their utility at multiple levels
- Lack of community radio coverage

- Forecasts reach farmers late, not in local language, and not sufficiently downscaled
- Gender-related barriers to accessing information
- Lack of access to inputs to act, including equipment and improved seeds
- Lack of coordination among department and commune levels, and with field agents, community radio, and mayors

Key opportunities for addressing challenges

- AGHRYMET expertise and regional role in agriculture and food security
- National Meteorological Services sustained support to Interdisciplinary Working Group

Key solutions for overcoming setbacks

- Support and improve technical tools and solutions on forecasts, crop monitoring, and yield estimation and reporting

3.4 Project Sessions

3.4.1 Elements of the West Africa CREWS Project: Climate Databases, Agrometeorology, Severe Weather Forecasting, Early Warning Procedures, Flash Floods, User Interfaces

Presentations and panel:

- Arnout Feijt and Gé Verver, 1.1—Assessment of observation networks and 1.2—WACA&D
- Cyrille Honoré, 1.4—EWS operational procedures
- Abdoulaye Harou, 3—WA-SWFDP
- Konstantine P. Georgakakos, 4—WA-FFGS
- Jose Camacho, 5.1 & 5.2—Climate forecasts and 5.3—Pilot services with TAMSAT
- Mamtimin Buhalqem and Mächel Hermann, 1.3—WACE and 2—Climate watch tools

Moderator: Jean Baptiste Migraime (WMO)

Introduction

The CREWS West Africa Project—implemented by WMO, in partnership with KNMI, DWD, HRC, IRI, and UK Reading University—is presented in the project document on the CREWS website. It supports the following nine elements:

- Assessment of observation network processes and needs
- West African Climate Assessment & Dataset (WACA&D)
- Knowledge Database on West African Climate Extremes (WACE)



- Early warning system integration, operational procedures, and seamless service delivery
- Analysis and climate-watch tools
- Improved short- to medium-range forecast capabilities focused on Severe Weather Forecasting
- Demonstration Project (WA-SWFDP)
- Flash Flood Guidance (WA-FFGS)
- Sub-seasonal to seasonal forecast
- Pilot drought services with TAMSAT

Many elements of a cascading forecasting system are already in place in West Africa. But the operational exchange of data and products between national and regional levels, with global support, needs to be improved. The following have all been identified as priorities: collecting, updating, and processing of data at the regional level (through the establishment of subregional databases), delivering reanalyses and forecast model outputs to countries, downscaling model outputs and developing tailored products for country-level decision support, and running a higher resolution Regional Numerical Weather Prediction (NWP) model over the subregion to obtain guidance on potential severe weather and of boundary conditions required to run high resolution Limited Area Models (LAM).

Each component of the CREWS West Africa project will target different areas subject to resources available for demonstration and Member States' willingness to contribute. Session participants discussed options relative to each of the different components with regional institutions, and with Member States' national meteorological and hydrological services, to formulate an inception report for each of the components. Additional interactions were planned during the forum to complement this session.

The session began with an overview presentation of expected outputs by the session lead, followed by a panel discussion and discussions with participants on each of the nine components. The panel was invited from regional and international institutions leading the different components.

Challenges and opportunities identified

Main challenges

National Meteorological and Hydrological Services (NMHSs) in West Africa are not fully capable of providing and sustaining all meteorological services required to successfully respond to weather, climate, and hydrological extremes.

- Most warning services in West Africa focus on food security and nutrition, with a 10-day-to-seasonal lead time. The challenge is to strengthen existing warning services and complement them to address rapid onset events with a “seamless” delivery approach.
- West Africa Climate Assessment & Dataset (WACA&D): Enhanced exchange of climate data among NMHSs and regional centers.

Key opportunities for addressing challenges

- The ongoing upgrading AGRHYMET as a regional climate center for the subregion is a key way to develop NMHSs' capacities to contribute to rapid and early warning processes in a harmonized manner
- Severe Weather Forecasting Demonstration Project (SWFDP) is being implemented in West Africa, building on experience from other regions (e.g., Pacific, Eastern Africa, Southern Africa, South-eastern Asia, Southern America, Caribbean)
- Collaborative approaches to share best practices
- Develop integrated approaches that include all actors in the process
- Share positive aspects but consider specificities of countries
- Improve the historical rainfall time series needed to identify historical hydrological drivers of floods and droughts, validate forecasts, and develop improved seamless forecast products
- Set up the West Africa Climate Assessment & Dataset (WACA&D) system for climate change assessment for West Africa
- Enhancing capacities through training



3.4.2 Toward Establishing a West Africa–Wide Flood Forecasting System

Presentations and panel: Fowe Tazen (Zie, Burkina Faso), Annang Ted Yemoh (GWC, Ghana), Kossi Komi (UL, Togo), Luc Sintondji (UAC, Benin), Mohamed Ibrahim (ECOWAS), and Konstantine P. Georgakakos (HCR).

Moderator: Geerten Horn (WASCAL/ HKV)

Introduction

West Africa is vulnerable to climate risk and disaster owing to its low adaptation capacity. Frequent climate risks are floods and droughts. This problem must be dealt with at the regional level by setting up climate risk early warning systems. For example, a flood early warning system based on experience with the drought early warning system over Sahel at AGRHYMET should help deal with inundation issues in the region's countries. Indeed, many lessons have been learned from drought management in the Sahel.

Setting up a climate risk early warning system will improve the preparedness of communities for climate risks. This system will help strengthen DRR coordination, planning, and policy advisory capacities of African Regional Economic Communities. As implementations elsewhere have shown, the cooperation of forecasters and reservoir managers is critical for effectively addressing longer range predictions for disaster and water management. The transboundary aspect is also important when dealing with flood forecasting, as well as automatic hydrometeorological stations.

Key issues discussed

Disaster Risk Reduction Practice Research and Capacity Building Support for ECOWAS

Regional early warning system components:

Technical components

- Set up IT system
- Prepare hydrological model or multimodel ensemble
- Test and make available on the web

- Offer training
- Inventory available flood forecast systems
- Consider case of early warning system model development at Oti, Niger basins
- Incorporate reservoir characteristics and guiding rules in the flood warning system
- Develop real-time measures of forecast uncertainty for management

Organizational components

- Design policies on regional action during a flood
- Identify information needs of ECOWAS/ Member states/Basin authorities
- Actions to take during a flood
- Assess scale of flooding and links to the West Africa Flash Flood Guidance System

Main recommendations

- Regional action to deal with flood events
- Participation of all ECOWAS governments in the flood early warning system (FEWS) project by providing financial and technical support to actors
- Sensitize all the actors of the FEWS project from all countries
- Clarify the advantages of each actor's responsibility in this chain work
- Obtain quality and reliable data to establish a FEWS
- Ensure a good hydromet infrastructure with a regular survey and maintenance
- Share data within basins and/or countries through a cooperative convention
- Assess the vulnerability of each basin through good hydrological modeling
- Transfer funding to the stakeholders



- Communicate the developed policies and strategies of this analysis to the local community (e.g., farmers, fishermen) through diverse and easy communication channels (SMS, radio, TV)
- Ensure that the local communities based on the communication have taken the necessary actions
- Prioritize in situ observed data on modeling, rather than satellite ones, to reduce uncertainties
- Identify hot spots of extreme events in West Africa
- Take advantage of excess runoff from flooding events by constructing water storage infrastructure (e.g., dams) to harvest the runoff for later use
- Create links with the West Africa Flash Flood Guidance System to cover smaller scale floods seamlessly
- Develop regional mechanisms that enhance cooperation of forecasters and disaster and water resources managers

Challenges and opportunities identified

Key challenges

- Lack of quality and reliable input data for models
- Inadequate hydromet infrastructure for data collection
- Unavailability of IT systems for model development

- Lack of human resources
- Lack of information sharing among countries or regions
- Uncertainties from input data and model

Key opportunities for addressing challenges

- Establishing modern hydroclimatic infrastructure; the establishment of the West Africa FFGS in the region will facilitate such infrastructure
- Transfer technology for operation and maintenance
- Cooperation between countries and basin river authorities
- Sharing information
- Regional cooperation and capacity building
- Develop hydrological model or a multimodel ensemble that integrates the land use/land cover, soil properties, and physical processes in the basin
- Develop river routing models integrated with reservoir management guide rules in cooperation with countries and river basin authorities
- Develop components to quantify forecast uncertainty in real time for the effective use of the information from disaster and water resources managers

3.5 DRR Subregional Platform

Presentation and panel: Mohamed Ibrahim (ECOWAS), Katarina Soltesova (UNISDR), Essa Khan (ECOWAS), Oumar Adamu (Niger), Henry O. Williams (Liberia), and Alsau Sambou (Guinea Bissau).

Moderator: Malam Soumaila Ibrahim (ECOWAS)

Introduction

ECOWAS Member States have experienced increased occurrence and magnitude of disasters over the last decade, the result of erratic and changing weather patterns. The top 15 most vulnerable countries in the world are in Africa, including seven countries in the ECOWAS subregion (World Risk Report, 2012). These include Guinea, Liberia, Mali, Niger, Nigeria,

Sierra Leone, and Togo. The session focused on a structured dialogue with Member States and other stakeholders on the achievements, challenges, and opportunities on overall national and regional DRR policies, plans, and strategies. Participants discussed the DRR policies and strategies implemented by ECOWAS countries and highlighted their challenges and success.



Key issues discussed

Participants emphasized that some countries had DRR policies, plans, and strategies but that the strategies were not yet fully aligned with the existing Sendai Framework. Also, capacity and political support for the implication of the DRR policies, plans, and legislation are crucial in local and national resilience. Important challenges are impeding the functionality of national and regional DRR policies. Another key goal was to increase substantially the number of ECOWAS countries with national and local DRR strategies by 2020.

The next steps are to:

- assess countries' vulnerability and capacity;
- establish national strategies and ensure that management of disasters is aligned with the SENDAI framework;
- reinforce capacity in response to emergency cases;
- renew technical equipment in ECOWAS hydromet services;
- put in place a multi-risk system of the early warning; and
- establish a national fund for emergency.

Challenges and opportunities

- Response time is slow due to limited funding and logistics, which prolongs suffering of victims, especially in rural communities
- Increase the capacity of national institutions for DRR across West Africa to deliver on their stated objectives of national coordination and advocacy for DRR mainstreaming
- Update, review, and align governance documents (legislation, acts) with regional and international frameworks, such as the AU Program of Actions for DRR, ECOWAS Regional Strategy for DRR, and the Sendai Framework for DRR
- Address complex and conflicting institutional arrangements
- Increase human and financial resources and political commitment to fully implement policies and strategies and action plans
- Ensure funding to boost financial capacity and ownership of national policies and plans by Member States

Key opportunities for addressing challenges

- ECOWAS Commission to lead regional efforts to engage and build alliances with donors, development partners, and the private sector
- Enhancing partnership and technical assistance with technical institutions
- Aggressive resource mobilization for DRR activities within the subregion
- Setting up a DRR project implementation unit (PIU) and Engage International Consultants/ Global Training Organizations with significant experience in DRR capacity building
- Recruiting consultants to carry out preparatory work before actual training workshops to understand the ECOWAS Monitoring & Evaluation (M&E) System and design practical training tools aligned with the system
- Mainstreaming DRR in other developmental sectors (e.g., gender, agriculture, environment)

Key solutions for overcoming setbacks

- More than seven ECOWAS states have aligned their strategies with the Sendai Framework
- Countries are invited to share good practices and lessons learned in developing DRR strategies
- Multi-stakeholder and participatory approach in developing a DRR strategy
- Alignment with the Sendai Framework for Disaster Risk Reduction 2015 – 2030
- Ensuring financing for implementing the strategy
- Identifying capacity building needs for implementing the strategy
- Developing a monitoring framework to follow up on the implementation of gender-sensitive and inclusive DRR strategies
- Establishing links with climate change adaptation
- Sensitizing stakeholders
- Mobilizing resources to fund DRR policies and involve the private sector in funding
- Harnessing customized solutions from private sector best practices, and documented best practices from NGOs and civil society need to be harnessed



3.5.1 Introduction to Risk Financing for West Africa

Presentations and panel: Xiaofeng Li (World Bank), Assia Sidibe (ARC), Africa Development Bank.

Moderator: Essa Khan (ECOWAS)

Introduction

At this session, participants shared innovative risk financing and insurance strategies and private sector customized solutions for sustained and predictable DRR funding. They discussed the management and financing of natural disaster risks. Two programs were presented: the African Risk Capacity (ARC), a specialized Agency of the African Union (AU); and the Disaster Risk Financing and Insurance Program, supported by the World Bank.

Key messages included:

- Introduction to risk finance instruments, including four core principles of disaster risk financing
- Possible ways for countries to manage contingent risks
- What information and data are needed and how can weather, water, and climate services contribute to sustainable risk financing solutions?
- What variables do countries consider in developing risk financing solutions?

Key issues of the discussion

Disaster risk finance is one component of a comprehensive approach to risk management. Financial protection complements, but does not replace, risk reduction and resilience measures.

Four core principles in disaster risk finance:

1. Timeliness of funding: speed matters but not all resources are needed at once
2. No single financial instrument can address all risks
3. The amount of money that reaches beneficiaries is as important as where it comes from
4. The right information is needed to make sound financial decisions

Five steps toward strengthening financial resilience:

1. Take stock of how disaster response is currently financed
2. Gather risk information and carry out risk assessments
3. Decide on policy priorities
4. Build a financial protection strategy
5. Work with, and improve, existing processes

The African Risk Capacity (ARC) approach is based on the four principles cited above. ARC promotes the exchange of expertise among Member States and countries need to formulate their own disaster risk profile. This requires a contingency plan tailored to the countries' needs. Two ECOWAS countries have so far received funding from the ARC program. Participants suggested thinking about complementary financing mechanisms for climate change adaptation. Reflection and research on basic risk was also mentioned. Participants suggested setting up a priority research and development program on index research for modeling risks affecting the region, including for pastoralism.

Challenges and opportunities identified

Key challenges

- Accuracy of the models
- Data availability
- Lack of human and financial resources
- Disaster risks differ from one country to the other
- High premiums and the inability of governments to pay them
- Payouts do not necessarily cover all affected regions and communities



Key opportunities for addressing challenges

- Availability of models that can be adapted and customized (e.g., Africa Risk View model)
- Exchanging expertise among ECOWAS countries
- Taking into account and involving AGRHYMET in countries' risk profiles
- ARC has signed a Memorandum of Understanding (MOU) with the African Development Bank to help countries pay premiums
- Need for closer collaboration between ECOWAS, ARC, and AfDB for advocacy with ECOWAS Member States
- Establish contingency plans for DRR for ECOWAS countries
- Strengthen financial resilience and build a financial protection strategy
- Ensure that funds reach the affected people
- Decide on regional policy priorities
- Involve, and build the capacity of, microfinance institutions and insurance companies at the national level to enhance sustainability of risk financing.
- ECOWAS to capitalize on the signed MOU between ARC and AfDB and provide regional leadership and advocacy with Member States.

Key solutions for overcoming setbacks

- Exchange expertise among ECOWAS members
- Build capacity through training and equipment

3.5.2 Sendai Framework Monitoring and Implementation

Presentations and panel: Katarina Soltsova (UNISR), Nomsa Dube (AUC), Malam Soumaila Ibrahim (ECOWAS) and Sanna Dahaba (National Disaster Management Agency, Gambia).

Moderator: Essa Khan (ECOWAS)

Introduction

At this session, participants discussed the Desinventar online platform, which is a platform for data sharing on risk information that is available for ECOWAS countries. Nine countries are currently using the platform while five have uploaded their data. Some challenges and difficulties for users in using the platform were underlined. Also, strategies for implementing the Sendai Framework should include guidance and direction at local, national, regional, and continental levels. Specific actions should be undertaken by all the stakeholders involved in the DRR.

Key issues of the discussion

- Planning further capacity development and training of the platform
- Assessing existing risk reduction, preventing new risks, and managing residual risks, as well as reducing disaster losses relative to country population size and economy.
- Planning strategies for implementing the Sendai Framework for providing guidance and direction at the local, national, regional, and continental levels
- Specifying priorities and actions to be undertaken by all stakeholders involved in DRR
- Outlining DRR elements to be carried out over the 15-year period

As noted above, nine ECOWAS countries have joined the available online platform and five have already uploaded their data. Some challenges and difficulties remain in using the platform.

- Capacity building for stakeholders on the Desinventar and other tools



- Historic data collection and data harmonization for effective early warning
- Quarterly stakeholder meeting for the SFM National Focal Points locally and internationally
- Raising step-down training/awareness in the regions on the Sendai Framework and DRR action plan monitoring system

Challenges and opportunities identified

Key challenges

- Coordination
- Data harmonization from stakeholders
- Raising training/awareness of stakeholders on the Sendai Framework monitoring
- Human and financial resources (e.g., stakeholders quarterly meetings)
- Late reporting

Key setbacks faced by country, region, and community

- Plan of Action (POA) indicators should be as few as possible and must take into account measurability and data availability
- Data harmonization and subregional trainings for national focal points of the SFM
- Political instability
- Weak coordination
- ECOWAS' low visibility, advocacy, and leadership with Member States on implementing the Sendai Framework monitoring and capacity building on the Desinventar

Key opportunities for addressing challenges

- Ensure that the developed system is simple but effective
- Avoid duplicating and developing a parallel system that overburdens Regional Economic Communities (RECs) and Member States
- The African Union Commission (AUC) must take a leading active role in developing monitoring and reporting capacity in RECs and Member States
- AUC monitoring and reporting should be web-based
- Instead of using binary measurement in assessing their achievement, the Monitoring and Results Framework (MRF) proposes five-level assessment criteria to convert the 'qualitative characteristics' of the POA targets into 'quantitative values' to measure progress achieved

Key solutions for overcoming setbacks

- Thirteen indicators are proposed to monitor the five additional targets
- Of these, nine are at the country level while four are at the REC level
- UNISDR uses the same approach for the Sendai Monitor
- Conduct training for stakeholders on Desinventar and other tools
- Provide financial and material support
- Strengthen and maintain the existing local focal points for the Sendai Framework for the POA

3.5.3 Planning and Managing Recovery at the Regional Level

Presentations and panel: Koffi Hounpke (World Bank), Margareth Kumba Kamara (Sierra Leone), Florent Bakouan (Burkina Faso), and Henry O. Williams (Liberia).

Moderator: Alozie Amaechi (ECOWAS)

Introduction

The session discussed DRR planning, managing, and recovery in ECOWAS countries. The discussions

centered on disaster cases that occurred in recent years in some ECOWAS countries, such as Liberia (Ebola), Sierra Leone (twin disaster of landslide



and flood), and Burkina Faso (floods). Participants shared achievements and challenges incurred in the planning, management, and recovery experience in these countries. It was pointed out that regional support for governments facing disaster and preparing recovery programs should be promoted. Also, recovery needs extended beyond disaster occurrence and need to be framed and implemented as middle- and long-term objectives. The Disasters Recovering Framework (DRF) should be a collaborative tool to assist governments and partners in prioritizing, phasing, and recovering after a disaster. In addition, ECOWAS countries and partners should promote investments in environmental management to prevent and reduce disaster risks. Actions should be planned that would strengthen resilience and reduce the community's vulnerability.

Key issues of the discussion

Participants discussed cases of DRR planning and management of recovery in some ECOWAS countries. Presentations were made on the Ebola outbreak in Liberia, the twin disasters of landslide and floods in Sierra Leone, and the post-disaster crisis in Burkina Faso.

Lessons learned from these cases were to:

- Support governments facing disasters and preparing disaster recovering programs
- Recognize that recovery needs go beyond the disaster management organizations
- Make the DRF a collaborative tool to assist governments and partners in prioritizing, phasing, and recovering after a disaster
- Frame the recovery effort over a medium- to long-term horizon

This discussion on the subregional DRR platform planning and managing recovery at the regional level underscored the need for regional support for governments facing disasters and preparing recovery programs.

Challenges and opportunities identified

Key challenges

- Security
- Adaptation of Post Disaster Needs Assessment (PDNA) to national context
- Recovery and adaptation policy regulation
- Lack of communication and information systems for the recovery application
- Weak coordination
- Recovery planning funding
- Elaboration and adoption of policies and legislation of recovery plan

Key opportunities for addressing challenges

- Training and support local network on resilience
- Building a PDNA and recovery expert network
- Political engagement for the reinforcement of governing and institutional management of risk
- Support the creation of profit activities for victims, especially for women and youth
- Elaborate recovery framework documentation
- Private sector and civil society dynamically engage to reflect on the institutional report in the recovery framework
- Report on the community's post disaster practices in the Sahel region
- Tap numerous funding institutions to assist resource mobilization

Key solutions for overcoming setbacks

- Sustainable environmental management
- Build people's resilience to help communities bounce back and rebuild better after disasters
- Support the efforts of the National Disaster Management Agency establishment in ECOWAS countries

High-Level Session on Way Forward (jointly with AMCOMET): Toward Sustainable Financing for Hydromet, Early Warning, and DRR Services

Presentations and panel: Hon. Commissioner SIGA Fatima Jagne, Social Affairs and Gender, (ECOWAS); Hon. Commissioner Sékou Sangare, Commissioner, Agriculture, Environment and Natural Resources (ECOWAS); Hon. Djime Adoum, Executive Secretary (CILSS); Hon. Minister Amadou Kone (Côte d'Ivoire); Hon. Gilberto Correia Carvalho Silva, AMCOMET Bureau Chair and Minister of Agriculture and Environment (Republic of Cabo Verde).

Moderator: Prashant Singh (World Bank)

Closing Ceremony: Michel Laloge, Head of Cooperation (European Union); Pierre Laporte, Country Director (World Bank); Petteri Taalas, Secretary-General (WMO); H.E. Mr. Gilberto Correia Carvalho Silva, AMCOMET Bureau Chair and Minister of Agriculture and Environment (Republic of Cabo Verde); H.E. Amb. Josefa Leonel Correia Sacko, Commissioner, Rural Economy and Agriculture (African Union Commission); and Hon. Minister of Transportation Amadou Kone (Côte d'Ivoire).

Moderator: Johnson Boanuh (ECOWAS)

Better integration of services provided by hydromet and disaster risk management institutions is one of the key priorities in the region. ECOWAS has a key role to play in creating an enabling environment to ensure that regional and national initiatives align with ECOWAS-relevant policies and are implemented in a sustainable manner, leveraging key partners' core competencies for the benefit of the region. The panelists all agreed that to achieve these goals, modernizing hydromet systems, reinforcing expertise in relevant institutions through capacity development for staff, and improving infrastructure and data collection are sorely needed. Panelists also noted that funding alone is not enough to ensure national capacity to respond to disasters.

Panelists cited the need to establish national action plans to strengthen hydromet systems and adequate assessments before seeking funding from

development partners. They further called for the enhancement of the capacities of Agrhymet and its formal establishment as the Regional Climate Center for the subregion.

The panelists also committed to making an effort to ensure that both services (hydrology and meteorology) work in a complementary manner and to work with governments to allocate national funding for hydromet over the long term while working with external partners in the short term.

Adoption of the ECOWAS Hydromet Forum Communiqué and Closing Ceremony

Hon. Siga Fatima Jagne, ECOWAS Commissioner for Social Affairs and Gender, read the ECOWAS Forum Communiqué, which was jointly drafted and endorsed by representatives from ECOWAS, WMO,



AMCOMET, AUC, Côte d'Ivoire, and the World Bank; and forum participants at large.

Closing remarks were made by Michel Lalogue, Head of Cooperation (European Union); Pierre Laporte, Country Director (World Bank); Petteri Taalas, Secretary-General (WMO); H.E. Mr. Gilberto Correia Carvalho Silva, AMCOMET Bureau Chair and Minister of Agriculture and Environment (Republic of Cabo Verde); H.E. Amb. Josefa Leonel Correia Sacko, Commissioner, Rural Economy and Agriculture (African Union Commission); and Hon. Minister of Transportation Amadou Kone (Côte d'Ivoire).

Closing panelists agreed that climate variability, change, and changing weather patterns threaten to reverse the continent's development trajectories. The frequent occurrence of natural disasters related to weather and climate has not only increased, but also intensified. These have a significant impact on the continent's economic development and pose real threats to Africa's efforts to attain Sustainable Development Goals (SDGs) and to develop the blueprint from the Africa Agenda 2063. The meteorological sector has a huge and important responsibility to

contribute to Africa's socioeconomic development. The AU Commissioner highlighted the firm commitment of Africa's political leaders to the development of hydrology and meteorology in Africa through the endorsement of AMCOMET's Integrated African Strategy on Meteorology (Weather and Climate Services), made during the Twentieth Ordinary Session of the African Union in January 2013.

The panelists further indicated that ECOWAS, and the continent at large, benefit from good international collaboration with its partners, including the AfDB, EU, WMO, and World Bank, and they urged continued engagement. In endorsing the ECOWAS Communiqué, participants reaffirmed a commitment to take all necessary measures, both over the short and long term, to ensure that hydromet services are made available to the African people on a sustainable basis.

Expression of sincere gratitude was extended to the government and people of the Republic of Côte d'Ivoire for hosting the forum and for the warm hospitality accorded to the delegates.

Communications and Media Coverage

ECOWAS Hydromet Forum in the News

- ECOWAS Commission calls for energised regional leadership on meteorological, hydrological and climate services | **ECOWAS Commission** | repost by ReliefWeb
- ECOWAS forum urges modernisation of hydromet and disaster risk management services | **ECOWAS Commission** | repost by ReliefWeb & Nigeria News
- Africa needs more hydromet investment | **WMO** | repost by PreventionWeb & NGO Impact
- West Africa regional institutions to provide better support for early warnings | **CREWS**

Social Media Mentions

- ECOWAS Hydromet Forum & DRR Platform—Web, French
- Less than 25 percent of Met Services in the ECOWAS region meet Climate Services needs of DRR and Environmental management managers. #ECOWAS Hydromet Forum
Less than 25 percent of Met Services in the ECOWAS region meet Climate Services needs of DRR and Environmental management managers. #ECOWAS Hydromet Forum—Twitter
- CREWS participated in the ECOWAS Hydromet Forum that took place in Abidjan this week, discussing work in West Africa and the #Caribbean. Read more about the need for hydromet investment in Africa here: <https://bit.ly/2MWEXeg> #DRR—Twitter, CREWS

