United Nations Development Programme

Country: Burkina Faso

PROJECT DOCUMENT[1]

Project Title: Strengthening Climate Information And Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change: Burkina Faso

UNDAF Outcome(s):

UNDAF Pillar 1 Outcome 4 By 2015, national institutions and local communities use an integrated approach for sustainable natural resource management and take into account adaptation to climatic change

UNDAF Pillar 1 Outcome 5 By 2015, national authorities and local communities are better prepared and can respond efficiently to emergencies and natural catastrophes

UNDP Strategic Plan Environment and Sustainable Development Primary Outcome: strengthened national capacities, including the participation of women to prevent, reduce, mitigate and cope with the Impact of the systemic shocks form natural hazards.

UNDP Strategic Plan Secondary Outcome: Strengthened capacity of developing countries to mainstream Climate change adaptation policies into national development plans.

Expected CP Outcome(s):

1) Contribute to achieving the MDGs and the establishment of sustainable growth
2) Reinforce the government and its institutions

Expected CPAP Output(s):

Outputs for catastrophe management include:

1) The response capacity of national prevention institutions at national and local levels are reinforced
2) Catastrophe management institutions at national and decentralized levels are better equipped and able to respond to emergencies

Executing Entity/Implementing Partner:

Permanent Secretariat for the National Advisory on the Environment and Sustainable Development (SP / CONEDD)

Implementing Entity/Responsible Partners:

Ministry of Transport (MT), Ministry of Environment and Sustainable Development (MEDD), Ministry of Social Action and National Solidarity (MASSN), Ministry of Agriculture (MAHRH), Ministry of Communication (MC), Ministry for the Promotion of Women (MPF)

[1]For UNDP supported GEF funded projects as this includes GEF-specific requirements

Brief Description

It is expected that as climate change unfolds, the variability of the frequency and intensity of climate related shocks will increase, thereby necessitating key economic sectors to adapt. In a developing country such as Burkina Faso, climate change impacts are exacerbated by limited outreach mechanisms to local levels and a country dependence on subsistence agriculture. For Burkina Faso, improving Climate Information (CI) and developing an Early Warning System (EWS) is an effective way to build the general population's weather /climate risk awareness, so that they prepare accordingly and better manage long-term climate change risks, and associated uncertainties. Currently, a national EWS/CI for multi-risk forecasting (e.g. floods, droughts, strong winds) and the capacities to produce and disseminate weather/climate information does not exist in Burkina. In order to have an effective system, it is necessary to improve the existing network of weather/climate monitoring infrastructure and to help build technical and operational capacitiesto efficiently produce and deliver targeted forecasts for planning and decision-making. This project, with financing from the Least Developed Country Fund (LDCF) will address such needs. One component of the project will be used to improve weather, climate and environmental monitoring. A second component will be used to strengthen/develop national systems to package forecast warnings based on user-needs and to effectively disseminate warnings and other relevant information and data to assist decision-making processes. In conjunction with other ongoing initiatives of relevance outlined in this project document, LDCF resources are expected to enhance the adaptive capacity of vulnerable populations throughout Burkina to respond to extreme weather events as well as to facilitate long-term climate resilient development planning at the national and sectoral levels.

Programme Period:	2013-2017
Atlas Award ID:	00074218
Project ID:	00086732
PIMS ID:	5104
Start date:	September 2013
End Date:	September 2017
Management Arrangements	NIM
PAC Meeting Date	31 July 2013

Total resources required	$ 64,690,525
Total allocated resources:	$ 64,690,525
• GEF/LDCF	$ 3,600,000
• Government (Grant)	$ 53,550,000
• Government (Cash)	$ 40,525
• UNDP (Grant)	$ 5,600,000
• USAID (Grant)	$ 1,900,000

Agreed by (Government):

Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

Date/Month/Year

Agreed by (UNDP):

Date/Month/Year

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List of Acronyms

ASECNA	MeteorologicalForecast Center
CAP	ConsolidatedAppealProcess
CCC	Communication pour un Changement de Comportement
CES	Conseil Économique et Social
CI	Climate Information
CILSS	Comité Inter états de Lutte Contre la Sécheresse au Sahel
CNLES	Comité National de Lutte Contre les Effets de la Sécheresse
CNSA	National Advisory on Food Security
CONASUR	National Advisory for Emergency and Rehabilitation
CORESUR	Regional Advisory for Emergency and Rehabilitation
CPAP	Country Program Action Plan
CPD	Country Program Document
CSO	Civil Society Organization
DCIME	(Departmental Division on the Understanding of Environmental Information and Monitoring, Division du Développement des Compétences, de l'Information et du Monitoring de l'Environnement)
DGPA	General Directorate on Fishing and Aquaculture
DGPC	Direction Générale de la Protection Civile
DGPEDD	Direction Générale de la Préservation de l'Environnement et du Développement
DGPS	General Directorate on Sanitary Protection
DGPSA	Direction Générale de la Prévision et des Statistiques Agricoles
DGM	General Directorate on Meteorology
DGRE	General Directorate on Water Resources
DGPV	General Directorate on Vegetable Production
EWS	Early Warning System
HDI	HumanDevelopment Index
IPC	Indice de Perception de la Corruption
MAF/CAO	Cadre d'Accélération des OMD
MAHRH	Ministère de l'Agriculture de l'Hydraulique et de Ressources Halieutique
MASSAN	Ministère de l'Action Sociale et Solidarité Nationale
MATDS	Ministère de l'Administration Territoriale et de la Décentralisation
MDG	Millenium Development Goals
MEDD	Ministère de l'Environnement et du Développement Durable
MNRC,	Mécanisme National et Régional de Coordination des secours d'urgence et de la réhabilitation
MPF	Ministère de la Promotion de la Femme
MRA	Ministère des Ressources Animales
NAPA	National Adaptation Programme of Action
NGO	Non-GovernmentalOrganization
OCHA	Bureau de la Coordination des Affaires Humanitaire
PANA	Programme d'Action National d'Adaptation
PNSR	Programme National du Secteur Rural
PDNA	Post DisasterNeedsAssessment
PIB	Produit Intérieur Brut / Gross Domestic Product

PMA	Paquets Minimum d'Activités
PRSP	PovertyReductionStrategyPaper
RGPH	Recensement Général de la Population et de l'Habitat
RRC	Réduction de Risques et Catastrophes
SAAGA	Radar and Cloud Seeding Center for Aeronautical Aviation
SAP	Système d'Alerte Précoce
SCADD	Stratégie de Croissance Accélérée et de Développement Durable
SISA	System Intégré System d'Alert
SMART	Standardized Monitoring and Assessment of Relief and Transition
SNSA	Stratégie Nationale de Sécurité Alimentaire
SNU	Système des Nations Unies
SP/CONEDD	Permanent Secretariat for the National Advisory on the Environment and Sustainable Development
SONAGESS	Société Nationale de Gestion du Stock de Sécurité Alimentaire
UGP	Unité de Gestion de Projet
UNDAF	Plan Cadre des Nations Unies pour l'Aide au Développement
UNDP	United Nations Development Program
UNISDR	United Nations International Strategy for Disaster Reduction
WFP	World Food Program

1 SITUATION ANALYSIS

1. Burkina Faso is highly exposed to extreme weather and climate change impacts, most notably floods, droughts, strong winds (e.g., harmattan trade winds from the Sahara)and strong variability in the duration of the rainy and dry seasons. All of these impacts have made it difficult to manage natural resource-based productive sectors including agriculture, fisheries, and forestry. They have also compounded the difficulty of planningfor food security, health epidemicsand water resource management, particularly dam/hydropoweroperations (NAPA 2007).For instance, heavy rainfall in 2009 was responsible for flooding crops, washing away 22,220 hectares of farmland, breaking 15 dams and destroying 42,000 homes (PDNA 2010). Also, during hot and dry periods, Burkina becomes victim to the spread of vector-borne diseases including meningitis and cholera, where in March 2010 alone, a meningitis outbreak caused 193 fatalities[2].

2. It is predicted that extreme weather risks and associated losses are expected to increase in Burkina Faso[3][4]. To build the country's capacity to plan for such detrimental impacts/events, this project willstrengthenexistingEarly Warning Systems (EWS)and improveclimate information (CI) collection/transmission. The project objective supports the overall goal of increasing the resilience of the most vulnerable populations by empowering them with knowledge on weather forecasts andclimate scenarios which enables them to take preventive measures against expected impacts. However,in Burkina Fasocapacities to strengthen adaptation during crises/catastrophes related to extreme weather at decentralized levels are relatively limited; communes and decentralized line Ministries have limited knowledge of adaptation needs and options. Furthermore, although post-disaster management mechanisms exist, there is no top-down and bottom-up approach to make Burkina's socio-economic sectors less vulnerable to weather/climate-related risks; no standard two-way communication system is available to fully engage local level populations to find optimal use of EWS/CI to prepare for extreme weather risks and for adaptation to climate change.

1.1 **Problem statement**

3. In Burkina Faso, one of the challenges for enhanced planning and management based on EWS/CI stems from a limited network of hydro-meteorological monitoring infrastructure which can consistently transmit data at a fast enough frequency to effectively provide weather forecasts and help to predict climate scenarios. A lack of meteorological and hydrological monitoring stations has meant that many important regions and populations vulnerable to climate hazards are not monitored e.g. drought conditions (e.g., soil moisture) are not monitored for important agricultural lands, intense rainfall is not monitored in areas prone to landslides and flooding, and rapid rises in rivers as a precursor to flooding go unnoticed. As a result, many potentially threatening hazards have not been anticipated and some foreseen consequences have not been mitigated. A prime example is the 2009 major flood event, one of the most destructive floods in Burkina history, where Burkina was unable to alert the population.Furthermore, where stations exist, they are often manually operated and do not report measurements for several weeksafter the climate hazards have passed. Equipment failure is also common and regular checks and maintenance areoften neglected due to insufficient funds and poor budget planning resulting in poor quality and unreliable data for decision-making.

[2] Burkina Faso: Meningitis International Federation's Disaster Relief Emergency Fund (DREF)

[3]IPCC, 2012, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Cambridge University Press, Cambridge UK

[4]GFDRR report, April 2011.*Vulnerability, Risk Reduction, and Adaptation to Climate Change, Burkina Faso*, Climate Risk and Adaptation Country Profile.

4. Additionally satellite data is not fully exploited to forecast rainfall, soil moisture or monitor severe weather due to limited equipment required to download and visualize data effectively. Burkina was a recipient of the African Monitoring of the Environmental for Sustainable Development (AMESD) and Africa Adaptation Project (AAP) project until 2012 which provided a satellite receiving station for the reception of environmental data specific to Burkina. However, these programsfocused on procuring equipment and did not include sufficient capacity reinforcement for technical personnel on how they could effectively interpret and display the data for end users. By not establishing the groundwork for how to deliver satellite data services such as preparing drought risk maps, Burkina Faso currently does not have the know-how and remaining visualization equipment to produce useful maps and analyses which can assist long-term risk planning.

5. The radar network for monitoring rainfall is also limited in Burkina Faso; two radar exist at airports located in Ougadougou and BoboDioulasso and are operated and maintained by the Radar and Cloud Seeding Center for Aeronautical Aviation program (SAAGA). Both radarhave been installed to aid air traffic control, however, only the radar in Bobo is currently functional. (Another radar is housed within the Met Service building, however, this radar is used for African Monsoon Multidisciplinary Analysis (AMMA) research purposes only.)The radar has ceased functioning in Ouagadougou due to poor budget planning for recurring costs such as maintenance and spare parts.

6. With the African Adaptation Programme (AAP), Burkina Faso benefited from financial support to up-scale the number of existing weather stations and capacity development activities to set up equipment, training on maintenance and also dissemination of climate data. However this program did not cover the advanced techniques necessary to improve technical capacity and human resources required to prepare weather forecasts for the coming 1-7 days using a combination of Numerical Weather Prediction (NWP) models and predictions either from neighbouring countries or international centres. In situations where forecasts are externally sourced, forecasters are dependent on the applicability of the forecasts to local conditions and restricted in their ability to apply local observations to develop better forecasts (i.e., data assimilation). In the case of Burkina Faso, regional seasonal forecasts, such as the ACMAD's PRESAO forecasts are currently utilized by DGM, however, such forecasts are not sufficiently downscaled and localized to be appropriate for all of Burkina's three climate zones, nor useful for any further localized analysis that can aid adaptation planning.

7. Burkina also lacks tailored weather and climate products for specific socio-economic sectors. The forecasts and climate information are given in the same standard formats for different users and this restricts their interpretation and application. For example, agricultural extension officers require information about the start of the rains, or the frequency of days with rain, whereas those monitoring floods require information on rainfall intensity. Extracting these particular attributes from forecasts is currently not possible;weather forecasts are published in bulletins and on television with data concerning the next 24 hours. They provide general information on the minimum and maximum temperature of the current and next day, the quantity of rainfall (mm) and the state of visibility in different geographical regions. In the context of an EWS for Burkina, it is necessary to havemore refined spatial and temporal estimatesof expected rainfall intensityand wind speeds to outline with greater certainty, regions at risk. Furthermore, there is a limited database of climate information required for long-term planning and better management of water storage, crop selection and cultivation cycles.

8. There are also limited trained technical personnel with the skills required to maintain an observational network, generateweather forecasts and climate predictions and interpret data in ways that non-technical stakeholders from various socio-economic sectors can understand. The lack of trained personnel is compounded by the fact that current technical staff are close to retirement. Without sufficient technical expertise it is more likely to have gaps in data collection and an absence of hydro-meteorological equipment maintenance. In the case of Burkina, human capacity is required to:

- Take manual measurements and transmit information by post;

- Replace components of the observing networks when they fail;
- Manage and run forecast models;
- Determine how users best understand data and design information packages that address user-needs;
- Be able to combine, manipulate and overlay different data to identify areas at risk.

9. In terms of communicating EWS/CI messages, consultations with NGOs/CSOs during project preparation indicated that local populations do not always understand the technical jargon associated with weather forecasts. Also, they do not understand the limitations of forecasting in terms of prediction uncertainty. Furthermore, weather forecasts are currentlydisseminated in the media (TV, radio, written press, all of which can be public or private), however, there is no mechanism to make the flow of climate information and alerts more efficient and standardized. Most significantly, due to various absent or false alarms (as seen in 2008, 2009 and 2010), confidence in alerts must be rebuilt.

10. Furthermore, Burkinabé women, just as women in general, are more vulnerable to the effects of climate change relative to men; they constitute the majority of the world's poor (two-thirds, O'Brien 2008) and are more dependent for their livelihood on natural resources that are threatened by climate change, particularly those living in rural regions who have limited mobility. The gendered division of household labour means that women are responsible for the majority of subsistence household chores; women are generally charged with the responsibility to secure water, food and fuel for cooking and heating and often have very little time to devote to alternative sources of income due to domestic and farming responsibilities; in addition, they may be excluded from some activities due to cultural norms, or due to lack of capital and ownership arrangements that confer all rights to men in the family (Buhl 2005; Eriksen et al. 2005, Eriksen et al. 2007). This inequality is compounded by a lack of opportunities arising from limited access to education and information services which prohibit participation in decision-making. Due to all of these reasons, it is thus important to identify gender-sensitive strategies to ensure women are included in measures designed to improve their resilience and capacity to adapt to climate change (UN Women Watch 2008).

1.2 **Preferred solution**

11. The preferred (normative) solution for Burkina Fasois to improve national and decentralized capacities to better manage and plan for extreme weather and climate-related risks through the development of an Early Warning System (EWS) and enhanced Climate Information (CI). Specifically, the solution will include:

- Enhancing the capacity of the hydro-meteorological services and networks to monitor and predict climate variability and extreme weather events;
- Ensuring the sustainability of new investments in hydro-meteorological infrastructure including recurring costs associated with expanded networks and new services;
- Developing a rapid and targeted delivery of climate information including early warnings based on user-needs, both public and private;
- Formalizing an efficient communication dissemination protocol involving local focal points to distribute climate/weather information to vulnerable populations (including women) and;
- Strengthening capacities of agencies involved with EWS/CI production and dissemination on technical, institutional and human resource levels, emphasizing local agency capacity development.

1.3 **Barriers to achieving the solution**

However, this normative solution is hindered by a number of institutional, financial, technological and informational barriers including:

1.3.1 Insufficient coverage of weather, climate and hydrological monitoring infrastructure required to support the generation of reliable forecasts

12. In Burkina Faso there has been a steady decline in infrastructure dedicated to monitoring the climate, hydrology, environment and severe weather (e.g. meteorological and hydrological observing stations, satellite receivers etc.) over the last 20-30 years. Whilst this situation has been ameliorated by specifically targeted project interventions, this has often benefitted a particular aspect of the early warning system (e.g. African Monitoring of the Environment for Sustainable Development, AMESD,[5]which has improved the use of satellite data).

13. Consequently, forecasting local weather/climate risks is presently limited by insufficient localizedhydro-meteorological data required for model'ground-truthing' /validation. Based on Stakeholder discussions during project development, limited coverage of hydro-meteorological monitoringhas been identified as a key barrier for risk planning; there is widespread agreement in Burkina that monitoring networks must be expanded throughout the country, in particular the vulnerable agro-ecological regions (NAPA, 2007).

14. The sparse monitoring network inBurkina can be explained by several practical constraints:

i) Limited financial support to purchase new equipment or rehabilitate existing equipment;
ii) Need for reliable power sources required to transmit data and perform maintenance;
iii) Insufficient security of the equipment necessary to prevent against theft. Much of the equipment requires fencing and security guards;
iv) Limited trained personnel required for equipment operation and maintenance. Many technicians/engineers have retired or are in the process of retiring;
v) Limited means to conduct field validations including equipment calibration, station maintenance and data quality checks.

1.3.2 Slow data transmission from manual hydro-meteorological infrastructure

15. Data from manual meteorological and hydrological monitoring stations or instruments are primarily collected on a daily basis by manual observers which have been trained by DGM/DGRE, recorded on paper, and sent once a month by mail to the principal NHMS offices in Ouagadougou. Very few automatic, real-time flow or weather measurementsare collected currently. (An exception is the real-time data collected from 6 automatic, agro-meteorological stations provided through the NAPA1 project). This prevents decision-making for extreme events occurring with short lead time (e.g., flash floods). Currently, there are also no SMS/GPRS data communication systems in place to improve the rate of transmission of manual data collection.

1.3.3 Poor long-term budget planning

16. The maintenance of monitoring equipment, the human capacity to use and repair this equipment, process data and develop early warning packages, all require sustainable financing mechanisms and capacity development. Costs to support operation and maintenance as well as salaries and capacity

[5]http://www.amesd.org/index.php?start=25

building for technical public servants within the NHMS are recurring annual expenditures which require planning and budgeting. At present, given the public nature of hydro-meteorological goods/services in Burkina, these expenditures are generally regarded as recurring public expenses which are covered by annual government budget lines. However, the NHMS often struggles to pay for the maintenance and upgrade of existing equipment[6] due to poor long-term budget planning. Insufficient budgeting has led to the inability of SAAGA to cover maintenance costs for the radar in Ouagadougou and approximately 40% of the hydrological equipment to become non-operational.

1.3.4 Insufficient technically skilled human resources

17. Additional human resources are required so that enough technical expertise is available for equipment maintenance/operation and data analysis/modeling/forecasting. In Burkina, human resources are one of the main limiting factors for equipment operation, particularly when new equipment is procured. In fact, it is imperative to continue operation of existing equipment when new infrastructure is placed on-line so that climate/weather monitoring services are not interrupted. Furthermore, running forecast models is a highly skilled task and requires many years of education and training. Currently, this skill is housed within the ASECNA program used solely for aviation purposes in Burkina. Skills must be gradually transferred by ASECNA to DGM over the course of this project in order for the national population to receive targeted forecasts which relate to their specific socio-economic activities (e.g., fishing, subsistence agriculture).

1.3.5 Limited synergy amongst EWS-related initiatives / agencies

18. Burkina does not have a clear legal mandate for the issuing of warnings because the existing alerts for famine and dam management act independently. There is limited coordination between projects and within technical and government institutions to conform alert production and dissemination to one standard protocol. This has led to parallel roles in alert generation and a lack of information sharing and lessons learned. For instance, although a basic agro-meteorological information system exists in Burkina, this system is under-performing and leaves farmers without reliable information for day to day land management and agricultural practices. Furthermore, there is little collaboration with regional EWS initiatives, such as with ACMAD's regional EWS project, VigiRiSC (African Early Warning and Advisory Climate Services, AEWACS). The implication is that regional alert programs do not build off of localized national alert projects and the projects progress in a compartmentalized fashion.

19. Further down the alert dissemination chain, various NGOs/CSOs act independently to disseminate alert information without being able to report to consistent focal points that can be held accountable for alert communication. Furthermore, feedback from end-users required to validate and improve alerts is entirely lacking in Burkina.

1.3.6 Inconsistent cross-sectoral information dissemination and data sharing

20. There is nocentralization of hydro-meteorological / environmental data due to various institutions acting as information producers with limited means to transfer data efficiently between institutions. Most of the existing environmental data is not archived securely and awareness of information databases at different departments and institutions is limited. As concluded during Stakeholder conversations, all the information required to assess vulnerability and calculate risks needs to be transparent and accessible through a centralized portal. Accessible data can enable correlations of weather and hydrology data with other important environmental variables (such as the spread of water-borne diseases) or the creation of environmental variable maps; moreover, interdisciplinary data analysis can have broader relevance and

[6]see WMO Global Framework for Climate Services

application for local intervention planning and monitoring, as well as fostering a culture of knowledge generation for the future.

21. There is also a need to facilitate data sharing with countries in the region. The majority of West African countries depend on regional climatic zones which have similar weather and climate patterns. Regional forecasts from international and regional centres simulate weather and climate across countriese.g. seasonal forecasts produced through PRESAO and ACMAD. Similarly, the hydrologic network is linked between countries (Benin, Mali, Niger, Togo, Cote d'Ivoire, Ghana) because watersheds and rivers traverse country boundaries; rain patterns upstream must be communicated to downstream Burkina. Consequently hydrological models are lacking appropriate boundary and initial conditions because Burkina does not have centralized data to share and a centralized server which can facilitatethe storage and receipt of international data.

1.3.7 Limited capacity and no standard operating procedure to disseminate warnings

22. The Government of Burkina Faso has an established decentralized governance system on commune (district) levels to support local communities. However, the budgets available to decentralized governments are limited and consequently they do not have the financial means to buy communication equipment or work with NGOs/CSOs and private media to reach out to local populations and provide them risk information. Also, local community focal points / representatives do not have an official role in communication protocols and community members do not have a means to provide feedback to local representatives on the efficacy of communication.

23. At their local branch levels, the Burkina Disaster Risk Management Unit, CONASUR and NGOs/CSOs (CPF, SOS Sahel, etc) currently have limited technical capacity to disseminate alert messages and the means to plan for catastrophes. The provincial, departmental and local branches of CONASUR do not have the capacity to interpret, simplify and relay technical, meteorological and climatological information and alerts. Also, many dissemination agencies do not have the physical means to communicate efficiently so that information can be relayed from national to local levels and vice versa. Based on Stakeholder consultations, aStandard Operating Procedure (SOP) through which CONASUR, communication agencies (e.g., SIG) and NGOs/CSOs can have a formalized role in the alert/information communication loop is necessary.

1.3.8 Need for weather/climate information to be tailored to user-needs

24. Burkina does not have the technical capacity to generate weather forecasts and climate predictions which are useful to socio-economic sectors (e.g., agricultural, livestock, construction) for planning purposes. The lack of coordination between agencies has not enabled the integration of satellite imagery which can significantly aid in providing national coverage of useful information, such as soil moisture for livestock and cultivation planning. Also, there is no capacity to provide forecasts per region which is necessary for local planning. Weather bulletins must be tailored to specific sectors in an appropriate, non-technical language, responding to local needs and priorities.If products are tailored appropriately, then various sectors will support weather/climate services and ensure their sustainability. It should be noted that if the government sees the utility and indispensability of climate services, its financial support is more likely ensured.

25. Stakeholder discussions during project development indicated that forecasts/predictions should be translated into specific hazards experienced by different sectors and users e.g. heat units for livestock or wind speeds for agriculture. This information should then be combined with known vulnerabilities to identify areas and communities at risk. Furthermore, the warnings are often too technical for end-users. A breakdown exists in message dissemination because clarification is needed between the producers and communicators of EWS messages. Collaboration between the communication agencies (local, regional

and national) and the alert generation agencies must take place so that weather forecasting jargon can be simplified for the general public. Simplified alerts must also be translated into all national languages.

2 STRATEGY

26. No single initiative can completely remove all of the barriers aforementioned. Nonetheless, this project (hereafter referred to as the LDCF2 project) will work in conjunction with other EWS/CI-related initiatives to build off of their advances in removing these barriers[7].

The LDCF2 projectaims to address the above barriersby achieving the following two outcomes:

27. Outcome 1 of the project will procure new climate/weather and hydrological monitoring equipment and the rehabilitation of existing infrastructure. It will also build capacity for more efficient data transmission/treatment and for equipment operation and maintenance.

28. Outcome 2 will strengthen national and local capacities to effectively use and efficiently disseminate hydro-meteorological and environmental information/alerts. EWS/CI will be targeted to end-users so that they can build resilience to extreme weather / climate risks through adaptation measures. The integration of EWS/CI into long-term development plans will also be facilitated.

29. By achieving these outcomes, the project will strengthen the capacity of national and sub-national entities to monitor climate change, generate reliable hydro-meteorological information (including forecasts) and combine this information with other environmental and socio-economic data to improve evidence-based decision-making for early warning and adaptation responses. On a local level, the project will help Burkina Faso communities (particularly the most vulnerable ones and targeting women)to adapt and build resilience to climate-induced impacts by providing them with climate/weather riskinformation and an understandingrequired for anticipatory and autonomous adaptation.

2.1 Project rationale and policy conformity

30. The Government of Burkina Faso became a signatory to the United Nations Framework Convention on Climate Change(UNFCCC)in 1992 and is classified among the non-Annex 1 parties. Burkina developed and submitted their National Adaptation Programmes of Action (NAPA) in 2007 and is entitled to benefit from the LDC Fund for the implementation of NAPA priority measures. In implementing priority interventions identified in the NAPAs, the project is consistent with the Conference of Parties (COP-9) and also satisfies criteria outlined in the UNFCCC Decision 7/CP.7 and GEF/C.28/18. The project has been endorsed by the national UNFCCC and GEF focal points.

31. The project responds to priorities and actions identified in the National Adaptation Programmes of Action (NAPA) of Burkina Faso. The NAPA clearly identifies the need for EWS in their number 1 priority action, "***Strengthening prevention systems and early warning systems for food security***".

32. This project is specifically aligned with NAPA objectives including i) increased knowledge and understanding of climate variability and change-induced risks at the country level and in targeted vulnerable areas, ii) strengthened adaptive capacity to reduce risks to climate-induced economic losses andiii) successful demonstration, deployment, and transfer of relevant adaptation technologies. The

[7]Note that with the approval of this initiative,Burkina Faso will have two (2) initiatives under implementation and financed by the LDCF that are based on the priority project profiles identified in the country's NAPA. To avoid confusion, the first NAPA follow up project will be referred to as the **LDCF1** project and the current one on EWS/CI, the subject of this project document will be referred to as the **LDCF2** project.)

Burkina NAPA also articulates the need for securing, transferring and installing critical technologies, as well as developing the necessary systems for climate change-related information to permeate into decision-making processes. The technologies and capacity building required to achieve these aims will increase the capacity of the national early warning network to forewarn and rapidly respond to extreme climate events.

33. Burkina has also defined national actions and policies oriented to creating a basis for sustainable development. The Poverty Reduction Strategy Papers (PRSPs) in Burkina include the Strategic Framework for the Fight against Poverty (CSLP) and the Rural Development Strategy (SDR). Since 2000, Burkina Faso has tried to combat poverty through the CSLP. The Framework was revised in 2003 and takes into account the Millennium Development Goals (MDGs). Under the revised Framework, specific Priority Action Programmes (PAPs) were developed to achieve the objective of poverty reduction by 2015. Major objectives of the PAPs include substantially reducing poverty, increasing the Gross Domestic Product per capita (GDP / H) and increasing Burkinabe life expectancy from 54 (2002) to 60 years (2015). However, ten years have passed since the CLSP was revised, and the results are not sufficient. Overall, poverty has declined significantly, however, still at least four out of ten Burkinabe are considered to be in poverty.

34. In 2008, a peer review of the CSLP 2004-2008 was conducted,and concluded that "environment should be strengthened together with the economic and social pillars of sustainable development." In response, a new strategy, the Strategy for Accelerated Growth and Sustainable Development (SCADD, 2011-2015) was developed and is currently being implemented. The difference with the SCADD is that it focuses on the role of local authorities and requires revisiting decentralization policies. It also promotes the implementation of a Budget Programme to enable new dynamic programming, evaluations, resource allocations and implementations of development activities. SCADD is driven to improve result management, strengthen national leadership and improve the participation of non-state actors.

35. The four strategic axes of the SCADD include:

- Accelerating economic growth based on infrastructure development;
- Establishing human capital and social protection;
- Strengthening the economic, political and administrative dimensions of national and local governance and;
- Accounting for cross-cutting priorities: gender, population, environmental planning and capacity building

36. Burkina Faso has also developed a Poverty Environment Initiative (PEI) to create links between poverty and the environment. PEI-Burkina, formulated by the UNDP Country Office (CO), is supporting sectoral policies to integrate environment and climate change as a cross-cutting issue in revised development plans. It is also contributing to the SCADD process by providing documentation and information to the SCADD Secretariat and has been integrated into the Ministry on the Environment's three-year plan, which is an integral part of Burkina Faso's Rural Sector programme (PROSDRp).

37. Burkina Faso is furthermore focusing on addressing access of the poor to social protection. The Government implemented an emergency management unit, the National Council for Emergency and Rehabilitation (CONASUR) equipped with a permanent secretariat in 2006. Its primary mandate is to mitigate the effects of disasters on populations and adhere to the National Multi-risk Contingency Plan for Preparation and Response to Catastrophes (2008) and the National Civil Protection Policy adopted in 2010. The national contingency plan for disaster preparedness and response aims to: i) clarify the relationship / responsibilities between the State technical services and humanitarian partners ii) facilitate the coordination of and enable alignment of sector plans iii) identify and reduce most likely risks iv)

provide a general framework for joint planning covering emergency risks v) integrate the process of prevention, preparedness and response emergency plans and programs in national development and vi) reduce the response time and the number of casualties. These mandated activities by CONASUR support the elaboration of EWS for natural catastrophes.

LDCF conformity

This project is fully consistent with LDCF objectives and priorities:

38. Component 1 of this project supports LDCF/SCCF area objective 3 by promoting the transfer and adoption of adaptation technologies. The technologies to be adopted in this project include hydro-meteorological infrastructure required to support a national EWS.

39. Component 2 of this project supports LDCF/SCCF area objective 2 by increasing the adaptive capacity to respond to the impacts of climate change, including variability, at local, regional and national levels. Specifically, Component 2 will facilitate mainstreaming EWS/CI into development frameworks (PEI, SCADD) to support adaptive measures in vulnerable areas. Furthermore, Component 2 of this project promotes strengthened awareness of adaptation and climate risk reduction measures at the local level.

40. Outcomes 1 and 2 of this project are aligned with the GEF/LDCF portfolio level outcomes/outputs, namely

- Disaster prevention and response improved through updated and expanded DRM policies and plans that incorporate climate change risks and incentivize lower-risk development and;
- Capacity development at the local level to implement climate-related disaster prevention measures

GEF conformity

41. The project has been designed to meet overall GEF requirements in terms of design and implementation. For example:

Sustainability: The project has been designed to be sustainable at village and at national levels by building the capacity of local information dissemination organizations (e.g., CODESUR), extending the hydro-meteorological network nationally and developing an open-access data portal to enhance the utility of EWS/CI. Standard Operating Procedures will be put into place for alert communication and equipment operation and maintenance and can be easily followed after project completion. Training will also be provided to tailor climate product services geared towards public/private user-needs.

Monitoring and Evaluation: The project is accompanied by an effective and resourced M&E framework, that will enable an on-going adaptive management of the project, ensuring that lessons are learnt, management decisions are taken based on relevant and up-to-date information, and regular progress reports are available for concerned parties.

Replicability: Great attention has been paid in the project design to ensure that lessons are replicable, sufficient training builds capacity to transfer expertise into other initiatives and that necessary replication mechanisms are in place.

Stakeholder involvement: Following on from the NAPA process, the design of this project was undertaken in a participatory manner. Moreover, the design of the project has ensured the appropriate involvement of stakeholders (actors and users) in project development and implementation (See Section 2.9).

Multi-disciplinary approach: the project will undertake a number of activities to ensure various Ministries, NGOs/CSOs are fully engaged, have capacities built and can contribute to an efficient EWS and the delivery of climate products useful to a range of socio-economic sectors and end-users.

Gender equality: the project Outcomes will contribute to an understanding of weather/climate related risks and required adaptation responses. Public awareness campaigns and the integration of women's groups (e.g. Women in Law and Development in Africa,WILDAF) will strengthen gender equality in terms of women's ability to react to extreme weather and adapt to climate change. The project has also ensured and will continue to ensure that women are part of interventions and management committees and can voice their suggestions/concerns on the effectiveness of EWS/CI with the development of an end-user feedback mechanism.

Complementary approach: In order to build upon existing plans and avoid the duplication of efforts, the project will work in conjunction with relevant on-going projects in Burkina Faso and will create a multi-agency platform to ensure synergy among EWS agencies and with EWS-related initiatives.

42. This project is also aligned with the GEF Result Based Management Framework for Adaptation to Climate Change by including activities which are aligned with key GEF indicators.

- Incorporating climate information, warning, and climate change projections into DRM plans, policies and programmes (GEF indicator 1.1 and 4.4, Project Output 2.3)
- Strengthening stakeholder comprehension, particularly those most vulnerable, of alerts and climate information by clarifying technical forecast jargon in training sessions (GEF indicator 1.2, Project Output 2.2)
- Sustaining the technical and operational capacity built within DGM, DGRE and CONASUR and the availability of skills and resources beyond the project lifetime through the development of Standard Operating Procedures (GEF indicator 4.3, Project Outputs 1.6, 2.1, 2.5)

43. The proposed project has been prepared fully in line with guidance provided by GEF and the LDCF Trust Fund. The project follows the guidance from the 'Programming Paper for Funding the Implementation of NAPA's under the LDC Trust Fund (GEF/LDCF 2006). The project focus is also aligned with the scope of expected interventions as articulated in the LDCF programming paper and decision 5/CP.9. As climate impacts fall disproportionately on the poor, the project recognizes the links between adaptation and poverty reduction (GEF/C.28/18, 1(b), 29).

2.2 **Country ownership: country drivennessand country eligibility**

44. This EWS/CI project is not associated with any particular sector; rather, it is intended to intervene nationally by producing early warnings and climate information to support many areas such as food security / agriculture, water management, health and energy.

2.2.1 Country drivenness

45. The project has been formulated based on Burkina'sNational Framework for Climate Services. This framework was developed in late July 2012 following a three-day workshop led by the World Meteorological Organization. The workshop involved numerous governmental and non-governmental institutions concerned with hydro-meteorological information who together outlined a roadmap for the establishment of climate services. The roadmap has been used to help identify suitable investments and capacity building activities. Annex 5 shows the conclusions from the WMO climate services workshop indicating recommended activities to establish an EWS and outlining the lead institution and funding sources.

46. The project is also fully aligned with the UNDAF outcomes, which address adaptation to climate change specified in the National Strategy on Climate Change as a matter of priority and the need to prepare local communities against natural catastrophes. Similarly, this project will coincide with the CP Outcomes and CPAP Outputs by reinforcing government institutions to produce/deliver EWS/CI so that national and decentralized levels are better equipped to handle emergencies.

47. The Project is linked to country priorities of the UNDAF outcome 2.1 “Improved sustainable natural resource utilization and food security”, 2.2 “Improved access to sustainable livelihoods opportunities in an innovative and competitive private sector”, and UNDAF outcome 2.3 "Improved access to sustainable basic infrastructure”. EWS/CI will support all outcomes by providing forecasts (short-term and seasonal) based on end-user needs.

48. The project also directly addresses priorities in the Second National Communication (SNC) for Burkina Faso (2008) created under the UNFCCC and developed with the support of the Ministry on the Environment and Sustainable development (MEDD). Key areas of vulnerability in Burkina identified in the SNC include water resources, agriculture and forestry.

49. The project addresses the urgent and immediate activities identified in the NAPA, and is in line with the priority sectors identified in GEF/LDFC (2006). Notably, this project focuses on urgently needed adaptive capacities in the most vulnerable agro-ecological zones in Burkina Faso, and addresses priorities identified in the agriculture and food security sectors. It builds local community adaptation capacities as well as strengthens Commune and decentralized government services to be able to address adaptation in a well informed and knowledgeable way.Specifically, the project’s formulation has been driven to address urgently needed adaptive capacities in vulnerable agro-ecological zones defined in Burkina’s NAPA (2007) (See Section 2.3.4), and addresses the top NAPA priority. It will build local community adaptation capacities as well as strengthens Commune and decentralized government services to be able and address adaptation in a well informed and knowledgeable way. The systemic capacity to address adaptation in Burkina will be strengthened through targeted interventions at the policy, planning and budgeting levels.

50. Burkina Faso also has developed a unique NAPA coordination unit which drives three NAPA adaptation projects under the supervision of SP/CONEDD (The Permanent Secretary for the Council on the Environment and Sustainable Development) which is a government body attached to the Ministry for the Environment and Sustainable Development (MEDD). The UNDP CO has served as the implementing agent for the NAPA projects with the support of the Burkina government and has delivered these three projects in a timely manner.

51. The SP/CONEDD has also signed a partnership combining key institutions to support the National Framework for Climate Change research initiatives. Partnership members include DGM, the National Research Institution for Environment and Agriculture and the University of Ouagadougou. Together, these ministries have been represented by an ad-hoc working group for climate change. The group has jointly conducted climate change research, namely, climate trend studies, climate scenarios, vulnerability assessments and evaluations of adaptation costs using tools for mid and long-term adaptation planning. The tools which the group has utilized include R-Climdex for climate trends; the ENSEMBLE approach for climate scenarios; and the CROP WAT, Ricardian and T21 models for climate vulnerability and adaptation (V&A) assessments. Advantages of the working group partnership include; 1) climate data sharing and mainstreaming for research and planning, 2) open-access use of sophisticated climate analysis tools for the national institutions involved in the collaboration.

52. Burkina Faso has furthermore demonstrated significant country drivenness by implicating the private sector during the project design phase. Between December 2012 and March 2013, the CO and the

Met Service organized a workshop with private sector representatives to see their needs for tailored climate products. Eighteen different representatives gathered to discuss their interest in tailored climate products. Potential clients for weather/climate service products include the mining, building construction and cotton sectors. Details of this initiative are detailed in Annex 5.

53. In addition, the project is designed to be an integral part of, and support to, the on-going development process in Burkina Faso and supports the decentralized governance system. It will also support the integration of climate and environmental information into established policies and programs (e.g. The National Environment Plan, DCIME).

2.2.2 Country eligibility

54. In 1992 Burkina Faso signed and ratified the Rio Declaration on Environment and Development. The development and adoption of a series of strategies, action plans and programs has occurred pursuant to the Rio Declaration:

- The National Action Programme to Combat Desertification (PAN / LCD), the first strategy framework developed and implemented in Burkina Faso, under the International Convention on the fight against Desertification (UNCCD), was signed and ratified in December 1995;
- The National Strategy and Action Plan on Biological Diversity was developed in 1999 and adopted by the Government in early 2001;
- The first national communication under the United Nations Framework Convention on Climate Change (UNFCCC), submitted by Burkina Faso in November 2001 was finalized in April 2006.

55. Burkina Faso ratified the Kyoto Protocol on 16 November 2001. It became effective in February 2002. Consequently, Burkina Faso developed its National Adaptation Plan of Action, NAPA, published in 2007 in accordance with the requirements outlined in the UNFCCC COP 7, which listed 21 urgent and immediate adaptation needs expressed by the local populations. Out of those needs, five were identified as priorities. This project will build the capacity for climate change adaptation planning by implementing the number one NAPA priority which clearly identifies the need for development of an Early Warning Systems (EWS) for food security.

Relevant national legal frameworks

56. Relevant legislative provisions relevant to NAPA priorities, the environment and climate change impacts include

Articles 14, 29, 30 and 101 from the Burkina Faso Constitution:

- ".... The wealth and natural resources belong to the people. They are used for the improvement of their living conditions .... ";
- ".... the right to a healthy environment is recognized, the protection, defense and promotion of the environment are a must for all ... ";
- ".... every citizen has the right to initiate an action or join a collective action as a petition against the acts, injuring public property, adversely affecting the interests of social communities, undermining the environmental or cultural or historical heritage ... ";
- ".... The law determines the fundamental principles of the protection and promotion of the environment ... ".

Other relevant legislative texts related to environmental management:

- Law No. 014 of 23 May 1996 -96/ADP on agrarian and land reorganization in Burkina Faso;
- Law No. 005-97/ADP of 30 January 1997 on the Code of the Environment in Burkina Faso;
- Act nb 002-2001/AN 8 February 2001 framework law on water management, law -94/ADP No. 023 of 19 May 1994 on the Code of Public Health in Burkina Faso;
- Law No. 022-2005/AN of 21 June 2005 on public health code in Burkina Faso;
- Law No. 034-2002/AN of 14 November 2002 on the relative orientation law pastoralism in Burkina Faso.
- Decree No. 97-054-/PRES/PM/MEF of 6 February 1997 on the terms and conditions of application of the agrarian and land reorganization in Burkina Faso;
- Decree No. 2001/PRES/PM/MEE of 17 July 2001 on the scope, content and procedure of the study and the environmental impact statement;
- Decree No. 2001-185/PRES/PM/MEE of 7 May 2001 laying down standards for discharges of pollutants into the air, water and soil;

Burkina Faso has also signed a certain number of international conventions and agreements related to the environment. These include:

- The African Convention on the Conservation of Nature and Natural Resources ratified by Decree 68-277 of 23 November 1968
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat, ratified by Burkina Faso by year zatu VII 2 of 23 August 1989 Framework Convention on Climate Change ratified by Decree 93-287 RU September 20, 1993;
- The Convention on Biological Diversity ratified by Decree 93-292 of 20 September 1993 UK;
- The International Convention to Combat Desertification in Countries Experiencing Serious Drought and / or Desertification ratified by Decree 95-569 of the UK December 29, 1995;

2.3 **Design principles and strategic considerations**

2.3.1 On-going relevant national and regional related initiatives

57. This project will build on and complement existing Early Warning System related programs in Burkina Faso. Existing alert programs are used for famine and hydropower in Burkina Faso. Alerts for food security are coordinated by the Direction of Production and Rural Economy (DGPER) in the Ministry of Agriculture and Hydraulics with assistance from several national / regional institutes and technical and financial partners. In the regions around dams, DGRE provides alerts for 15 national dams when water is insufficient for irrigation or when reservoir levels need to change to mitigate floods for downstream residents. Because the current alert systems are targeted to specific risks in localized areas, neither of these alert programs is capable ofgenerating multi-risk warnings on a national scale.

58. At present there are many projects and programmes – both climate and non-climate related – which support EWS/CI. In order to ensure that the LDCF funds are used in a strategic manner, the LDCF project will build upon the initiatives and partnerships already in place. For instance, a partnership has been signed between the Departmental Division on the Understanding of Environmental Information and Monitoring DCIME (Division du Développement des Compétences, de l'Information et du Monitoring de l'Environnement), the National Meteorological Service, DGM, and the University of Ouagadougou to generate and disseminate climate data for local and national planning, downscaling, and climate vulnerability and adaptation multi-sector analysis.

59. Other related initiatives are promoting food security and adaptation to climate change activities. These related initiatives include the following:

60. An on-going NAPA priority initiative that has already been funded through GEF-LDCF (LDCF1) is entitled ***Reducing vulnerability to climate change by strengthening prevention schemes and managing food security crises in the Oursi and Boulsa zones***. The LDCF1 project has a component to develop a small-scale EWS to support food security. Thus far, 10 manual synoptic weather stations and 6 automatic agro weather stations have been installed. In partnership with DGM, the LDCF1 project is training farmers to make better use of seasonal forecasts and local daily climate data to improve agriculture practice. Thus far, the LDCF1 project has shown good results as a pilot project.The LDCF2 project will place additional weather stations in complementary locations to those planned by the LDCF1 initiative in order to establish national monitoring coverage and will effectively be used to scale-up the LDCF1 project.

Other adaptation to climate change related initiatives in Burkina include the following:

- UNDP/DANIDA's ***Adaptation to climate change for the improvement of human security in Burkina Faso*** ($870,000, based on a NAPA priority): This project has been successful in raising awareness of decision makers to adverse effects of CC and adaptation measures and has implicated many of the same NGOs/CSOs in project implementation due to their experience and knowledge of CC;
- Japan's ***Capacity reinforcement to better plan and implement developmental programs and projects linked to climate change*** ($2.9m, based on a NAPA priority): This project is involved with reinforcing the capacity and strategic planning of adaptation to CC, yet, on a global level by looking at the portfolio of CC projects in Burkina and ensuring their synergy;
- UNDP-GEF (LDCF)'s ***Capacity reinforcement for adaptation and vulnerability reduction to climate change*** ($3.4m): This project stresses good adaptation practices and best available technologies for agro-pastoralism in 6 pilot areas. The EWS/CI project can serve to feed the needs of these agro-pastoralists;

61. Future related projects building resilience to climate change within Burkina Faso which have yet to be implemented include 1) a UNDP-GEF/LDCF financed project, ***Integrating Climate Resilience into Agricultural and Pastoral Production for Food Security in Vulnerable Rural Areas Through the Farmers Field School Approach*** which will build resilience for agro-pastoral communities to climate change impacts; and 2) the UNDP $9.5m (2013-2016) ***Multi-year program for the resilient restoration of means of existence and for the reduction of Risks and Catastrophes in Burkina Faso*** which will build resilience of vulnerable populations to crises and catastrophes in the Sahel and Northern regions of Burkina Faso. Details of linkages to these two projects will be elaborated as the LDCF2 project is implemented.

62. Furthermore, a significant related initiative is **WMO's *Global Framework for Climate Services* (GFCS)**. Just before the beginning of the LDCF2 project preparation, the GFCS funded a workshop in Burkina to establish a framework for climate services at the national level. This initiative was a first step to improving communication between different sectors (health, agriculture, food security, private) on their needs for climate services. Other goals of this project are to: strengthen capacity for disaster risk reduction and early warning, perform large-scale data recovery and digitization, develop National Climate and Health Working Groups, partner climate services and water resources management.

63. This LDCF project is also related to similar initiatives developing climate information and Early Warning Systems in Africa. To date, 10 African countries including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia are in the process of detailing best practices and plans to develop EWS/CI. These projects will work in coordination through a regional team of experts to be hired between the projects. Their role will be to enhance the cost-effective hiring of specialized technical staff, coordinate data and information collection (including inter-country data sharing where feasible), training (on equipment operations & maintenance and the development of weather forecasts / climate predictions) and the effective use of communication and standard operating procedures.

64. Details of activities, which will benefit through the multi-country programme are described in section 2.6. For Burkina Faso, equipment procurement / rehabilitation Outputs 1.1, 1.2, 1.3, 1.4 and 1.5 will be enhanced by exploiting the common pool of regional experts to assist with acquiring the most appropriate/cost-effective technology/equipment and optimal placement/design of hydrological and meteorological monitoring networks. Outputs 1.6 as well as activities under Outputs 2.1 and 2.2 will also use the regional expertise to maximize training on infrastructure operation and maintenance and the development of tailored warnings/advisories/forecasts/climate predictions. Specifically, regional support can be used to engage multi-national corporations to invest in climate services (e.g., the mining and building construction industries) in Activity 2.2.3 which includes a pilot study to explore the economic viability of tailored forecasts / predictions. Further benefits of a regional approach can also be pursued through Output 2.4 where international data transfer can be facilitated to assist with cross-boundary hydro-meteorological forecasts / predictions. Similarly, through Output 2.6, countries can share knowledge on effective warning and communication strategies and integrate warnings issued by neighbouring countries in the case of shared watersheds.

65. Other regional related projects focusing on adaptation and/or climate monitoring include the following:

- Africa Adaptation Programme (AAP) – Burkina Faso (Funded $2.9m by Japan): This project is mainstreaming climate change information into national development policies, including disaster risk reduction actions. The LDCF2 project will serve to generate EWS/CI for integration into policies8 and policy formulation frameworks, therefore completing the work that was started with the Govt of Japan funding;
- Centre Regional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle (AGRHYMET, $4m) and the Permanent Inter-state Committee for Drought Control in the Sahel (CILSS): AGRHYMET developed the CILSS International Committee to invest in research which promotes food security and fights against droughts and desertification in the Sahel. In February 2013, they launched an adaptation to climate change project in West Africa to improve climate information. AGRHYMET hydrological and agro-meteorological monitoring data and forecasts, as well as satellite data will be used to enhance EWS/CI in Burkina.
- Permanent Inter-state Committee for Drought Control in the Sahel (CILSS, $13.25 funded by the EU, FFEM, CRDI and CILSS): This project is contributing to sustainable land management and capacity reinforcement for adaptation to climate change in West Africa in order to achieve the MDGs.
- Climate for Development in Africa Programme (ClimDev-Africa): Promoting the use of climate information for development;

[8]"http://www.adaptationlearning.net/project/strengthening-capacity-address-climate-change-adaptation-concerns-preparation-and-implementa" http://www.adaptationlearning.net/project/strengthening-capacity-address-climate-change-adaptation-concerns-preparation-and-implementation

- SERVIR project: Developing an integrated platform for data service discovery, acquisition, sharing, and use;
- Global Climate Observing System (GCOS): Coordinating body for the climate observing system worldwide;
- ReliefWeb (2011-2013): Information database providing Food Insecurity in the Sahel;
- Global Information and Early Warning System (GIEWS) (FAO): Information website providing data on Food Security worldwide including information specific in Burkina Faso

2.3.2 Baseline projects and financing

66. This project will build off of on-going grass-roots based projects which focus on participative community involvement. These projects are considered to be baseline for the LDCF2 project. Links with local awareness groups established through the USAID WA-WASH and UNDP COGEL projects will be exploited to facilitate warnings and community feedback required to improve the effectiveness of alerts. These significant baseline projects, along with support from the PNGT3 National Land Management Programme, the Poverty and Environment Initiative and the Ministry of Sustainable Devevelopment (see table 1 below) will be used to support and co-finance the LDCF2 project. The baseline projects which will co-finance the LDCF2 project are detailed below and summarized in Table 1.

- **The UNDP COGEL** project – The UNDP financed project ***Consolidation of the Local Environmental Governance*** was approved in October 2011 for **$4.0m** with UNDP core funds (TRAC) plus **$630K** from the Government. Operating at both national and sub-national levels, the project focuses on strengthening relevant structures and community based organisations to integrate a practical approach to sustainable development and natural resource management as a means to roll-out the National Strategy for Accelerated Growth. The project is focused on the regions of eastern and central-northern Burkina. This project will serve to co-finance this project for **$4m**.

- The ***WA-WASH*** project of **USAID** aims to improve access to potable and treated water in 4 West African countries including Burkina Faso, Niger, Mali and Ghana. Project financing is 28 M USD for all countries. Sub-projects aim to improve the agricultural productivity and life conditions in rural, farming regions by promoting sustainable agricultural and water management activities. Capacity reinforcement and microfinance mechanisms are also used to ensure the sustainability of the projects. These rural projects use ground-based support representatives. Co-financing for this project is **$1.9m**.

- **PNGT3 – *National Land Management Programme*** (World Bank co-financed under its *Community Based Rural Development Project*). The third phase of this project will begin in June 2013. The project supports rural communes in planning and implementing local development activities with a participatory and sustainable approach. PNGT works on the community level to give resources and support to local populations for their case specific needs. The Project contributes to the second phase of the National Programme for Decentralized Rural Development. It has three main components: A) strengthening capacity for decentralized rural development; B) local development financing; and C) rural land tenure reform. Behind the project's implementation is an investment of **$103m**, of which **$73m** were committed by the World Bank. Some 3,000 villages have been covered by the implementation of more than 18,000 micro projects and various capacity building activities. Many of these micro projects are located within the LDCF project zones. Co-financing provided by the PNGT3 project is **$53.5m**.

- **UNDP's Poverty Environment Initiative (PEI):** PEI-Burkina, formulated by the UNDP CO, supports sectoral policies integrating environment and climate change as a cross-cutting issue into revised development plans. The LDCF2 project plans to facilitate updates to the PEI by linking early warnings and climate information with poverty reduction. Co-financing for this LDCF2 project by UNDP PEI is **$1.6m**.
- Ministry of Sustainable Development (MEDD) will support the LDCF2 project with their existing budget used to promote environmentally-focused projects such as for sustainable water supply and reforestation. MEDD will provide **$40,525** in cash co-financing.

Table 1: Sources, Purposes and Amounts of Co-financing from Baseline Projects

Sources of Co-financing	Name of Co-financier(s)	Purpose	Amount ($)
COGEL Project	UNDP	To exploit the established local dialogue chains and the catastrophe response mechanisms on-the-ground. In return, the LDCF2 project will support regions build resilience to CC with EWS/CI	$4m
WA-WASH Project	US AID	To help farmers plan for droughts and rainy seasons and good water management practices and to exploit the extended network of local NGOs/CSOs implicated in WA-WASH	$1.9m
National Land Management Programme, PNGT Phase III project	World Bank	To assist the PNGT project by providing local populations with EWS/CI for planning purposes. The LDCF2 project will exploit the communication mechanisms with the local populations the PNGT project has reinforced	$53.55m
Poverty Environment Initiative	UNDP	To assist PEI-Burkina to create a link between poverty and the environment. The LDCF2 project's link with PEI will facilitate the integration of EWS/CI into revised SCADD and PEI policies	$1.6m
Ministry on Sustainable Development	MEDD	To support the LDCF2 project using existing government budget lines	$40,525
Total Co-financing			**$61,090,525**

67. Otherwise, various development partners and projects in Burkina Faso are investing in: i) hydrological and meteorological infrastructure and training in the country to support the DGM and DGRE to address their current capacity gaps; and ii) providing disaster risk reduction to support the national and regional capacity of Burkina's Disaster Risk Management Unit, CONASUR. These baseline projects are detailed in Section 2.4.

68. Overall, the total amount of funding requested, as articulated in the Letter of Endorsement and not including project preparation and agency fees is USD 3,600,000. The project is designed to build on the core baseline projects providing co-financing aforementioned and others described subsequently in Section 2.4. As indicated in Table 1 above, co-financing for this project includes more than **$61m**.

69. Financing will be used to support the DGM and DGRE manage meteorological and hydrological data in a way that is relevant to addressing climate change in the country. In spite of the good foundation of baseline and related initiatives / projects, there is a need to address issues related to the: i) collection of meteorological and hydrological data, as well as data analysis, storage and management; ii) editing and packaging of weather and climate forecasts for use in early warning systems and long-term development

plans; and iii) collaboration between EWS agencies, particularly to facilitate data exchange. There is a particular need to: i) strengthen the accuracy and localization of forecasting; ii) link national weather and climate information and early warning systems to existing communitiesand appropriate communication channels; and iii) develop innovative mechanisms for sustaining these weather and climate forecasting and warning systems.

2.3.3 National and local benefits

70. This project supports national development goals and plans to achieveMillennium Development Goals (MDGs) 1, 3, 6 and 7.

- MDG 1: Eradicate extreme poverty and hunger –This project aims to improve EWS nationally, providing useful climate information such as seasonal forecasts to 77% of the population who are rural and work with small-scale agriculture of which 53% are in poverty (NAPA 2007). Seasonal forecasts can enable the rural population to take adaptive farming measures to ensure productivity
- MDG 3: Promote gender equality and empower women – EWS/CI will be tailored to end-user needs, in particular the needs of women who have little access to farming, particularly on fertile land. Women focused NGOs have been implicated in the project (the Women in Law and Development in Africa organization, WILDAF and the Women's Forestry Assocation).
- MDG 6: Combat HIV/AIDS, malaria and other diseases – Malaria and other vector-borne diseases are heavily linked with climate variables such as temperature. This project will provide open-access data for institutions such as the Ministry of Health to use climate/weather forecasts to be able to predict the spread of such diseases.
- MDG 7: Ensure environmental sustainability – The foundation of this project is to ensure environmental sustainability by integrating EWS/CI into national policies, planning and decision-making. Such endeavors can assist in the sustainable use of natural resources through good water management practices.

71. Specifically, this project will be used to extend the national hydro-meteorological service networks and to build capacity for institutions throughout Burkina Faso on national, regional and local levels. On national levels, the project will be used to build capacity in DGM, DGRE, DCIME and CONASUR. This accounts for 530 people whowill gain operational and technical capacities.

72. Data sharing will also extend weather/climate information to the Ministries of Health and Agriculture which account for 20,000 beneficiaries.

73. On regional and local levels, the capacity of EWS/CI focal points will be built within CONASUR, the Direction of Communication (SIG) and NGOs/CSOs to disseminate EWS/CI. This accounts for 840 beneficiaries.

74. On a local level, Burkina's NAPA has outlined that, currently, the extreme northern, eastern and western regions in addition to the central plateau are particularly vulnerable and require improved rapid warnings for food security and extreme weather events (NAPA 2007, Figure 1). During the project planning phase, five tentative localities have been outlined based on the NAPA and the responses from NGOs during the capacity assessment held during the second workshop. Further analysis to validate and specify the choice of zonesto gauge project indicators will be conducted by DCIME during project implementation.

- North, Oursi,

- Central plateau, Boulsa,
- East, Diapaga,
- Southwest, Nouna
- South, Diébougou

75. These regions will benefit from the project by being able to have a targeted Early Warning System for their specific risk(s) (e.g., flooding, droughts, strong winds). Also, they will be able to exploit tailored weather bulletins, agricultural advisories, and the alert feedback mechanism to help improve the efficacy of alerts. Within the pilot zones, the project is expected to provide alerts and climate information nationally to over 70% rural and 90% urban people and an estimated 65% of whom will be women in the target communities.

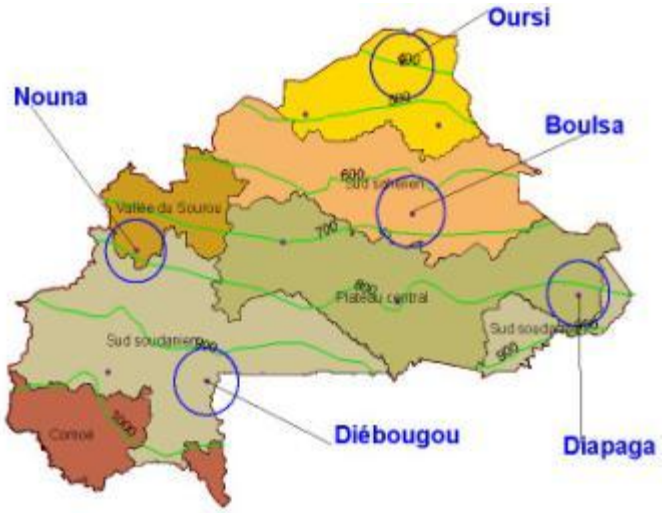


Figure 1: Five project target zonesrepresenting vulnerable agro-ecological areas in Burkina Faso
(Source: Burkina Faso NAPA 2007)

76. The private sector will also be potential beneficiaries from the project. During project preparation, contact with 12 companies has been made who have all stated their interest in using tailored weather/climate products. The LDCF2 project could therefore provide benefits to an additional 2,000 people.

77. Finally, activities for this project will build EWS agency capacity to inform long-term development plans for disaster risk prevention, environmental information use (DCIME) and Burkina's PRSP documents, the SCADD and PEI. These benefits have long-term positive benefits for the entire country.

2.3.4 UNDP comparative advantage

78. The proposed project is aligned with UNDP's comparative advantage, as articulated in the GEF matrix, in the area of capacity building, providing technical and policy support as well as expertise in project design and implementation. Additionally UNDP has close links with the Government, as well as a high level of experience managing other LDCF projects in the region, in particular those with an early warning component.

79. UNDP is already conducting several programs and initiatives that directly relate to capacity building within the DRM and other EWS-related initiatives. The UNDP-Burkina Faso Country Office is therefore already connected to important government agencies that will be instrumental in implementing this project e.g. the NHMS and disaster management. A prime example is the UNDP BCPR ($1.23m) project which will build institutional capacity development in disaster risk management nationally and regionally in two pilot sites.

80. UNDP is also working on CI/EWS in many countries and many sectors, strengthening its capability to coordinate and provide flexibility to handle changing needs between countries. The country offices are supported by Regional Technical Advisors at UNDP offices in Pretoria, as well as by policy, adaptation, economics and climate modeling experts in New York, Cape Town and Bangkok. A network of global Senior Technical Advisors provide additional technical oversight and leadership helping to ensure that programs on the ground achieve maximum policy impact.There are other LDCF, SCCF and Adaptation Fund -financed projects within the region with similar objectives currently supported by UNDP, which means that there is substantial in-house technical expertise within UNDP that can be brought to bearto support the Government with the project.

UNDP's comparative advantage in implementing this project is also underpinned by UNDP's energy and environment program strategy which aims to mainstream environment and disaster prevention measures into national and local development policies, strategies and plans with an overarching role of capacity development.In fact, in Burkina Faso, UNDP has a very large programme of projects focusing on governance, decentralisation, local development, gender, environment and energy and HIV-AIDS. The UNDP Country Programme counts on several partnerships within and outside the UN System which are described in the Country Programme Document (CPD). The entire CPD foresees investments of at least $40.6 million over four years. The Country Office in Ouagadougou works actively with the government and donors to build national capacity. More specifically, the cluster Environment & Poverty Reduction is currently managing some 25 projects, including those financed by GEF. Among non-GEF projects are flagship programs such as the UNDP/UNCDF ACRIC, UNDP PTMF and the UNDP COGEL. Besides core resources, UNDP Burkina Faso also manages funds from the EU, DANIDA, Bill & Melinda Gates Foundation and JICA. The proposed capacity development activities in all components of the LDCF2 project will benefit from UNDP's overarching and strategic role in this area, helping to ensure that related outcomes are sustainable in the long-term.

2.4 Project Objective, Outcomes and Outputs/Activities

Project Objective[9]

The project objective is to strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and available information for responding to extreme weather and planning adaptation to climate change in Burkina Faso.

81. The project aims to secure, transfer and install critical monitoring technologies in conjunction with developingweather risk / climate change information service delivery to strengthen decision-making processes and long term planning. A set of complementary outcomes and outputs will be used to strengthen monitoring and forecasting capabilities as well as to build capacity within technical agencies to combine cross-sectoral data to improve evidence-based decision-making. National and decentralized

[9]*Objective (Atlas output) monitored quarterlyERBM and annually in APR/PIR*

authorities (prefects, communities, women-focused organizations, NGOs/CSOs, media, farmers' associations) and the private sector have been important stakeholders in defining these outcomes and outputs during project development. These Stakeholders will continue to be consulted during project implementation and will be provided with the space and opportunity to contribute to the design of project activities.

Component 1: Transfer of technologies for climate, weather and environmental monitoring

Outcome 1: Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change(droughts, floods, strong winds)

Co-financing amounts for Outcome 1: $24,236,210

LDCF project grant requested: $2,424,700

2.4.1 Baseline Component 1, Without LDCF Intervention

82. Regional early warning systems are in place in Burkina Faso to produce alerts for food insecurity (by the Direction of Production and Rural Economy (DGPER) in the Ministry of Agriculture) or to notify residents near any of the 15 national dams that they are at risk for flooding or when water is insufficient for irrigation (alerts provided by DGRE). The existing food security EWS uses agro-climatic data and partnerships between the NHMS and the Ministry of Agriculture. Currently, DGM contributes data for agricultural planning including daily/monthly/annual rainfall, air/soil temperature, water vapour levels, and wind speed, among others. To acquire this data, DGMcollaborates with various regional and international partners.[10]

83. The General Directorate on Water Resources (DGRE) is responsible for operating and maintaining a surface hydrological monitoring network of 71 water level meters, 11 manual flow meters and 1 Acoustic Doppler Current Profiler (ADCP) flow meter. Paid observers[11]take manual readings once a day at minimum. Data is sent either weekly or monthly via post or telephone to DGRE, often resulting in critical delayswhich have made early warnings for flooding practically impossible. An exception is DGRE's management of hydropower operations (dam spillways and reservoir levels). They are currently capable of generating automatic alerts to the populations located around the dams through radio communication.The DGRE's annual operation and maintenance budget for the hydrological network is ~US$ 81,000.

84. At present, a number of challenges limit the DWRM's water resource monitoring and assessment capacity. Coverage of the country is very limited. All hydrological equipment is manual which prevents rapid warnings for inundation and flash floods from being generated and disseminated. Some flow gauges have been damaged during floods and others have been poorly maintained. At present, approximately 60% of the equipment is not functioning. DGRE has existing hydrological modelling software, HECRES and MIKEBASIN. They have been trained by external experts during recent years over weekly increments. However, this limited training has not enabled them to make the flood or water management models fully operational

[10]Christian Aid report. Nov. 2010. "EWS Networks in Mali and Burkina Faso." Accessible at: http://community.eldis.org/.59e99ac1

[11] Observer salaries are paid by government budget lines

Table **2**.Status of existing hydrological equipment under the DGRE (see Annex 6 for location and operation status of existing equipment).

Station type	Existing	Fully operational
Water level (stage) measuring equipment	71	60
Manual flow meters	11	7
Acoustic Doppler Current Profiler (ADCP) flow meters	1	Not deployed because lack of understanding on how to use equipment

85. Baseline projects related to water resources include i) the GFDRR project Mainstreaming disaster reduction and CCA in Burkina Faso ($4.5m, ending in 2014) which has established a pilot study early warning system and purchased hydro-meteorological equipment including hydrological flow meters and rain gauges in the pilot zones and ii) the WHYCOS (World Hydrological Cycle Observing System) project. Local watershed modelling initiatives under WHYCOS, the Volta-HYCOS and Niger-HYCOS projects, are focusing on cross-boundary watersheds by exploiting and sharing satellite information related to hydrology to model common drainage basins which traverse country boundaries.

86. The General Directorate on Meteorology (DGM) is responsible for establishing and maintaining the weather and climate observation network in Burkina Faso. This includes data collection, analysis and exchange as well as the production of weather and climate information and products (including warnings) to support social and economic development. ASECNA, the regional Meteorological Forecast Center, is an operational arm of DGM which is concerned with forecasting for aviation and launching the radiosondes in Ouagadougou and Bobo once per day. Presently, only ASECNA has the capacity to produce forecasts. SAAGA, the Radar and Cloud Seeding Center for Aeronautical Aviation, is responsible for radar operation.

87. The weather and climate observation network managed by the DGM includes 20 synoptic, 20 agro-meteorological and 8 climate stations as well as 100 rain gauges. Two satellite receivers, one at DCIME and one at DGM exist. Two radar exist at airports located in Ougadougou and BoboDioulasso. Both radar have been installed to aid air traffic control, however, only the radar in Bobo is currently functional.

88. Presently, observation stations do not cover the spatial variability of the three different climate zones (See Figures in Annexes 6 through 9). Most existing stations are obsolete and in need of rehabilitation (with the exception of newly acquired stations acquired through the NAPA1 project). DGM has limited spare parts and insufficient maintenance and calibration equipment. There is a shortage of modern and/or automated monitoring stations. As a result, data is transmitted from existing weather/climate and hydrological stations typically once a month. This inhibits the use of hydro-meteorological information for making early warning systems and long-term development plans.

89. In addition, the one radiosonde launch per day does not adhere to WMO recommendations to monitor the atmospheric vertical profile twice per day (at noon and midnight) to effectively contribute to regional forecasting models. Furthermore, the radar in Ouagadougou has ceased functioning due to poor budget planning for recurring costs such as maintenance and spare parts. Repair is quite expensive because SAAGA is dependent on an American company to send qualified personnel and spare parts to perform maintenance.

Table **3**.Status of existing meteorological stations under the General Directorate on Meteorology in Burkina Faso.

Station type	Existing	Fully operational

Synoptic, manual	20	0
Agro-meteorological, manual	20 (6 automatic)	7
Climate, manual	8	5
Rainfall gauges	100	60
Radar	2	1
Radiosonde	2	2
Satellite receiving stations	2	2

Table 3 above includes meteorological equipment funded bythe following baseline projects:

90. Under the Africa Adaptation Programme, 10 manual synoptic weather stations and 6 automatic agro-climate stations (supplied by ADCON) have been installed in two agro-ecological zones. The new automatic ADCON stations have been placed next to existing manual synoptic stations and are functioning well. The plan is to displace these automatic stations once DGM gains enough capacity to maintain them.

91. The European Union funded project Preparation for the Use of MSG in Africa (PUMA) made available data and products from EUMETSAT's latest satellites, promoting African National Meteorological and Hydrological Services to provide accurate weather forecasts, monitor extreme weather phenomena, and improve disaster management. The African Monitoring of the Environment for Sustainable Development (AMESD) initiative takes PUMA a stage further by significantly extending the use of remote sensing data to environmental and climate monitoring applications. For West Africa, ECOWAS adopted the theme of water resource management and the management of crops and pastures. The project was entrusted to the Niamey-based Regional Centre for Training and Application of Agrometeorologyand Operational Hydrology (AGRHYMET). Funding for this project ended in 2012 and will continue in 2013 under the MESA project. The MESA project will enable DCIME to have access to satellite data.

92. The MESA project in coordination with the Group on Earth Observations (GEO) AfriGEOSS initiative is building satellite data acquisition capacity in Burkina Faso. As Burkina is one of the 22 members of the AfriGEOS initiative, they are able to exploit regional education and training programmes, have greater access to open-source software and systems and more easily share data internationally.

93. The Famine Early Warning Systems Network (FEWS NET) funded by the U.S. Agency for International Development (USAID) is an information system designed to identify problems in the food supply system that could potentially lead to famine or other food-insecure conditions. The FEWS NET data portal provides access to geo-spatial data, satellite image products, and derived data products in support of FEWS NET monitoring needs throughout the world. Burkina Faso in one of the participating countries of FEWS NET and currently exploits the satellite image products.

94. The African Center of Meteorological Application Development (ACMAD) is in the process of implementing a regional project called ViGIRisC in Burkina. This initiative is developing capacity within National Meteorological Agencies and facilitating coordination of other Met Agencies within West Africa. The goal of the ViGIRisC project is to build forecasting expertise within West Africa's National Meteorological Services and train them to establish an EWS for the region. Burkina Faso is already an active member of this regional project.

95. Despite the support of the associated baseline projects, infrastructure and knowledge on the implementation of modern weather, climate and hydrological forecasting is still required. No repair tools

or manuals are available, in particular for automated equipment. Very little equipment if any (none in the case of DGRE) is automated. Furthermore, despite investment in computer equipment through existing projects, limited training in relevant software has been provided to DGM and DGRE personnel. This prevents the development of modern weather forecasting and climate change modelling capabilities. Also, little data from Burkina Faso is transmitted internationally through the Global Telecommunications Network (GTS). This is as a result of the obsolete and inadequate status of meteorological infrastructure in the country. Weather and climate observations from Burkina Faso are therefore not being effectively incorporated into regional and global circulation models which decreases the accuracy of these models for the Burkina context.

2.4.2 Adaptation Alternative Component 1, With LDCF Intervention

96. Under this component the Government of Burkina Faso will use LDCF resources to procure, install and/or rehabilitate critical infrastructure required to build and strengthen the climate-related observational network nationally for multi-risk purposes (floods, droughts, and strong winds). All existing EWS projects are focused on predicting floods, famine or best dam management practices in localizedgeographical areas. In contrast, this component will focus on establishing national hydro-meteorological monitoring capabilities in order to produce EWS/CI for the three climate zones in Burkina, particularly the most vulnerable agro-ecological zones indicated by the NAPA.

97. Data will be communicated by improving transmission (for existing manual stations) through SMS or GPRS connections (in the case of automatic weather stations). Data will also be transmitted through the acquisition of CB radios provided for key information producers. Existing written records will be digitized and all data will be stored in secured servers housed within each information production agency. Treated, comprehensible data will be transmitted to an open-access data server (see Component 2).

98. In addition, this component will address current equipment failures (radar in Ouagadouou) and insufficiencies (need for an additional radiosonde launch). The concrete output and activities of this component include training required to support the sustainability of monitoring infrastructure.The outputs address the needs highlighted by EWS information production agencies during bilateral consultations held during project preparation phase between September and November 2013 (See Annex 4 and 5).

99. Salaries for DGM, DGRE and DCIME are covered under existing Ministry of Transport, Ministry of Water and Ministry on the Environment (SP/CONEDD) budget lines respectively. New recruited personnel will be mandated to stay in their specified positions after being trained for 5 years in order to ensure knowledge sharing as per the TORs.

100. Specifically. LDCF funds will build on the above mentioned baseline projects in the following manner:

- Create a formalized partnership between DCIME, DGM and the University of Ouagadougou for climate data collection and dissemination by implicating all these parties in the EWS/CI project:Each of these agencies has a large role in the LDCF2 project and has been consulted during Stakeholder consultations to get feedback on their capacity reinforcement and equipment needs in order to effectively implement the project.
- Establish a strong synergy with the GFDRR project in order to complement the activities for developing EWS: It should be noted that the development of EWS in the GFDRR project is on a limited scale in pilot areas. In fact, the budget for hydro-meteorological equipment is 3 times less than that of the LDCF2 project. As a result, the LDCF2 project will expand the EWS initiative to the

national scale by focusing on larger agro-ecological zones and building off the equipment acquisitions to expand weather/climate/hydrological monitoring networks nationally.

- Reinforce collaboration with AMESD/MESA,FEWS NET and the recently launched SERVIR[12] program at the regional level which have assisted in reinforcing satellite reception equipment at DCIME:In all of these satellite datainitiatives, there have been no measures to build capacity to effectively visualize and analyze the data to produce multi-risk alerts specific to Burkina.The LDCF2 project will complement these projects by enabling DCIME to exploit the satellite data to create risk vulnerability maps for multi-risk events including floods, droughts and strong winds.The LDCF2 project will focus on producing short-term seasonal forecast mappings as well as long-term projections of climate change risks.
- Build off theViGIRisCproject (ACMAD) by using their knowledge on EWS in the region and exploitingknowledge sharing opportunities sponsored by theViGIRisC project: The LDCF2 project includes funds to send DGM personnel to ViGIRisC's training courses for West Africa.
- Build on the existing WHYCOS regional hydrology project: The National Hydrological Service (DGRE) has gained experience in watershed modeling in two watersheds, Volta and Niger. The LDCF2 project will reinforce the existing hydrological modeling expertise by updating modeling licenses, adding new equipment to assist with downscaling and training new technical personnel.

101. Following feasibility assessments and stakeholder consultations conducted between September 2012 and April 2013 (see Annex 4 and 5), LDCF resources will be used to achieve the following outputs:

Output 1.1: and installation of 100 water level monitors to be placed on 11 manual, hydrological stations and 8 acoustic Doppler flow meters (ADCP) for the National Hydrological Service (DGRE). All equipment will include data transmission/processing/storage facilities which will feed into hydrological forecasting models.

Under **Output 1.1**an increase in the coverage of the hydrological monitoring network nationally will lay the foundation to better calibrate hydrological models, generate locally relevant flood forecasts, monitor sharp rises and increases in river flow, and generate projections of expected changes water resource availability. In turn this allows the NHMS to identify dangerous floods before they occur, issue warnings to populations and dam managers downstream and alert communities at risk.

Equipment acquisition will provide appropriate means to transfer data to a central server. Manual station data will continue to be collected with volunteer data observers (generally water level readers). New automatic flow meters (ADCPs) will be outfitted with GPRS connections so data can be related to DGRE in real-time. Such fast transmission of data can enable early warnings for short lead-time events such as flash floods. Digitization of written hydrological records will improve the availability of data for climate predictions and analyses.

Indicative activities include:

1.1.1 Procurement of 100 water level meters to be placed on 11 manual, hydrological stations and 8acoustic Doppler flow meters (ADCP). Stations costs include fencingand full-time local security guards to prevent theft. (For locations of 11 hydrological stations where the water level markers will be placedsee Annex 7). Salaries for existing security guards are paid by existing government budget lines. It is assumed that the government will continue to support salaries for newly

[12]http://www.servir.net/africa/index.php?option=com_frontpage&Itemid=1

recruited guards based on proper budget planning by DGRE (See Output 1.6 which includes capacity reinforcement for sustainable budgeting and planning).

1.1.2 Field monitoring and evaluation annually to validate flow (i.e., discharge) calculations based on comparing river heights with river flows (i.e., rating curves).

1.1.3 Purchase of privileged phone systems (CB radios) and SMS communication services to enable fast transmission of manually collected hydrological data.

1.1.4 Purchase of a secure data server to build a long-term flow database which can help in the prediction of flood probabilities and to assist with data quality control.

1.1.5 Digitization of written hydrological data to be stored in the secure data server for the use of generating climate predictions and analyses.

1.1.6 Renewal and purchase of hydrological modelling licenses (MIKE BASIN) including training for three (3) DGRE engineers with modelling software.

1.1.7 Knowledge sharing between the Water Study and Information Center (DEIE) and DGREon hydrological modelling.

Output 1.2: Procurement and installation of 40 automatic climate stations, 10 automatic synoptic stations with telemetry and 100 rain gauges for the National Weather Service (DGM), including improved data transmission/processing/storage facilities. (For existing and proposed station arrangements, see Annexes 8 and 9)

During the preparatory phase, stakeholders prioritized the procurement of Automatic Weather Stations (AWS) using GPRS mobile telecommunicationsystems. Based on the experiences of the LDCF1 project in Burkina Faso (which had a component on procuring 10 manual synoptic stations and 6 automatic agro-climate stations)the DGM has already been trained on manual and automatic equipment operation and maintenance.In their budgets they weighed the future running costs and the ease of maintenance. As a result of this analysis, DGM decidedthat they need to procure automatic synoptic and climate stations to complement their existing installations. Their feasibility analysis also detailed the required number of stations and where they should be located (See Annex 9). Specific locations are still under negotiation and will be finalized during project implementation. A future feasibility study during implementation has been included in project design to enable DGM to meet with end-users, private and public to determine the best station placement. Fences and local security guards have been budgeted in Output 1.2 to prevent theft and GPRS / SMS transmission mechanisms have been budgeted to provide hourly / daily data transmission. Written meteorological data will be digitized to create longer time series for climate statistical analysis.

Indicative activities include

1.2.1 Procurement of 40 automatic climate stations, 10 automatic synoptic stations and 100 rain gauges. Four of the 10 synoptic stations will be placed in Djibo, Diapaga, Leo, and Niangoloko in order to have a synoptic station in each Burkina region. Costs include station testing every 3 months and a comprehensive inspection annually over the course of the project. Continual monitoring costs will be incorporated into government budget lines by the end of the project.

1.2.2 Field consultations with village representatives during project implementation prior to equipment installation to verify weather equipment are installed in useful and secure locations.

1.2.3 Construction of secure fencing around weather stations to prevent theft of solar panels, mercury from thermometers, rainfall gauges, etc. Enclosure costs are approximately 500,000 FCFA (1,000 USD) per station.Costs include recruitment of full-time locally-employed security guards at each station. Salaries for existing security guards are paid by existing government budget lines. It is assumed that the government will continue to support salaries for newly recruitedguards based on

proper budget planning by DGM (See Output 1.6which includes capacityreinforcement for sustainable budgeting and planning).

1.2.4 Purchase of radio systems (CB radios) and SMS communication to enable fast transmission of manual data from existing weather stations.

1.2.5 Purchase of a secure data server i) to build a long-term database to assist in climate risk and climate change predictions and ii) to centralize data from rain gauges and agro-meteorological stations, managed by the Department of Agriculture and private mining companies after it has been quality checked.

1.2.6 Digitization of written meteorological data to create longer time series for detecting climate change trends. Data will be stored in the secure data server financed by LDCF funds.

Output 1.3: Rehabilitation of the radar in Ouagadougou including acquisition of spare parts and knowledge sharing to build self-sufficiency within SAAGA to be able to undertake radar operation and maintenance *(125,800 USD)*

This includes the first initiative in Burkina to build sustainability with radar equipmentrepair. Burkina Faso is now dependent on importing specialized technicians from the United States for complicated repairs every time one of the two radar mal-functions.Consequently, LDCF funds will be used to contract in aradar specialist to train SAAGA on how to become more self-sufficient with radar repairs and to ensure that recurring costs are well-understood and included in government budget lines.

1.3.1 Radar repair and acquisition of necessary tools and spare parts by/from radar specialists and other vendors including solar electricity equipment to enable data transmission when there are local power failures.

1.3.2 2 week training for 3 SAAGA technicians on radar maintenance and operation principles to build capacity to become self-sufficient

1.3.3 Purchase of microwave link (to circumvent internet failures) to enable hourly transmission of radar data to the EWS centralized data server (See Component 2)

1.3.4 Purchase of power surge prevention equipment to prevent electrical blow-outs

1.3.5 Transfer of radar images from ASCENA to DNM's operational forecast center

Output 1.4: Radiosonde equipment for ASECNA to provide one more sounding at midnight (in addition to at noon) to generate vertical, atmospheric profile information for generating weather forecasts according to WMO standards

Upper air monitoring through radiosondes are useful for sampling the vertical atmospheric profile to update regional and global forecast or climate models. Through **Output 1.4** LDCF funds will be used to add an additional upper air sounding at midnight every day to improve forecasting capability (http://www.meteolafleche.com/emagramme.html). By launching two radiosondes per day, Burkina Faso will be in agreement with WMO guidelines. The radiosonde information will be shared with international data collection agencies (University of Wyoming, http://weather.uwyo.edu/upperair/sounding.html) to improve numerical weather prediction at international centers and downloaded by DGM. Due to ASECNA's sources of private funding from the aviation sector, covering recurring costs is not seen as an issue after the project ends.Similarly, ASECNA also acts as the operational arm of DGM so there are no foreseen conflicts with data sharing between the agencies.

1.4.1 Hydrogen and balloon equipment to provide aradiosonde launch at midnight.

1.4.2 Training for 2 night-time technicians; 1 general operator and 1 hydrogen operator.

Output 1.5: Equipment for improved satellite imaging and data visualization for the Departmental Division on the Understanding of Environmental Information and Monitoring (DCIME).

LDCF resources will be used for the procurement of satellite data analysis equipment and the enhancement of data/image processing facilities. The potential uses of satellite data and imagery for planning and management purposes in the context of food security and water management will be established based on user needs (e.g., short-term disaster management, long-term climate scenario modeling).

1.5.1 Equipment and training for DCIME for improved satellite imaging, data analyses and visualization,and quality control for EWS/CIpurposes (e.g. soil moisture, NDVI etc).

1.5.2 Satellite image validation including field observations to improve satellite data integration into EWSfor multi-agency usevia the open-access EWS server housed at DCIME (see Component 2).

Output 1.6: Training for DGM (4 engineers / 4 technicians) and DGRE (3 engineers) on equipment data communication/treatment, operation and maintenance (O&M) and maintenance/monitoring principles including development of Standard Operating Procedures (SOPs) for equipment and capacity reinforcement for long-term budgeting.

102. Under Output 1.6, training will stress that cost-effective technologies are utilized, which are able to interface with existing systems and which minimize dependence on external suppliers of hard and software. Training will be provided annually due to the staggered procurement of equipment.Capacities for all information production agencies to plan long-term budgets for O&M will also be reinforced because as indicated in Section 1.1, an inability to plan for recurring costs has been the cause of inoperability in Burkina (as evidenced by the non-functional radar in Ouagadougou).

103. It must be noted that salaries for DGM/DGRE are currently covered under existing Ministry of Transport and Ministry of Water budget lines respectively. The staff of DGM and DGRE are considered government officials, engaged as permanent staff. Thus, they have fixed contracts for life, are salaried employees and get their salaries from the national budget. Each ministry must annually define lines in the national budget for specific activities such as Operation and Maintenance costs for General Directorates like DGM and DGRE. Through Output 1.4, the capacity of DGM and DGRE will be reinforced to plan for recurring costs in order to ensure long-term financing from the Burkina government. Also, new recruited personnel will be mandated to stay in their specified positions for 5years in order to ensure knowledge sharing as per the TORs (Annex 11).

104. Also, due to the approaching retirement of DGM technical personnel the Government of Burkina intends to use the LDCF2 project as an opportunity to create a properly trained pool of local experts to support the collection/use of meteorological/climatological data (See Output 2.1).

1.6.1 Training for at least 3 DGRE engineers on flow meter information collection, data treatment (including data quality check) and operation and maintenance (O&M) tasks. Standard Operating Procedures (SOPs) will be put into place for equipment operation, data storage and collection.

1.6.2 Training of at least 4 engineers / 4 technical officers within DGM to operate and maintain the new automatic climate and synoptic stations. Training will focus on information collection, data

treatment (including data quality checks) and operation and maintenance (O&M) tasks. Standard Operating Procedures (SOPs) will be put into place for equipment operation, data storage and collection.

1.6.3 Capacity reinforcement for DGM/DGRE/DCIME by a National financial expert on sustainable budgeting and planning for Operation and Maintenance of EWS monitoring and IT equipment (weather stations, flow meters, satellite receiving stations, servers).

Component 2: Hydro-meteorological weather and climate information integrated into development plans and early warning systems

Outcome 2:

Efficient and effective use of hydro-meteorological and environmental information for making early warnings andseasonalforecasts which feed into long-term development plans

Co-financing amounts for Outcome 2: Approximately $36,354,315

LDCF project grant requested: $995,300

2.4.3 Baseline Component 2, Without LDCF Intervention

105. Much of the value of early warnings (whether a user changes their actions or lives/assets are safeguarded) is dependent on the packaging, communication and dissemination of those warnings. Presently, Burkina does not have the ability to produce weather forecasts for the coming 1-7 days or seasonally using a combination of Numerical Weather Prediction (NWP) models and predictions. Weather forecasts are published in bulletins and on television with data concerning the next 24 hours. They provide general information on the minimum and maximum temperature of the current and next day, the quantity of rainfall (mm) and the state of visibility in different geographical regions. However, it is necessary to have more refined spatial and temporal estimates of expected rainfall intensity and wind speeds to outline with greater certainty, regions at risk.

106. Burkina Faso also does not have the capacity to target weather/climate products to end-users. Through WMO's Global Framework for Climate Services, Burkina has taken the first steps to formalize the needs of various socio-economic sectors for weather/climate information. However, this framework has yet to be implemented. Furthermore, there is a limited database of climate information required for long-term planning and better management of water storage, crop selection and cultivation cycles. Early warning systems for food security use information from the major international food security monitoring systems such as the USAID-sponsored Famine Early Warning System (FEWS NET) and AGRHYMET are used by Burkina, however this information is not sufficiently downscaled and crop-specific for localized contexts (e.g. for subsistence farmers).

107. Furthermore, current EWS-related activities related to Component 2 deal predominantly with building capacity within CONASUR on national and regional levels (not local). Consequently, local disaster risk management units have limited technical and operational capacities.

Projects building DRM capacity on national and regional levels include the following:

- **UNDP National Capacity development for natural disaster risk management in Burkina Faso** with **$1.23m** of funding from **UNDP and BCPR**. The project has three components; 1.

Institutional capacity development in disaster risk management 2. Integrated information system management at national and two regional levels (2 pilot sites: 'les HautsBassins' and the North) 3. Mainstreaming of Disaster Risk Management in National strategy. The project is therefore active in reinforcing the capacity of CONASUR.

- The **GFDRR** project ***Mainstreaming disaster reduction and CCA in Burkina Faso*** has**$4.5m** of financing, ending in 2014. It will accomplish the following goals relevant to Component 2:Strengthen CONASUR, improve its relations with other institutions; Strengthen the response capacity of CONASUR institutions; Implement climate change adaptation actions at the village level.[13]
- The **UNDP CO-executed** project, ***National capacity building for disaster management and crisis recovery in Burkina Faso*** This 3-year, **$1.8m** project seeks to strengthen preparedness, response, and disaster risk management through provision of additional resources (human resource, financial, and material); develop an integrated information system on disaster risk and tools for DRR at various levels; integrate DRR into relevant frameworks and plans; and support the formulation of a national disaster management and recovery system with consultation from technical and financial stakeholders and partners.[14] The project focuses on strengthening the capacity of CONASUR and COPROSUR on the national and regional levels.

108. In addition, communication mechanisms to decentralized agencies/NGOs/CSOs, particularly those most vulnerable are weak. Local capacity to understand alerts and the utility of climate information for adaptive planning is also extremely limited. Nonetheless, there are significant grass-roots based projects which involve communities. These important baseline projects include the UNDP-COGEL, USAID WA-WASH, WB PNGT3 and the UNDP PEI projects which will be built upon and are providing co-financing as described in Section 2.3.2.

109. There have also been limited efforts to strengthen the link between CONASUR and DGM/DGRE to establish a streamlined alert procedure. Alert generation is compartmentalized and managed by different Ministries for food security or dam management. There is very little synergy among EWS-related initiatives and between EWS agencies. Also, data is not shared between weather/climate information production agencies. As a result, there is a need to formalize alert communication into one national Standard Operating Procedure (SOP) for multi-risk events.

110. It should be emphasized that currently, the Direction of Communication has well-developed methods for disseminating information and alerts to the general public on national, regional and local levels. However, there is little coordination between the information production institutions (DGM, DGRE and DCIME) and the Direction for Communication. Also, during project preparation, the Direction of Communication expressed their confusion with technical forecasts and their need to simplify this information for end-users. This project will help to bridge the gap in message dissemination and clarification between the producers and communicators of EW messages through the Outputs of Component 2.

111. At the same time, the following existing means of communication will be exploited for disseminating alerts:

[13] (http://www.gfdrr.org/gfdrr/ca_projects/detail/3838)

[14] http://www.pnud.bf/FR/fcrises.html

- A mailing list which provides messages to a broad audience including ministers, ambassadors, NGOs and community organizations (already existing at SIG);
- A call center which is operational and funded since the end of September 2012, consisting of 4 people on-line 24 hours a day, 7 days a week (already existing at SIG);
- Toll-free telephone numbers for inquiries (already existing at SIG and CONASUR);
- A website for general information (already existing at SIG);

112. Despite the support of the baseline projects outlined previously, additional support is required to: i) increase the accuracy, timeliness and applicability of weather and climate forecasts; ii) enhance awareness at all levels on the impacts of climate change on socio-economic development and the importance of weather and climate information to assist local communities and sectors to adapt to these impacts; and iii) strengthen coordination procedures and communication channels for sharing and disseminating weather and climate information to decision-makers in government, private sector, civil society, development partners and local communities. This will make the work of DGM, DGRE and DCIME more visible and better appreciated by other government ministries and local communities.

2.4.4 Adaptation Alternative Component 2, With LDCF Intervention

113. This project outcome will be used to ensure that multi-risk EWS/CI is used effectively by being communicated clearly to end-users and integrated into disaster mitigation planning. In order to improve the current lack of coordination amongst EWS agencies, this component will include the formalization of a multi-agency synergy platform (Comité Inter institutionnelet Multi Disciplinaire de promouvoir la Synergie, CIMS) with the specific task of promoting a synergy amongst agencies and EWS-related initiatives. Data sharing amongst information producers and the DRM will be facilitated. Forecasting capacity will also be developed under this component through internal and external knowledge sharing sessions. Based on the forecasting expertise built through this project and additional capacity building measures, information producers will develop the skills to tailor early warning and climate information products on short-term and seasonal scales for both public and private user-needs.

114. Additionally, a Standard Operating Procedure (SOP) for alert communication and a formalized national alert guide with thresholds will be developed for the first time in Burkina through this Component. Activities will focus on improving local technical and operational capacities to disseminate alerts and to understand the technical jargon of weather bulletins and other climate-related information, as well as provide input into the design of tailored advisories and information products. A feedback mechanism (via SMS, toll-free numbers and local EWS focal points) will be provided to ensure that end-users are engaged and are able to provide their suggestions on how to improve communication and alerts. To ensure that alerts are received by end-users, they will be provided through multiple media outlets in all national languages.

115. Specifically. LDCF funds will build on the above mentioned baseline projects in the following manner:

- Ensure no duplication of activities reinforcing CONASUR's capacities: During the project preparation phase, CONASUR evaluated the activities proposed in the LDCF2 project. The outputs and activities of both the UNDP/BCPR project and the LDCF2 project are in alignment to build capacity within CONASUR and to integrate disaster prevention strategies into national planning and policies to the fullest extent possible. The LDCF2 project differentiates itself by working on building the capacity of CONASUR's decentralized branches in local departments, CODESUR offices, and within locally-represented NGOs/CSOs. Furthermore, primary activities for the UNDP/BCPR project have a narrower focus assisting pilot regions and working to improve food security.

- Build a strong synergy with the GFDRR project in order to complement the activities building CONASUR's capacity nationally. The GFDRR project is also conducting parallel activities which can support the LDCF2 project such as strengthening local legal frameworks and conducting analytical studies on disaster risk. Consequently, the LDCF2 project will build a synergy with the GFDRR project by taking into account any studies or new policy developments and incorporating lessons learned from the GFDRR pilot studies.
- Complement the UNDP-CO project by building the capacity of CONASUR: Rather than focus on national and regional capacity building, the LDCF2 project will stress training and knowledge transfer to the local focal points within CODESUR. The UNDP-CO project also focuses on building the response and recovery capacity of CONASUR which balances the LDCF2 project's goal of improving the preventive and warning capacities of CONASUR. Overall, the LDCF2 project will capitalize on the work of the UNDP CO project by building off their pilot work and their studies (e.g., a study on the resilience capacity of the most vulnerable).
- Collaborate with the COGEL project: Since 2011, the COGEL project has been building the resilience of populations to climate change in the regions of eastern and central-northern Burkina. Due to its significant ground-based experience, the LDCF2 project will exploit the local dialogue chains already implemented in the UNDP COGEL project to assist with alert dissemination. Furthermore, the LDCF2 project will build off the catastrophe response mechanisms developed on-the-ground under the COGEL project.
- Build off the USAID WA-WASH project: USAID has made significant progress in coordinating local NGOs in specific areas for climate change related initiatives. The LDCF2 project will build off the local coordination mechanisms already in place. NGOs already implicated in USAID initiatives can play a support role in alert and information dissemination. In return, USAID local projects would benefit greatly from extreme weather forecasts to help farmers plan for droughts and rainy seasons. Flood alerts can also be used by the communities to ensure that potable water wells are properly covered and sealed to prevent water contamination.
- Build a strong synergy with the National Program for Rural Development (PNGT3) project:The PNGT3 projecthas developed strong communication mechanisms with numerous local populations in rural areas spread across Burkina.Many of these rural areas are located in the vulnerable agro-ecological zones where the LDCF2 project will be targeting its alerts. In effect, the LDCF2 project will build off the community level communication mechanisms to launch the public awareness campaign on EWS/CI planned under Component 2 of this project. In return, the PNGT3 project will be able to exploit EWS/CI to support their concrete development activities which aim to build resilience to climate change.
- Support the development of Burkina's Poverty Environment Initiative by building the capacity of EWS agencies to integrate EWS/CI into the SCADD and PEI policies as well as specific sectoral policies.Following feasibility assessments and stakeholder consultations conducted between September 2012 and January 2013 (see Annex 4), LDCF resources will be used to achieve the following outputs:

Output 2.1:DGM, DGRE and DCIME capacity to make and use climate forecasts (on hourly, daily and seasonal timescales) is strengthened by training 7 engineers and 4 specialized technicians, updating the National Water Information System Plan (SNIEau) and promoting national and regional knowledge sharing. (The Government will assist with recruitment and will mandate that trained personnel must remain working within their respective institution for at least 5years after training. Training of personnel will occur on national and regional levels.)

116. **Output 2.1** will link to ongoing activities at the NHMS and will ensure a formalized collaboration with regional and international forecast centers for data sharing. Based on conclusions from the second project preparation workshop, it is envisioned that ASECNA will continue to forecast during the beginning of the project. Simultaneously, they will train DGM forecasters internally and transfer their skills to DGM over the course of the project. Capacity development is also included for DGM and DGRE to formalize an alert guide for extreme weather and to map hydro-meteorological risks. Data from models will be shared between DGM and the University of Ouagadougou'sLaboratory of Climatologyin order to share expertise on weather/climate forecasting. Data sharing withregional NHMSs will help with forecast model calibration. Knowledge sharing with regional training program such as ACMAD's ViGIRisC will be supported.

2.1.1 Acquisition of Synergie forecasting system (MeteoFrance) to combine satellite data, radar images and model outputs for nowcasting, daily/weekly forecasts and seasonal forecasts.

2.1.2 Knowledge sharing for DGM on Numerical Weather Prediction models (e.g., WRF and COSMO)with international centers (e.g., MeteoFrance) and regional centers (ACMAD, responsible for the African Early Warning and Advisory Climate Services, AEWACS or ViGIRisC project and for the ClimDevAfrica programme) to build forecasting expertise.

2.1.3 Capacity development for DGM and DGRE to build a formalized alert guide and thresholds for extreme weather events, most notably drought, flooding and strong wind probabilities.

2.1.4 Capacity development within DCIME to map hydro-meteorological risks. Existing maps (e.g., World Bank 2007 inundation project) will be exploited in this project to see where vulnerable populations have been under-served by observations and warnings.

2.1.5 Validation study by DCIME on the most vulnerable zones and villages.

Output 2.2: Tailored agricultural and extreme weather risk advisories that link climate, environmental and socio-economic information on short-term and seasonal timescales are developed to support end-user needs and to promote sustainable financing mechanisms, including research development of a mobile-phone based advisory platform

117. **Output 2.2** will strengthen DGM, DGRE and DCIME's capacities to tailor early warnings and CI to public and private end-users from various socio-economic sectors. A pilot project will be implemented to demonstrate the potential for targeted service delivery of climate/weather information products (e.g., for weather-index based insurance for the cotton industry). No other projects are building climate service delivery at the moment. GFCS is planning to build this capacity during or after project implementation.

2.2.1 Four (4) annual collaboration sessions between the technical staff of DGM/DGRE/DCIME and private sector representatives to see the needs for tailored climate products.

2.2.2 Feasibility study and capacity development for the technical staff of DGM/DGRE/DCIME to generate targeted forecasts and a suite of products geared towards user-needs both public and private.

2.2.3 Pilot study to demonstrate the economic potential of tailoring and selling weather/climate information to different agricultural sectors (e.g., cotton), the mining industry, building construction industry and a range of private sector clients (See TORs Annex 11 and notes from private sector meeting Annex 5).

2.2.4 Capacity reinforcement by a National financial expert for DGM/DGRE/DCIME on establishing sustainable cost-recovery mechanisms with revenues generated from selling tailored weather/climate products and risk maps.

2.2.5 Household surveys of targeted users of climate information conducted to understand the social and economic costs and benefits of using advisories and warnings to mitigate risks associated with agriculture and water management.

2.2.6 Quarterly roundtable meetings between DGM, DGRE, DCIME, the Ministry of Health and the Ministry of Agriculture for long-term development planning for various socio-economic sectors (e.g., agricultural/fishing/livestock).

Output 2.3: Development of a multi-agency platform to enhance cooperation (CIMS) and to resolve lack of coordination and data sharing amongst agencies and with EWS-related initiatives

This involves developing a formalized synergy for all EWS agencies to resolve their lack of coordination. In-house focal points dedicated to the LDCF2 project will be assigned in each agency. Agencies will also use the existing multi-disciplinary (GTP) platforms to ensure that the LCDF2 project has good synergy with related EWS initiatives and to ensure the project is properly informed by a cross-sector Environmental Impact Assessment process at the beginning of project implementation. Currently, no other project is considering the lack of synergy between EWS agencies for any EWS or CI – related initiatives.

2.3.1 Creation of a multi-agency platform (Comité Inter institutionnel et Multi Disciplinaire de Promouvoir la Synergie, CIMS) within CONASUR composed of key EWS actors such as focal points from the Multidisciplinary Working Groups (GTPs) who are currently responsible for alerts, CONASUR, CPF, and other organizations representing national and local levels. The purpose of the observatory will be to oversee the development of EWS so that i) there are no redundancies amongst EWS agencies, ii) any institutional conflicts are resolved, and iii) there is coordination with other EWS-related initiatives (in particular, the UNDP-BCPR, UNDP-CO and the GFDRR projects) on mainstreaming disaster reduction in Burkina Faso, in terms of discussion and knowledge sharing.

2.3.2 Capacity building for the Multidisciplinary Working Groups (GTPs), who are responsible for current alerts on dam management and famine, on how to generate alerts specific to extreme hydro-meteorological events.

2.3.3 Environmental Impact Assessment conducted at the beginning of project implementation which implicates all sectors, organizations and beneficiaries involved in EWS.

2.3.4 Quarterly meetings and reports by CIMS on synergy building development.

Output 2.4: Development of an open-access EWS data portal for sharing data cross-sectorally, including facilitating internet access and mobile phone services with a Public Private Partnership (PPP) and transferring data into the Global Telecommunication System.

Data sharing can enable climate information to have broader relevance (such as relating weather variables with health impacts) and enables the establishment of appropriate initial and boundary conditions for hydro-meteorological models.A high performance data server (to stock environmental data and dissemination of data) is already located at DCIME. This project will store all EWS-related information including monitoring and alert dissemination data on the server for open-access data sharing. It will serve to assist the integration of hydro-meteorological climate information into disaster management systems and development plans. It will also store an inventory of concrete preventive measures for catastrophes according to specific alert levels and climate information produced. Furthermore, it will build links with the catastrophe databases in Burkina managed by the China and Japan National Centers for Catastrophes and link to the open access spatial data from the UN Office for Outer Space Affaires (UN OOSA) and the

UN SPIDER project which is concerned with developing the capacity of countries to use an open network of all types of space-based information to support disaster management activities. All data will be integrated into the international system for meteorological data collection/analysis, the **Global Telecommunication System (GTS)**.

2.4.1 Development of existing HPC server at DCIME to serve as the EWS centralized data server (See Figure 2) including connection with China and Japan National Centers for Catastrophes and link to the open access spatial data from the UN Office for Outer Space Affaires (UN OOSA) and the UN SPIDER project. It will be an open-access data portal to all EWS information production agencies (DGM, DGRE, DCIME, ASECNA, SAAGA) and CONASUR and data can be transmitted rapidly between institutions, NGOs/CSOs, to other ministries within Burkina (e.g., Ministry of Health) and abroad. For data sharing abroad, a password-protected FTP connection could be established. All data will be transmitted to GTS.

2.4.2 Integration of satellite data specific to EWS by DCIME from national (output 1.5), regional and international programs MSG, Eumestat, Météosat.

2.4.3 Establishment of a Public Private Partnership and service level agreement between DGM/DGRE/DCIME and SONABEL, an internet and mobile phone service provider, minimizing start-up costs for mobile phone plans and modems as well as increasing bandwidth for internet connections.

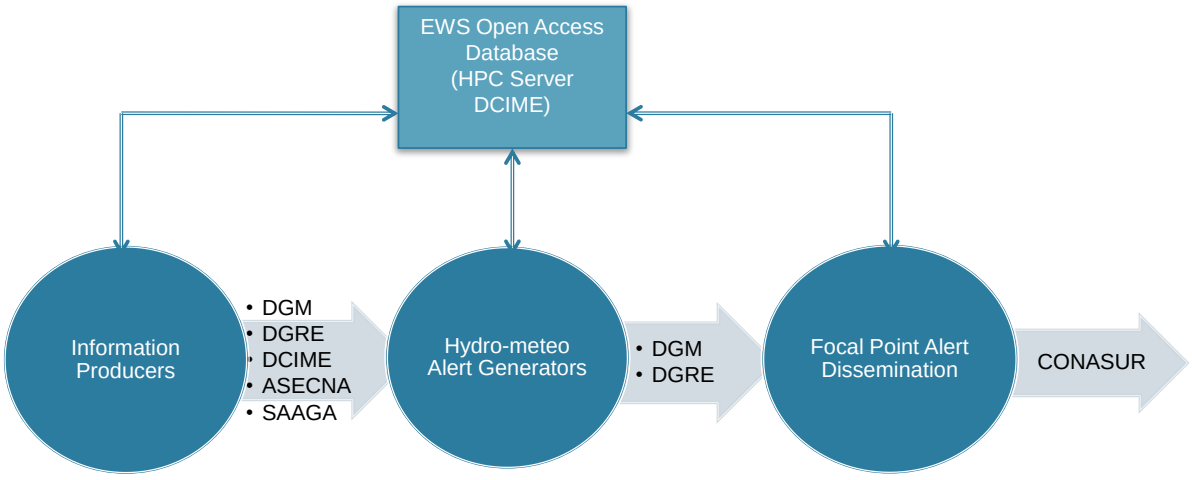


Figure 2: EWS centralized database

Output 2.5: Capacities for CONASUR and DCIME to conduct field inspection/validation, assimilate forecasts and monitoring into existing development planning, PRSPs (SCADD and PEI) and the National Multi-risk Plan are built through local and regional collaborations and support from the Multi-agency Synergy Committee (CIMS).

In order for the national DRM, CONASUR, to integrate forecast information into their planning, this activity includes operational capacity building for CONASUR from national to local levels via knowledge sharing. The Output will also support DCIME to incorporate environmental data into national policies and for both CONASUR and DCIME to have the capacity to validate risk maps / prevention strategies in the field. Climate monitoring information from **Component 1** and forecasts from **Output 2.1** will be combined to identify regions where risks are currently high and likely to get worse.

2.5.1 Integration of EWS/CI into the next PRSPs (SCADD (2015) and PEI (2015)) is facilitated by the Multi-agency Synergy Committee (CIMS) (Output 2.3) who will have the role to promote as a national priority the use of EWS/CI to help prepare for crises/catastrophes.

2.5.2 Capacity building and knowledge sharing for CONASUR and DCIME to mainstream EWS/CI and adaptation measures into disaster risk management plans(the National Multi-risk Plan) and risk maps, including validation of disaster prevention strategies and vulnerable zones in the field.

2.5.3 EWS capacity development meetings between CONASUR and regional disaster risk management (DRM) units such as the Department of Humanitarian and Social Affairs of ECOWAS, the International Federation of Red Cross IFRC, and with neighboring national DRMs (ANPC in Benin) to strengthen EWS on local levels.

2.5.4 Development of the next decree on environmental data by DCIME formalizing the integration of environmental information into national policies and plans.

Output 2.6: Communication channels and standard procedures for issuing warnings by CONASUR, SIG, NGOs/CSOs are enabled through public/private partnerships with radio, newspaper, television and mobile phone servicesincluding the development of a feedback mechanism via toll-free numbers, SMS and contact with local EWS focal points and field analysis on the utility of early warning advisories and warnings.

118. **Output 2.6** will build upon the existing capacity of the Direction of Communication (SIG) and CONASUR in their ability to collectively use sms, emailing, a call center, toll-free numbers, and radio/television/press (both public and private) to disseminate alerts in all national languages. CB radio communication systems will be provided to all EWS information dissemination agencies that require them, particularly on decentralized levels. This output will also include the development of a SOP for alert communication and training for focal points from all dissemination agencies on alert understanding. Furthermore, an information chain with a feedback mechanism for local populations to communicate with the focal points for alert generation and dissemination will be formalized. They will be able to communicate by sms, toll-free numbers or direct contact with their EWS local representatives.[15]. This will build on the work undertaken by the GFDRR, UNDP CO and UNDP BCPR projects in working with locals and exploiting existing communication mechanisms with locals (if any). Also, it will build off the communication capabilities currently housed within the Direction of Communication.

2.6.1 Provision of privileged communication systems (CB radios) to CONASUR (main and local branches), a representative of the Directorate of Communication and the focal points of relevant NGOs (CPF and COS3C) to build their warning transmission capacity.

2.6.2 Group training for leaders of all NGO/CSO dissemination agencies on alert signification.

2.6.3 Development of a standardized communication operation procedure (SOP) involving all EWS agencies from national to local levels and the establishment of local EWS focal points. DGM with assistance from DGRE will act as the agency responsible for alert generation and CONASUR will be the responsible focal point for alert dissemination.

2.6.4 Implementation of a formalized feedback mechanism so that local focal points in NGOs and government representatives in each department and in critical communes can relay lessons learned and suggestions/comments on alert transmission and climate information products (e.g. useful seasonal bulletins).End-users will be able to provide feedback by SMS, toll-free numbers or contacting their local EWS focal points (See Figure 4).

[15]CABI

2.6.5 Training for the Directorate on Communication and the Government Information Service (SIG) and equipment to improve their understanding and means to effectively disseminate alerts (e.g., various risk level flags such as yellow, red or green) through multiple media outlets (e.g., SMS, toll-free number, local radio, public/private media, vocal messages by mobile phone and television announcements).

2.6.6 Field visits and stakeholder consultations undertaken to understand how users of early warning advisories and warnings use the information for managing climate and weather related risks and how their decision frameworks affect the interpretation of advisories and warnings.

2.6.7 Market research for mobile-phone platform development to integrate EWS/CI into agricultural advisories (See TOR).

Output 2.7: Rural community capacity to adapt to climate shocks is strengthened by promoting understanding of alert signals and disaster risk prevention planning and gauging the receipt of alerts in a gender disaggregated survey

Currently, the alert systems for famine and dam management are not well-understood or trusted by the general population. This output will include training for the local focal points to relay the utility of weather/climate information to build the resilience of local populations to climate change. A public awareness campaign will focus on the same task with the ability for communities to get involved in project implementation and provide feedback by sms, toll-free numbers or contacting their local EWS focal points in the target agro-ecological zones.

2.7.1 Local CONASUR focal points, SIG and NGO/CSO representatives at the village level, are provided training to better understand the technical jargon of weather bulletins, effective alert communication and the use of climate information to build the resilience of local populations to climate change (i.e., for adaptation purposes such as rainwater harvesting, the development of short cycle crops and sustainable management of water resources).

2.7.2 Project public awareness campaign is developed in each of the vulnerable agro-ecological zones to promote the utility of climate information and the Early Warning System for adaptation to climate change and to introduce concrete ways in which the communities can get involved in project implementation and provide feedback (feedback by sms, toll-free numbers or contacting their local EWS focal points).

2.7.3 Gender disaggregated survey on receipt of alerts, differentiated by type (floods, droughts, strong winds) in all of the pilot zones.

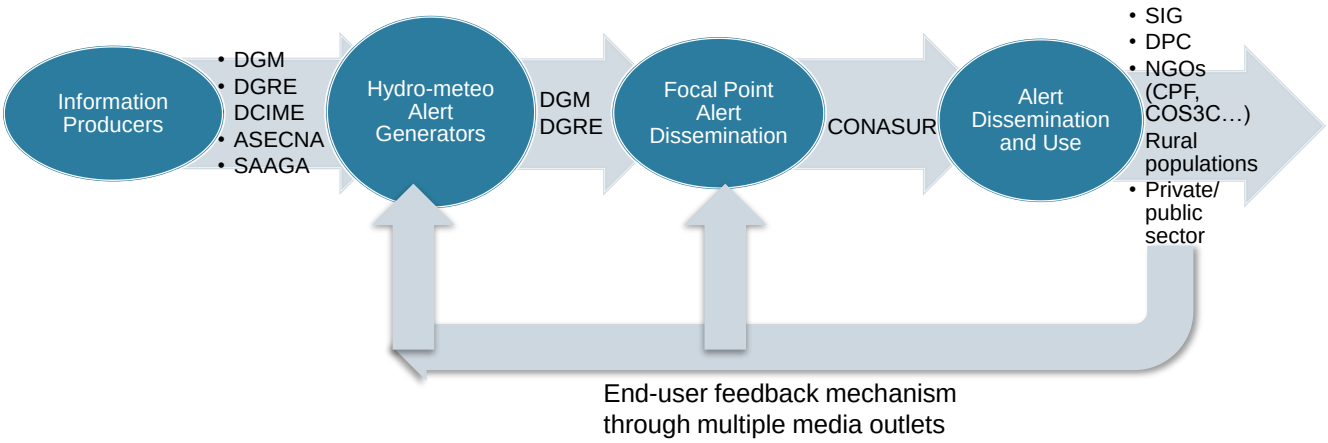


Figure 3: Standard operating procedure for alert generation/ communication (Conclusion from PROJECT PREPARATION Workshop 2, Ouagadougou, Burkina Faso November 2012)

2.5 **Key indicators, risks and assumptions**

Key indicators, risks and assumptions are indicated in the Project Results Framework and Risk Log in Annex 1. Indicators have been developed to be Specific, Measurable, Achievable, Realistic and Timebound ('SMART') and are indicated in the Project Results Framework.Risks and recommended countermeasures were identified during bilateral consultations during the project preparation phase.

Key risks and assumptions underlying project development include the following:

RISKS	RISK LEVEL	MITIGATION MEASURE
Burkina Faso does not have enough government financing to continue monitoring and to cover recurring O&M costs	Medium	-By making EWS/CI more useful to various socio-economic sectors (e.g. health, agriculture, building construction, cotton, mining), this will push the Government to include stable, core budget lines for climate/weather services due to their cross-sectoral importance -Capacity for long-term planning and budgeting on EWS monitoring and IT equipment will be built in all information production agencies.
Lack of qualified personnel within the NHMS to operate and maintain new equipment, data transmission/treatment/storage processes and forecasting models	High	-A major part of the project is to strengthen the technical capacity of human resources with O&M and data transmission/analysis/storage. -Personnel will be supported through knowledge sharing opportunities to gain expertise (e.g., ACMAD, Météo France). Collaborations with regional EWS initiatives (Benin, Mali, Niger) will also be developed -The Government will assist with recruitment and will mandate that trained personnel must remain

		working within their respective institution for at least 5 years after training.
Natural disasters damage infrastructure (particularly floods)	Medium	Robust infrastructure will be procured and training will be provided for repair and maintenance with the provision of spare parts in each information production agency
Data sharing is hindered by lack of coordination / willingness of agencies to share data or by technical constraints (e.g., bandwidth issues or local mobile telecommunication networks)	Low	-An open-access data portal for information producers will be developed where knowledge will be shared for cross-sectoral use (e.g., health, agriculture planning). -A Public Private Partnership and service level agreement between the information production agencies and SONABEL, an internet and mobile phone service provider, will be established with regards to minimizing start-up costs for mobile phone plans andmodems as well as increasing bandwidth for internet connections.
Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with the release of funds and/or national procurement procedures.	Low	-Funds will be distributed directly to the Directorates (DGM/DGRE/DCIME/CONASUR) by their respective Ministry so that they can have sufficient upfront funding to perform their activities such as procurement. Procurement will be staggered to reduce the risk that a large quantity of funds cannot be released.

ASSUMPTIONS
There is sufficient political support and capacity within the EWS agencies for successful execution and implementation of the project
Forecasts will be improved by local data assimilation collected from new climate/weather monitoring infrastructure
Manual equipment rehabilitated with enhanced SMS communication systems will not limit transmission of hydro-meteorological data
There is and will continue to be sufficient qualified personnel within the NHMS to handle the new equipment, data transmission/storage/treatment and to prevent continuity breaks in national hydro-meteorological services. (Recruitment of technical personnel by the Government will mandate that new trained personnel must stay within their agency for 5 years to support knowledge sharing.)
Data sharing and alert/climate information communication will not be hindered by lack of coordination between agencies or by technical constraints such as bandwidth issues or local mobile telecommunication networks.
Ministries have a vested interest to fully integrate climate information into their poverty reduction strategies and disaster risk management plans due to the utility of EWS/CI for long-term planning cross-sectorally
Natural disasters (e.g., floods, strong winds) may damage infrastructure. Sufficient spare parts and tools have been procured to assist with equipment repair.
NHMS will acquire enough capacity to tailor climate products to different socio-economic sectors (e.g., subsistence agriculture, cotton, mining, building construction) by the end of the project.
False alarms may occur but enough awareness has been provided to end-users to understand the reality of forecasting uncertainty and to inform them how they can get involved to improve early warnings and tailor CI suited to their needs

2.6 Cost-effectiveness

Outcome 1: Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change(droughts, floods, strong winds)

119. Other baseline projects were evaluated to see what relevant activities they are supporting. This project builds on the existing initiatives in terms of equipment acquisitions (building off of the LDCF1 project).To ensure cost-effectiveness for Outcome 1, it was critical to evaluate the equipment purchases. An assessment of existing equipment was made, noting the manufacturer, whether it is still working and whether the NHMS has an interest in continuing with particular makes/models. The NHMS weighed current costs against the costs of potentially cheaper solutions and the added costs of training personnel(See Annex 4). They also weighed the option on the use of manual and/or automatic

stations.Training costs can be particularly high if new automatic stations are acquired and the EWS agency has had no experience using the equipment. Therefore, it was quite important for the cost estimates to include accurate training and operation and maintenance costs. Twenty-five percent (25%) of the running costs were designated for spare parts.

Outcome 2:

Efficient and effective use of hydro-meteorological and environmental information for making early and seasonal warnings which feed into long-term development plans

120. In terms of cost-effectiveness for Component 2, a key design component was to try to consolidate the training programs and knowledge sharing sessions which are required to improve EWS/CI message dissemination. A coherent training programme was emphasized where one activity can cost effectively satisfy more than one of the needs identified, such as group training for NGO/CSO focal points. Also, other baseline programs involving capacity building for the DRM, CONASUR, were evaluated in order to ensure that money has been spent wisely.

121. To facilitate decisions on cost-effectiveness, a baseline self-capacity assessment was conducted during the project preparation phase. The assessment enabled alert production and dissemination agencies to prioritize their needs (see Section 2.8). Due to project budget limitations, it was necessary to select from the long-list of equipment / capacity building needs and identify those within the scope and cost-effectiveness of this project. In response, a set of criteria to prioritize needs / requested activities was formulated. The criteria were also used to assess the relevance of the LDCF2 project to tackle these priority needs, given its overall objective. Annex 4 shows the criteria for cost-effective adaptation interventions.

122. Finally, the chosen set of activities was reviewed in a validation workshop involving all stakeholders and the multi-stakeholder EWS focus group committee. Based on group consensus, Outputs/Activities were revised accordingly. The Outputs outlined have been chosen based on their financial feasibility. They have been chosen over alternative ways to address project barriers as shown in Table 5 below. A summary of the co-financing strategy, indicating sources, purposes and amounts was described in Table 1.

123. This LDCF project is not a standalone project; it is part of a wider multi-country programme that will implement similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia). Synergies between these projects will be used to enhance the cost-effective hiring of specialized technical staff, coordination of data and information (including inter-country sharing where feasible), training (operations & maintenance of equipment; forecasting techniques; tailored advisories and warnings), and effective use of communications and standard operating procedures.

124. By surveying the technical support needs for each country during the project preparation phase, a set of common specialized technical staff were identified, each with particular skills related to the development of hydroclimatic observing systems, the effective design and implementation of standard operating procedures and tailored warnings/advisories, as well as the communication of advisories/warnings. Hiring 3-4 full-time technical staff, which can provide the needed support for all countries, will be more cost effective than hiring the same staff as consultants for each country and all projects will benefit from the diverse technical support that will be provided. Further benefits include time saved on HR procurement procedures (e.g. for hiring, advertising etc.) and the ability to compare and standardize support across countries where possible. UNDP will directly undertake the recruitment for all project staff who will support all countries in this multi-country programme.

125. Training and capacity building for operations and maintenance of the hydromet infrastructure and for modeling and forecasting (Outputs 1.1 - 1.6 and 2.1) can be conducted at the regional level, bringing together participants from all countries to encourage knowledge sharing and the development of collective skills. This has several advantages, namely: i) promoting the sharing of information and learning between countries; ii) encouraging discussions of best practices i.e. what works, reasons for failure etc; and iii) increasing the effective pool of skilled resources which each country can draw upon (increasing the potential for future trainings to be conducted by experts within the region). Such activities will be closely coordinated with other regional and international partners/centres e.g. WMO/GFCS, ACMAD, AGRHYMET etc.

126. Regional collaboration will facilitate the integration of warnings issued by neighbouring countries e.g. in the case of shared watersheds. Data sharing abroad will similarly be supported by the regional component when cross-boundary hydro-meteorological data transfer between national data portals (Output 2.4) is required to update forecasting models. Regional support will also be used to help strengthen the development of standard operating procedures in Burkina (both the procedures themselves and their legal basis), for the issuing and communication of warnings/advisories, supporting Output 2.6 of this project. In the case of mobile (cellular) communications (which may be used for both disseminating alerts and the collection of data used to generate alerts), the regional support programme will leverage collective bargaining for data services, as well as engaging with corporate social responsibility programmes to enhance services where possible. Finally, when tailoring products to the private sector in Output 2.2, the regional component can facilitate the engagement of multi-national corporations in multiple countries to make continual investments in hydro-meteorological / climate services which are geared to specific needs (e.g. cotton cultivation seasonal forecasts or localized, short-term weather forecasts for construction activities).

Table 5: Demonstration of Cost-effectiveness for each proposed Output indicating the project barrier addressed by each Output

OUTPUTS	Barrier Addressed	Alternatives Considered
1.1 Procurement and installation or rehabilitation of 100 water level monitoring stations with telemetry, 2 automatic Doppler flow meters with data transmission capabilities and data processing and storage facilities to feed hydrological models.	Lack of hydrological monitoring infrastructure required to improve forecasts, validation and monitoring Slow transmission of hydrological information from manual hydro-meteorological infrastructure	**Alternative 1:** Expand the hydrological monitoring network based on a cross-border watershed approach; however, this requires cross-border data sharing and more financial resources. This project lays a foundation for future initiatives to model hydrology in river basins by establishing good monitoring networks to build off of. **Alternative 2:** Different equipment manufacturers can be used. However, DGRE and DGM (see Output 1.2) have experience with the current models which were chosen based on previous cost-effectiveness studies (Annex 4). Using different models could increase the training and maintenance costs by 20% according to Stakeholder discussions.
1.2 Procurement and installation of 40 automatic climate stations and 10 automatic synoptic stations with telemetry, including improved data transmission/processing/storage facilities.	Lack of weather and climate monitoring infrastructure required to improve forecasts, validation and monitoring Slow transmission of climate information from manual hydro-meteorological infrastructure	**Alternative 1:** Only use manual stations and incorporate SMS communication services: DGM believes that it is more difficult to manage telephones required for SMS data transmission which can be easily lost or damaged. Also, as shown in Annex 4, DGM weighed two options, one with only manual stations and the second with only automatic. The options are competitive, so for EWS in Burkina, it is more cost-effective to use automatic stations. Using automatic stations also reduces the need to pay and train manual observers at each station. **Alternative 2:** Use stations with cheaper sensors to decrease the cost of spare parts: If sensors do not adhere to WMO standards, WMO will not consider the station data in regional and global models. As a result, the country's data would not be assimilated to improve the regional and international forecasting models the country will exploit and downscale. **Alternative 3:** Acquiring more equipment to improve national coverage: This option was considered as per the feasibility studies and development plans which demanded more monitoring equipment. However, this project is focusing on capacity development for service delivery which is lacking in Africa rather than excessive procurement. Good and targeted service delivery of EWS/CI is more likely to ensure the sustainability of continued monitoring and the use of tailored EWS/CI into long-term development plans.
1.3 Rehabilitation of the radar in Ouagadougou including acquisition of spare parts and knowledge sharing to build radar O&M self-sufficiency	Lack of extreme weather monitoring infrastructure required to improve severe weather warnings and potential flooding	**Alternative 1:**Lightning detection systems: At present, there is considerable variability around the costing for lightning detection. Besides startup costs, which in some cases are a significant portion of the project budget, the costs of implementing new technologies, training and maintenance, as well the requirement for ground based observations (for calibration) and the untested nature of the technology in Africa were significant concerns.
1.4 Radiosonde equipment for ASECNA to provide one more sounding at midnight	Lack of atmospheric monitoring infrastructure required to improve forecasts	**Alternative 1:** No additional radiosonde launch would reduce costs. However, the launching station and capacity to launch exists. An additional sounding adheres to WMO standards (one launch at noon and another at midnight) and ensures the integration of this data into global databases which are used to generate global and regional forecasting products.
1.5 Equipment for improved	Inability to obtain and use	**Alternative 1:** SADIS ($50,000) is a satellite data distribution system. The system works well, but

OUTPUTS	Barrier Addressed	Alternatives Considered
satellite imaging and data visualization (DCIME).	satellite data and combine with other sources of environmental/climate/weather information	forecasters must build enough qualifications to use the system, so capacity building costs are high. **Alternative 2:** Use outside satellite viewing products for free: this option will be considered where regional and international databases (e.g., FEWSNET and NOAA's CFS tools) will be exploited to support Burkina to assimilate data into national forecasting. However, satellite data is difficult to interpret real-time without significant experience. As a result, such free satellite visualization tools are planned to validate forecasts or be used in climate change projections.
1.6 Training for DGM (2 engineers / 2 technicians) and DGRE (2 engineers / 2 technicians) on information collection, data treatment, operation and maintenance (O&M) and maintenance/monitoring principles including development of Standard Operating Procedures	Unknown sustainability of observational infrastructure and technically skilled human resources	**Alternative 1:** All operation and maintenance can be outsourced to a private company through a PPP (public private partnership) to enable the company time to train information production personnel over a longer period of time. However, DGE/DGRE already has experience with learning-by-doing and has received training for many of the specific monitoring instruments they have requested to be acquired. **Alternative 2**: One-time training to save financial resources: This project will procure in a staggered manner a rational amount of stations considering human resource constraints so that the new stations can be well-integrated with existing NHMS and there are no continuity breaks in monitoring (i.e., problem if all resources are focused on procurement and existing stations are neglected). Budget has therefore been allotted to provide training each year as more personnel are absorbed and more equipment are procured.
2.1 DGM, DGRE and DCIME capacity to make and use climate forecasts (on hourly, daily and seasonal timescales) is strengthened by training 4 engineers and 4 specialized technicians through knowledge sharing and south-south cooperations.	Lack of weather/climate information tailored to user-needs	**Alternative 1:**Do not acquire the SYNERGIE system, a satellite, observation, and radiosondedata integration tool which acts as a forecasting interface;DGM has limited forecasting capacity and will gain specialized skills through mandated knowledge transfer from ASECNA. However, ASECNA forecasts are specific to aviation and do not consider mulit-risks. As such, the initial cost of SYNERGIE (approximately $140,000 for installation) is justified by the goal of DGM having a working operational forecast center by the end of the project. An external expert is planned to build DGM's capacity to include annual license renewal costs and forecasting training costs in future budget lines. **Alternative 2:** DGM could rely solely on regional and international centers for training but this is not cost-effective because the option does not take advantage of internal forecasting expertise within ASECNA. **Alternative 3:** DGM could rely on only ASECNA. (Again, ASECNA is an internal semi-private organization which acts as the operational arm of DGM.) However, ASECNA is not specialized with forecasting multi-risk extreme weather. **Alternative 4:** Use outside forecasting products for free: this option will be considered, such as NOAA's CFS forecasting tool which is readily available and free, however, these products must be downscaled and calibrated with in situ data. Therefore, regional and international databases (e.g., FEWSNET and NOAA's CFS tools) will be exploited to support Burkina to develop national forecasting by translating open-source climate monitoring and forecasts into flooding and drought/food security information.
2.2 Tailored agricultural and extreme weather risk advisories that link climate, environmental	Lack of weather/climate information tailored to user-needs	**Alternative 1:**Rely on additional infrastructure to improve EWS/CI, however, delivery of hardware will not change the uptake of warnings and climate information by users, especially while service delivery is weak in Africa. Most importantly, by making EWS/CI more useful to

OUTPUTS	Barrier Addressed	Alternatives Considered
and socio-economic information on short-term and seasonal timescales are developed to support end-user needs and to promote sustainable financing mechanisms, including research development of a mobile-phone based advisory platform.		various sectors in the country, this pushes the Government to include stable, core budget lines for climate/weather services due to their cross-sectoral importance
2.3 Development of a multi-agency platform to resolve lack of coordination and data sharing amongst agencies and with EWS-related initiatives.	Lack of synergy between agencies and lack of coordination amongst EWS initiatives	**Alternative 1:** If nothing is done, the current EWS initiatives will continue to work independently (for zonal famine and dam management) and little national capacity will be built. **Alternative 2:** No platform to formalize synergy: this is currently the case in all other EWS and CC-related projects. For the case of the UNDP-CO project, this has led to a delay in project implementation and a lack of coordination with other on-going projects.
2.4 Development of an open-access EWS data portal for sharing data cross-sectorally and internationally, including data integration into the Global Telecommunication System	Inconsistent cross-sectorial information dissemination and data sharing across and within country borders	**Alternative 1**: Have separate data portals for each agency to ensure security: however, this would prohibit the easy use of data across agencies and an easy collaboration for international data sharing **Alternative 2:** Do nothing, however watersheds and rivers traverse country boundaries and rain patterns upstream must be communicated to downstream Burkina. Therefore, with this option models would lack appropriate boundary and initial conditions because Burkina would not be able to utilize trans-national data.
2.5 National and local capacity for CONASUR and DCIME to assimilate forecasts and monitoring into existing development planning (SCADD and PEI) and disaster management systems is built.	Limited capacity to disseminate warnings on local, decentralized levels Unknown sustainability of observational infrastructure and technically skilled human resources	**Alternative 1:** Build CONASUR capacity without coordination with other initiatives will lead to redundant activities and a waste of financial resources.
2.6 Communication channels and standard procedures for issuing warnings by the DRM unit, NGOs/CSOs are enabled	Limited capacity to disseminate warnings on local, decentralized levels	**Alternative 1:** Enable each information dissemination agency to disseminate alerts by obtaining alerts from DGM directly: With this option, there is no central focal point for all NGOs, CSOs to report to for high level questions and to clarify disaster prevention strategies. Also, on the feedback chain there would be no clear contact for end-user comments/suggestions. Developing a Standard Operating Procedure is therefore the best mechanism for effective communication (SOP).
2.7 Rural community capacity to adapt to climate shocks is strengthened by promoting	Limited capacity to disseminate warnings on local, decentralized levels	**Alternative 1:** Do nothing, if the locals are not informed on the utility of EWS/CI, alerts will continue to be misunderstood. Also, users will continue to lack confidence in alerts if the uncertainty of forecasts is not conveyed to the general public. Furthermore Output 2.7 includes

OUTPUTS	Barrier Addressed	Alternatives Considered
understanding of disaster risk prevention planning and alert signals		training and a public awareness campaign for decentralized NGOs to inform local populations about the potential of EWS/CI to assist them in building resilience to climate extremes

2.7 **Sustainability**

127. This project represents an effort to upscale the number one priority identified in Burkina Faso's NAPA (developing an early warning system)to the national scale based on the Roadmap for the Establishment of a National Framework for Climate Services developed by the WMO in July 2012. It will also serve to develop an EWS for multi-risk forecasting (concerning floods, droughts, strong winds) and tailored climate information so that a vast variety of stakeholders can exploit the weather/climate information produced. The project furthermore supports the MDGs in terms of aiming to reduce poverty reduction by enabling the rural populations (for which more than half are in poverty) to take preventive actions when weather or climate-induced risks are forecasted.

128. Various activities support the project's sustainability after the support of the LDCF ends including:

- The development of a multi-agency platform to promote synergy (Comité Inter institutionnel et Multi Disciplinaire pour Promouvoir la Synergie, CIMS) for synergy building;
- Use of existing Interdisciplinary Working Groups (GTPs) to support alert generation;
- Staggered approach to equipment procurement and training;
- Station placementbased on meetings with local representatives and the private sector;
- Development of Standard Operating Procedures (SOPs) for equipment operation and maintenance and data storage and collection;
- Knowledge sharing with international and regional training centers;
- Development of an open-access data portalto share data across country boundaries and with other ministries;
- Building capacity for local focal points and NGO/CSO representatives at the village level to better communicate and understand alerts;
- Capacity building and knowledge sharing strategymandates that newly recruited technical personnel who receive training must remain within their ministries for at least 5 years as per their TORs;
- Capacity building to incorporate recurring costs into government budget lines;
- Collaboration of DGM with DGRE, DCIME, NGOs (CPF, COS3C) and the Ministry on Agriculture will ensure forecast bulletin or alert information is provided in useful quantitative units (e.g., crop yield, area of flood plain, wind velocity) for the economic sectors (e.g., agricultural) and the rural populations who are most vulnerable;
- Leverage of revenue-generating tailored EWS and CI products to ensure long-term financial sustainability
- Making EWS/CI more useful to various sectors in the country pushes the Government to include core budget lines for climate/weather services due to their cross-sectoral importance

129. Overall, the main factors affecting the financial sustainability of the project beyond the duration of the LDCF grant include the ability of the agencies to develop cost-recovery mechanisms and the potential lack of coordination with existing EWS projects which can delay the project and waste financial resources. Project design has included Outputs/Activities to address these risks:

130. Output 2.2 will develop the capacity of information producers to tailor climate products based on public/private needs. Sectors such as the cotton, building construction and mining sectors have already showed interest and evidence from other African initiatives (CABI in Niger) has indicated that 'pay for weather/climate information' systems can be profitable. Funds have also been allocated to launch a pilot project to test the viability tailored weather/climate products andmobile-phone based platforms to distribute agricultural advisories to a wide, 'pay-for-service' audience.

131. Output 2.3 stresses formalizing a synergy among several projects concerned with EWS-related initiatives through the development of a multi-agency platform (Comité Inter institutionnelet Multi Disciplinaire de Promouvoir la Synergie, CIMS). CIMS will be created to oversee any inefficiencies amongst EWS initiatives and to coordinate and consolidate the projects. Such an approachis more likely to ensure successful implementation and eliminate any risk that activities are duplicated, wasteful and in the worst case counterproductive. Also this approach tries to prevent the development of isolated projects without comprehensive, integrated, adaptation actions which will continue to hinder the social and economic development of Burkina Faso.

2.8 **Replicability**

132. The originality of this project is that it will be the first to attempt to build national networks for hydro-meteorological monitoring and alert dissemination and to provide support to tailor climate products in Burkina Faso. The needs for capacity building (both equipment and human resources) are too great to cover the entire country. As a result, the efficacy of EWS/CI will be tested in the most vulnerable agro-ecological zones as outlined in Burkina's NAPA. Lessons learned from these pilot zones in terms of EWS/CI will be transferred in between the network of decentralized and national level focal pointsto be established through this project (associated within both CONASUR, NGOs and CSOs). The pilot zones are therefore a means to further improve alerts nationally. Any activity or improvement to an activity can be easily replicated because the core network of national hydro-meteorological services and communication mechanisms are being developed in this project and can easily be built upon.

133. Furthermore, specific attention has been given to the limitations of local agencies to disseminate information. A national SOP for communication will be developed as a result which will include an important mechanism to share lessons learned will be the feedback mechanism developed in Output 2.6. The feedback mechanism canenable end-users to give direct comments and suggestions on the efficacy and utility of EWS/CI to the focal points for alert generation and dissemination (DGM/DGRE and CONASUR respectively).For instance, the alert generation and dissemination focal points can be contacted via SMS.

134. There are also various mechanisms of knowledge transfer so that the agencies become more self-sufficient and less reliant on outside agencies for repair. The learning-by-doing approach will be reinforced on local, regional and international levels. For example, links with international (e.g., MeteoFrance) and with regional (ACMAD, responsible for the African Early Warning and Advisory Climate Services, AEWACS or ViGIRisC project and for the ClimDevAfricaprogramme) centers will help build national forecasting expertise. Expertise can be easily transferred to new personnel because civil servants in Burkina are mandated to remain in the Ministry. Also, as a security measure, Terms of Reference have been created to ensure that personnel who are hired to support this project must transfer knowledge within their respective agency after receiving specialized training. Training recipients are outlined below:

- DGM/DGRE technicians/engineers for operation and maintenance
- DGM forecasters for regional and international training
- DGRE hydrological modelers
- SAAGA radar technicians
- CONASUR disaster risk personnel
- DCIME risk mapping personnel
- SIG/NGO/CSO communication teams, nationally and decentralized

- Local CONASUR focal points and NGOs/CSOs representatives at the village level to better communicate alerts and inform the general population how provide feedback to designated focal points for EWS/CI
- Training for information producers on how to develop a suite of revenue-generating tailored climate products

135. Data will be accessible to all pertinent agencies, particularly those like the Ministry of Health who require weather data to make analyses on the spread of diseases with respect to weather variables such as temperature. Data sharing across borderswill also be facilitated by creating ftp password access. Overall, data sharing will promote the regular use of EWS/CI so that more agencies will realize its potential and utility.

136. The pilot program to test tailoring climate products for specific socio-economic sectors can be easily be up-scaled to address other private sector interests/needs. Similarly, the market research conducted under this project to support the development of a mobile-phone based platform for agricultural advisories can easily be extended as public awareness on the utility of EWS/CI is heightened.

137. Finally, UNDP's Adaptation Learning Mechanism (ALM) will be used as a dissemination and sharing tool that is accessible by all and constantly updated will the most recent information from the project. As stated in the TOR, the project management unit will be required to contribute to ALM on a regular basis noting case studies, successes and challenges.

2.9 **Stakeholder involvement**

2.9.1 Stakeholder baseline analysis

138. During project preparation, a series of three workshops and extensive bilateral consultations were organized.

- The inception workshop held during September 2012 was used to identify relevant EWS agencies involved with climate and hydro-meteorological information production as well as agencies that should be implicated in alert dissemination to vulnerable populations, most notably farmers and rural women. It was also used to detail the baseline of EWS-related initiatives (outlining gaps, successes and failures) and identify potential co-financing sources including institutions who are managing/developing relevant on-going/planned EWS related initiatives
- The second mission workshop was used to 1) to validate Early Warning System (EWS) costs provided by each agency in Burkina Faso 2) to perform a capacity assessment of all information production and dissemination agencies and 3) to formalize the roles of each EWS agency in information dissemination.Results from the self-assessment on capacity and prioritized needs are detailed in Annex 4.
- Subsequently, the final validation workshop was used to confirm the Management Arrangements, partnerships, project indicators, risks, assumptions, synergy mechanisms and project outputs and budgets.

139. Interventions with the Disaster Risk Management Agency, CONASUR, and rural-based NGOs/CSOs who have experience with existing alert programs for famine and dam management was particularly critical. These consultations have ensured the proposed project is grounded in local realities whilst being aligned to national policies.Detailed meetings were held to determine equipment needs (type, quantity, placement) and to prioritize procurements over the four-year project duration.

140. The project outcomes, outputs and activities listed in Section 2.3 are based upon the recommendations of the Stakeholders given the technical, operational and financial constraints of the project.Findings from each mission are detailed in the Key Assessment Reports (Annex 4).

141. Discussions have already taken place about the cost-effectiveness of moving a small number of stations to locations beneficial to the cotton production sector (A 20 km radius for one weather station can potentially serve a number of private clients.) The idea is to place a few stations in locations which can both serve the expansion of the national network and target cotton private sector clients. If climate information is requested from the private sector, it can serve as a source of revenue to DGM which can enable the EWS to be more financially sustainable in the future. However, a condition for the station location in the context of this project is also that placement must provide benefits to the most vulnerable in addition to the private sector.

142. The effective monitoring of the impacts of gender differentiated capacity for adaptation will be required for ensuring scale up actions are sufficiently sensitive to the needs of the poorest and most vulnerable. Consequently, gender-focused NGOs/CSOs(the Women in Law and Development in Africa organization, WILDAF and the Women's Forestry Association) have been implicated in project development and will continue to be involved in project implementation. These gender-focused NGOs/CSOs will help to identify the efficiency of alert dissemination to women and the utility of climate information for women in the aforementioned target communities such as with the gender disaggregated survey planned in Output 2.7.

The following table shows the list of consultations which have taken place with providers and users of EWS information to develop a user-driven Early Warning System. The role and participation of each agency is indicated by the column headings describe in the legend.

Column Heading Legend

National Inception & Validation Workshops – involved in inception (September 2012) and validation (April 2013) workshops. The National Inception Workshop involved 50 participants in total. The Validation Workshop involved 40 participants.

Role Identification and Capacity Assessment Workshop – involved in workshop (November 2012) which included 30 participants and representation from 6 climate information producing agencies and 14 information dissemination agencies.

Involvement in Baseline Assessment – consulted during project development to perform self-capacity and needs prioritization assessments

Role Identification – Identification in institutional arrangement

Risk/Barrier Analysis – consulted on their specific institutional risks or barriers for a successful EWS

Policy/ Strategic alignment to priorities – institution has policies/strategies which are aligned with EWS

Co-financing Identification – other projects to support and be supported by EWS project financially

Gender representation – organization which is concerned with promoting the involvement of rural women in project development and the dissemination of alerts to the female rural population

Upscale / Sustainability planning – consulted on how to maintain and replicate EWS

Document Endorsement – signatures obtained from government and UNDP CO

Table 6: Stakeholder Involvement Matrix, Burkina Faso

Stakeholder	National Inception& Validation Workshops	Capacity Assessment Workshop	Involvement in Baseline Assessment	Role Identification	Risk/Barrier Analysis	Policy/ Strategic alignment to priorities	Co-financing Identification	Gender representation	Upscale / Sustainability planning	Document Endorsement
Federal/Sector										
Direction Générale de la Météo (DGM)	X	X	X	X	X	X			X	
(SP/CONEDD) DCIME	X	X	X	X	X	X			X	
Direction Générale de la Resource en Eau (DGRE)	X	X	X	X	X	X			X	
Direction Générale de l'Environnement (DGE)	X	X	X	X	X	X			X	
Direction of Communication	X	X	X	X	X	X			X	
Direction de la Protection Civile	X	X	X	X	X	X			X	
National Advisory for Emergencies and Rehabilitation (CONASUR)	X	X	X	X	X	X	X		X	
General Direction on Health and Sanitation	X	X		X						
Technical / ResearchInstitutions										
Water Study and Information Center (DEIE)	X		X	X	X					
Private Sector										
ASECNA	X	X	X	X	X	X			X	
SAAGA	X	X	X	X	X	X			X	
Regional/Sector										
Rural Confederationof Burkina Faso, Confédération Paysanne du Faso (CPF)	X	X	X	X	X	X		X	X	
NGOs/CSOs										
Coalition	X	X	X	X	X	X			X	

Stakeholder	National Inception& Validation Workshops	Capacity Assessment Workshop	Involvement in Baseline Assessment	Role Identification	Risk/Barrier Analysis	Policy/ Strategic alignment to priorities	Co-financing Identification	Gender representation	/ Upscale Sustainability planning	Document Endorsement
d'Organisation des Sociétés Civiles sur le Changement Climatique (COS3C)										
SOS Sahel	X	X	X	X						
INADES		X	X	X						
WILDAF (Women in Law and Development in Africa)			X		X			X	X	
Women'sForestry Assocation			X		X			X	X	
Donor Partners										
World Bank					X				X	
UNDP COGEL					X		X			
USAID	X	X			X		X		X	

2.9.2 Stakeholder involvement plan

143. The Stakeholders identified during project preparation will continue to be implicated in project implementation. A Stakeholder involvement plan has been created to provide a framework to guide interaction between implementing partners and the key stakeholders, particularly end-users to validate project progress. All Stakeholders involved in the baseline self-capacity assessment will be addressed again in order to track the efficacy of Stakeholder capacity building both operationally and technically. Also, the women's interest organizations, the Women in Law and Development in Africa organization, WILDAFand the Women's Forestry Association, will continue to be implicated and consulted in order to ensure women are properly engaged/warned.These gender-focused NGOs/CSOs will conduct the gender disaggregated survey indicating the receipt of alerts and utility of weather/climate information planned in Output 2.7. Details of the Stakeholder Involvement Plan are indicated in Annex 10.

2.9.3 Expected benefits

144. The largest economic benefits are expected from building capacity of the climate/environmental information production agencies to tailor climate products to the needs of various socio-economic sectors (e.g., agriculture, health cotton, mining). By the project enabling a pilot study on tailoring climate services and market research on the potential for mobile phone-based agricultural advisories, the foundations will be set for self-sustainable NHMS. For instance, although Burkina's cotton sector has become less productive over the years (NAPA 2008), it can take advantage of improved local forecasts of winds, rain and temperature. The mining sector also represents a likely large private sector client for early warning services and tailored forecasts.

145. Together with satellite imagery used for land-use planning and monitoring, tailored climate products can also provide significant local environmental benefits, such as detailing best water management practices which is crucial to help Burkina's fight against desertification. At the local level, early warnings and climate hazard mapping can provide economic benefits by reducing losses of agricultural produce, infrastructure (roads and bridges) and disruption to people's livelihoods.

146. Communities will also immediately benefit from the Standard Operating Procedure to be implemented for alert communication. The total population benefiting from these developments has the potential to grow hugely if warnings extend to a reasonable percentage of the total population e.g. through a mobile phone relay. Also, the feedback mechanism can enable the communication mechanism to be improved via end-user comments/suggestions.

147. In addition, this project will build a multi-agency platform whose sole role will be to ensure that there is synergy amongst EWS related initiatives. This will support the elimination of duplicate roles and wasted financial and human resources.Furthermore, it is expected that the open-access data portal will facilitate data sharing between ministries/agencies and potentially international institutions.

148. Many of the beneficiaries will be women, especially within the agriculture sector who do not have access to information, yet are most vulnerable to food insecurity and climate change due to their dependence on natural resources for subsistence household chores and their limited access to education and information services which prohibit participation in decision-making. The project has and will continue to target women by implicating women-focused NGOs/CSOs, the Women in Law and Development in Africa organization, WILDAF and the Women's Forestry Associationin order to ensure women are properly engaged/warned and are receiving useful weather/climate information.

149. The UNDP Environmental and Social Screening template has been applied to ensure environmental and social safeguards are in place. According to this checklist, the project is considered Category 2 where no further safeguards must be incorporated because no environmental or social risks are foreseen (See Annex 13).

150. Environmental safeguards being applied include the following:

- Tailoring EWS/CI to support better farming, water and coastal management practices
- Consulting local reps to find best station/equipment placement

151. Social safeguards being applied include the following:

- Mandating station placement/equipment must benefit the most vulnerable, not only the private sector
- Including women representation organizations
- Facilitating feedback from marginalized populations with the communication feedback mechanism

3 PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP:

CPAP OUTPUT 1: The response capacity of national prevention institutions at national and local levels are reinforced

CPAP OUTPUT 2: Catastrophe management institutions at national and decentralized levels are better equipped and able to respond to emergencies

Country Programme Outcome Indicators:

Early warning system (EWS) and contingency plans.

Primary Applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): Promote climate change adaptation

Applicable GEF Strategic Objective and Program:

OBJECTIVE 2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level

Applicable GEF Expected Outcomes:

Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas
Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses

Applicable GEF Outcome Indicators:

- Relevant risk information disseminated to stakeholders
- Type and no. monitoring systems in place
- % of population covered by climate change risk measures

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Project Objective[16] To strengthen the climate monitoring capabilities, early warning systems and available information for responding to climate shocks and planning adaptation to climate change in Burkina Faso.	1.Capacity as per capacity assessment scorecard (BASELINE: 74; TARGET: 161) (see Annex 12) 2.Domestic finance committed to the relevant institutions to monitor extreme weather and climate change	1.Limited capacity to generate EWS and CI on a national scale for extreme hydro-meteorological phenomena Limited disaster risk prevention capacity onlocal levels within CONASUR No Standard Operating Procedure (SOP) for alert communication by ANPC with the support of NGOs/CSOs Current score: 74 2.Existing budget plans do not have sufficient funds to maintain and	1. Capacity assessment TARGET score 161 for all combined EWS agencies 2. TARGET: 30% increase in domestic financing for equipment operation and maintenance across all institutions	1. Capacity assessment scores 2. Ministry budget lines for recurring costs	Burkina has enough government financing to continue monitoring and will consider recurring O&M costs for new infrastructure in government budget lines because of the utility of EWS/CI. There is sufficient political support and will within the EWS agencies to reinforce existing capacities for successful execution and implementation of the project.

[16] *Objective (Atlas output) monitored quarterlyERBM and annually in APR/PIR*

		operate environmental monitoring infrastructure			

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Outcome 1[17] Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)	1.% national coverage for climate/weather monitoring 2.Frequency and timeliness of climate-related data availability (BASELINE: monthly;	1.Currently, there is 25 % national coverage for climate/weather monitoring with respect to the optimal arrangements defined in DGM/DGRE feasibility reports and WMO standards. Twenty synoptic stations, 20 agro-meteorological stations, 8 climate stations, 100 rain gauges, 71 water level meters and 11 manual flow meters are in place. Meteorological stations: 142 manual, 6 automatic Hydrological stations: 82 manual, 0 automatic 2.Data from manual weather and hydrological stations is collected monthly and transmitted by post.	1. Increase to75 % NHMS optimal monitoring arrangements as defined in feasibility studies, 8 Acoustic Doppler Current Profilers (ADCPs) for flow measurements, 40 automatic climate stations, 10 automatic synoptic stations with telemetry and 100 additional rain gauges Meteorological stations: 242 manual, 56 automatic Hydrological stations: 93 manual, 8 with telemetry 2. TARGET for data transmission frequency: daily	1.Review of budget spent on equipment procurement and rehabilitation and data held on servers to show that new equipment is operational 2.Analysis of data frequency transmission using storage servers within each information production agency	Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with the release of funds and/or national procurement procedures. Manual equipment rehabilitated with enhanced SMS communication systems will enable transmission of data to NHMS at least daily. There is and will continue to be sufficient qualified personnel within the NHMSto handle the new equipment, data transmission/storage/treatment to prevent continuity breaks in monitoring. Natural disasters (e.g., floods, strong winds) may damage infrastructure. Sufficient spare parts and tools have been procured to assist with equipment repair.
Outcome 2 Efficient and effective use of hydro-meteorological and coastal information for making early warnings and seasonal forecasts which feed into long-	1.% of population with access to improved climate information and flood, drought, strong windand coastal warnings (disaggregated by gender)	1.There are existing EWS initiatives for regional dam management and famine alerts, however, a national alert system concerned with extreme hydro-meteorological	1. 50 % increase in population who have access to improved EWS/CI Women: 8% Men: 15% 2. At least 2 of the PRSP policy briefs	1. a) Gender disaggregated survey on receipt of alerts b) Record of debriefings by CONASUR post extreme weather events	Data sharing and alert/climate information communication will not be hindered by lack of coordination between agencies or by technical constraints such as bandwidth issues or local mobile telecommunication networks.

[17] *All outcomes monitored annually in the APR/PIR. It is highly recommended not to have more than 4 outcomes.*

term development plans	2. Development frameworks (SCADD, PEI) that integrate climate information in their formulation of proverty reduction strategies and links between poverty and the environment at local levels (BASELINE: No integration; TARGET Integration into the revised SCADD and PEI in 2015) 3. Sector-specific EW products and strategies that integrate climate risks (agriculture, health, and cotton production sectors)	phenomena is lacking. There is also a limited understanding of technical alert jargon (alerts are not translated into all national languages). There is also no mechanism for end-users (most vulnerable populations) to be involved in the alert process to ensure its sustainability. Women: 5% Men: 10% 2.Development frameworks do not incorporate any EWS/CI products such as risk maps or climate change predictions into long-term planning 3. Sector specific strategies do not include EWS/CI because the quality of weather forecasts and climate predictions are poor and not tailored for specific uses, particularly seasonal forecasts.	incorporate analyses of risk maps and/or climate change projections influencing long-term planning proposals 3. Development of at least 2 tailored climate products and presentation of market research plan on how to implement mobile phone based agricultural advisories, both supporting targeted weather/climate service delivery	c) CONASUR record of end-user feedback 2.Review of SCADD, and PEI documents to validate incorporation of risk, weather and/or climate information 3.Partnerships formed between information producers and the Ministries of Health and Agriculture, private sectors, NGOs and women organizations to support weather/climate service delivery	Ministries have a vested interest to fully integrate climate information into theirpoverty reduction strategies and disaster risk management plans. NHMS will acquire enough capacity to tailor climate productsto different socio-economic sectors (e.g., subsistence agriculture, cotton, mining, building construction) by the end of the project. False alarms may occur but enough awareness has been provided to end-users to understand the reality of forecasting uncertainty and to inform them how they can get involved to improve early warnings and tailor CI suited to their needs

4 TOTAL BUDGET AND WORKPLAN

Award ID:	00074218	Project ID(s):	00086732
Award Title:	Early Warning Systems Africa, Burkina Faso		
Business Unit:	BFA10		
Project Title:	Strengthening Climate Information And Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change Early Warning System, Burkina Faso		
PIMS no.	5104		
Implementing Partner (Executing Agency)	SP/CONEDD		

SOF (e.g. GEF) Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Notes:
OUTCOME 1: Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)	**SP/CONEDD**	**62160**	**LDCF**	72300	Materials & Goods	496,800	444,600	467,600	422,600	1,831,600	a
				75700	Training, Workshops & Conferences	92,000	49,000	39,000	39,000	219,000	b
				72400	Communication& Audio Visual Equip	0	20,200	0	0	20,200	c
				72800	Information Technology Equipment	42,600	54,000	28,000	28,000	152,600	d
				71300	National Consultants	21,000	21,000	21,000	21,000	84,000	e
				71400	Contractual Services Individuals	33,300	33,000	3,000	48,000	117,300	f
					sub-total LDCF	**685,700**	**621,800**	**558,600**	**558,600**	**2,424,700**	
					Total Outcome 1	**685,700**	**621,800**	**558,600**	**558,600**	**2,424,700**	
OUTCOME 2: Efficient and effective use of hydro-meteorological and environmental	**SP/CONEDD**	**62160**	**LDCF**	72300	Materials & Goods	60,000				60,000	g
				75700	Training, Workshops & Conferences	$116,500	$136,500	$109,500	$ 108,800	$471,300	h
				74500	Miscellaneous Expenses	5,000	5,000	3,000	3,000	16,000	n

information for making early warnings and seasonal forecasts which feed into long-term development plans				72400	Communication& Audio Visual Equip	27,000	27,000	19,000	19,000	92,000	i
				72800	Information Technology Equipment	69,000	64,000	42,000	42,000	217,000	j
				71300	National Consultants	36,000	31,000	36,000	36,000	139,000	l
					sub-total GEF	**313,500**	**263,500**	**209,500**	**208,800**	**995,300**	
					Total Outcome 2	**313,500**	**263,500**	**209,500**	**208,800**	**995,300**	
PROJECT MANAGEMENT UNIT	**SP / CONEDD**	**62160**	**LDCF**	71300	National Consultants	20,000	30,000	30,000	30,000	110,000	m
				74500	Miscellaneous Expenses	14,641	9,641	14,641	9,641	48,564	n
				72500	Supplies	5,000	5,000	5,000	5,000	20,000	o
				74599	UNDP Cost Recovery Chrgs - bills	358.95	358.95	358.94	358.94	1,435.78	p
					sub-total	**40,000**	**45,000**	**50,000**	**45,000**	**180,000**	
					Total Management	**40,000**	**45,000**	**50,000**	**45,000**	**180,000**	
					PROJECT TOTAL	**1,039,200**	**930,300**	**818,100**	**812,400**	**3,600,000**	

Summary of Funds:[18]

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
National Land Management Programme, PNGT Phase III project (World Bank)	**$13,387,500**	**$13,387,500**	**$13,387,500**	**$13,387,500**	**$53,550,000**
Poverty Environment Initiative (UNDP)	**$400,000**	**$400,000**	**$400,000**	**$400,000**	**$1,600,000**
WA-WASH Project (US AID)	**$475,000**	**$475,000**	**$475,000**	**$475,000**	**$1,900,000**
Government Budget Line - Ministry on Sustainable Development	**$10,225**	**$10,100**	**$10,100**	**$10,100**	**$40,525**
GEF	**1,039,200**	**930,300**	**818,100**	**812,400**	**3,600,000**
TOTAL	**$15,311,925**	**$15,202,900**	**$15,311,925**	**$15,085,000**	**$60,690,525**

[18] *Summary table should include all financing of all kinds: GEF financing, cofinancing, cash, in-kind, etc...*

Budget Note	Description of cost item (Activity and Output number)
a.	Procurement of 100 water level markers on 11 hydrological stations and 8 automatic Doppler flowmeters including tools and spare parts for operation and maintenance of hydrological equipment(1.1) Procurement of 40 automatic climate stations,10 automatic synoptic stations and 100 rain gauges including tools and spare parts for operation and maintenance of meteorological equipment(1.2) Construction of secure fencing around weather stations and recruitment of security guards to prevent theft (1.2) Acquisition of necessary tools for radar repair (1.3) Purchase of power surge prevention equipment to prevent electrical blow-outs (1.3) Hydrogen and radiosonde equipment for additional daily launch at midnight in Ouagadougou (1.4) Equipment for satellite image validation (1.5) Operating expenses to conduct at least 20 field consultations to verify hydrological equipment placement (1.1) Operating expenses to conduct at least 30 field consultations to verify meteorological equipment placement (1.2)
b.	Meeting costs for at least 20 field consultations to verify hydrological equipment placement (1.1) Meeting costs for at least 30 field consultations to verify meteorological equipment placement (1.2) Knowledge sharing between the Water Study and Information Center and DGRE on hydrological modelling (1.1) 2 week training by on radar maintenance and operation principles (1.3) 2 week training for night-time radiosondetechnicians, 1 general operator and 1 hydrogen operator (1.4) Training for DGRE/DGM technicians on flow meter/weather station information collection, data treatment and O&M. O&M tasks to be documented in Standard Operating Procedures. (1.6)
c.	Purchase of CB radios and SMS communication services to enable fast transmission of data from manual equipment for DGM/DGRE (1.1, 1.2)
d.	Purchase of secure data servers for DGM/DGRE to build long-term data records and to store treated/quality controlled data (1.1, 1.2) Acquisition of data-downloading device and data digitization equipment for use by DGM/DGRE/DCIME (1.1, 1.2, 1.3) Renewal and purchase of additional hydrological modelling licenses (MIKE BASIN) (1.1) Purchase of microwave link for SAAGA to enable fast transmission of radar data to EWS centralized data server (1.3) Transfer of radar images from ASCENA to DNM's operational forecast center (1.3) Equipment for improved satellite imaging and data visualization (DCIME) (1.5)
e.	Local consultants for organising and conducting equipment surveys/reports, identifying and liaising on procurement of equipment with line ministries and facilitating NHMS etc. training programs. National expert on hydrological and flood forecast modelling (See TORs)*** (1.1)
f.	Radar expert for repair of radar in Ouagadougou, repair training and long-term recurring cost planning (See TORs) ***(1.3) Cost of 4 audits @ $3000 each (total for LDCF project: $12000). Cost of an Independent Mid-term evaluation @ $30000. Cost of an Independent Terminal evaluation @ $45000.
g.	Field support equipment for Disaster Risk Management Unit to be able to prepare populations for weather/climate risks
h.	Training to improve national weather forecasting capabilities including capacity building for national technical experts through regional knowledge sharing programs Capacity development for DGM/DGRE to build a formalized alert guide and thresholds for extreme weather events Capacity development for DCIME to map hydro-meteorological risks Four (4) annual collaboration sessions between the technical staff of DGM/DGRE/DCIME and private sector representatives to see the needs for tailored climate products

	Capacity development for the technical staff of DGM/DGRE/DCIME to generate targeted forecasts Quarterly roundtable meetings between DGM, DGRE, the Ministry of Agriculture and the Ministry of Health for long-term development planning for various socio-economic sectors Conferences to introduce mobile-phone platform development to integrate EWS/CI into agricultural advisories Quarterly meetings by the multi-agency platform, CIMS, composed of designated focal points, to coordinate EWS-related projects and agencies (See TORs) Capacity building for Technical Support Group on how to generate alerts specific to extreme hydro-meteorological events Integration of EWS/CI into the next PRSPs (SCADD (2015) and PEI (2015)) is facilitated by the Multi-agency Synergy Committee (CIMS) (Output 2.3) who will have the role to promote as a national priority the use of EWS/CI to help prepare for crises/catastrophes Capacity building for CONASUR and local CONASUR focal points (decentralized units) and mainstream EWS/CI and adaptation measures into planning EWS capacity development meetings between CONASUR with regional disaster risk management (DRM) units Elaboration of existing decree on environmental data by DCIME Group training for leaders of all dissemination agencies (CONASUR, SIG, NGOs/CSOs) on alert signification Capacity building between CONASUR and local focal points for implementation of a formalized feedback mechanism Project public awareness campaignby NGOs/CSOs on the utility of EWS/CI for climate change resilience
i.	Communication equipment for pilot study on tailoring climate/weather products Communication equipment for market research for mobile phone platform development CB radios for CONASUR local branches, NGOs/CSOs and the Direction of Communication (SIG) Communication feedback mechanism equipment Communication equipment for the Direction of Communication (SIG) Communication equipment for public awareness campaign on the utility of EWS/CI for climate change resilience
j.	Acquisition of SYNERGIE system (MeteoFrance) for weather forecasting (2.1) Information technology equipment for validation study on most vulnerable zones (DCIME) Development of existing HPC server at DCIME to serve as EWS centralized server IT equipment for integration of satellite data from national, regional and international programs IT equipment for the Direction of Communication to disseminate alerts through the enhancement of their existing call center
l.	Local consultants to assist with tailoring forecasts, monitor the utility of forecasts/predictions for end-users and the efficacy of the Standard Operation Procedure for alert communication. Organise workshops, meetings and feedback sessions from users of forecasts and SOPs Cost for National expert team to conduct an Environmental Impact Assessment at project inception (estimated to be $20k) *
m.	Salaries for the project management unit including the Project Manager, Financial and Administrative Assistant and Indemnity fees for the Project Coordinator
n.	Miscellaneous, Insurance, bank charges and other sundries for project coordinating unit.
o.	Cost of office supplies and disposables
p.	Direct Project Costs for UNDP CO to assist SP/CONEDD with payment processes, manufacturer selection, equipment procurement, preparation and management of contracts, and purchase order assistance

***** Assuming national expert fee: $250 per day

******* Assuming contractual service fee: $4000 flight/visas, hotel $155, daily expenses $75 and salary $1000 per day for 13 days - $20,300

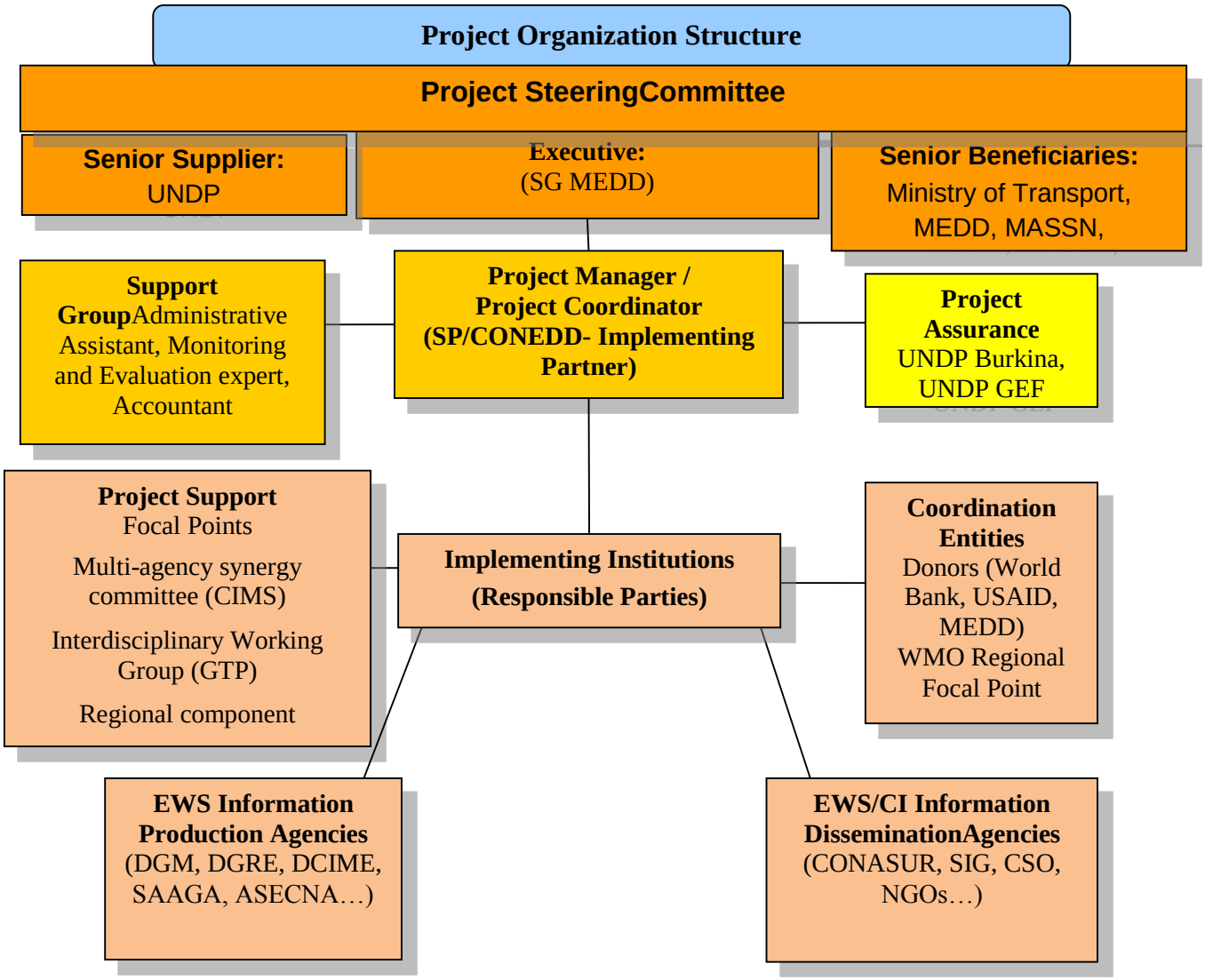
5 MANAGEMENT ARRANGEMENTS

152. The execution modality for this project will be UNDP's National Implementation Modality. The implementing partner for this project will be the Permanent Secretary for the National Environmental and Sustainable Development Council (SP/CONEDD) who will have project ownership and appoint a Project Manager (PM), paid for by the project, to coordinate project operations, in accordance with Decree 2007-776, the projects/programmes of category A. The main beneficiaries of this project will be the Ministry of Transport, Infrastructure and Development (MT), the Ministry of Environment and Sustainable Development (MEDD), the Ministry of Social Action and National Security (MASSN), the Ministry of Communication (MC) and Civil Society Organizations (CSOs) / Non-Governmental Organizations (NGOs) who will be responsible for the delivery of results in their respective departments / organizations. The Project Steering Committee (COPIL), led by the SG MEDD, will be responsible for approving program activities. Based on the approved activities, the Project Manager will ensure the provision of funds to all institutions/organizations for their respective activities. All executing agencies will be responsible for managing tasks related to their institution/organization. A Memorandum of Understanding and Terms of Reference (TOR) indicating the role of each executing agency will be developed under the guidance of Project Manager during project implementation. A full capacity assessment of the IP was conducted in May 2013 (see document attached with submission). A Letter of Agreement (Annex 2) describes all additional services required of UNDP beyond its role in oversight between the Ministry of Water and UNDP. The Ministry of Water has requested UNDP to assist with payment processes, manufacturer selection, equipment procurement, preparation and management of contracts, and purchase order assistance. The direct project costs associated with technical or administrated services requested of UNDP are detailed in the Total Budget Work Plan (TBWP, Section 4).

153.

154. The Stakeholder Involvement Table indicating the key inputs of all project partners during project implementation is indicated in Table 6.

155. A diagram detailing the Management Arrangements, including the responsible decentralized agencies and support committees/organizations, is presented below. The roles and responsibilities of the parties involved in managing the project are described below.



156. The **Project Steering Committee** (COPIL) established by a ministerial order will be directed by the General Secretariat of the Ministry on the Environment and Sustainable Development (MEDD) and will be responsible for approving the reports and activities. It will also provide guidance for proper implementation of the project.Other members of COPIL will include UNDP, senior officers from the Ministry of Transport, Ministry of Environment and Sustainable Development (MEDD), Ministry of Social Action and National Solidarity (MASSN), the Ministry of Agriculture (MAHRH), the Ministry of Communication, the Direction of Civil Protection (DPC) and the Ministry for the Promotion of Women (MPF). The COPIL will be responsible for making management decisions for the project in particular when guidance is required by the Project Manager. The COPIL plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It i) ensures that required resources are committed, ii) arbitrates on any conflicts within the project and iii) negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities.Based on the approved Annual Work Plan, the COPIL can also consider and approve quarterly plans (if applicable) and approve any essential deviations from

the original plans. In accordance with Decree 2007-776, the Committee will be 2 times per year, during each semester and can include a maximum of 20 participants.

157. Potential members of the COPIL are reviewed and recommended for approval during the PAC meeting. Representatives of other stakeholders can be included in the Committee as appropriate. The Committee contains four distinct roles which have been filled as follows:

1) **An Executive**: individual representing the project ownership to chair the group.
    - General Secretariat of the Ministry on the Environment and Sustainable Development (SG MEDD)
2) **Senior Supplier**: group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the COPIL is to provide guidance regarding the technical feasibility of the project and alignment of the outcomes/outputs with the LDCF.
    - UNDP
3) **Senior Beneficiary**: group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the COPIL is to ensure the realization of project results from the perspective of project beneficiaries.
    - Ministry of Transport, Ministry on the Environment and Sustainable Development, the Ministry of Social Action and National Security (MASSN) and NGOs/CSOs including the Federal Farmer Confederation (CPF) as well as others to be determined during the Inception Workshop
4) The **Project Assurance** role supports the Project Board Executive by carrying out objective and independent project oversight and monitoring functions in line with UNDP and GEF/LDCF policies and procedures.
    - UNDP Burkina and UNDP-GEF

158. **Project Manager**: The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

159. **Project Coordinator:** A representative from SP/CONEDD who will support the PM with overall administration and maintaining a liaison with UNDP. In accordance with Decree 2007-776, the Project Coordinator for a Class A project is appointed by the Minister in charge of project supervision. The designated officer must concurrently perform his usual tasks with those specific to this project in terms of management and coordination. The project will be responsible for paying the indemnities for the Project Coordinator.

160. **Support Group:** The project will support an administrative assistant, an accountant and an expert in Monitoring and Evaluation (See TORs) to assist with project management.

161. **Information Production:** The technical information production agencies including the National Met Service (DGM), the National Hydrological Service (DGRE), the Departmental Division on the Understanding of Environmental Information and Monitoring (DCIME) as well as technical groups within DGM (SAAGA - radar and ASECNA –radiosondes) will be responsible for collecting all weather/climate data and producing all forecasts/predictions/risk maps. At times of alert, all information production agencies will transmit their data to DGM and DGRE who together will be responsible for generating the appropriate alert fordistribution by the Disaster Risk Management unit, CONASUR.

162. **Information Dissemination:** Agencies will support the dissemination of information from the national to decentralized levels. The project will establish a Standard Operating Procedure (SOP) for alert communication to ensure information dissemination is efficient at the decentralized levels. The Disaster Risk Management Unit, CONASUR, will serve as the principal contact point to receive alert information from information producers (see above). CONASUR will be responsible for the distribution of alert information to the Governmental Information Service (SIG) and to local actors in NGOs/CSOs (eg, CPF, COS3C, WILDAF, SOS Sahel, etc)serving as decentralization support. Representatives ofCONASUR's decentralized branches (CORESUR, COPROSUR and CODESUR) and representatives of SIGand key NGOs / CSOs will work together as a team with public / private media and local representatives in targeted regions (prefects, communes) to ensure that EWS/CIalerts are distributed to local people in a streamlined and understandable manner. The support team will also be responsible for ensuring that the feedback mechanism that allows end-users to play an active role is effective and that the comments / concerns / suggestions from end-users are included in the project implementation.

163. **Project Support**: Regular technical project support will be provided by focal points from the General Directorate on Meteorology (DGM), the General Directorate on Water Resources (DGRE) the National Advisory for Emergencies and Rehabilitation (CONASUR) and Departmental Division on the Understanding of Environmental Information and Monitoring (DCIME) who will meet periodically with the Project Manager. They will provide project administration, management and technical support to the PMas required by the needs of the individual project or Project Manager. The project will also facilitate coordination with the already established Interdisciplinary Working Groups (GTPs) which include technical specialists currently generating alerts for famine and dam operations in Burkina Faso. Similarly, coordination will be promoted with the Multi-agency Committee for Synergy (Comité Inter institutionnelet Multi-disciplinaire de promouvoir la Synergie, CIMS) to be established through this project to ensure EWS-related initiatives are well-coordinated.

164. As per discussions with the GEF Secretariat, this initiative is part of a multi-country set of NIM projects supported by UNDP-GEF. In response to LDCF/SCCF Council requirement that a regional component would be included to enhance coordination, increase cost effectiveness and, most importantly, benefit from a regional network of technologies, a cohort of technical advisors and a project manager will be recruited to support each of the national level project teams. In particular they will support countries to develop robust adaptation plans and provide technical advice, training and support for accessing, processing and disseminating data for early warning and national/sectoral planning related purposes on a systematic basis. The cost of these project staff has been prorated across all country project budgets and recruitment of these posts will be undertaken by UNDP-GEF (HQ) in coordination with all UNDP Country Offices.

6 MONITORING FRAMEWORK AND EVALUATION

The project will be monitored through the following M&E activities. The M&E budget is provided in the table below. The M&E framework set out in the Project Results Framework in Part III of this project document is aligned with the AMAT and UNDP M&E frameworks.

Project start: A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and program advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

The **Inception Workshop** should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and Regional Coordinating Unit (RCU) staff (i.e. UNDP-GEF Regional Technical Advisor) vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the LDCF related AMAT set out in the Project Results Framework in Section III of this project document, and finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Steering Committee meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Steering Committee meeting should be held within the first 12 months following the inception workshop.

An **Inception Workshop report** is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS.

  Risks become critical when the impact and probability are high. Note that for UNDP/GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logswill be used to monitor issues, lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually: Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR

Periodic Monitoring through site visits: UNDP CO and the UNDP-GEF region-based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle: The project will undergo an independent Mid-Term Review at the mid-point of project implementation (expected to be in October 2015). The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit (RCU) and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the mid-term evaluation cycle.

End of Project: An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the terminal evaluation cycle. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

Learning and knowledge sharing: Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

There will be a two-way flow of information between this project and other projects of a similar focus.

Audit: This project will be audited in accordance with UNDP Financial Regulations and Rules and applicable audit policies.

Table 5: ProjectMonitoring and Evaluation workplan and budget

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ PIU (Project Implementation Unit) ▪ UNDP CO, UNDP GEF	Indicative cost: 10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. ▪ PIU, esp. M&E expert	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on output and implementation	▪ Oversight by Project Manager ▪ PIU, esp. M&E expert ▪ Implementation teams	To be determined as part of the Annual Work Plan's preparation. Indicative cost is 20,000	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project manager ▪ PIU ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term Review	▪ Project manager ▪ PIU ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: 30,000	At the mid-point of project implementation.
Terminal Evaluation	▪ Project manager ▪ PIU ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost : 45,000	At least three months before the end of project implementation
Audit	▪ UNDP CO ▪ Project manager ▪ PIU	Indicative cost per year: 3,000 (12,000 total)	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO, as required by UNDP RCU
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 117,000 (+/- 5% of total GEF budget)	

7 LEGAL CONTEXT

Standard text has been inserted in the template. It should be noted that although there is no specific statement on the responsibility for the safety and security of the executing agency in the SBAA and the supplemental provisions, the second paragraph of the inserted text should read in line with the statement as specified in SBAA and the supplemental provision, i.e. "the Parties may agree that an Executing Agency shall assume primary responsibility for execution of a project."

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

8 ANNEXES

Annex1: Risk Analysis

#	Description of the risk	Potential consequence	Countermeasures / Mngt response	Type (Risk category) Environmental Financial Operational Organizational Political Regulatory Strategic Other	Probability & Impact (1-5, low to high)	Owner	Submitted updated by	Last Update	Status
1	Burkina Faso does not have enough government financing to continue monitoring and to cover recurring O&M costs	Warnings become less accurate and useful on a national level	By making EWS/CI more useful to various sectors, this pushes the Government to include stable, core budget lines for climate/weather services due to their cross-sectoral importance Capacity for long-term planning and costing will be built in all information production agencies.	Organizational, Strategic, Financial	P=3 I=4				
2	Data sharing is hindered by lack of coordination / willingness of agencies to share data or by technical constraints (e.g., bandwidth issues or local mobile telecommunication networks)	Threat to sustainability of climate information collection. Threat to vulnerable population's ability to adapt to climate change (particularly for agricultural production)	An open-access data portal for information producers where knowledge will be shared for cross-sectoral use (e.g., health, agriculture planning). A Public Private Partnership and service level agreement between the information production agencies and SONABEL, an internet and mobile phone service provider, will be established with regards to minimizing start-up costs for mobile phone plans, modems as well as increasing bandwidth for internet connections.	Strategic	P = 2 I = 2				

#	Description of the risk	Potential consequence	Countermeasures / Mngt response	Type (Risk category) Environmental Financial Operational Organizational Political Regulatory Strategic Other	Probability & Impact (1-5, low to high)	Owner	Submitted updated by	Last Update	Status
3	Lack of qualified personnel within the NHMS to operate and maintain new equipment, data transmission/treatment/storage processes and forecasting models	May limit/delay project implementation	A major part of the project is to strengthen institutional and technical capacity for planning, designing and implementing Early Warning Systems Personnel will be supported through knowledge sharing opportunities to gain expertise (e.g., ACMAD, Météo France). Collaborations with international EWS initiatives (Benin, Mali, Niger) will also be developed The Government will assist with recruitment and will mandate that trained personnel must remain working within their respective institution for at least 5 years after training.	Operational, Strategic	P=3 I=2				
4	Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with the release of funds and/or national procurement procedures.	Threat to operational sustainability of project	Funds will be distributed directly to the Directorates by their respective Ministry so that they can have sufficient upfront funding to perform their activities such as procurement Procurement will be staggered to reduce the risk that a large quantity of funds cannot be released	Operational	P = 3 I = 3				
5	Continuity breaks in	Existing manual stations	Procurement will be staggered to	Operational	P = 3				

#	Description of the risk	Potential consequence	Countermeasures / Mngt response	Type (Risk category) Environmental Financial Operational Organizational Political Regulatory Strategic Other	Probability & Impact (1-5, low to high)	Owner	Submitted updated by	Last Update	Status
	National Hydro-meteorological services due to the work required with new equipment installation and other project needs	may become neglected because efforts are focused on project development	ensure continuity and a gradual increase for required capacity building Sufficient personnel will be hired to maintain existing and acquired equipment		I = 3				
6	Natural disasters damage infrastructure (particularly floods)	Threat to operational sustainability of project Weather network becomes less extensive and representative for forecasting	Robust infrastructure will be procured and training will be provided for repair and maintenance with the provision of spare parts in each technical, information production agency.	Operational	P = 2 I = 2				
7	False alarms	Decreased confidence in alerts	Capacity building for technical institutions is included in the project. Feedback mechanisms engage end-users and enable lessons learned to be relayed to the alert generation team so that alerts can be improved and the uncertainty associated with alerts can be understood.	Strategic, Operational	P = 3 I = 3				

Annex2: Cofinance and Direct Project Cost Agreements

MINISTERE DE L'ENVIRONNEMENT
ET DU DEVELOPPEMENT DURABLE
=-=-=-=
SECRETARIAT GENERAL
=-=-=-=
DIRECTION DE L'ADMINISTRATION
ET DES FINANCES
=-=-=-=

BURKINA FASO
=- =-=-=
Unité-Progrès-Justice

Ouagadougou, le 14 MAR 2013

LETTRE DE COFINANCEMENT

Je soussigné Tanga OUEDRAOGO, Directeur de l'Administration et des Finances, administrateur de crédits du Budget du Ministère de l'Environnement et du Développement Durable du Burkina Faso, atteste que notre institution contribuera au cofinancement du projet intitulé «Projet Alerte Précoce», pour un montant de vingt millions cinq cent mille **(20.500.000) francs CFA**, soit l'équivalent de quarante mille cinq cent vingt cinq **(40.525)** dollars des Etats-Unis, pour la période du projet 2013 à 2016.

Ce montant représente les investissements prévus dans le cadre de nos programmes d'activités déjà identifiés et planifiés, avec l'aide de nos différents partenaires, lesquels contribueront à l'atteinte des résultats du projet.

Le Directeur de l'Administration et des Finances

Tanga OUEDRAOGO,
Chevalier de l'Ordre du Mérite
Agrafe Economie et Industrie

Programme des Nations Unies pour le Développement

Au service des peuples et des nations

013/LD

Ouagadougou, le 07 mars 2013

Confirmation de cofinancement

La présente a pour but de confirmer l'engagement du Programme des Nations Unies pour le Développement (PNUD) à contribuer au cofinancement du projet PNUD/FEM «*Renforcement de l'information climatique et des systèmes d'alerte précoces pour le développement de la résilience et de l'adaptation aux changements climatiques au Burkina Faso*» à l'atteinte des résultats des composantes 1 et 2.

Le cofinancement de notre institution dans cette composante est évaluée à cinq millions six cent mille USD (5,600,000 reparti comme suit) pour la période de 2011 à 2015 :

- Consolidation de la gouvernance environnementale locale (COGEL): 4million US$
- Initiative Pauvreté Environnement (IPE) : 1 600 000 US$

Ce montant représente les dépenses et investissements en nature et en espèces prévus dans le cadre de nos activités déjà identifiées avec l'aide de nos partenaires, lesquels contribueront à l'atteinte des résultats attendus du projet.

Maleye Diop
Représentant Résident a.i.

34 Avenue du CES, Immeuble des Nations Unies, Koulouba (secteur 4) 01 BP 575 Ouagadougou 01 – Burkina Faso
Téléphone : (226) 50.30.67.62/63/64 – Fax : (226) 50.33.27.46 – Email : registry.bf@undp.org

USAID
FROM THE AMERICAN PEOPLE

Global Water for Sustainability

West Africa Water Supply, Sanitation and Hygiene Program (USAID WA-WASH)

Lettre N° - 054 -2013 / USAID WA WASH/RD

Ouagadougou, le 23 mars 2013

Reçu 26/03/13

A

Madame la Coordinatrice du PNUD/FEM
Ouagadougou, Burkina Faso.

Objet: Lettre de Confirmation de cofinancement

Madame la Coordinatrice,

La présente a pour but de confirmer l'engagement du Programme USAID WA-WASH à contribuer au cofinancement du projet PNUD/FEM «Renforcement de l'information climatique et des systèmes d'alerte précoces pour le développement de la résilience et de l'adaptation aux changements climatiques au Burkina Faso» à l'atteinte de résultats des Composantes 1 et 2.

Le cofinancement de notre institution évalué à un million neuf cent mille USD (1 900 000), pour la période de 2011 à 2015 et entre dans le cadre de la mise en œuvre de nos activités dans plusieurs communes du Burkina Faso

Ce montant représente les dépenses et investissements en nature et en espèces prévus dans le cadre de nos activités relatives aux changements climatiques et à la sécurité alimentaire, lesquels contribueront à l'atteinte des résultats attendus du projet.

USAID WA-WASH 157, Rue 16-566 Secteur 15 Ouaga 2000 01 BP 1241 Ouagadougou 01 - Burkina Faso

LE DIRECTEUR RÉGIONAL
USAID WA-WASH

Dr Lakhdar Boukerrou

RD 014/08-2012 REV.

01 BP 1241 Ouagadougou 01 157, Rue 16-566, Secteur 15, Ouaga 2000, Burkina Faso Tel. +226 50 37 53 08, Fax +226 50 37 52 09

MINISTERE DE L'AGRICULTURE
ET DE LA SECURITE ALIMENTAIRE

SECRETARIAT GENERAL

DEUXIEME PROGRAMME NATIONAL
DE GESTION DES TERROIRS
(PNGT 2) PHASE II

UNITE NATIONALE DE COORDINATION
---
01 BP 1487 OUAGADOUGOU 01
Tél. : 50.32.47.53/54 - Fax : 50.31.74.10

BURKINA FASO

Unité - Progrès - Justice

UNDP BURKINA
REGISTRY
RÉCEPTION COURRIER
Date :: 06 MARS 2013

N° 2013-0149/MASA/SG/PNGT2-Phase II/UNC/CN/of

Ouagadougou, le 06 MAR 2013

Le Coordonnateur National

A

Madame la Représentante du PNUD
Ouagadougou

CONFIRMATION DE COFINANCEMENT

La présente a pour but de confirmer l'engagement du deuxième Programme National de Gestion des Terroirs Phase III à contribuer au cofinancement du projet PNUD/FEM « Renforcement de l'information climatique et des systèmes d'alerte précoces pour le développement de la résilience et de l'adaptation au changement climatique au Burkina Faso » à l'atteinte de résultats de la composante 3, dont un certain nombre d'activités concerne le volet environnement.

Le cofinancement de notre institution dans cette composante est évaluée à 53,55 millions de dollar USD pour la période de 2012 à 2016. La maîtrise d'ouvrage est assurée par les communes rurales.

Ce montant représente les dépenses et investissements en nature et en espèce prévus dans le cadre de nos activités déjà identifiées avec l'aide de nos partenaires, lesquels contribueront à l'atteinte des résultats attendus du projet.

Suleymane NASSA

MINISTERE
DE L'ENVIRONNEMENT
ET DU DEVELOPPEMENT DURABLE

SECRETARIAT PERMANENT DU CONSEIL NATIONAL POUR L'ENVIRONNEMENT ET LE DEVELOPPEMENT DURABLE

N° 0584 /MEDD/SP-CONEDD

13

UNDP BURKINA
REGISTRY
RECEPTION COURRIER
Date : 12 JUIL 2013

BURKINA FASO
Unité - Progrès - Justice

Ouagadougou, le 12 JUIL 2013

Le Secrétaire Permanent

A

Madame la Directrice Pays
du Programme des Nations Unies
pour le Développement (PNUD)

-OUAGADOUGOU-

Objet : Acquisition de stations pour la mise en œuvre du Projet « Système d'Alerte Précoce » au Burkina Faso

Madame la Directrice Pays,

Par la présente, j'ai l'honneur de solliciter des services du PNUD pour l'acquisition et l'installation de stations agro-climatiques automatiques et de stations limnométriques équipées de dispositifs télémesure dans le cadre de la mise en œuvre du Projet « Système d'Alerte Précoce » au Burkina Faso.

Veuillez agréer, **Madame la Directrice Pays**, l'expression de ma considération distinguée.

MEDD
SP/CONEDD
Secrétaire Permanent

Mamadou HONADIA
Chevalier de l'Ordre du Mérite

Annex 3: References

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Annex 4: Key assessment reports

Roadmap
For the Establishment of a National Framework for Climate Services in Burkina

Conclusions of Works
Ouagadougou, Tuesday July 31 2012

Roadmap
For the Establishment of a National Framework for Climate Services in Burkina

Conclusions of Works
Ouagadougou, Tuesday July 31 2012
Direction Générale de la Météo du Burkina

I. ***Short-run strategy (August 2012 – June 2013)***

Activity	Timeline	Lead institution Participating institutions	Activity Funding source
1. Formalization of the Framework			
Designation of a single institutional framework to coordinate weather information: The National Framework for Climate Services **Partnerships between the various participating institutions**	- Month of September 2012: MoU between the telecom and Construction sectors and the National Weather Service	SONABEL Telecom (Telecel)	No financial contribution required
Establishment of a severe weather EWS	August 2012: Project Launch Workshop for the Burkina EWS (Project coordinated by the GEF CONEDD)	CONEDD - National Met Service - CONASUR	GEF Executing agency: UNDP
2. **Dissemination of Meteorological Information**			
Submitting a request for reactivation of the web portal of the National Weather	End of August 2012	National Met. Service	WMO support

Met Service, NGOs and Development Initiative: - Identification of target NGOs that can serve as channels for disseminating weather information to vulnerable commnities - Invitation of target NGOs at the Met Service for a working session - Drafting of project funding for engagement of NGOs in disseminating weather information - Seminar with all NGOs to raise awareness on climate information and leverage as broadcast channels	April 2013	National Met Services - MARPE Network - SOS Sahel - SPONGs - DGCOOP	Funding to be seek
Open house of the Weather Service and its partners to refresh the relationship (to be held during the Forum of Science and Technology Innovations)	Every 2 years (1st edition: October 2012)	National Met Services - All structures invited to come	CIFOR support to secure a stand at the « Forum INERA Science and Technological Innovations »
Letter to the Department of Communication to request a free time span for weather information on the state media (TV, Radio Burkina, Sidwaya)	September 2012	National Met Services - State Media	No funding needed
Training of a Network of Communicators to broadcast weather and climate info	September 2012	IAVS - National Met Services	Potential Funding: UNDP
Strengthening the	Continue	National Met	No funding necessary

partnership between the weather service and community radio		Services	
Partnership with telephone companies for mass distribution of hydro-weather information: formulation of a Pilot Project	Meeting scheduled for the begining of 2013	National Met Services NGOs Telcel	Private funding channels
Communication officers involved in all activities of the National Weather Service, from design to implementation		National Weather Directorate General of Water Resources	
NHMS-Media partnership Efforts needed on both sides: willingness to collaborate has to come from those who produce as well as those who need information - Awareness raising among the first leaders in each institution to explain the importance of the press - Relationship of trust required: Some information from the structure must remain classified (technicians sometimes must oblige to respect the hierarchy). - Distinguish between public information / decision-making and information specialist /	Now	Weather Journalists	No funding necessary

sectoral. - To undertake information that the technician / specialist only, allow unrestricted distribution of hydro-weather info.			
3. Equipment for the National Weather Service			
Partnership Agreement with the mining companies to use their equipment against use of meteorological data	First Semester of 2013	National Met Services	No funding necessary
4. Provision of hydrometeorological data and information			
Access to weather data - Collaborate more closely with National Weather Service - Relationship of trust between users and scientists - Since the project design, integrate the weather as a partner	Now	Weather Journalist	No funding necessary
Extending the approach developed for the pilot sites and NAPA Provision for users organized: CPF, etc..	First Semester of 2013	National Met Services Farmers Confederation of Faso (CPF)	GEF/UNDP
5. Capacity Building			
Training of leaders CONASUR	- August 2012: Launch Workshop for Burkina EWS (Project coordinated by CONEDD)	National Met Services CONEDD	GEF/UNDP
- Farmers trainings - Training of NGOs as community relays of information	- August 2012: - Launch Workshop for	National Met Services CONEDD ONGs	GEF/UNDP

	Burkina SAP (Project coordinated by the GEF CONEDD		

II. In the mid to long run (2013-2015)

Activity	Timeline	Lead institution Participating institutions	Activity Funding source
1. Densification of the Observation Network			
Equipment & modernization of the Weather Observing System for Meteorology: - Four synoptic stations - 25 climate stations (one in each capital of province) - 300 + rainfall stations	-	National Met Services	Météo France (already acquired) CIFOR WMO Earth Institute (Columbia University)
Uptake of the priority activities inscribed in the present roadmap on the various workplans of projects currently funded in Burkina to allow the strengthening of financial and human capacities of the National Weather Service	-	All partners	CIFOR UN System in Burkina WMO
2. Awareness-raising on the added value of climate services			
Partnership with Customs to facilitate the importation of		National Met Services - Customs	No funding necessary

equipment			
Open house on the weather and its partners to refresh the Relationship	Annually	National Met Services - All structures undertake invited to come	Funding to be seek
3. **Dissemination of hydro-met advisories**			
Open a position for a Communication Officer based at the National Weather Service and facilitate liaison with the media	-	National Met Services	State Budget
Establishment of a lexicon for translation of information received in local language - Preparing terms of reference - Seminar with communicators in national language to translate technical terms into the lay language	-	IAVS - National Met Services	State Budget
Training / capacity building focal points in each ministry on Weather	-	National Met Services - All Ministries of climate sensitive sectors	State Budget
Act to facilitate interministeial collaboration on climate services production and dissemination	-	State	State Budget
4. **Fundraising**			
Identification of sustainable funding sources for Disaster Reduction	-	CONASUR National Met Services - CONEDD	State Budget PTFs

III. Commitments

Each stakeholder who participated in the **National Workshop for the Implementation of a National Framework for Climate Services in Burkina Faso** is committed to serving as a special agent of awareness-raising on the use of climate information and services.

Participants also agree to:

- Advance interaction with the National Weather Service and the Directorate General of Water Resources, partners in providing information and climate services;
- Actively promote better commnication of hydrometeorological information, relevant to their decisions, their work and community support;
- Within their institutions, to minimize the Gap between climate service providers and their technical services, for better communication of climate information and services, inputs to decision making and planning;
- Commonly implement all the commitments identified in this roadmap towards the establishment of a harmonized framework for climate services in Burkina Faso, useful for producers and vulnerable communities across the country.

Concluded July 31, 2012, Ouagadougou.

Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change –Burkina Faso

ASSESSMENT REPORTS

Authors : Dr. Cara Tobin and Dr. Pascal Yaka

Tables and Annexes

Executive summary Mission 1:

Afirst mission was undertaken to support the Burkina UNDP Country Office with the design of an Early Warning System (EWS) and climate information project to be financed by the LDCF. An interactive workshop and bilateral consultations involving the producers, operators and end-users of EWS as well as other key stakeholders were held between the 11th and 20th of September. The primary tasks of the workshop and consultations were 1) to detail the baseline of Early Warning Systems in Burkina Faso , 2) to develop a work plan to develop the UNDP project document for the LDCF financed project on climate information and EWS for climate resilient development, and 3) to identify potential co-financing sources including institutions who are managing/developing relevant on-going/planned EWS related initiatives in order to ensure the UNDP-GEF/LDCF EWS project can leverage and mutually support (and be supported by) other projects.

Key findings from the mission include:

- There is a lack of data centralization due to various institutions acting as information producers with limited means to transfer data efficiently between institutions (data are often transmitted by post). In response, an open-access web-based portal to store data will be developed in this project.
- It is difficult to produce weather forecasts for short-term alerts or long-term development planning which are specific to the different administrative regions of Burkina Faso due to the unrepresentative network of hydro-meteorological stations throughout the country. Through this project, weather forecasters working for the General Directorate of Meteorology (DGM) will be trained to use European/American forecast products. DGM could be trained to provide more useful forecasts to socio-economical sectors (e.g., agricultural, natural disaster management)which can detail extreme meteorological events (floods, hot winds, dusty periods) as well as particular climatic events (drought and rainy periods).
- There is a lack of coordination with existing EWS initiatives which provide alerts for famine and dam management. This project can use the existing Interdisciplinary Working Groups platforms (GTP) to generate alerts.
- There is a lack of technical means to disseminate warnings and lack of a standardized information paths from national to local levels and vice versa. This project should enable a formalized information chain from national to local levels and build capacity communication local focal points to provide alerts.
- A lack of automatic weather and hydrological monitoring equipment and the existence of old equipment requiring repair will be resolved by procuring and rehabilitating hydro-meteorological infrastructure. Consultations with the DGM and the Ministry of Water provided details of the quantity (and locations in some cases) of stations/gauges required to enable a better representation of climate and environmental variables.
- Information producers in DGM and the Ministry of Water (DGRE) require training on information collection, data treatment and the operation and maintenance of equipment.
- There is a need to create a synergy between EWS agencies and between EWS-related initiatives.
- There is a need to build technical capacity within CONASUR to be able to respond to catastrophes at their local branch levels. The provincial, departmental and local branches of CONASUR do not have the capacity to interpret, simplify and relay technical, meteorological and climatological information and alerts. Also, they do not have the physical means to communicate efficiently so that information can be relayed from national to local levels and vice versa. Conclusions from consultations and the workshop indicate that it is recommended to organize capacity building for the decentralized branches to improve their understanding of hydro-meteorological forecasts. Also, CONASUR's capacity to communicate could be improved by providing CB radio systems to the local offices.

1. Initial activities, workshop and consultations

An interactive national workshop on Early Warning Systems (EWS) was held on the 11th September 2012 at the Ministry of Environment in Ouagadougou, Burkina Faso. The purpose of the workshop was to bring together the producers of hydro-meteorological information, the technical and financial EWS partners, those in charge of disseminating alerts and parties concerned with the management of catastrophes and natural disasters to present the intended scope of the project (as cleared by LDCF/Council) to facilitate the exchange of ideas on how to best elaborate, implement and develop a sustainable EWS in Burkina Faso.

Bilateral consultations took place with technical institutions (the Water and Information Study Institute (DEIE), the SAAGA program, and the Meteorological Forecast Center (CMP/ASECNA)), government departments (the Direction of Communication, the General Directorate on Civil Protection, and the National Advisory on the Environment and Sustainable Development, SP/CONEDD), bilateral/multilateral donors (World Bank, UNDP) and NGOs (the Civil Society Organization on Climate Change, the Farmers Confederation of Burkina Faso).The purpose of these meetings was to inform the relevant institutions and departments of the scope of the proposed LDCF project, to understand the role of key EWS actors, elicit ideas on details that could be factored into the LDCF project during the design phase so as to ensure that the LDCF financed project coordinates and complements other ongoing and planned initiatives. The needs and estimated costs for developing and facilitating EWS capacity and efficiency were also discussed.

1.1 Inception workshop

The workshop involved 51 participants from organizations ranging from technical institutions such as the General Directorate on Meteorology (DGM) to institutions concerned with disaster and risk management (the National Advisory for Emergencies and Rehabilitation, CONASUR) as well as the Farmer's Confederation of Burkina Faso which is a platform which represents 14 rural organizations. Working sessions were not deemed necessary for the workshop because the World Meteorological Organization led a 3-day workshop at the end of July 2012 to discuss the needs for climate services in Burkina Faso. The WMO workshop discussed the lead institutions, timelines and funding sources for various climate service activities such as the establishment of a severe weather EWS and identification of target NGOs that can serve as channels for disseminating weather information to vulnerable communities. The roadmap generated at the WMO workshop is being used to help identify suitable investments and capacity building activities by this project.Annex II shows the agenda for the workshop.

1.1.1 Key sectors / users of climate information

Through the workshop and consultations, key sectors/users of climate information and EWS were identified. These institutions or organizations are detailed below.

- The National Advisory for Emergencies and Rehabilitation (CONASUR) supports the prevention and management of natural catastrophes and the rehabilitation of impacted parties on national, regional, and local levels. They are currently responsible for providing alerts in accordance with the risk and catastrophe plan of the Department of Civil Protection.
- The Department of Civil Protection is the overseeing body for plans to prevent and react to catastrophes. Like its operating arm, CONASUR, it is decentralized with focal points located nationally, regionally, provincially and locally.
- The National Weather Service (DGM) is the parent organization for two private organizations, the Meteorological Forecast Center (ASECNA) concerned with forecasting for aviation and cloud seeding and SAAGA concerned with collecting radar data (Radar and Cloud Seeding Center for

Aeronautical Aviation SAAGA). These organizations need to be better coordinated in the LDCF project.

- In the context of this project, the Ministry of Water (DGRE) is responsible for managing hydropower operations (dam spillways and reservoir levels). They currently provide automatic alerts to the populations located around the dams through radio communication.
- The Water Study and Information Center (DEIE) is a technical institute responsible for all hydrological modeling.
- SP/CONEDD, DCIME is in charge of storing and disseminating environmental data for planning adaptation to climate change activities at all levels. Every 4 years, they produce a report on the state of the environment in Burkina Faso.
- The Direction of Communication is responsible for managing all public media services (radio, television, newspaper) and coordinating with private media services.
- The Rural Confederation of Burkina Faso coordinates with 14 rural organizations concerned with agricultural and livestock production.
- The Civil Society Organization on Climate Change is an NGO with 40 members who concentrate on influencing political leaders and training local societies on adaptation to climate change principals. They promote techniques for adaptation to climate change.

1.1.2 Scope of project

The general consensus from the workshop and bilateral consultations is tobuild Early Warning services throughout the entire country based on the needs of the principal end-users: the rural populations including farmers and agro-pastoralists. The aim of this project is to develop an Early Warning System (EWS)for natural catastrophes, including floods, ,strong and hot winds as well as seasonal alerts for droughts during rainy periods. Targeted areas which have previously suffered from droughts or floods and are considered vulnerable agro-ecological zones (NAPA 2008) will serve as project indicators by comparing alert communicationin these areasafter the development of EWS over present day alerts.

1.2 Initial consultations

Meetings were conducted with the UNDP Country Office and key representatives of bilateral/multilateral organizations represented in Burkina in order to facilitate the design of the EWS. Details of these consultations are indicated in Table 1.

Table 1: Mission Program and Findings: Preparation of EWS project in Burkina Faso (10 Sep 2012 – 20 Sep 2012)

Day/Date	Time	Meetings/Activities	Findings
Mon 10 Sep 2012	8:00–18:00	Workshop Planning, NC/IC/Aki	Agenda, budget and key speaker finalization for the inception workshop
Tues 11 Sep 2012	09:00-14:00	Inception Workshop	See Workshop Minutes Annex III
	17:00-18:15	SP/CONASUR	Role of CONASUR is to provide alerts during natural catastrophes Need for privileged communication systems (FLOTTE) Need training, a formalized, communication chain and means of data transfer with information providers
	18:30-20:00	Direction de la Protection Civile	Have multi-risk plan to deal with various catastrophes. This project falls under natural catastrophe planning & management Lack of assigned roles in EWS Need flood risk maps for the country Need for privileged communication systems (FLOTTE)
Wed 12 Sep 2012	09:30-10:45	Programme SAAGA	Radar requires expensive operation and maintenance because only specialists from the US have the capacity to do O&M. Radar in Ouagadougou is not functioning because they require O&M training. Power surges damage electricity transmission so they would like solar power capability. Need a formalized way to provide radar images to DGM
	11:00-12:00	ASECNA	Like the DGM, they have a role in weather forecasting Training on weather forecasting products, equipment and software is necessary Need to hire personnel for 24 hour-7 day weather forecasting
	12:30-14:00	Direction Générale de la Resource en Eau (DGRE)	They perform hydrological modeling for several watersheds and generate a yearly hydrological atlas and bi-weekly hydrological bulletin Only manual flow meters are used; Volunteers to measure flows are lacking and data quality is questionable due to human error Require additional automatic flow meters and boats to obtain the readings Require training with hydrological modeling software (HECRES and

			MIKESHE) Need for CB radios, otherwise known as privileged communication systems (FLOTTE)
	16:00-17:30	SP-CONEDD/DCIME	Have satellite thanks to AMESD project (2010) Involved with UN-SPIDER, PUMA and EMMA projects Produce a state of the environment report every 4 years Need mode of transport and GPS units to validate satellite data in remote terrain Need training to update their capacity for environmental data analysis Need EWS focal points and accessibility for all data Need workshops with other data producers to enhance coordination
Thurs 13 Sep 2012	8:30- 9:30	Secretariat Général Ministère de la Communication	They have an international mailing list, call center, toll-free number and website and work with public/private media, nationally and locally Call center will be operational at the end of September 2012 Need better coordination with information producers because they do not receive forecast information systematically. They do not understand technical warning messages so they are unable to simplify the messages for end-users Need computer equipment to make functional call center 24 hours / 7 days per week Need training with information producers in order to understand warnings and means of transport to do warnings.
	9:45-11:00	Rural Confederation of Burkina Faso, Confédération Paysanne du Faso (CPF)	Include 14 structures ranging from livestock to agricultural production Now insufficient data transfer to rural population. Warnings come too late and forecasts are not accurate. Can use local offices to disseminate warnings Due to their local influence, they must be included on boards of project and in all training workshops Local population listen more to local radio so messages must be in local languages on local stations Have themed workshops already (last one on Climate Change) and have the capacity to provide training on EWS to rural end-users
	11:30-13:00	Direction Générale de la Météo (DGM)	They require automatic weather stations (synoptic and climatologic), numbers are costs to be provided Their capacity to provide forecasts is limited so they need training with regional and international models (e.g., COSMO) PANA project is planning to install weather stations. These stations will be in addition to have a better network.

			Need regional forecasts with a shorter lead-time (6 hours for EWS) Need one more launch per day for soundings in Ouagadougou
	16:00- 18:00	PANA	Institutional arrangement discussion: this project should be implemented as Category B where country becomes autonomous structure Must collaborate with UNDP COGEL project for co-financing For regional component, could work with ACMAD and Agrhymet
Fri 14 Sep 2012	10:00- 11:30	Direction Générale de la Production, et des Statistiques sur l'Elevage (DGPSE)	This institution provides statistics on livestock farming They study the movements of pastoralists and their livestock They would like to see EWS alerts transferred to all livestock owners, even in the most remote regions, and will assist with the information dissemination process
Mon 17 Sep 2012	15 :30- 16 :30	Coalition d'Organisation des Sociétés Civiles sur le Changement Climatique (COS3C) (NGO), linked with SOS-SAHEL	Founded in 2010 (40 members), their role is to influence politics to put Climate Change (CC) on initiatives, to help in CC policy writing and to aid with techniques to adapt to CC They manage meetings on CC and on regional down to local levels if funding becomes available They work with other NGOs (IUCN and Christian Aid) They are limited in their means of transport to disseminate information
Thurs 20 Sep 2012	11:00- 12:00	UNFCCC Point Focal + SP (OFP/FEM)	UNFCCC is in full support of the project and SP/CONEDD is here to help with administrative and political difficulties Warns that results must be simple and concrete otherwise there will be no trust in the EWS Must decide if want an experimental or operational approach Must interview people to see if they understand alerts
	12:00- 13:00	Service de l'Information Gouvernementale(SIG)	This service is part of the Ministry of Communication They have the capacity to provide alerts if new telecommunication and computer equipment are provided for the call center and a high bandwidth cable is provided to improve telecommunication They have experience is giving alerts and reporting Must sign convention among partners to define who does what
	13:00- 14:00	BanqueMondiale (Emmanuel Nikiéma)	Inundation risk maps exist from another World Bank project, must contact WB to exploit and update this information PNGT project is community based and driven (e.g., building shallow wells, schools, vaccination, etc) PNGT project can serve as source of co-financing Building companies can be private sector source of revenue Can work with DGM and WB to improve the communication of local weather measurements

	18 :00- 18 :30	UNDP COGEL (Alexis Kaboré), Climate change 2012-2015	COGEL is a program to build resilience of people to CC in eastern and central-northern Burkina They are implementing communication channels with villages Sustainable management of natural resources is not easily transferrable to rural regions Can be another source of co-financing

2. Project development

2.1 Current and past EWS-related activities

The proposed EWS will need to complement the existing alert programs already in place for famine and hydropower in Burkina Faso. Alerts coordinated by the Direction of Production and Rural Economy (DGPER) in the Ministry of Agriculture and Hydraulics are provided for food security including several national / regional institutes and technical and financial partners (including AGHRYMET, FEWSNET, OXFAM, and the World Food Program). Alerts are also coordinated by DGREwho provides alerts for 15 national dams when water is insufficient for irrigation or when reservoir levels need to change to mitigate floods for downstream residents. Neither of these alert programs is concerned with extreme weather warnings on a national scale.

There has been significant devastation caused by floods in 2008, 2009 and 2010. However, flood alerts have been generally absent or false so that reactive decision-making has not been possible. A prime example is the 2009 major flood event, one of the most destructive floods in Burkina history, where no alert was disseminated to the population.

Knowledge and information sharing platforms (Groupe de Travail Pluridisciplinaire, GTP) created under the existing EWS programs for food security and dam management must be exploited in this project. These platforms consist of interdisciplinary working groups which share knowledge for decision-making. The working groups consist of members from numerous institutions including DGRE, DGM, the Direction of Production and Rural Economy (DGPER), the Ministry on the Environment and the National Advisory for Emergencies and Rehabilitation (CONASUR). Based on consultations, it was deemed redundant and unnecessary to create other EWS platforms specific to this project.

In the case of catastrophes, some relevant institutions such as NGOs and social organizations, mobilize to assist and take some preventive actions. In terms of donors,the World Bank (WB) has been active in flood projects. Previously, they generated potential inundation zones maps in 2007 for Burkina Faso. These maps will be exploited in this project.

CONASUR is the operational governmental institute responsible for emergency and rehabilitation actions. CONASUR has implemented flood security measures in 6 vulnerable zones and has identified flood zones in the region of Burkina's capital, Ouagadougou. CONASUR's role with catastrophe management includes i) organizing meetings with parties concerned with natural catastrophe prevention and management, ii) providing internal training courses to their decentralized agencies on regional, provincial and local levels, and iii) annually organizing an open dialogue with local mayors on the prevention and management of natural catastrophes. In 2007, CONASUR adopted a multi-risk contingency plan to improve preparation and responses to catastrophes.

National policies which support the elaboration of EWS for natural catastrophes include the National Civil Protection Policy, adopted in 2010 and Burkina's NAPA. This project is fully in-line with the NAPA strategy in terms of strategic planning for adaptation to climate change in the long-term. Due to complementary NAPA initiatives, the meteorological network is in the process of being expanded: 15 automatic weather stations are being installed. This project will place additional stations in complementary locations to those planned by the NAPA initiative.

Furthermore, this project will integrate into the National Framework for Climate Services. This framework was developed recently in late July 2012 following a three-day workshop led by the World Meteorological Organization. The workshop involved numerous governmental and non-governmental

institutions concerned with hydro-meteorological information who together outlined a roadmap for the establishment of climate services.

This project will also build off of regional EWS-related efforts. Formalizing a solid collaboration with ACMAD's ViGIRisC (African Early Warning and Advisory Climate Services (AEWACS)) project is recommended. ACMAD provides seasonal forecasts issued during the PRESAO meetings to the DGM. The aims of the ViGIRisC project are: (i) to provide a needs assessment for climate risk identification in terms of Early Warning Systems and (2) to identify opportunities for EWS improvement in Africa for climate risk reduction. This project will coordinate with ViGIRisC to gain knowledge on EWS in the region. In addition, the second phase of ViGIRisC will include the installation of pilot EWSs in selected countries and regions. This project could exploit the ViGIRisC project at the regional level by using ACMAD facilities, and taking part in ACMAD's forecast training courses for West Africa.

In spite of the current EWS initiatives within the country and regionally, a formalized mechanism for EWS and transmitting alerts is lacking. Such a mechanism must take into account lessons learned from the existing EWS-related initiatives and place more emphasis on implementing EWS in regions of Burkina Faso which are considered vulnerable to extreme weather. Based on conclusions from the workshop, a platform containing representatives from DGM, DGRE, SP CONEDD and CONASUR will manage the implication of the actors of existing EWS-related projects in order to reinforce collaboration and facilitate discussion and knowledge sharing.

Moreover, currently, there is no formal communication mechanism to officially disseminate alerts. A formal communication mechanism must include a standardized flow for information for issuing warnings from national to local levels and vice versa. Warnings must be issued in all local languages (through both governmental and non-governmental agencies). Consultations indicated that appropriate local institutions must be assigned responsibilities for warning transmission in order to ensure EWS is decentralized and efficient.

2.2 Other interventions and their successes/failures

Currently, the Direction of Communication has well-developed methods for disseminating information and alerts to the general public on national, regional and local levels. However, there is little coordination between the technical data production institutions and the Direction for Communication. Also, the media expressed their confusion with technical forecasts and their need to simplify this information for end-users. This project can help to bridge the gap in message dissemination and clarification between the producers and communicators of EW messages.

The following means of communication could be exploited for disseminating alerts:

- A mailing list which provides messages to a broad audience including ministers, ambassadors, NGOs and community organizations;
- Acall center which is operational since the end of September 2012, consisting of 4 people on-line 24 hours a day, 7 days a week;
- A toll-free telephone number for inquiries;
- A website for general information

It must be emphasized that CONASUR has significant technical capacity constraints because their regional and local offices currently lack a means to communicate with the local populations and an understanding of EWS alerts and required actions. This project could build capacity on all levels

within CONASUR by procuring privileged communication systems and enabling capacity building for CONASUR's local branches to communicate hydro-meteorological alerts.

There are also no organized debriefings with the National Meteorology and Hydrology Services (e.g., DGM, DGRE, scientists (modeling laboratories), decisions makers (CONASUR, Ministry of Public Health, Ministry of Planning) and donors (UNDP, World Bank) or NGOs before or after flood events to integrate lessons learned. Consultations showed support for the idea of having CONASUR organize debriefings post natural catastrophes.

2.3 Limitations of current capacity and existing systems

Weaknesses and limitations of current EWS systems and their capacity include the following:

- Poor local catastrophe prevention in the field by CONASUR. Within the past 5 years, there have been floods in various regions in Burkina. CONASUR was unable to preventively act or use forecasts appropriately. As a result, potential damage was not anticipated and some foreseen consequences were not limited. In contrast, after the flood events, management of the catastrophes to assist local populations has been more or less well organized;
- A need to assimilate forecasts and monitoring into existing development planning, Poverty Reduction Strategy Papers (PRSPs) and disaster management systems;
- No formalized communication chain between information producers and the Direction of Communication to officially disseminate alerts through multiple sources of media;
- Poor understanding of alerts and scientific jargon by the Direction of Communication;
- Poorly utilized local focal points within CONASURto effectively decentralize information dissemination;
- Poor coordination between hydrological and meteorological information providers (rain gauge information is not incorporated into the HECRES and MIKE BASIN hydrological models used by DGRE);
- Lack of clear collaboration between technical and governmental institutions, namely the DGM, the DGRE, and the institutions responsible for disseminating alerts such as the Direction of Communication;
- Weather forecasting data is weak and not quantitative in terms of rainfall intensity and wind velocities per various regions of Burkina;
- Lack of useful forecasts for the agricultural sector detailing drought and rainy periods to enable long-term development plans.

2.4 EWS components, existing and proposed

The existing EWS components and their insufficiencies (if any) include the following.

- Multiple manual flow meter measurements (See Annex V for hydrological monitoring locations.)
  - No automatic, real-time flow measurements prevent decision-making for alerts because collection time takes days to weeks. This hinders the ability to provide sudden warnings for threats such as floodplain inundation.
- 10 automatic synoptic weather stations, 6 automatic agro-meteorological stations, 13 manual agro-meteorological stations, 9 manual climatologic stations and 120 rain gauges (See Annex VI for locations of existing meteorological stations.)
  - The observation network is not dense enough to see the evolution of meteorological variables or to have sufficient information for reliable short-

term weather forecasts and long-term seasonal forecasts. The network is also not to norm with WMO standards: One synoptic station every 100 km and 1 rain gauge every 8 km is recommended.

- 2 radar (Bobo and Ouagadougou):
  - The radar in Ouagadougou is not functioning because of electrical problems and due to the incapacity of the technicians to repair the equipment. (Only technicians from the US have the capacity to perform repairs.)
- 1 sounding per day:
  - Two launches per day (one at noon and another at midnight) are standard world-wide to have enough atmospheric profile information to serve as input for ASECNA weather forecasts.
- 2 satellite receiving stations (1 at ASECNA, 1 at DCIME)
  - The number of satellites is sufficient and the satellites are functioning; however, technical knowledge of weather forecasting and software for environmental data analysis is lacking.
- Daily 24 hour forecast indicates weather orientation in general
  - No forecasts are provided per region and none provide quantifications of rainfall or wind intensity. Both aspects are necessary for local planning during periods of extreme weather.
- Weekly hydropower bulletins and an annual report on hydrological resources
  - These bulletins show the dam levels and the availability of reservoir water to prevent crises linked to the absence or abundance of water. The annual report provides information on the state of water bodies. However, no frequent weather bulletins exist at the scale of the country which can assist EWS planning.
- Flood risk maps from a 2007 World Bank study
  - These maps are potentially outdated considering development in the past 5 years. The maps will be updated in this project.
- Annual meeting organized by CONASUR and provided by DGM are used to present seasonal rainfall forecasts to local mayors in terms of rainfall below-near-or above average.
  - The forecasts are not considered reliable and precise enough for proper cultivation/livestock planning.

Needs for the EWS components include:

- Approximately 150 rain gauges, 30 automatic climatic weather stations, 4 automatic synoptic weather stations, 100 manual flowmeters and 2 automatic Doppler flow meters (See Annex VII for proposed weather station locations.)
- Repair of the radar in Ouagadougou
- Training for radar technicians on operation and maintenance
- Training in Numerical Weather Prediction (e.g., COSMO/WRF) for weather forecasters at DGM and ASECNA
- One more sounding launch per day to obtain atmospheric profile measurements required for weather forecasting

- Purchase of solar electricity equipment and protection against power surges which damage electricity transmission
- Improving the understanding of forecasts by the Direction of Communication and local CONASUR branches in terms of clarifying scientific jargon (in meteorology and hydrology) and simplifying messages for dissemination
- Privileged telephone communication systems (FLOTTE) to facilitate EWS message dissemination
- Institutions with specific roles in EWS to clarify tasks, the chain of information dissemination and data validation
- Preparation of updated risk maps (e.g., flood inundation maps) for the entire country
- Additional equipment for the emergency call center including telephones and computers
- Mobile phone services to translate SMS messages into multiple languages and to provide vocal messages for warnings to the general public
- Translation of all warnings and weather bulletins into all national languages
- Financial capacity for NGOs and the Farmer's Confederation to inform the local populations about EWS with their decentralized structures and presence on the ground regionally, provincially and locally

Conclusions from the workshop and consultations demonstrated that ministries are well aware that they must properly inform rural populations so that they can act in advance to evacuate, cultivate in advance and protect livestock. They will ensure that the project is decentralized in order to get alerts to the regions more effectively. To accomplish this, the established vertical chain of government from a national level (Government, Ministry) to the local level (Municipality, Village) will be exploited and appropriate local institutions will be informed, consulted and included in warning transmission.

Furthermore, the project will build Early Warning services based on the needs of the principal end-users; coordination with the Farmer's Confederation and the Civil Society Organization on Climate Change has already begun. These collaborations will enable dialogue with the local communities to detail their needs for a properly functioning and efficient EWS. By enabling these organizations to inform the communities of this project through workshops, users will become self-enabled and motivated to make the alert system more effective.

2.5 Capacity of forecasts and needs for improvement

The DGM currently provides a 24 hour weather forecast indicating weather orientation in general. No forecasts are provided per region and none provide quantifications of rainfall or wind intensity. Both aspects are necessary for local planning during periods of extreme weather. An agro-meteorological bulletin, elaborated every 10 days, is also produced. It summarizes the meteorological conditions in the past and makes qualitative weather forecasts. Furthermore, DGM is supported by the insurance association, SONAR, which sponsors the publication of a meteorological bulletin on national television. This television weather bulletin is watched and appreciated by a variety of audiences in Burkina.

Currently, qualified DGM personnel are lacking to ensure that a forecasting team is present and capable of providing forecasts 24 hours per day 7 days per week. Furthermore, forecasters are lacking numerical weather prediction skills which are better adapted to the topographical complexities of Burkina and which can be used to refine current weather forecasts. (Forecasters working with satellite images or wind data are exceptions).

The DGM therefore requires significant weather forecasting training. Collaboration should be formalized between this project, the ViGIRisC project training center and European and American

forecasting centers in order to enhance the training available. It is also feasible that the DGM partakes in regional weather forecast training organized by ACMAD and other international centers.

2.6 Operation and maintenance gaps

DGM annually detail maintenance needs in terms of equipment needed or in need of repair. However, DGM currently have a tight budget and are only able to perform operation and maintenance through the financial support of ASECNA. They expect that with this project after infrastructure has been procured or rehabilitated and their personnel have been trained, they can recover some recurring costs by selling climate information products to the private sector.

To date it has not been possible to collect needs and costs for operation and maintenance from information producers due to their busy schedules. The National Consultant has booked meetings in the future with DGM (Re: meteorological stations), DGRE (Re: hydrological stations), ASECNA (Re: sounding discussion) and the program SAAGA (Re: radar discussion). He is also frequently corresponding with them via email in order to engage them in the project.

2.7 Information access and dissemination

There is a lack of data centralization due to various institutions acting as information producers. Furthermore, awareness of data located at different departments, institutions, NGOs and other stakeholders is limited.

There are also limited means to transfer data efficiently between EWS agencies. Data from meteorological and hydrological stations or instruments are primarily collected on a daily basis, recorded on paper, and sent once a month by mail to regional offices and to the central data production office of DGM or DGRE in Ouagadougou. An open access portal to store data and secure data servers was therefore deemed necessary to ensure transparent databases for all EWS information production actors and efficient inter-departmental data exchange.

A formalized system through which CONASUR and the DGPC can receive hydro-meteorological information in a privileged manner does not exist. These national DRR agencies are thereby not able to anticipate the consequences of extreme weather phenomena and to plan accordingly. Currently, they must look at general information emails between members of the interdisciplinary working groups (GTPs) to have an idea on the current monitoring of famine alerts.

Furthermore, there is a need to collaborate with countries in the region in terms of hydro-meteorological data sharing. The majority of West African countries depend on regional climatic zones which have the same weather patterns progressively. Regional forecasts track weather patterns on international-and regional scales such as with PRESAO forecasts (ACMAD). Similarly, the hydrologic network is linked between countries (Burkina, Mali, Niger, Benin, Cote d'Ivoire, Ghana) because watersheds and rivers traverse country boundaries; rain patterns upstream must be communicated to downstream Burkina. Models are lacking appropriate boundary and initial conditions because Burkina has not been able to utilize trans-national data.

Conclusions from the workshop also indicated that information must be easily accessed so that institutions can make correlations of weather and hydrology data with other environmental variables. Often, interdisciplinary data analysis can have broader relevance and application for local intervention planning and monitoring in the case of hydro-meteorological disaster risk.

2.8 Locations for hydro-meteorological infrastructure

Maps of the locations of the existing rain gauge and weather station networks are provided in Annexes V and VI. A map of the proposed weather station network is provided in Annex VII

(proposed locations for rain gauges have not been finalized). Further bilateral consultations between the national consultants and the key institutions are necessary to clarify the exact location of new equipment or equipment to be rehabilitated.

2.9 Potential private sector clients

A key aspect of workshop and consultation discussions revolved around leveraging project funds so that the resulting EWS system is sustainable in the long-term. Regular revenues from the purchase of EWS products by the private sector could help the project to develop cost-recovery mechanisms such as to cover the costs of operation and maintenance. However, it is essential to obtain more detail about the existing and potential of private sector interest in climate information. Consultations to see if any formalized partnerships with the private sector can be created are planned. At this point of the project, a list of potential private sector clients who may be willing to pay for climate products has been outlined. They include:

i. Agro businesses (e.g., cotton industries like SOFITEX, sugar industry like SOSUCO, Mineral Water Industry like LAFI, BARAGUI, YIRMANI) - Value-added climate risk information such as the location of specific seasonal rainfall/temperature forecasts, strong winds, droughts, and floods can be of value to these private entities in adjusting their sowing/harvesting production behaviors.
ii. Hotel industry and tourism - The hotel and tourism industries are the two leading private sectors interested in climate information. Real-time rainfall, temperature and flood warning information are requested by hotel and tourism operators.
iii. Building (BTP) companies - For BTP companies, climate risk information can be of value in planning construction activities.
iv. Civil aviation - There has been discussion about opening domestic flights covering the 13 regions of Burkina. Real-time weather information can potentially be useful for flight operation and planning.
v. Insurance companies - Further discussions will be engaged with insurance companies (e.g., Colina, Sonar, General des Assurances, UAB) to identify their interests in climatic risk and weather information. Potentially, risk hazard forecast maps can be purchased by insurance companies to enable them to set more accurate premiums and payout calculations.
vi. Mobile phone companies - Telmob, Telecel, and Zain have the potential to be interested in providing weather forecasts over the phone.
vii. Mining - The emerging mining industry in Burkina has the potential to be interested in EWS due to the risks meteorological phenomena can pose on installations and productivity.
viii. Hydropower industry – SONABEL is a most likely user of EWS alerts due to their need to operate turbines and reservoirs according to extreme weather behavior.

2.10 Outcomes and outputs

The outcomes identified in the Project Identification Framework have remained virtually the same. The general concept of the outputs has remained the same while the quantities of infrastructure/personnel to procure/rehabilitate/train have changed based on departmental-specific needs. Table 2 below details the revised Outcomes and Outputs.

Table 2: Revised Project Outcomes and Outputs

OUTCOMES	OUTPUTS

1. Enhanced capacity of national hydro-meteorological services (NHMS) and environmental institutions to monitor extreme weather and climate change	1.1 Procurement and installation or rehabilitation (in case of existing) of approximately 100 hydrological monitoring stations with telemetry and 2 automatic Doppler flow meters with archiving and data processing facilities.
	1.2 Procurement and installation of 30 automatic climatologic stations, 150 rain gauges and 4 automatic synoptic stations. All stations/gaugeswill be equipped with telemetry, archiving and data processing facilities.
	1.3 Rehabilitation of the radar in Ouagadougou. Training on radar operation and maintenance.
	1.4 Radiosonde equipment to provide one more sounding per day; two soundings will adhere to WMO standards to be able to provide atmospheric profile information every 12 hours so that weather forecasts can be updated.
	1.5 Equipment for satellite imaging and data visualization is required; the two satellites (at ASECNA and DCIME) function well but data treatment is lacking.
	1.6 Training of at least 4 engineers or technical officers to maintain and repair equipment, computer infrastructure and telecommunications, including cost-effective technologies to interface with existing equipment/software.
2. Efficient and effective use of hydro-meteorological and environmental information for making early and seasonal warnings and long-term development plans	2.1 NHMS capacity to make and use climate forecasts (on hourly, daily and seasonal timescales) is strengthened by training at least 10 forecasters.
	2.2 Tailored sector-specific early warning products that link climate, environmental and socio-economic information on short-term and seasonal timescales are developed, based on identified user needs from NGO and NC consultations.
	2.3 National capacity for CONASUR to assimilate forecasts and monitoring into existing development planning, PRSPs and disaster management systems is built, including coordination with systems and warnings developed by other initiatives.
	2.4 Communication channels and procedures for issuing warnings (through both governmental and non-governmental agencies) are enabled through radio, newspapers, mobile phones, television and social media outlets with warnings disseminated in local languages.
	2.5 Plans for sustainable financing for the operation and maintenance of the installed EWS are developed and implemented, including public and private financing options to assist cost-recovery mechanisms.

Executive summary Mission 2:

The second mission was undertaken to support the UNDP Country Office to engage with climate information and Early Warning System stakeholders to finalize design aspects of the UNDP-GEF/LDCF financed project. The primary tasks of this mission were 1) to validate Early Warning System (EWS) costs provided by each agency in Burkina Faso 2) to perform a capacity assessment of each EWS agency and 3) to formalize the roles of each EWS agency in information dissemination. All three tasks were facilitated by holding a workshop among the stakeholders including the producers, operators and end-users of climate information and EWS and conducting individual meetings with the key representatives of the EWS agencies. In addition to the co-financing sources identified during the first mission, this mission was also used to target additional sources of co-financing to ensure the project can leverage and mutually support (and be supported by) other projects.

An interactive national workshop on the use of climate information and Early Warning Systems (CI-EWS) was held on the 21st September 2012 at the Ministry of Environment in Ouagadougou, Burkina Faso to bring together the producers of hydro-meteorological information, those in charge of disseminating alerts and parties concerned with the management of catastrophes and natural disasters, in order to contribute towards the final design phase of the EWS project. The workshop was used to present the detailed scope of the project, which has been formulated during 2 months of individual consultations with relevant agencies following the inception workshop in September (see Agenda, Annex II). The capacity of all agencies involved in CI-EWS information production and dissemination was also assessed during the workshop with participants answering one of two questionnaires, a questionnaire for i) climate, hydro-meteorological information producers and ii) information and alert dissemination agencies, particularly the NGOs and civil society organizations (CSOs) at the ground level. The goal of the questionnaires was to identify the capacity of their respective agency with respect to CI-EWS tasks and to prioritize their needs. The workshop was also used for informal discussions to interactively decide who would be the focal points from each agency for generating and disseminating alerts. Focal points were chosen based on their human resource and technical capacity to provide efficient alert dissemination.

I. The workshop involved 30 participants from organizations ranging from technical institutions such as the National Meteorological Service (DGM) to institutions concerned with disaster and risk management (the National Advisory for Emergencies and Rehabilitation, CONASUR) as well as the Farmer's Confederation of Burkina Faso which is a platform which represents 14 rural organizations. Overall, 6 agencies involved with information production and 14 agencies involved with information dissemination were represented (See Annex IV for participant list).

II. Bilateral consultations also took place with key CI-EWS information production agencies, including the General Directorate for Meteorology (DGM), the SAAGA program (a government agency focused on aviation forecasting), the Meteorological Forecast Center (CMP/ASECNA), the General Directorate on Water Resources (DGRE), the primary disaster risk management agency, CONASUR, as well as NGOs. These consultations were used to validate and prioritize the financial needs of these agencies for developing and facilitating EWS capacity and efficiency based on cost estimates they each prepared following the inception workshop. Meetings were also conducted with ground-based and decentralized NGOs including the Civil Society Organization on Climate Change, the Women in Law and Development in Africa organization (WILDAF) and the Women's Forestry Association in order to ensure that each organization is implicated in the project to enhance alert provision to vulnerable end-users, most notably rural women. Finally, additional multilateral donors (USAID) were consulted to see if the LDCF financed project coordinates and complements their ongoing and planned initiatives.

3.1 Key findings

The workshop was effective in providing a discussion forum to formalize the roles of CI-EWS agencies in the information dissemination chain. Agreement was reached to use the General Directorate on Meteorology (DGM) partnered with the General Directorate on Water Resources (DGRE) to generate alerts. Alerts will be based on data from DGM and DGRE in addition to data provided by the SAAGA program (radar), ASECNA (soundings) and any environmental information provided by DCIME (Division of Environmental Information, Monitoring and Evaluation). Alerts will be distributed to one central agency, CONASUR, before dissemination. CONASUR will be responsible for alert dissemination, alert training to NGOs and will provide alert information to the Direction of Communication and relevant NGOs such as the Farmer's Confederation of Burkina Faso. For a schematic of the proposed information chain with a feedback mechanism for end-users to CONASUR and DGM via their current toll-free numbers, see Annex V.

1. Other findings in terms of project development as highlighted in the workshop include:

- Need for coordination meetings within CONASUR nationally and within their decentralized offices regionally (CORASUR and COPRASUR)
- CONASUR will use their toll-free number to advise the public during alert periods
- Lack of strategy to ensure continuity of forecasting; ASECNA is recommended to continue forecasting during the beginning of the project until DGM forecasting capacity is built.
- Both DGM and ASECNA should become part of a trans-agency National Forecasting Center team to be supported by this project.
- All information production agencies should take part in contributing data and efforts to create joint forecasting bulletins to be organized by DGM. Bulletins will include i) a 24 hour forecast for the different weather regimes in Burkina including precipitation intensity, temperature, and wind speed, ii) a 10 day agro-meteorological forecast bulletin showing the same weather information specific for agricultural zones, and iii) a seasonal rainfall forecasting bulletin for July, August and September.
- Both DGM and ASECNA will send personnel to the African Center of Meteorological Applications for Development's (ACMAD) regional centers for forecasting training financed by the project "Vigilance et GestionIntégrée du RisqueClimatique" (VigiRisC) with a regional center for Burkina located in Niger.
- Need to formalize agreement between ASECNA and DGM for transfer of forecasting skills with the overall goal of strengthening weather forecasting nationwide
- Need to include additional project Output (2.6) to ensure synergy between CI-EWS agencies, particularly between information producers and dissemination agencies; a workshop recommendation was to create a specific committee to ensure synergy between agencies involved with generating or disseminating hydro-meteorological alerts
- Must ensure that CONASUR, the principal dissemination agency has the technical capacity and human resources to distribute warning (e.g. sufficient personnel and a computer server to store alert maps, alerts in all national languages and statistics on disaster risk prevention to judge alert efficiency spatially)
- Project should collaborate with the Multidisciplinary Working Group (GTP) for data sharing. (The GTP generates early warning alerts currently for famine management.)
- Project should collaborate with China and Japan National Centers for Catastrophes because they have a comprehensive database on catastrophes in Burkina. (The specific programs and data will be identified by DCIME in the next couple weeks)
- Should include Ministry of Health (DGPS) in alert dissemination. (DGPS already has strong ties with DGM due to previous joint workshops connecting climate and health effects.)
- Should enable open access to spatial information data from the UN Office for Outer Space Affaires (UN OOSA) and the UN SPIDER project which is concerned with

developing the capacity of countries to use an open network of all types of space-based information to support disaster management activities.

- Need to elaborate a national protocol to formalize the roles of the CI-EWS actors
- Must enable NGOs to collect user feedback in the form of a reverse information dissemination chain through training and improved telephone communication systems

2. During the workshop, a capacity assessment questionnaire was used to ask a representative from each organization the following questions. The primary goals of the assessment were to detect potential weaknesses within each CI-EWS organization and to find any overall consensus as to which capacity building issues are most pressing for the group as a whole.

3. The baseline capacity assessment involved two questionnaires, i) one designed for climate, hydro-meteorological information producers and ii) the second designed for information and alert dissemination agencies, particularly the NGOs and civil society organizations (CSOs) at the ground level. The goal of the questionnaires was to identify the capacity of their respective agency with respect to CI-EWS tasks and to prioritize their needs. A previous assessment for the Africa Adaptation Program (AAP) by UNDP (2011) and another assessment by the WMO (2012) were used to assess the capacity of institutions in Burkina; however, these studies were primarily focused on climate variability / change issues. Questions posed to the agencies/organizations are listed in Tables 5a and 5b.

Table 5a) Information production agencies

2.1 To what extent do you have necessary human resource capacity for an Early Warning System (EWS)(e.g., weather forecasters)? If capacity is lacking, please specify enumerated, prioritized needs (1 being most needed) in the Comments column.
2.2 To what extent do you know the costs of operation and maintenance for existing equipment?
2.3 To what extent are you familiar with cost-recovery mechanisms to pay for the costs of operation and maintenance? In Comments column, provide examples of current cost recovery mechanisms you utilize.
2.4 To what extent are you willing to sell your climate products to the private sector for revenue to support operation and maintenance costs given that the products must be tailored to private sector needs?
2.5 To what extent are you familiar with the roles of other information producers?
2.6 To what extent do you share data with other climate information producers? In Comments column, please indicate who you collaborate with and with whom you are lacking collaboration.
2.7 To what extent do you think it is necessary to collaborate with other climate information producers?
2.8 To what extent do you currently collaborate with the private sector? In Comments column, provide examples of how you work with the private sector.
2.9 What is your level of capacity for managing donor funds? If you have existing capacity, in Comments column, provide examples of how you work with donor funds currently.

Table 5b) Information dissemination agencies

1.1 To what extent is your agency capable of disseminating alerts?
1.2 To what extent are you able to understand the hydro-meteorological alerts currently, in order to be able to simplify them for local populations?
1.3 What is your level of technical resources to disseminate alerts (e.g., privileged Flotte telephone communication systems, CB radios)? If capacity is lacking, please specify enumerated, prioritized needs (1 being most needed) in the Comments column.
1.4 What is your level of human resource capacity? If capacity is lacking, please specify enumerated, prioritized needs (1 being most needed) in the Comments column.
1.5 To what extent are you capable of providing alerts in local languages?
1.6 To what extent are you able to provide messages through different sources of media? Please note in Comments which media works best for rural populations where you have experience (e.g., radio, sms) with 1being the media source that is most effective?
1.7 What is your technical capacity to inform local population organizations of Early Warning System (EWS)

to make them more involved in this project? If capacity is lacking, please specify enumerated, prioritized needs to perform training (1 being most needed) in the Comments column.
1.8 Excluding your own organization, what is your level of capacity to coordinate with either the local CONASUR focal points, the Rural Confederation of Burkina Faso or the Civil Society Organization on Climate Change (COS3C)? Please indicate in Comments if collaboration would be useful and why.
1.10 What is your existing capacity to hold joint training workshops for your decentralized offices with other environmental-related organizations? (This question is asked to try to streamline alert dissemination to local regions.)
1.11 Based on your experience, to what extent are local populations currently provided alerts? Please note in comments what alerts are provided, when have alerts been provided or lacking, and who has provided the alerts.
1.12 Based on your experience, to what extent are local populations aware of climate change?
1.13 To what extent are local populations aware of ADAPTATION to climate change and how a weather warning can help them become more resilient to the impacts of climate change?

4. Results from the baseline capacity assessment are provided in two formats:
i) Matrix with color and number coded capacity indicating scores of 1 (red, poor capacity/knowledge/experience) to 5 (green, good capacity/knowledge/experience), Tables 1 and 3
ii) Bar chart indicating average capacity for all information producers/distributors collectively, Tables 2 and 4

Information producers

5. Based on the numeric capacity assessment scores, it is clear that the agencies have similar capacities based on each question. On average information producers have low capacity to i) budget operation and maintenance costs, ii) establish cost-recovery mechanisms and iii) tailor products for the private sector. These three needs will be addressed by the project Outputs 2.2 and 2.5.

6. General written comments provided in the Information Producer questionnaire by DGM, DGRE, DCIME, ASECNA, SAAGA, DEES, DGPV are in alignment with the numeric scores. Summarized comments include:

- Not sure of Operation and Maintenance costs
- Lack knowledge on how to establish cost-recovery mechanisms
- Other than semi-private organizations that deal with aviation, (SAAGA), agencies are not familiar with how to tailor weather/climate products
- Data sharing needs to be improved and extended to all information producers and to outside agencies (e.g., Ministry of Health)
- Other than semi-private organizations (SAAGA), the agencies have an average capacity to manage donor fund

Information distributors

7. Based on the numeric capacity assessment scores, it is clear that the agencies have similar capacities based on each question. On average information distributors have low capacity to i) understand alert jargon, ii) to translate alerts into local languagues (alerts are too technical and unclear), and iii) to communicate effectively. Training for the NGOs/CSOs and CONASUR from national to local sectors to clarify jargon and translate alerts will be provided in this project through project Output 2.4. In terms of communication capacity, some NGOs/CSOs cited a prioritized need to have better technical resources to disseminate alerts while others already have this capability. The final budget will reflect the required equipment costs based on each agencies needs in Output 2.4.

8. Furthermore CONASUR and the NGOs/CSOs already have capacity to transmit information. Most use radio, but more communication mechanisms are welcome (e.g., sirens). These organizations already have experience with collective training. The average consensus is that the local population

will need to be informed on how EWS/CI can help them adapt to climate change. The last output, 2.7, of this project will provide information workshops at the local level and a public awareness campaign to inform users on the potential benefits of EWS/CI.

9. General written comments provided in the Information Dissemination questionnaire by CONASUR, SIG, CPF, COS3C, SOS Sahel, INADES, DGPEDD, DGFF/MEDD, DEP/MAIDS, DGPA, DGPS, DGPV, UNPCB are in alignment with the numeric scores. Summarized comments include:

- Need training for comprehension of alerts
- Some (not all) need priveledged communication systems (CB radios, Flotte systems)
- Local understanding of climate change is strong but local understanding of adaption measures is average, particularly on how to adapt to extreme weather events

10. Findings from individual consultations with information producers include the following:

- Costs for maintaining and operating both radar in Ouagadougou and Bobomust be included in any cost assessment
- Human resource costs for an additional sounding at midnight must include overtime rates for 1 general operator and 1 hydrogen operator
- In order to have an additional sounding, ASECNA needs an approval agreement from their General Director (ASECNA DG)
- Costs of delivering data to DGM by post for manual weather stations are lacking in DGM's initial cost estimate
- SAAGA has enough personnel for radar operation and maintenance but they require training
- There is a need to elaborate a national policy on environmental information for DCIME

11. Specifications by primary information producers

DGM proposes to have four automatic synoptic stations and a mix of either classical or automatic climatological and agro stations. They will provide the NC with a clarified cost estimate indicating how many classical and automatic agro-meteorological and climatological stations they require. DGM does not feel that they can be completely reliant on automatic stations yet because of the difficulty in training personnel. Maps of existing and proposed stations are depicted in Annexes VI and VII.

New station location is currently being discussed. The village locations of the stations to be acquired in this project were previously identified (Annex VI). Current discussion revolves around whether it is cost-effective to move a small number of stations to locations beneficial to the cotton production sector (A 20 km radius for one weather station can potentially serve a number of private clients.) The idea is to place a few stations in locations which can both serve the expansion of the national network and target cotton private sector clients. If climate information is requested from the private sector, it can serve as a source of revenue to DGM which can enable the EWS to be more financially sustainable and scaled-up in the future. However, a condition for the station location in the context of this project is also that placement must provide benefits to the most vulnerable in addition to the private sector. Accordingly, the DGM is now looking at station location options based on the potential of cotton production and other private sector interest.

Exact locations will be determined by conducting a local study and through village consultations with each mayor during project implementation. The goal of the local studies and consultations will be to ensure the station location is secure and prohibits theft as much as possible. Also, village representatives will be consulted to ensure the location can provide useful information for agriculture or to better predict floods. The four synoptic stations under this project will be placed within four

different regions within Burkina to complement the existing stations in order to make sure each region has a representative station. The IC also clarified that USAID has a clear interest in this project and is planned to be a co-financing institution. Locating stations near USAID ground-based presence could enable the infrastructure to be better supported because USAID has made significant progress in coordinating local NGOs in specific areas for climate change related initiatives. These NGOs could potentially support the necessary security and data collection / transmission measures for new stations and could profit from the data at the same time. The General Director of Meteorology agreed to engage with USAID when station location would be decided on a local level.

Discussion also revolved around station inspection. It is foreseen that station surveillance will be required every 3 months and a comprehensive inspection will take place annually. These costs have been included.

At the time of the mission, a representative from ADCON telemetry GMBH, the provider of 10 synoptic and 6 agro-meteorological stations mandated through the NAPA project, was training personnel at DGM. The new automatic ADCON stations have been placed next to the 10 existing synoptic stations and are functioning well. The plan is to displace these automatic stations once DGM gains enough capacity to maintain them. Furthermore, it is envisaged that ADCON stations will be procured in this project because they are relatively low-cost, they are functioning well presently and DGM personnel have already been trained on how to use and manage these automatic stations. DGM will provide the NC with a map indicating where the new 6 agro-meteorological stations are located.

Rain gauges and agro-meteorological stations, managed by the Department of Agriculture and private companies such as mining, have already been installed in addition to the DGM Met Service network. It was discussed that DGM will serve to centralize this additional hydro-meteorological data. Currently, an institutional rule is being developed which will oblige any institution collecting climate or weather data in Burkina to provide a copy to DGM.

DGRE detailed that the 2 new Doppler flow meters to be procured in this project will be rotated within the Mouhoun and Comoé watersheds which are flood prone regions. Addditonal flow meters are required and will be detailed in subsequent meetings. DGRE will also generate an updated map for the project indicating the revised locations of manual flow measurement stations.

12. Experiences from Disaster Risk Management Agency, CONASUR

An in-depth bilateral consultation with CONASUR discussed the reasons that other disaster risk management projects have not been successful. Lack of coordination and good management from the outset were cited as issues. (Note: more information will be obtained on this specific project by the NC.) CONASUR wants to prevent a lack of coordination and poor management by ensuring that the roles of different agencies are formalized. Furthermore, CONASUR expressed that the difficulties experienced in other DRM projects can be mitigated by including coordination meetings on a regional and national scale during project development. They will provide the consultants with the costs for these coordination meetings.

13. Engaging with NGOs to implicate the most vulnerable

The Farmer's Confederation of Burkina Faso (CPF) was consulted a second time to discuss their needs for training. They had requested training for their regional focal points so that they can easily understand the information and various levels of alerts before dissemination to their decentralized branches known as CORESUR regionally and COPRESUR provincially. The Civil Society Organization on Climate Change (COS3C) was also consulted to discuss their current capacity and

their needs to disseminate information. They require better telephone communication systems and want to be included in the training for focal points along with CPF so that they can spread awareness and understanding of alerts and how to respond to them.

In general, the NGOs have different technical capacities and it was seen that a 'father' organization such as CPF, does not automatically transfer skills to confederation members (such as CPF to COS3C). Training should therefore be provided to focal points from all relevant NGOs so that they will all have the same knowledge base on EWS alerts. Each organization will then be responsible for transferring these skills to their decentralized representatives.

Two female organizations were also consulted in order to ensure that rural women are prioritized in this project. Both WILDAF and the Women's Forestry Association (WFA) work with women in rural regions to ensure they have capacity to farm and can be a part of the associated fruit tree and farm product chain. WILDAF is involved with promoting the rights of women in rural sectors while the WFA trains women in proper agricultural production techniques and environmental awareness education. WILDAF has been in existence in Burkina since 1992 and has an extensive network of local focal points and thereby a large radius of influence. Neither of the female organizations have the means to disseminate warnings due to communication difficulties; however, both are concerned with assuring that women receive alerts. Both organizations could be used to validate the effectiveness of EWS in helping vulnerable rural populations; their role would be to inform the project if and how populations receive alerts and how they can be improved.

14. Project indicators

The project will build Early Warning services throughout the country based on the needs of the principal end-users, including rural populations, farmers and producers of agricultural products. Targeted areas, which have suffered significant flood damage in the past, have been additionally identified in the second workshop. These areas can be used to provide project indicators by comparing the effectiveness of the improved alerts proposed by this project over present day alerts. Agencies familiar with the local regions including the NGOs and CONASUR suggested the following areas to be used for project indicators during the second mission workshop: Bama (Hamet), Duri (Seno), Sebba (Yagha), Bouroum (Namentenga), Kaya (Sanmatenga), Sissili villages (Leo), Tabou (To), communes of Dedougou and Sanaha, villages of Torouh, Nemena, and Gayer as well as populations surrounding the dams such as Bagne and Zig.

15. Detailed costs

Final detailed cost estimations are in the process of being collected from all CI-EWS actors. Consultations during the second mission were used to validate that all operation and maintenance costs have been included. Also, agencies were asked to prioritize their needs in the Comments column of the questionnaires to facilitate annual budget planning. The final cost estimate will distribute the costs over the course of the three year project, prioritizing the tasks most necessary. The final project preparation report will provide a detailed financial breakdown for the components, outputs and activities of this project.

16. Discussion on EarthNetworks technology

EarthNetworks presented their total lightning technology to the UNDP CO and the project consultants during this mission. An ADCON representative who was present to train DGM with the new NAPA weather stations was also present. The lightning sensor network, known as the Earth Networks Total Lightning Network (ENTLN), is the world's largest lightning detection network detecting both in-cloud (IC) and cloud-to-ground (CG) lightning. Because phase changes within clouds are indicative of

storm development, the IC detection technology can provide forecasts for rain events. According to EarthNetworks, their technology is quite comparable with radar at a fraction of the cost. In addition to their technology, EarthNetworks can provide hardware, data processing and nowcasting and/or forecasting with the assistance of regional control centers. In developing countries such as Brazil, EarthNetworks provides their forecasting products using a web-based interface.

Discussion with EarthNetworks revolved around the power required for the stations. EarthNetworks potential plan would be to install their sensors on existing cell phone towers. Accordingly, EarthNetworks met with SONABEL, the sole controller of cell phone towers, who is an agency independent from all mobile companies in Burkina Faso. Together both agencies discussed ways in which SONABEL can leverage EarthNetwork's data and applications.

Some complications in implementing an EarthNetworks system in the context of this project might include obtaining cell phone tower space. EarthNetworks could either rent cell phone tower space and data transfer capabilities or the government could mandate that the cell phone companies provide the data transfer service free of charge since warnings are a public good. In addition, installation on cell towers is not generally compliant with WMO standards for installation. Furthermore, a need for observers and technicians and provision for site clearance and security might be costs additional to standard equipment.

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Annex I: Inception Workshop Agenda

Inception workshop for EWS project, Renforcement de l'information climatique et des systèmes d'alerte précoce en Afrique Occidentale et Centrale pour le développement de la résilience et de l'adaptation aux changements climatiques

11th September 2012, Ministry on the Environment, Ouagadougou, Burkina Faso.

	8 :30h – 09:00h	Acceuil / Enregistrement Participants
Cérémonie d'Ouverture	**09:00h – 09 h 30**	-Introduction,Maitre de Ceremonie-Allocution,Representant du PNUD (Mr DIOP) - Discours d'ouverture par le SG MEDD
09:30 h – 09:45h Suspension - Retrait des Autorités/ Pause Café		
	09:45 h – 12:30 h	-Objectifs et Programme de l'Atelier (CI) -Presentation du Contexte/Formulation du Projet (PANA) - Presentation DGM sur le Cadre Service climatique - Presentation des acteurs clés en matière d'hydrologie, secours d'urgence et protection civile (DGRE, CONASUR, DGPC) - Presentation de CONASUR sur le secours d'urgence - Presentation DGRE sur l'hydrologie - PresentationDGPC sur la protection civile -Questions / Reponses
	12 :30h – 13:00h	Proposition d'agenda de prise de contact avec les acteurs clés et les Termes de Reference sur les échanges avec les institutions clés (CN)
	13 :00h – 14:00h	Fin atelier / Dejeuner

Annex II: List of participants at the Inception workshop for EWS project, project preparation phase 11th September 2012, Ouagadougou, Burkina Faso

MINISTERE DE L'ENVIRONNEMENT
ET DU DEVELOPPEMENT DURABLE

BURKINA FASO
Unité – Progrès – Justice

SECRETARIAT PERMANENT DU CONSEIL
NATIONAL POUR L'ENVIRONNEMENT ET
DU DEVELOPPEMENT DURABLE

UNITE DE COORDINATION
DES PROJETS DU PANA

ATELIER DE LANCEMENT DE LA FORMULATION DU PROJET « RENFORCEMENT DE L'INFORMATION CLIMATIQUE ET DES SYSTEMES D'ALERTE PRECOCES EN AFRIQUE OCCIDENTALE ET CENTRALE POUR LE DEVELOPPEMENT DE LA RESILIENCE ET DE L'ADAPTATION AUX CHANGEMENTS CLIMATIQUES »
11 SEPTEMBRE 2012 A OUAGADOUGOU

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Annex III: Workshop Minutes

Introduction

Sur invitation du secrétaire Général du Ministre de l'Environnement et du Développement Durable (MEDD), un atelier national sur les Systèmes d'Alerte Précoce intitulé «Renforcement de l'information climatique et des systèmes d'alerte précoce en Afrique Occidentale et Centrale pour le développement de la résilience et de l'adaptation aux changements climatiques» s'est tenu le 11 Septembre 2012 dans la salle de conférence du Ministère de l'Environnement et du développement Durable à Ouagadougou, Burkina Faso.

L'organisation de l'atelier a été assurée par le SP CONEDD.

L'objectif de cet atelier national était de réunir les structures productrices d'informations d'alerte précoce hydrométéorologique, celles chargées des disséminations de ces types d'informations, celles en charge de la gestion des catastrophes et désastres naturelles ainsi que des Partenaires Techniques et Financiers pour leur informer du présent projet et échanger avec eux sur les stratégies de son élaboration, sa mise en œuvre, son fonctionnement et sa pérennisation.

I. Deroulement de l'atelier

1. Ceremonie d'ouverture

La cérémonie d'ouverture et la gestion des échanges pendant l'atelier ont été présidées par le secrétaire General du Ministère de l'Environnement et du développement Durable.

Dans son intervention, il a rappelé la vulnérabilité du Burkina Faso face aux variations/changements climatiques et plus particulièrement, aux extrêmes météorologiques. Il a souligné le fait que le projet d'alerte précoce tel que défini dans la note conceptuelle est conforme aux priorités identifiées dans le cadre du Programme d'action national d'adaptation à la variabilité et aux changements climatiques du Burkina Faso, qui œuvre à mettre en place un système de collecte d'informations nécessaires sur les changements climatiques et l'alerte précoce, pour accompagner le processus de prise de décisions. Il a donc exhorté vivement aux participants à l'atelier à des débats très fructueux afin d'aboutir au terme des travaux, à des propositions pertinentes et susceptibles de renforcer le contenu du document de projet, dans le sens d'une réelle promotion du système d'alerte précoce au niveau national et local.

Il eu aussi, l'allocution du Directeur pays adjoint / PNUD BURKINA FASO, qui a rappelé les actions du PNUD en faveur des programmes de lutte contre les extrêmes climatique et météorologiques au Burkina, l'assistance aux personnes démunies et de l'adaptation aux changements climatiques. Il a aussi confirmé le soutien ferme du PNUD pour l'élaboration et la mise en œuvre du présent projet.

2. Participants à l'atelier

L'atelier a regroupé 51 participants provenant de différentes institutions et organisations. (voir en annexe la liste des participants). Celles-ci ont été invités en tenant compte de leur implications pertinentes dans les Systèmes d'alerte Précoces afin de présenter leurs expériences et leurs stratégies.

3. Synthèse des présentations pendant l'atelier

Un résumé des présentations des représentants des institutions clé invitées est fourni ci-dessous.

Au début, la Consultante Internationale, àprésenté les objectifs de l'atelier ainsi que les TDR du projet en ces différentes composantes. Après ce fut le tour des institutions suivantes :

- **Coordination Nationale des Projets PANA (structure relevant du SP/CONEDD) – PANA**

Coordination of all projects in the National Adaptation Programme of Action (NAPA)

Cette structure est chargée de la coordination des Programmes d'Action National d'Adaptation (PANA) à la variabilité et aux changements climatiques du Burkina Faso. Dans leur présentation, son coordonateuràrappelé les différents projets que sa structure a contribué à la mise en œuvre. En ce moment, il travaillé sur le programme PANA Programmatique afin de donner au gouvernement des orientations en terme de projets et activités à promouvoir sur l'horizon 2025 à 2050.

- **CONASUR :**Conseil national de secours d'urgence et de réhabilitation (CONASUR), structure interministérielle à caractère social et humanitaire. Dans sa présentation, son Secrétaire Permanent a fait savoir que sa structure est chargée de d'Assurer le plaidoyer, la mobilisation et le soutien en faveur de la prévention et de la gestion de secours d'urgence et de réhabilitation, d'Assurer la coordination des actions humanitaires, Veiller à l'intégration des risques de catastrophes dans les plans et programmes de développement… En outre, c'est une structure décentralisée en Conseil Régional de Secours d'Urgence et de Réhabilitation (CORESUR) au niveau régional, en Conseil Provincial de Secours d'Urgence et de Réhabilitation (COPRoSUR) au niveau provincial, en Conseil Départemental de Secours d'Urgence et de Réhabilitation (CODESUR) au niveau régional. En son sein figure, des ONG, la croix rouge, des Partenaires Techniques et Financiers…

- **National Weather Service** –

Le Directeur Général de la Météorologie a présenté une synthèse des résultats de l'atelier du Cadre National sur les Services Climatiques ; organisé avec le soutien de l'Organisation Météorologique Mondial (OMM). Il est ressorti la pertinence et l'importance des EWS hydrométéorologique en termes de priorité pour la protection des populations et l'assistance météorologique.

- **Department of Civil Protection –**

Cette structure est chargée de la planification et de l'organisation des premiers secours. Elle intervient dans les opérations de secours en cas de sinistres ou de catastrophes, ceci, en coordination avec le CONASUR.

Elle est structuré de façon décentralisée (national, régional, provincial, communal) et dispose de différents plans d'organisation des opérations de secours.

Direction Générale des Ressources en Eau (DGRE)

Son représentant à l'atelier àprésenté les différents méthodes déjà utilisé en termes de EWS (ouverture des vannes, alerte donnée sur les radios communautaires) sur la montée des eaux au niveau de certains barrages (Darou, Leri, Sourou, Bagré). Il a également sollicité une automatisation du système de gestion de la côte d'alerte sur la montée des eaux du barrage, le renforcement des capacités pour une meilleure surveillance et l'implantation de station de veille et d'alerte en nombre suffisant.

4. Synthèse des échanges (questions – réponses) pendant l'atelier

Concernes et questions posé par les agences de SAP incluaient la qualité et l'acquisition des données nécessaires à la réalisation du projet, le montant et le mode de financement du projet, la possibilité de rallonger le budget initial, la connexion des EWS sur la famine ou la sécurité alimentaire, le rattachement institutionnel, le rattachement à des programmes existants, l'équipement des barrages, les gestion des populations autour des barrages, la prise en compte des règles sur la décentralisation dans ce projet, les activités à prévoir dans ce projet, les stratégies de communication à développer et des commentaires sur l'importance des EWS, sur les plans de gestion des risques, la qualité des prévisions météorologiques, la surveillance des barrages.

En fin de travaux, le consultant national a présenté et expliqué les questionnaires à adresses aux institutions clés devant intervenir le projet EWS, ainsi que l'agenda pour des partenaires clé qui seront contacté pour des entretiens bilatéraux.

Annex IV: Mission 2 Schedule

Mission 2 Program for the Consultants:Elaboration of EWS project in Burkina Faso
(19Nov 2012 – 23Nov 2012)

Day/Date	Time	Meetings/Activities	Findings
Mon 19 Nov 2012	15:00–16:00	ASECNA	- Cost of operating personnel for a sounding launch at midnight - Verification of cost items - Need for agreement of ASECNA DG to approve sounding
	16:00-17:00	DGRE (Directorate General for Water Resources)	- Verification of cost items - Request to update hydrological monitoring station map - They will place the Doppler flow meters in the Mouhoun et Comoé catchments
	17:00-18:15	DGM	- Verification of operation and maintenance costs - Request for updated maps on proposed location of 6 PANA agro-meteorological weather stations (10 PANA stations have been placed with existing synoptic stations) - Stations are placed logistically so that there is a station in each region of Burkina - Clarification on frequency of station inspections
Tues 20 Nov 2012	11:00 - 12:00	SAAGA	- Have enough personnel for radar but they need training - Will give us O&M costs for radar in Ouaga and Bobo - They will prioritize costs in order to distribute costs over 3 year project
	13:00 - 14:00	EarthNetworks	- Presentation of total lightning technology - Discussion on costs - Questions from ADCON representative on cost of transmitting data, quality of sensors and power needs

	14:00 - 15:00	CPF (Rural Confederation of Burkina Faso)	- Validation of needs for workshops - Existing relevant initiatives - Sharing of contact information of NGO promoting women, WILDAF
	16:00 - 18:00	CONASUR	- Verification of costs - Need for coordination meetings regionally and nationally - Problems with current UNDP project including little coordination and unclear roles - Trucks need repair
Wed 21 Nov 2012	8:30-15:00	WORKSHOP	- Presentation of meeting conclusions since the first mission - Presentation of proposed project outcomes, outputs and major activities - Prioritization of needs and rapid self-capacity assessment for all organizations - Interactive discussion amongst two groups, 1) information dissemination and 2) information production. Discussion formalized the roles and key focal points for agencies along the information dissemination chain
	15:00-18:00	Meeting amongst consultants	- Tallying of capacity assessment results - Distribution of workshop materials by email to workshop participants - Organization of private sector workshop
Thurs 22 Nov 2012	11:00-12:00	USAID	- WA-WASH project in 4 countries (28 M USD total, 4 M USD for Climate Change) - Projects are on ground level and they could use extreme weather forecasts to help locals plan for droughts or rainy seasons
	14:30-15:30	DCIME	- Discussed budget details - Need to elaborate a national policy on environmental information
		BanqueMondiale (Emmanuel Nikiéma)	- Email exchange to confirm 3rd phase of PNGT and its support for the project
	18:00-19:00	Coalition d'Organisation des Sociétés Civiles sur le Changement Climatique (COS3C)	- Discussion on current capacity and needs of the Coalition to disseminate information

			- Need for training and better telephone communication systems - All training will be to train the NGO focal points so that they can continue training on local levels
Fri 23 Nov 2012	09:00-10:00	DGM (General Director for Meteorology)	- Clarification that all synoptic stations will be classical, not automatic - DG will provide a new cost estimate clarifying which stations which will automatic or classical - Classical stations will be placed because of the difficulty in training personnel - Will perform a location study for where to put the stations within each identified village - Will confirm with local regions where to put stations to ensure their security and that the locations will provide useful information - Can collaborate with USAID in the local villages identified in order to insure their implication in supported station placement - 10 ADCON stations for PANA projects located next to synoptic weather stations are planned to be moved in some years after sufficient training - Will use local rain gauges and temperature measurements placed by the Ministry of Agriculture and the mining sector but due to their lack of quality check on data recording, this data will be placed in a secondary database
	10:00-11:00	Women's Forestry Association, CNRST	- They work with a group of poor women and teach them to apply fruit and other production techniques. Also, they promote environmental education - This organization will be used to validate the effectiveness of EWS to help these vulnerable populations - They will let us know if these populations received the alert, how they received it and how it can be improved - They do not have the means to disseminate warnings due to communication difficulties
	10:00-11:00	Meeting with Monsieur Diop, Adjoint Representative of UNDP, Aki Kogachi and AlainKy-Zerbo of UNDP	- Update on project and the workshop during the second mission - Outline of weekly deliverables on important sections of the draft report - AK, Must ensure synergy between project agencies and dissemination

			agencies should have the technical capacity (e.g., server) - AK, Different actors will be together to see who is most technically capable of immediately providing an alert with sufficient human resources
	14 :00- 16 :00	WILDAF (Women in Law and Development in Africa organization)	- They promote the rights of women in rural sectors - They are interested in assuring the women will receive alerts - They do not have the means to disseminate warnings due to communication difficulties - They will let us know if these populations received the alert, how they received it and how it can be improved
		EU	- Meeting the week of 3rd December
		UNDP COGEL (Alexis Kaboré), Climate change 2012-2015	- On mission, meeting will take place after 26th Nov with NC
		Private Sector Workshop at UNDP to take place the 14th Dec 2012	- Terms of Reference written - Private sectors identified - UNDP will have significant presence to reinforce the importance of working with the private sector for the sustainability of the project - Both private sector and information producers will be present

Annex V: Agenda for the project preparation Role Identification and Capacity Assessment Workshop

Workshop for EWS project :
Conclusions des entretiens, étude de capacité et formalisation du projet

21st November 2012, Ministry on the Environment, Ouagadougou, Burkina Faso.

08:30h – 09:00h	Accueil / Enregistrement Participants
09:00h – 11:00h	-Présentation des conclusions des entretiens - Composants et activités du projet - Timing de projet - Formalisation des rôles des acteurs dans la dissémination d'information - Vérification des rôles des différentes institutions clés intervenant dans les échanges/élaborations des données - Intervention des acteurs et recommandations
11:00h – 11:30h	Suspension - Retrait des Autorités / Pause-Café
11:30h – 13:00h	- Introduction et explication des questionnaires - Evaluations des capacités et priorisation des besoins - Synthèse / Questions - Collecte des réponses des questionnaires/ Fin atelier
13:00h – 14:00h	Déjeuner

Annex VI: Meeting Minutes from the project preparation Role Identification and Capacity Assessment Workshop

Sur invitation du PANA, un atelier national sur les Systèmes d'Alerte Précoce intitulé «Formulation du document du projet d'un système d'alerte précoce en matière d'adaptation aux changements climatiques» s'est tenu le 21 novembre 2012 dans la salle de conférence du Ministère de l'Environnement et du développement Durable à Ouagadougou, Burkina Faso.

L'objectif de cet atelier national était de présenter aux différentes structures intervenant dans le SAP hydrométéo et dont la plupart avaient assisté à l'atelier de lancement, les résultats des travaux des consultants sur l'élaboration du SAP hydrométéo au Burkina, de recueillir leurs avis, leurs critiques et leurs suggestions une meilleure conception de ce projet ainsi que des perspectives qu'il susciterait.

II. Déroulement de l'atelier

I.1 Cérémonie d'ouverture

L'ouverture et la gestion des échanges pendant l'atelier ont été présidées par le Coordonateurdu PANA. Dans son intervention, il a rappelé le processus de conception du SAP depuis le premier atelier tenu le 11 septembre 2012 et a fait savoir aux participants que les consultants par cette occasion voudraient exposer les résultats de leurs travaux et qu'ils leur revenaient de vérifier si leurs préoccupations ont été prises en compte, si les analyses effectuées traduisent la réalité des faits et de proposer des pistes pour améliorer le travail effectué et des perspectives liés au projet.

I.2 Participants à l'atelier

L'atelier a regroupé 30 participants provenant de différentes institutions et organisations. (Voir en annexe la liste des participants). Celles-ci ont été invitées en tenant compte de leurs implications pertinentes dans les Systèmes d'alerte Précoces hydrométéo.

I.3 Synthèse de la présentation effectuée pendant l'atelier

La consultante internationale a présenté les résultants des travaux menés de concert avec le consultant national. Essentiellement, il s'est agi de partager des résultats sur les conclusions des entretiens avec les différentes institutions/organisations intervenant dans le SAP du Burkina Faso, de présenter les acquis, les forces ainsi que les limités et les difficultés des institutions intervenant dans le SAP, leurs besoins en terme de renforcement des capacités pour la production et la dissémination d'informations sur les Systèmes d'Alerte Précoce (SAP), de définir les rôles clés des institutions/organisations au plan national et au niveau décentralisé.

Après ce fut le tour aux participants de poser des questions, de formuler des suggestions et des recommandations pour la suite des travaux :

I.4 Synthèse des échanges (questions – réponses) pendant l'atelier

Les questions posées concernaient essentiellement le choix de type de stations (automatiques ou manuels), la qualité des prévisions météorologiques, l'intégration du ministère de la santé dans le dispositif du SAP, la prise en compte de la voie retour (réponses à fournir aux usagers du SAP), les liens entre producteurs agricoles et météorologistes sur le terrain, les structures additionnelles aux

groupes de disséminateurs et d'utilisateurs d'informations sur le SAP hydrométéo, la formation sur le jargon météorologique, la traduction des informations SAP en langue nationale, la synergie entre les groupes producteurs et disséminateurs d'informations SAP. Une recommandation a été formulée pour l'acquisition de données et informations issues des technologies spatiales.

Des réponses appropriées ont été apportées aux questions ci-dessus.

Par la suite un questionnaire a été distribué aux participants afin que les réponses qu'ils y apporteront puissent servir à l'évaluation de la priorisation de leurs besoins en renforcement de capacité.

Enfin, il a été institué deux groupes de travaux. Un premier groupe formé des potentiels producteurs d'information SAP hydrométéo ont été constitué afin d'analyser le schéma présenté par les consultants sur les structures producteurs d'informations hydrométéo et celles habiletés à fournir des alertes hydrométéo. Le second groupe était chargé de critiqué le schéma présenté par les consultants sur les structures chargées de la dissémination de l'information et de définir la stratégie pour mieux disséminer les alertes hydrométéo.

Les résultats des travaux des deux groupes ont été présentées en plénière par leurs rapporteurs, puis critiquer et approuvés (voir partie annexe).

<u>Rapport de synthèse des travaux du Groupe de producteurs d'information hydrométéo</u>

- Synergie de toutes les structures productrices d'informations hydrométéorologiques
- Centraliser tous les équipements ou les produits dérivés à l'ASECNA (Déport des images RADAR du programme SAAGA et des images Satellitaires de la DGM) car étant déjà le centre national principal de prévision
- Déployer un prévisionniste de la DGM et un élément du programme saaga au sein des quarts de l'ASECNA pour une élaboration collective des prévisions et une suivie du RADAR.
- Former tous les producteurs d'infos à l'exploitation du RADAR météo et des images satellitaires
- Envoyer des prévisionnistes se former à l'EAMAC ou à l'ACMAD au sein du projet VigiRisc
- La DGM est la seule structure habilitée à lancer l'alerte sur les phénomènes météorologiques.
- La DGRE est la seule structure habilitée à lancer l'alerte sur les phénomènes hydrologiques.

Etaientreprésentés :

- La DGM
- La DCIME
- L'ASECNA
- Service de Statistiqueenvironnementale
- Le Programme SAAGA

<u>Rapport de synthèse des travaux du Groupe des Disséminateurs des alertes</u>

Libellé de travail :

1) Définition des stratégies de dissémination des alertes
2) Désignation des structures chargées de coordonner la dissémination des alertes.

Les structures membres du Groupe des disséminateurs des alertes, présentes à l'atelier :

- Direction générale de la pêche et de l'Aquaculture ;
- ConfédérationPaysanne du Faso ;
- SP/CONASUR ;
- INADES Formation ;
- DEP/MATDS ;
- SOS Sahel ;
- Ministère des ressourcesAnimales ;
- Systèmed'Information du Gouvernement ;
- SONABEL ;
- FASO BAARA ;
- Direction générale des forêts et de la faune ;
- UNPCB.

1) Définition des stratégies de dissémination des alertes

Les membres du Groupe ont déterminé les stratégies suivantes pour la dissémination des alertes vertes les utilisateurs finaux :

- La communication de masse : masse média (radio, presse écrite, TV)
- Les TIC : téléphone (Appels et SMS) ; Internet (sites web et mails) ;
- Les productions périodiques : les rapports spécifiques (santé et sécurité), les bulletins d'information, les annuaires statistiques, etc.
- Les cadres ordinaires de concertation, de rencontre ;
- Le cadre administratif (Correspondances administratives)

2) Désignation des structures chargées de coordonner la dissémination des alertes.

Deux stratégies ont dicté le choix des structures chargées de la dissémination des alertes :

- Réception et certification des alertes : CONASUR ;
- structures principales chargées de la dissémination et de la diffusion des alertes : CONASUR et SIG

Recommandation de l'atelier :

Dans le cadre de la surveillance des risques de catastrophes pour le système d'alerte précoce du Burkina Faso, les participants à l'atelier «Formulation du document du projet d'un système d'alerte précoce en matière d'adaptation aux changements climatiques» s'est tenu le 21 novembre 2012 à Ouagadougou suggèrent que le Système des nations Unies (UNDOSA et UNSPIDER) approche les nations spatiales (APSCD, JAXA, NDRC) pour mettre à la disposition du pays des données et informations issues des technologies spatiales.

Annex VII: Participation List from the project preparation Role Identification and Capacity Assessment Workshop

MINISTERE DE L'ENVIRONNEMENT
ET DU DEVELOPPEMENT DURABLE

SECRETARIAT PERMANENT DU CONSEIL
NATIONAL POUR L'ENVIRONNEMENT ET
DU DEVELOPPEMENT DURABLE

UNITE DE COORDINATION
DES PROJETS DU PANA

BURKINA FASO
Unité – Progrès – Justice

ATELIER POUR LA FORMULATION DU DOCUMENT DU PROJET D'UN SYSTEME D'ALERTE PRECOCE EN MATIERE D'ADAPTATION AUX CHANGEMENTS CLIMATIQUES »
21NOVEMBRE 2012 A OUAGADOUGOU

LISTE DES PRESENCES

SEE PDF DOCUMENT ATTACHED

Day/Date	Time	Meetings/Activities	Findings
Fri 19 Apr 2013	8:30–9:00	UNDP Resident Representative, Mr. Diop	- Goal of Validation workshop - Areas requiring clarification, Implementation Arrangement, budget, Terms of Reference, risks and project indicators - Clarification on role of project CTAs
	9:00-10:00	Meeting with UNDP and NAPA focal point, Aki Kogachi	- Terms of Reference - Project execution structure - Statute A project - ADCON contact information and costs for stations already purchased

			under NAPA 1 project
	16:00-18:00	DGM	-
Mon 22 Apr 2013	8:00 -10:00	CONASUR	- x
	11:00 - 13:00	DGRE	- x
	14:30 - 16:30	SP/CONEDD and UNFCCC focal point for BKF, Mr. AugustinKabore	- Chief Technical Advisors
	9:00 -14:00	Validation workshop	- x

RAPPORT DE SYNTHESE

ATELIER NATIONAL DE VALIDATION "Système d'Alerte Précoce (SAP) en vue de promouvoir la résilience aux extrêmes climatiques et l'adaptation au changement climatique au Burkina Faso"

OUAGADOUGOU, LE 23 AVRIL 2013

Rapporteur :

Dieudonné Pascal YAKA, Consultant Système d'Alerte Précoce, PNUD

Sommaire

I. Introduction

Sur invitation du Secrétaire Permanent du Conseil National sur l'Environnement et du Développement Durable (SP/CONEDD), un atelier de validation du document du projet "Système d'Alerte Précoce (SAP) en vue de promouvoir la résilience aux extrêmes climatiques et l'adaptation au changement climatique au Burkina Faso" s'est tenu le 23 avril 2013 dans la salle de conférence du Ministère de l'Environnement et du développement Durable à Ouagadougou, Burkina Faso.

L'organisation de l'atelier a été assurée par le SP CONEDD.

II. Objectif de l'atelier

L'objectif de cet atelier est de procéder à la validation du document général du projet, notamment les activités définies, les produits à concevoir, les résultats attendus, les incertitudes, les risques et comment y palier, le suivi ainsi que l'évaluation des activités, l'arrangement institutionnel et les stratégies de gestion pérenne du projet.

III. Déroulement de l'atelier

III.1 Cérémonie d'ouverture

La cérémonie officielle d'ouverture a été présidée par Monsieur Sambou COULIBALY, Secrétaire Général (SG) du Ministère de l'Environnement et du Développement Durable (MEDD), qui avait à ses côtés Monsieur Maleye DIOP, Directeur Adjoint de Programme au PNUD, et Mr Mamadou Honadja, Secrétaire Permanent du Conseil National pour l'Environnement et le Développement Durable (SP/CONEDD).

Le directeur Adjoint de Programme au PNUD dans son allocution, a mentionné que ce projet participe à la construction d'un système efficient et pérenne qui permettra l'élaboration d'informations sur les risques hydrométéorologiques, la transmission d'alerte aux populations et aux structures de protections civiles afin de mieux contrôler et de palier aux conséquences négatives des désastres hydrométéorologiques.

Par ailleurs, il a porté à l'attention des participants que le PNUD, en sa qualité de l'agence d'exécution du FEM, voudrait rassurer de sa ferme détermination à travailler étroitement avec les acteurs nationaux pour assurer l'élargissement des partenariats et la mobilisation des ressources financières pour la mise en œuvre du PNA.

Pour finir, Il a félicité au nom du PNUD le Burkina Faso pour ses initiatives et son engagement dans le domaine des changements climatiques et souhaitée que le présent atelier offre l'opportunité aux

parties prenantes au projet de consolider sa pertinence et sa cohérence avec les défis et enjeux actuels du pays.

Le SG du MEDD dans son discours d'ouverture à remercier les participants pour leur présence, rappelé la pertinence et l'importance du projet pour le Burkina Faso, notamment sa conformité aux priorités et orientations stratégiques du Burkina Faso qui œuvre depuis quelques années à mettre en place un système de collecte d'informations nécessaires sur les changements climatiques, pour accompagner le processus de prise de décisions.

Il a souligné le fait que ce projet constitue donc une contribution hautement appréciable au renforcement des capacités du Burkina Faso à faire face aux changements climatiques.

A cet effet, il a remercié au nom du Ministre de l'Environnement et du Développement Durable, les Partenaires Techniques et Financiers, notamment le FEM et le PNUD pour leur accompagnement et leur soutien.

Pour finir ses propos, il a exhorté les participants à débattre de façon fructueuse afin d'aboutir à des propositions pertinentes et susceptibles de renforcer le contenu du document de projet, dans le sens d'une réelle promotion du système d'alerte précoce au niveau national et local.

III.2 Participants à l'atelier

L'atelier a regroupé une cinquantaine de participants provenant de différentes institutions et organisations. (Voir en annexe la liste des participants). Celles-ci ont été invitées en tenant compte de leur implication pertinente dans les Systèmes d'alerte Précoces hydrométéorologique et ce, depuis le début du processus.

La gestion des échanges pendant l'atelier ont été présidée par le SP/CONEDD. Il a présenté l'agenda de l'atelier, procédé à son adoption par l'ensemble des participants. Après que chaque participant ait décliné son identité, les consultants ont été invités à faire leur présentation.

III.3 Synthèse de la présentation effectuée pendant l'atelier

La consultante internationale a présenté les points clés du document général du projet élaboré de concert avec le consultant national, à savoir le cadre logique, l'arrangement institutionnel et les stratégies de pérennisation du projet.

Après ce fut le tour des participants de poser des questions d'éclairage et de formuler des suggestions diverses sur la présentation et le contenu du document.

III.4 Synthèse des échanges (questions – réponses, commentaires) effectués pendant l'atelier

Les questions posées portaient essentiellement sur la forme dont le document a été présenté à savoir la présentation de la page de garde du document (y faire figurer le coût global du projet, l'apport du gouvernement, la durée – le date de démarrage – la date de clôture du projet), du cadre logique (le rendre plus aéré), la présence de fautes d'orthographes et la formulation incorrecte de certaines phrases.

Quant au contenu du document, les interrogations portaient sur l'existence d'indicateurs sur la productivité, la conception d'un cadre de concertation formel sur l'adaptation aux changements climatiques, l'engagement des ministères de tutelle à former des cadres pour pérenniser le projet, la période de référence pour l'acquisition et l'installation du matériel météorologique, l'acquisition de serveur et du logiciel «SYNERGIE» pour la Direction Général de la Météorologie, le déport des images radar au Centre de Prévision Météorologique (CPM) de l'ASECNA, l'arrangement institutionnel du projet et le rôle des différents acteurs, l'affinement du cadre logique, la suppression des « risques » non pertinentes, l'implication effective des acteurs dans le projet (ministère de la santé, de l'agriculture, des ressources, des Directions des Études et de la Planification des ministères de tutelle), la flexibilité dans l'exécution des tâches définies dans le projet, la prise en compte des savoirs traditionnelles en matière de communication et des attentes des utilisateurs finaux, la formulation des indicateurs sur la base de règles mesurables.

Des réponses appropriées ont été apportées aux questions ci-dessus.

Il est à souligner que le document fourni aux participants pour appréciation est un extrait du document général du projet, traduit de l'anglais en français, d'où la présence de certaines incohérences pour ce qui est de la forme. En outre, le document général du projet a été formulé suivant un plan (modèle) fourni par le Fonds Mondial de l'Environnement (FEM) qui devra évaluer le dit document en vu de sa soumission au comité d'évaluation pour appréciation et approbation.

Les suggestions concernant le contenu (nouveau matériels à prendre en compte) et les commentaires en vu de rendre le document générale davantage consistent seront prises en compte par l'équipe des consultants.

Les participants ont convenu que la gestion du projet sera classée dans la Catégorie A, dont les règles de gestion sont déjà préétablies par un décret ministériel et n'ont pas jugé nécessaire de recourir à des experts internationaux pour l'exécution des activités du projet. Ils ont convenu que l'expertise

nationale, sous-régionale et le partenariat régionale entre institutions devrait plutôt être valorisée. Le recours à un expert international ne se fera que si la nécessité s'impose, notamment lorsque l'expertise nationale et régionale fera défaut.

Les participants ont désapprouvés la création d'un groupe d'expert international (Assistants Techniques Régionaux) d'environ quatre à cinq personnes devant agir au plan régional sur des questions liées à la Prévision du temps et du climat, de communication, d'hydrologie, de mobilisation des finances…). En effet, ils trouvent cette option non pertinente en termes d'apport objectif à la réalisation des activités prévues et des produits à élaborer. Par ailleurs, les fonds devant être alloués au fonctionnement de ce groupe d'expert est exorbitant (environ 10% de l'enveloppe global). Par ailleurs, cela ne provient par d'une demande exprimées par les états concernés par le projet.

IV. Clôture de l'Atelier

Le SP/CONEDD, président de séance, a clôturé les travaux de l'atelier de validation de l'atelier en remerciant les participants pour leur dévouement en terme de réflexion, de proposition et d'implication personnelle pour la validation du document du projet et les a invité à toujours resté disponibles pour toutes sollicitations ultérieures concernant l'aboutissement du présent projet.

Les contacts des consultants ont été transmises aux participants afin qu'ils leur fassent parvenir constamment leurs suggestions et préoccupations.

V. Annexe :

Liste des participants

FEASIBILITY STUDIES (BURKINA FASO)

Burkina Faso: SNIEau (DGRE)
And
Global Project For Modernization and Reform of Burkina Faso's National Meteorological Service, October 2007 (DGM)

Plan de conception et de mise en œuvre du Système National d'Information sur l'Eau (SNIEau) Nov 2004

Translation : Concept plan for implementing a National Water Information System

Chapter 2.3 (entitled "The hydrometric Network") and more precisely the sub-chapter 2.3.6 that we highlighted was closer to a "to do list" rather than a list of equipment so I did not take it into account. I focused on chapter 3 (entitled "The information centres on water") and, in particular on the sub-chapter 3.7 (entitled "Needs in human resources, equipments and infrastructures").

Equipment (p.111)

A. On a central Level

- Five computers (amongst these, two powerful ones, able to contain the CIEau original and a copy of it).
- Five "onduleurs", inverters (?)
- Two laptops for information exchange and formation.
- Three external hard drives (100GB) for copies of the CIEau.
- Commercial software (for databases and the SIG).
- A Software such as the WINISIS Software is recommended for the management of the Documentation Centre.
- One A-3 size scanner, one A-0 plotter ("table traçante"), one A-0 digitalizer ("table à digitaliser).
- One colour A-3 size printer, one N/B A-4 size laser printer.
- One network for the computers and printers' connexion.
- One powerful photocopier with a printer ("avec tireuse").
- A specific Internet connexion, with unlimited access and specific email address.

B. At the level of each DRAHRH

- One computer with inverter ("onduleur").
- One external hard drive (40GB).
- One colour A-3 size printer.
- One Internet connexion, with specific email address.

Human Resources (p.110)

To make the SNIEau work they need:

A. On a central Level

- Two Computer Specialists (engineer level), one more specialized in computers and the second in cartography.
- Two Engineers specialized in water (hydrologist, hydro geologist or GR) having practical experience with computers and databases.
- Two permanent data input Operators.
- One document centre Manager, trained in electronic libraries management.
- Two Assistants for the document centre Manager (in case of sickness, vacation, etc.).

B. At the level of each DRAHRH

- One Engineer specialized in water (hydrologist, hydro geologist or GR) or high level Technician having a long experience and trained to use the SNIEau database and able to use Excel (maybe an agent who is already working in the DRAHRH and who could be trained).

Infrastructure(p.112)

- One computer room (large enough for 3 people, the A-0 plotter ("table traçante"), the A-0 digitalizer ("table à digitaliser) and storing space. The room has to be air-conditioned at any time.
- A suite of room for the Documentation Centre (an archive room, a desk room and a reading room).
- Two working desks, each for two people.
- The electric wiring should systematically include grounding-type plugs.
- The computer cabling for the mini computer network.
- A telephone line with Internet access.

Global Project For Modernization and Reform of Burkina Faso's National Meteorological Service, October 2007

From:Chapter 6, which is a summary table of what is necessary to the accomplishment of the project as it is described in chapters 4 and 5. Chapter 4 is entitled "Details of the different components necessary for the first stage of the project" and chapter 5, "Requirements necessary to the project's success"

Equipment &Human Resources

See summary table from chapter 6 (in this table, "service" designate tasks that require human resources, the rest in only equipments).

Annex 5: Minutes from Meeting between DGM and Private Sector Representatives

Introduction

Sur invitation du PNUD et en partenariat avec le SP/CONEDD, un atelier relatif au projet «Renforcement de l'information climatique et des systèmes d'alerte précoces pour le développement de la résilience et de l'adaptation au changement climatique au Burkina » s'est tenu le 1 mars 2013 dans salle de la réunion 5ème étage du PNUD à Ouagadougou, Burkina Faso.

L'objectif de cet atelier était d'assurer une meilleure implication du secteur privé dans l'élaboration du projet.

Déroulement de l'atelier

I.1 Cérémonie d'ouverture

L'ouverture et la gestion des échanges pendant l'atelier ont été présidées par monsieur Maleye DIOP, représentant adjoint pays du PNUD au Burkina Faso.

Dans son intervention, il a rappelé le but et la pertinence de l'atelier et souhaiter une meilleure implication du secteur privé dans le processus de pérennisation du projet.

Il a part la suite rappelé l'agenda de l'atelier qui a été approuvé à l'unanimité et adopté. Essentiellement, l'agenda comportait :

une brève introduction du projet Système d'Alerte Précoce, effectué par le consultant national, une présentation sur l'assistance météorologique et climatologique ainsi que la localisation/positionnement des stations hydrométéorologique et la production de type de produits/informations hydrométéorologiques, effectuée par le Directeur Général de la Météo du Burkina.

I.2 Participants à l'atelier

L'atelier a regroupé 18 participants provenant de différentes institutions (PNUD, DGM, DGRE, PNGT) et diverses structures/sociétés privées (BTP, mines, coton).

I.3 Synthèse de la présentation effectuée pendant l'atelier

Le consultant nationale a présenté succinctement, la pertinence et l'importance du présent projet SAP pour le Burkina, les activités menées jusque là, les résultants sommaires des entretiens menés avec les différentes institutions/organisations intervenant dans le SAP et la l'impérieuse nécessité d'impliquer le secteur privé pour une pérennisation et un meilleur fonctionnement du projet.

Par la suite le Directeur Général de la Météorologie (DGM) àprésenté aux participants, les activités menées au sein de la DGM, les démembrements de la DGM, les produits élaborés, le réseau national de collecte et d'archivage des données météorologiques et une proposition sur la localisation/positionnement des stations hydrométéorologiques en tenant compte des besoins spécifiques du secteur privé, notamment les sociétés cotonnières.

Après ce fut le tour aux participants de poser des questions diverses et de recevoir des réponses appropriées. Avant à la clôture de l'atelier, il a été institué que le consultant national prendra attache avec les différents participants pour des échanges bilatéraux en vue d'une meilleure intégration des besoins, des préoccupations du secteur privé dans la production de produits/information hydrométéorologiques.

II. Synthèse des échanges bilatéraux avec les différents participants.

Pour le secteur minier, les besoins en terme d'information météorologiques sont essentiellement la force et la direction du vent, la température du sol, l'humidité de l'air, la pression atmosphérique. A noter aussi, les besoins d'information sur la qualité de l'air (PM 2,5, PM 10, SO2). A ce niveau, il faut noter que les données ont été collectées essentiellement par des échanges sur Internet, téléphone car malgré l'insistance du consultant national à les rencontrer, tous sont fréquemment hors de Ouaga avec un programme de temps très chargé. Ce qui ne permet pas des possibilités

d'échange bilatéraux. Des échanges avec la Chambre des Mines du Burkina (CMB) a permis de recueillir un répertoire plus exhaustif des personnes évoluant dans ce secteur.

Pour le secteur Bâtiment – Travaux Public, les participants à l'atelier ont promis de se référer à leur supérieur hiérarchique pour qu'ils définissement le spécialiste à mesure de fournir des informations appropriées au consultant national. A ce jour, malgré l'insistance et plusieurs rappels des consultant national, aucun d'eux ne s'est montré disponible pour des échanges bilatéraux. En général, leurs besoins sont relatifs à une prévision de temps de « grande » précision pour leur permettre de se protéger ou de mettre à l'abri leurs matériaux des intempéries du temps/climat.

Pour le secteur cotonnier, il faut souligner quant l'atelier, seul Union National des Producteurs du Coton du Burkina (UNCP) était présent. La SOFITEX était absente. Par la suite une investigation du consultant national a permis de retrouver l'adresse email du Directeur Général. Un email à donc été envoyé au DG de la SOFITEX et est resté sans réponse.

Des échanges via Internet avec la Coordonatrice de l'UNPC, Madame Delphine ZOUNGRANA/OUEDRAOGO, ont permis de notifier leur préoccupation qui se présente comme suit :

la carte No3 a été retenue comme étant la plus proche des besoins en termes de répartition de stations météorologiques, moyennant les changements sur les localités suivantes:

**Onze (11) Localités supprimées: Garango, Nobéré, Kassou, Ouakara, Wona, Tiébélé, Bomborokuy, Kié, Gassan, Gao et Boura.

**Onze (11) Localités en remplacement de celle supprimées: Yamba, Diabo, Nadiagou, Matiakoali, Diapaga, Logobou, Loumana, Niangoloko; Karagasso-Vigué, Niankorodougou et yé.

En terme d'information, Les producteurs souhaiteraient recevoir toutes les informations sur les prévisions pluviométriques et les analyses (comparatives aux autres campagnes ou non) y afférentes afin d'adapter leur calendrier culturale en conséquence.

Ces informations pourront être transmises avant le début de la campagne et tout au long de la campagne par divers canaux en vue d'une large diffusion (exemple SMS téléphonique, communiqués radio et/ou télé, etc...)

III. Recommandation:

Les secteurs privés dans leur grand ensemble sont intéressés par l'assistance hydrométéorologique. Leur implication serait judicieuse pour la pérennisation du projet, dont le but essentiel est la prévention contre les extrêmes hydrométéorologiques pour une meilleure protection des hommes et de leurs biens contre les désastres naturelles.

Les échanges/consultations avec le secteur privé et les autres secteurs pourraient/devraient se poursuivent durant la phase d'exécution du projet.

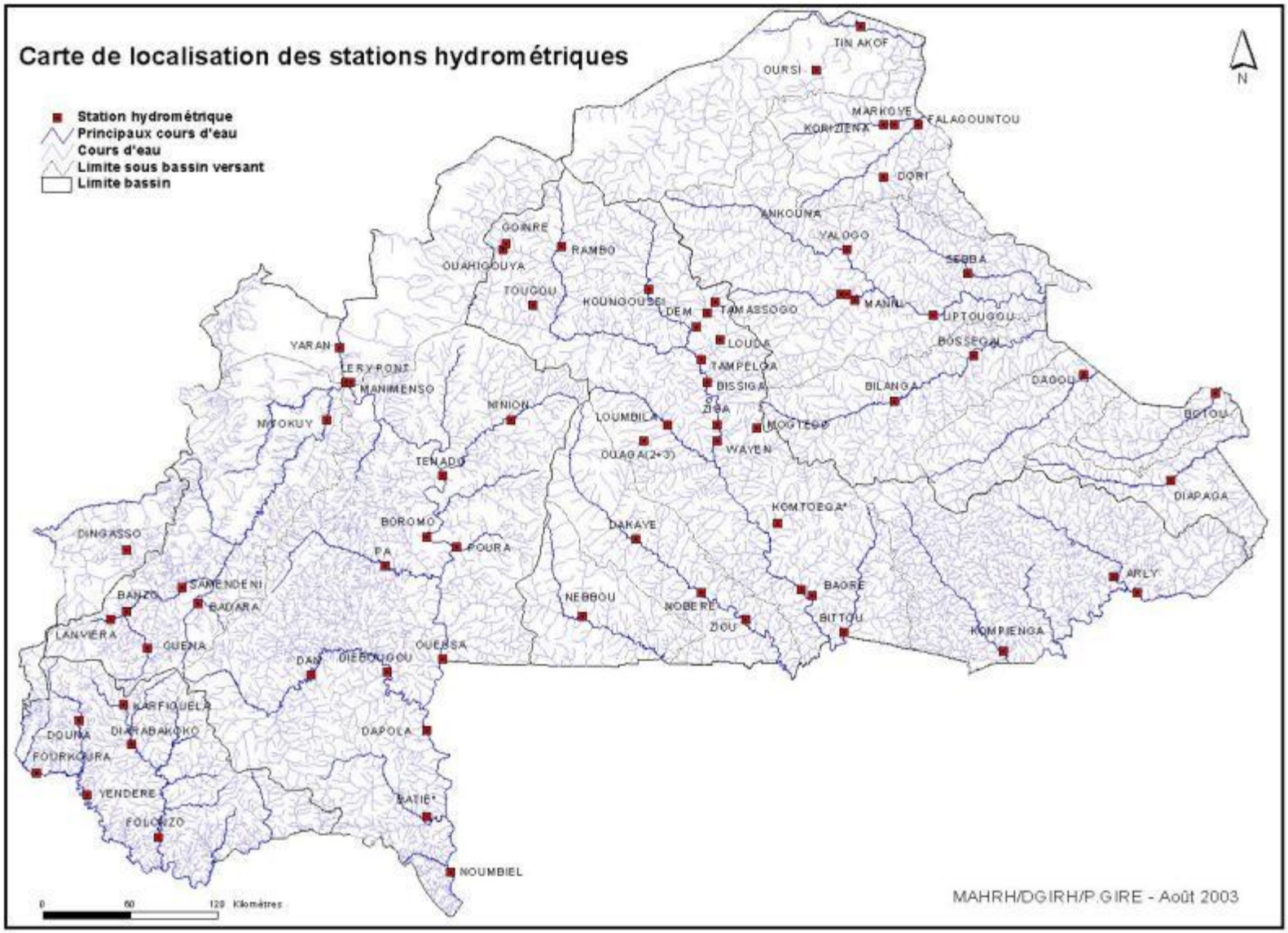
IV. Annexe :

Annexe1 : Liste des participants

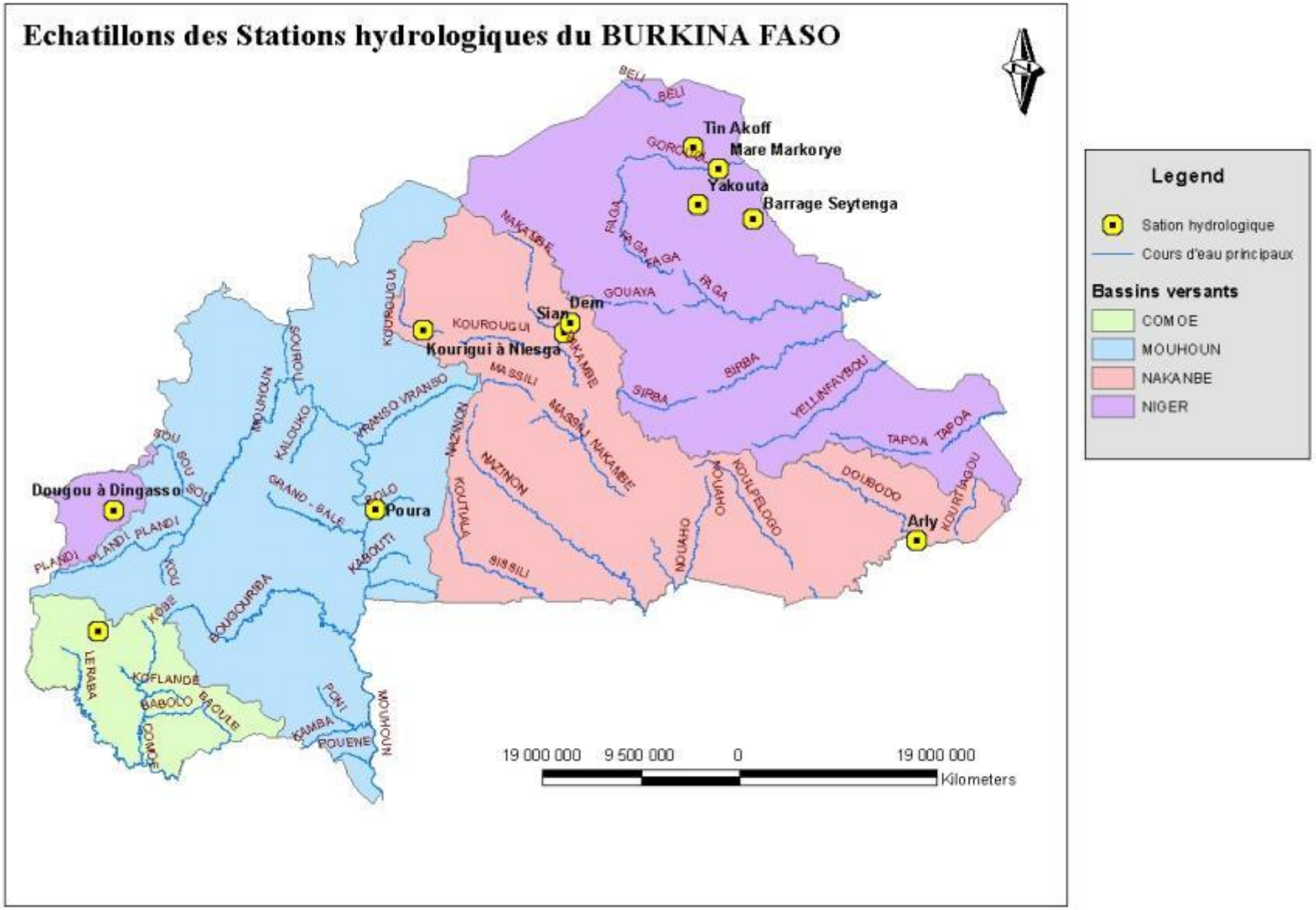
Annexe2 : TDR Atelier

Annexe3 : Propositions de cartes de localisation de stations météorologique

Annex 6a: Existing Water Level Monitoring Networks(Source: DGRE, Burkina Faso)

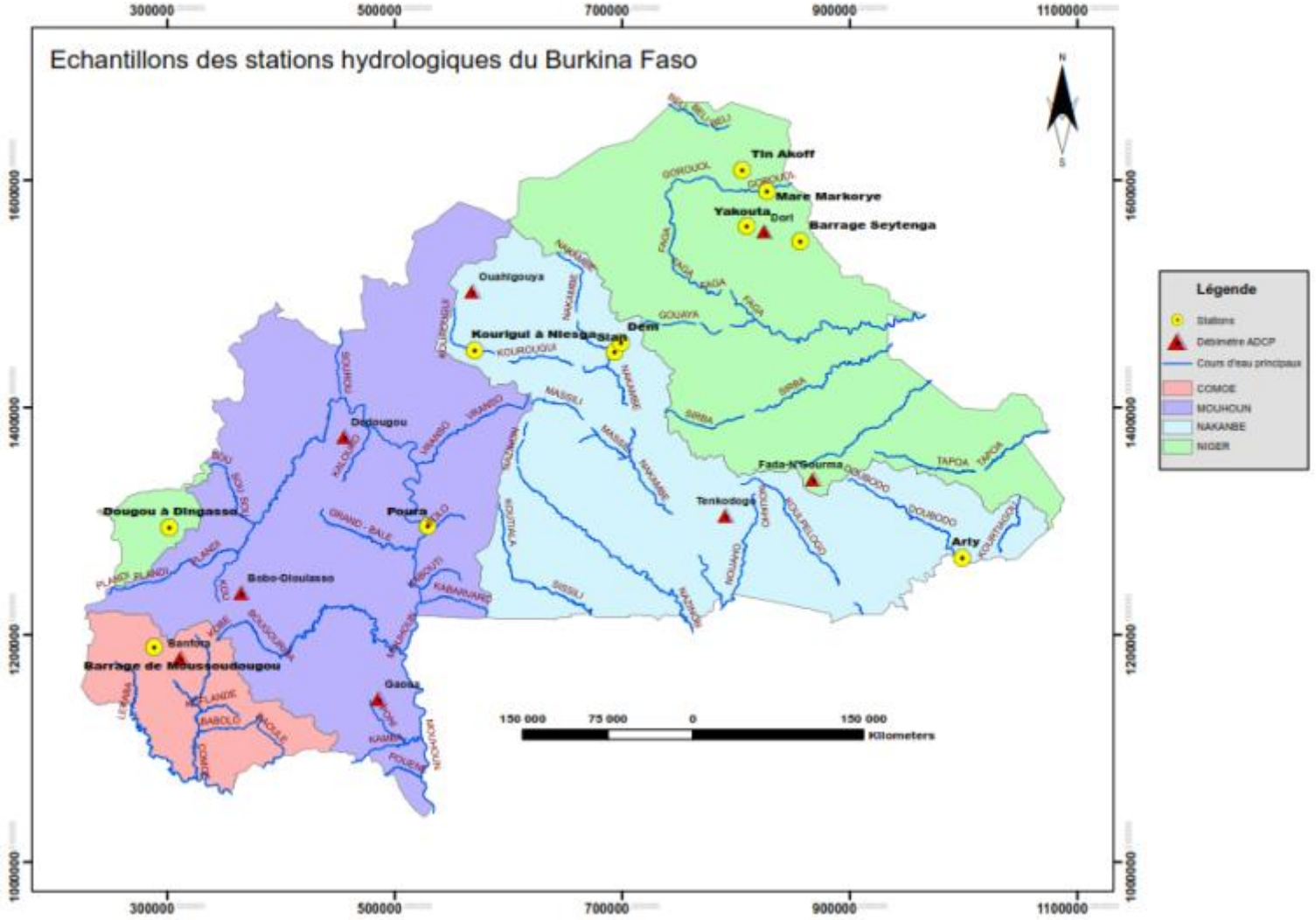


Annex 6b: Existing Flow Meter Monitoring Networks (Source: DGRE, Burkina Faso)



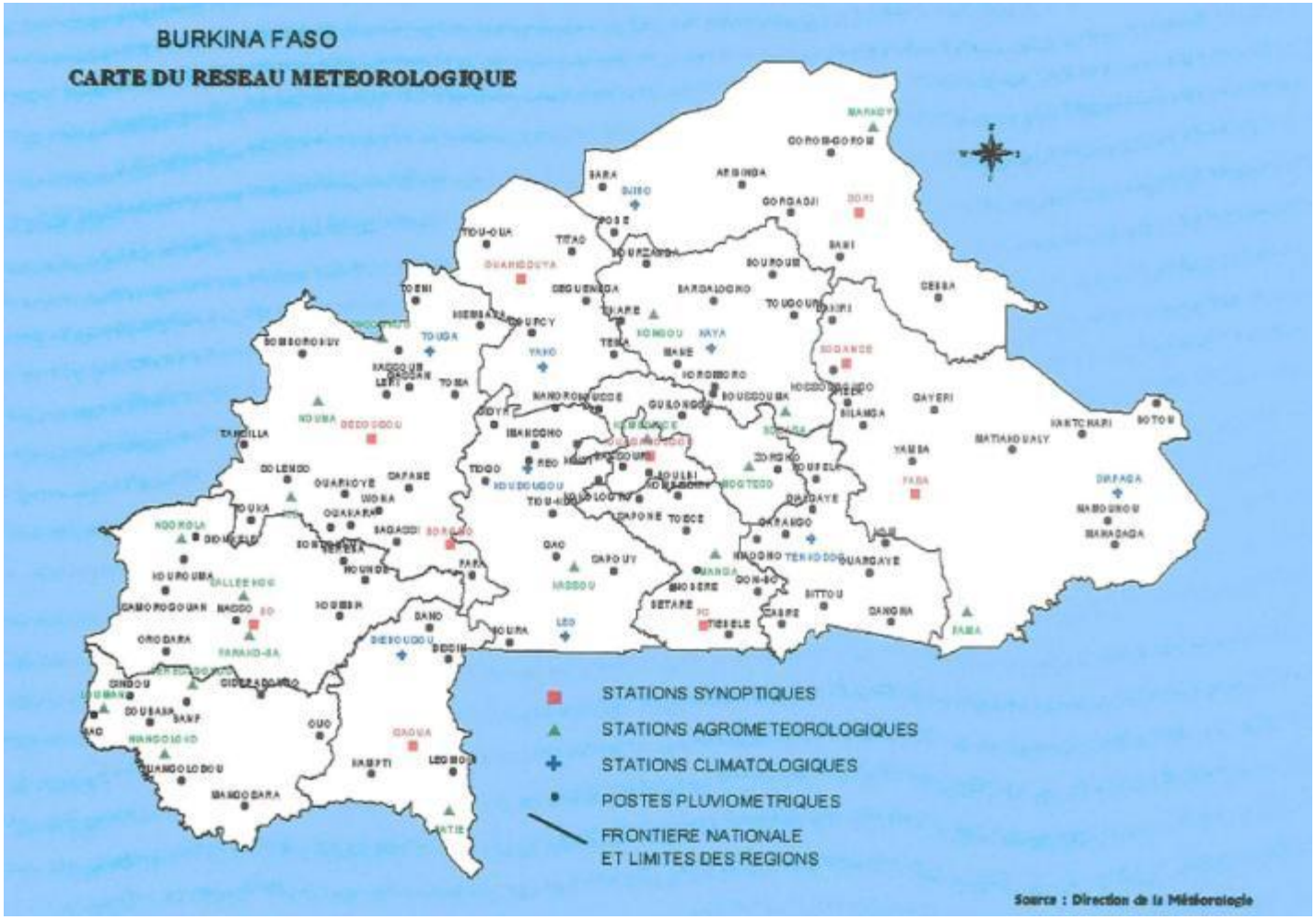
Annex 6c: Proposed ADCP Monitoring Network

(Red triangles) (Source: DGRE, Burkina Faso)



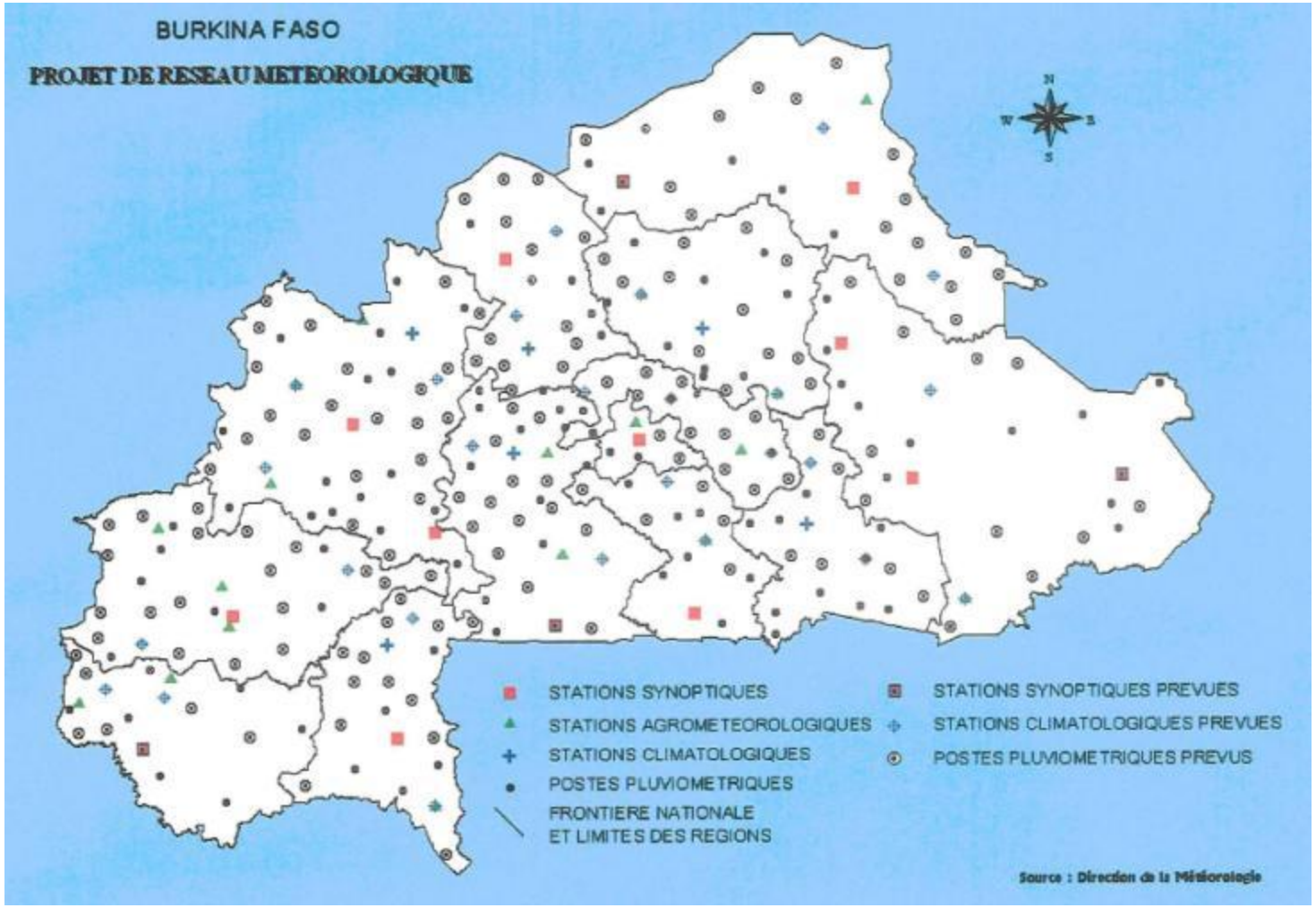
Annex 7a: Existing Weather Monitoring Networks

(Source: National Weather Service, Global Project to Modernize and Reform the Weather Network, 2007)

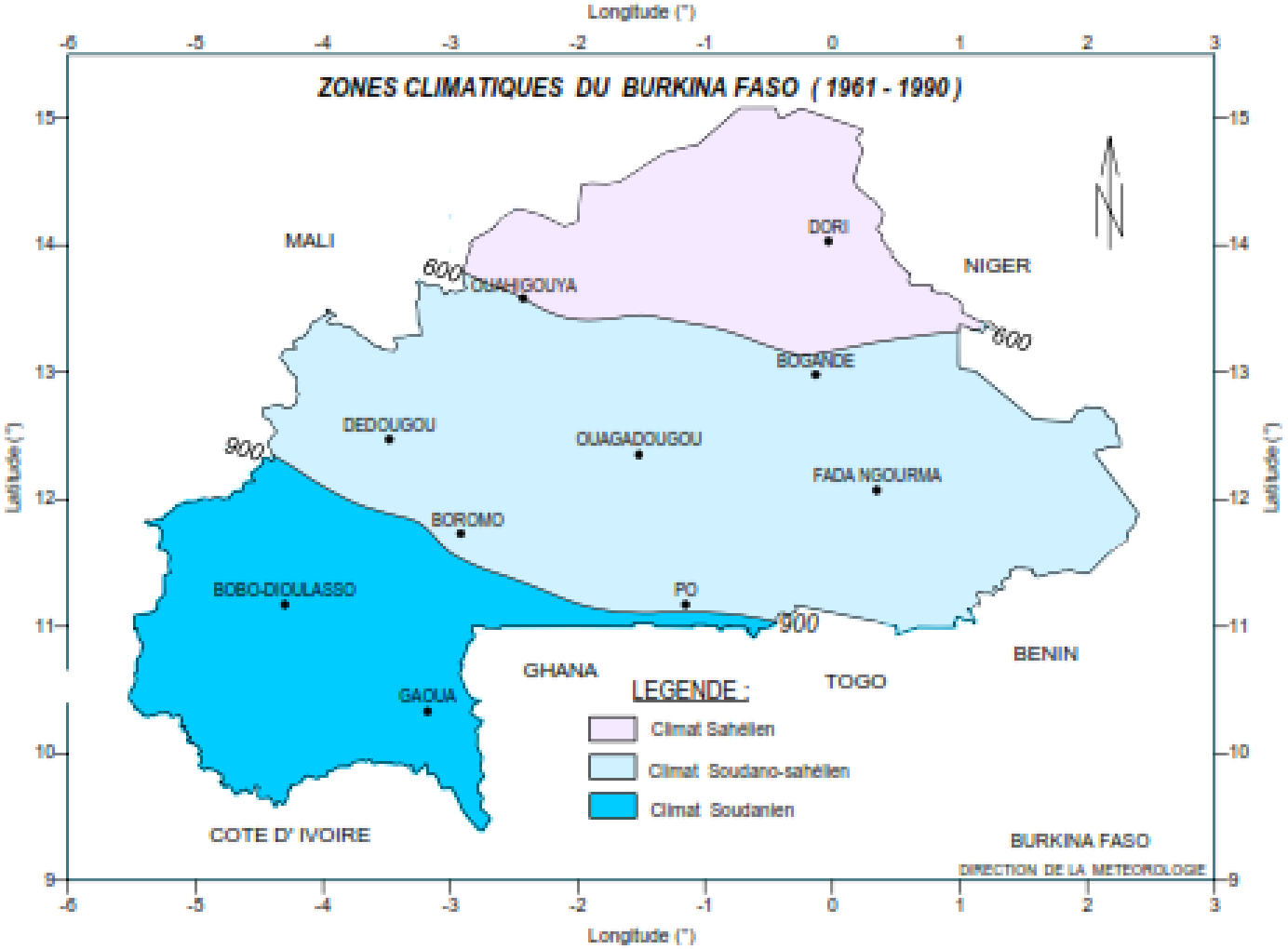


Annex 7b: Proposed Weather Monitoring Networks

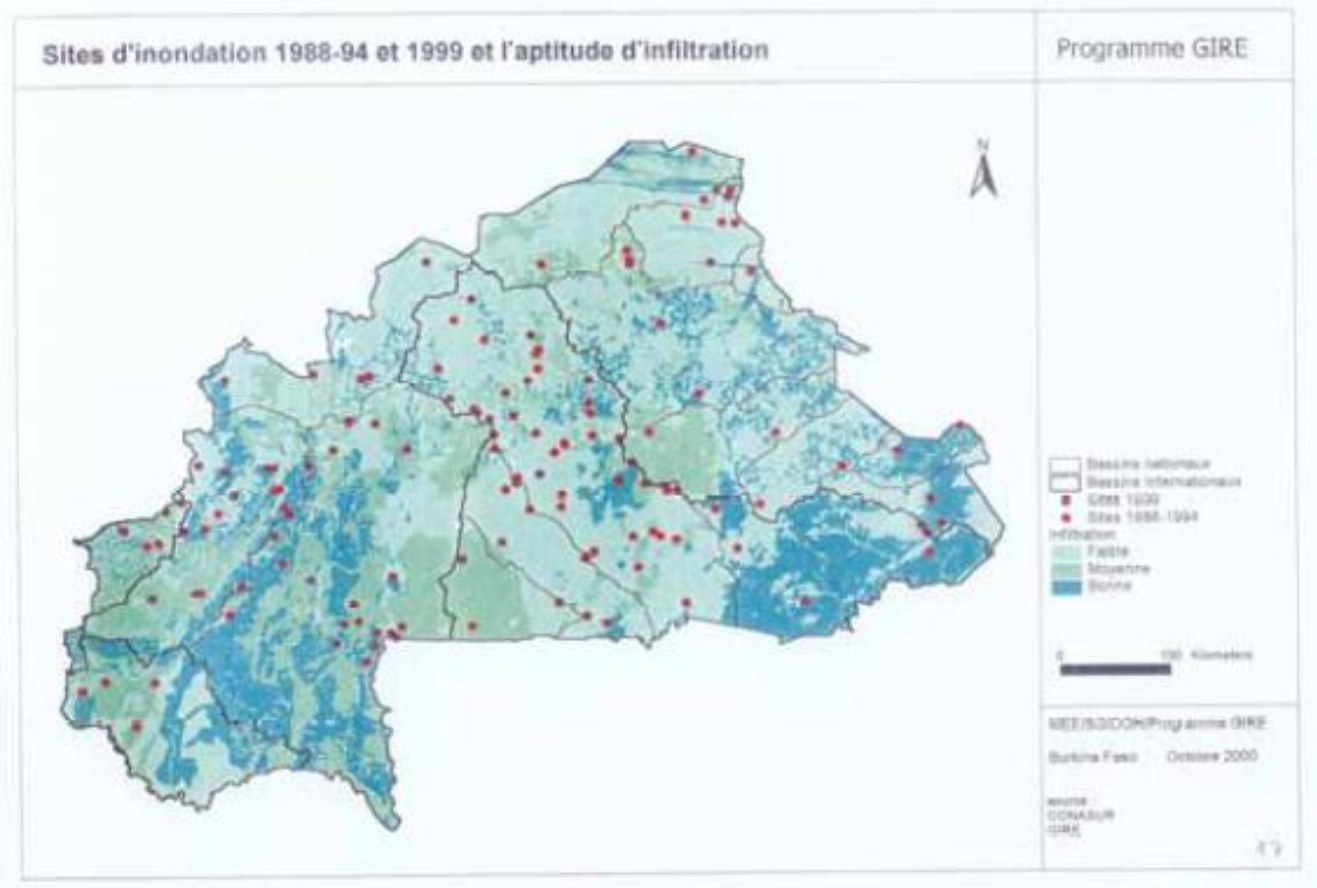
(Source: National Weather Service, Global Project to Modernize and Reform the Weather Network, 2007)



Annex 8: Climate Zones in Burkina (Generale Directorate on Meteorology, 1998)



Annex 9: Flooding sites (circles) and soil infiltration potential (GIRE Programme, 2001)



Annex 10: Stakeholder involvement plan

Background

Stakeholder consultation has been a key feature in the design of this LDCF Proposal, and stakeholders have been involved in identifying and prioritizing the proposed intervention activities. Details of the stakeholder engagement during the project preparation Phase were provided in Section 2.9 above. On-going public consultation is critical for successful implementation. This section outlines some of the key consultation principles and processes at a strategic level that will need to be translated into practical action during the project implementation. It provides guidance based on the initial stakeholder analysis, conducted as part of the project preparation process, and the consultations so far. This can be used to define exact activities that will form part of a communications and consultation strategy developed during the inception period of implementation.

Objectives

The stakeholder consultation during project implementation will be expected to support all outcomes. Overall, the objective of the consultation plan is to provide a framework to guide and promote two way engagements between the key Project Beneficiaries (DGM, DGRE, DCIME and CONASUR)and the end-users with whom the project will engage and directly impact upon.

It is proposed that several more specific objectives for consultation are adopted:

1. To ensure a general vision and understanding of the project and its expected outcomes by all concerned stakeholders;
2. To engage key stakeholders in planning, implementing and monitoring of specific interventions;
3. To ensure consistent, supportive and effective communication (information, documentation, sharing, lessons learned and feedback) processes with key beneficiaries as well as the wider public including subsistence farmers and pastoralists.
4. To influence and ensure strategic level support for project implementation from state and non-state organizations and international agencies through engagement in effective community, private sector and donor forums or platforms.

In deliveringthese objectives, there are a number of simple qualitative considerations that need to be taken into account when planning engagement processes and what they should be seeking to achieve:

- Identify constraints and solutions: As a two way engagement, the consultation process should be used as an opportunity to identify with stakeholders possible constraints to or with the project's implementation and to work with the stakeholders in finding sustainable solutions.
- Managing expectations: The LDCF investment is relatively minor, compared to the adaptation demands facing the country. It will be important that consultations take due consideration to manage expectations of stakeholders and stakeholder groups.
- Partnerships for co-financing: The LDCF seek to add value to their investments by building on existing and parallel projects that represent co-financing and consultations should consider opportunities for partnerships that will leverage co-financing into innovative approaches or technologies that may improve efficiencies and enhance impact.

Stakeholders

Stakeholders include a range of types of groups, all with their own interests and concerns. They have different roles to play in the project and the Table 6 below indicates key stakeholders and their possible roles.

Activities planned during implementation and evaluation

During implementation, the communication and consultation process should be divided into three main phases, being:

Phase 1 – this is the **mobilization** phase in the first year of the project. The fine details of the activities and implementation structures will be designed, partnerships for action will be forged and stakeholder engagement will focus around these design processes.

Phase 2 – represents the main **implementation** phase where investments will be made on the ground in the target areas and stakeholder consultation about engagement will focus on output oriented action.

Phase 3 – represents the **completion** of the project and the plans for scale-up and long-term sustainability of the LDCF investments. Consultation will focus on learning, bringing experience together and looking at processes for continued post-project impact.

Phase I – Developing a strategy and action plan

At mobilization, a simple communications strategy should be developed. Key principles to be considered in the development of the strategy include:

Who? Implementers need to understand the stakeholders well – their needs, the impacts of interventions on each stakeholder group, the opportunities for contribution/engagement, and their power/influence. Whilst, as part of the project preparation, a stakeholder analysis was carried out, during this phase this should be reviewed as stakeholders should be seen as dynamic. The stakeholders that may be involved in or affected by the project are multiple, diverse; so an effective stakeholder identification process will be an important contributor to identifying key factors for success and risks to mitigate.

Gender: In engagement with the project implementation, it will be important to consider the different ways that the early warning products are easily accessed, understood and used by both women and men.The project implementer will continue to implicate gender-focused NGOs/CSOs (WILDAF, the Women's Forestry Association) in order to ensure all sexes have access to useful weather/climate information, can interpret it and can receive feedback through consultation processes in selected areas of implementation.These NGOs/CSOs will be responsible for conducting a gender-disaggregated survey indicating receipt of alerts/climate information.

Table 6: Matrix of stakeholders and activities planned during implementation and evaluation

			Outcome 1 **Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)**					Outcome 2 **Efficient and effective use of hydro-meteorological and environmental information for making early warnings and seasonal forecasts which feed into long-term development plans**						
Stakeholder	Project Board (PB) Project Support (PS) Decentralization Support (DS)	Procurement AWS	Procurementt HYDRO	Rehabilitation RADAR	Equipment RADIOSONDE	Equipment SATELLITE	O&M Training	FORECASTING training	TAILORED Climate Products	Improve SYNERGY	Open-Access DATA Portal	COMMUNICATION SOP	RURAL awareness	M & E
FederalSector														
SP/CONEDD		✓								✓				✓
Direction Générale de la Météo (DGM)	PB	✓					✓	✓	✓	✓	✓	✓		
DCIME	PB					✓		✓	✓	✓	✓	✓		
Direction Générale de la Resource en Eau (DGRE)	PB		✓				✓	✓	✓	✓	✓	✓		
Direction Générale de l'Environnement (DGE)	PB									✓	✓			
Direction of Communication	PB									✓		✓		
Direction de la	PB													

			Outcome 1 **Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)**					Outcome 2 **Efficient and effective use of hydro-meteorological and environmental information for making early warnings and seasonal forecasts which feed into long-term development plans**						
Stakeholder	Project Board (PB) Project Support (PS) Decentralization Support (DS)	Procurement AWS	Procurementt HYDRO	Rehabilitation RADAR	Equipment RADIOSONDE	Equipment SATELLITE	O&M Training	FORECASTING training	TAILORED Climate Products	Improve SYNERGY	Open-Access DATA Portal	COMMUNICATION SOP	RURAL awareness	M & E
Protection Civile														
National Advisory for Emergencies and Rehabilitation (CONASUR)	PB									✓	✓	✓	✓	
General Direction on Health and Sanitation	PS								✓	✓		✓	✓	
Technical / Research Institutions														
Water Study and Information Center (DEIE)	PS		✓											
Private Sector														
ASECNA	PS				✓			✓	✓	✓	✓			

			Outcome 1 **Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)**					Outcome 2 **Efficient and effective use of hydro-meteorological and environmental information for making early warnings and seasonal forecasts which feed into long-term development plans**						
Stakeholder	Project Board (PB) Project Support (PS) Decentralization Support (DS)	Procurement AWS	Procurementt HYDRO	Rehabilitation RADAR	Equipment RADIOSONDE	Equipment SATELLITE	O&M Training	FORECASTING training	TAILORED Climate Products	Improve SYNERGY	Open-Access DATA Portal	COMMUNICATION SOP	RURAL awareness	M & E
SAAGA	PS			✓					✓		✓			
Cotton									✓					
Regional/ Sector														
Rural Confederation of Burkina Faso, Confédération Paysanne du Faso (CPF)	DS								✓			✓	✓	
NGOs / CSOs														
COS3C	DS											✓	✓	
SOS Sahel	DS									✓		✓	✓	
INADES	DS											✓	✓	
WILDAF	DS								✓			✓	✓	

			Outcome 1 **Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)**					Outcome 2 **Efficient and effective use of hydro-meteorological and environmental information for making early warnings and seasonal forecasts which feed into long-term development plans**						
Stakeholder	Project Board (PB) Project Support (PS) Decentralization Support (DS)	Procurement AWS	Procurementt HYDRO	Rehabilitation RADAR	Equipment RADIOSONDE	Equipment SATELLITE	O&M Training	FORECASTING training	TAILORED Climate Products	Improve SYNERGY	Open-Access DATA Portal	COMMUNICATION SOP	RURAL awareness	M & E
Women'sForestryAssocation	DS								✓			✓	✓	
Donor Partners														
World Bank	PS									✓				
UNDP COGEL										✓				
UNDP PEI										✓				
UNDP GEF	PB													✓
USAID	PS									✓				
End users									✓			✓	✓	✓

Why? Implementers need be clear about the purpose of the consultation process as so that the right stakeholders make the right inputs to the planned activities. During Phase I, the**Project Manager** with the support of the **Technical Support Committee and the Decentralization Support Groups** will seek to have secured the support and commitment of key stakeholders required for project implementation.

Implementers should make key stakeholders aware of the plan and its intended activities and outcomes and make clear their role and scope for contributing to project decisions and activities.

What? In planning stakeholder involvement, the strategy should make as much use of existing mechanisms (institutions and process) as possible, avoiding establishing project oriented structures.

Types of consultation mechanisms:

- Preparation meetings with NGOs/CSOs to be implicated in alert communication;
- Initial consultation meetings in target regions;
- Information briefings for government and co-financing institutions;
- Initiation of public awareness campaign on EWS and the utility of CI for private sector representatives

Phase II - Consultation through implementation

Once implementation begins, public consultations should become more of an ongoing exchange of information, and there are two main purposes for the various mechanisms outlined under Phase II:

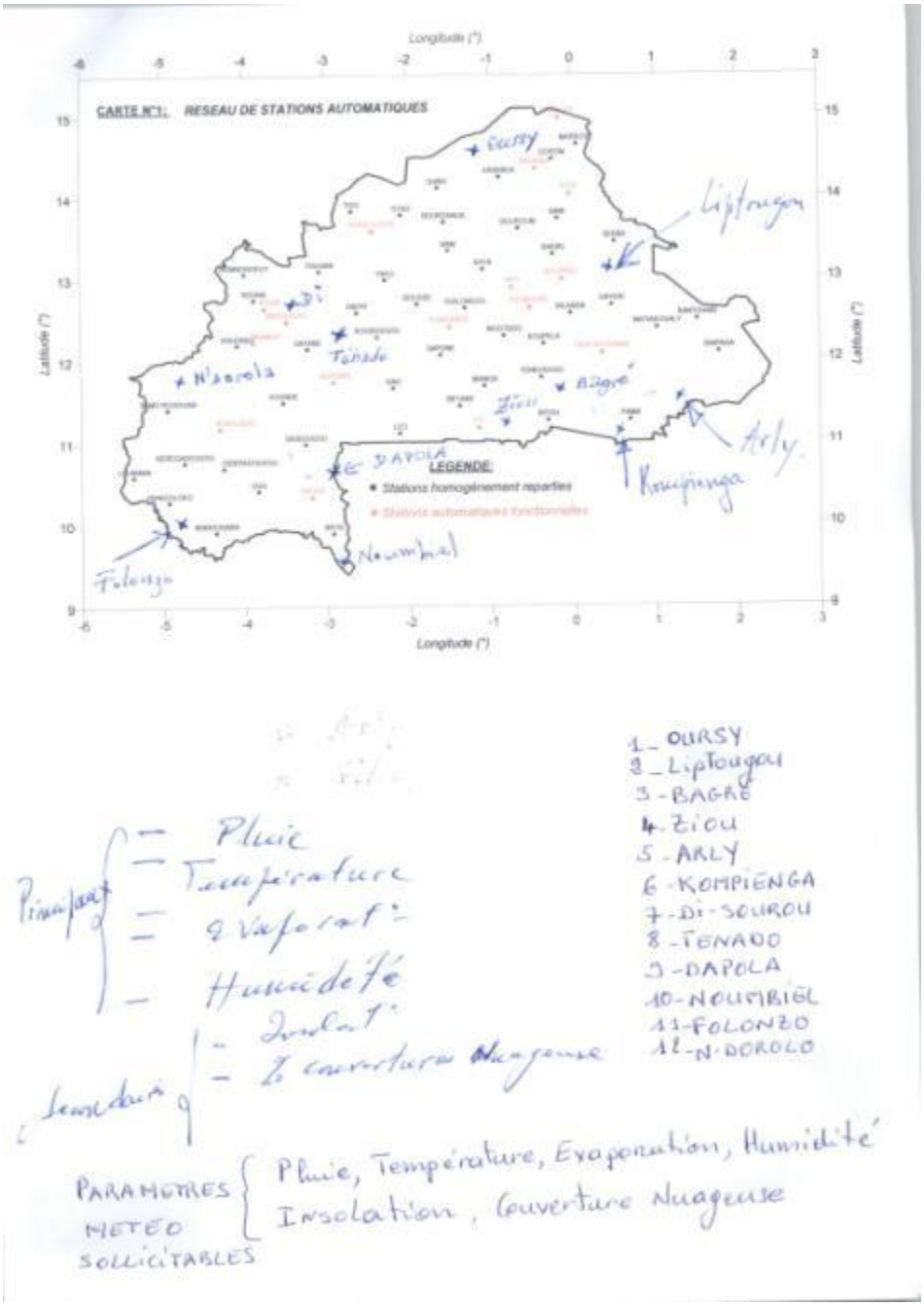
- to gather information from beneficiaries and stakeholders about the impact and effectiveness of the planned adaptation packages (efficient and reliable EWS) to support adaptive management; and
- to provide interested government and donor stakeholders and the general public with information about the progress and impact of the project as it is implemented.

The first purposerelates to engagement for effective implementation and monitoring, whilst the latter is more concerned with information dissemination, 'public relations' and expectation management. Good public relations will also help encourage collaboration with respect to the objective of the LDCF project.

Phase III - Project completion and scale up promotion

This will be a process of ensuring completion, hand-over and long-term sustainability of the LDCF investment. Consultation will focus on bringing experience together, sharing key lessons learnt (through the UNDP ALM and other forums) and looking at processes for promoting scale up of this project in order to have efficient and reliable EWS in the country.

Annex X: Weather stations desired by DGRE to support hydrological modelling (Source: DGRE)



Annex XI: Results for Self-Assessments on Capacity/Need Prioritization Conducted during Mission 2

Table 1: Results for each Information Production agency

Matrix with color and number coded capacity indicating scores of 1 (red, poor capacity/knowledge/experience) to 5 (green, good capacity/knowledge/experience) for each Information Production agency

Question	Indicateur de capacités	Situation de référence: Niveau réel des capacités/connaissances					
		1	2	3	4	5	
		Nul	**Faible**	**Moyen**	**Fort**	**Très Fort**	
	Structure	**DGM**	**ASECNA**	**SAAGA**	**DCIME**	**DEES**	**DG des Productions végétales**
2.1	Quel est le niveau de vos capacités en ressources humaines (ingénieurs, techniciens…) ? Si les capacités font défaut, veuillez spécifier les besoins selon leur priorité (1 étant le besoin le plus urgent) dans la colonne réservée aux commentaires.	3	2	3	2	3	3
2.2	Avec quelle précision connaissez-vous les coûts de fonctionnement et de maintenance des équipements existants ?		1	4	1	3	3
2.3	Dans quelle mesure connaissez-vous les mécanismes de recouvrement de coûts pour le paiement des coûts de fonctionnement et de maintenance ? Dans la colonne réservée aux commentaires, veuillez donner des exemples de mécanismes de recouvrement de coûts que vous employez actuellement ?		2	2	1	3	1
2.4	Dans quelle mesure êtes-vous disposé à vendre vos produits climatologiques au secteur privé en vue d'obtenir des revenus pouvant alléger les coûts de fonctionnement et de maintenance étant donné que les produits doivent être adaptés aux besoins du secteur privé ?		2	1	1	2	1
2.5	Dans quelle mesure connaissez-vous les rôles des autres fournisseurs/producteurs d'informations ?	4	4	5	3	3	4
2.6	Dans quelle mesure partagez-vous des données avec les autres fournisseurs/producteurs d'informations climatiques ? Dans la colonne réservée aux commentaires, veuillez indiquer avec qui vous collaborez et avec qui la collaboration fait défaut.	3	2	4	4	2	5
2.7	Dans quelle mesure jugez-vous la collaboration avec les autres fournisseurs/producteurs d'informations climatiques nécessaire ?	4	2	4	4	1	4
2.8	Dans quelle mesure collaborez-vous actuellement avec le secteur privé ? Dans la colonne réservée aux commentaires, veuillez donner des exemples de la manière dont vous travaillez avec le secteur privé. Citez ces secteurs privés.	2	5	2	4	2	1
2.9	Quel est le niveau de vos capacités en matière de gestion de fonds émanant des bailleurs ? Si vous disposez de capacités, veuillez donner des exemples de la manière dont vous employez actuellement les fonds des bailleurs dans la colonne des commentaires.	1	4	5	4	3	4

Table 2: Average Results for Information Production agencies

Bar chart indicates average capacity for all information producers collectively based on the questions presented in Table 1 above.

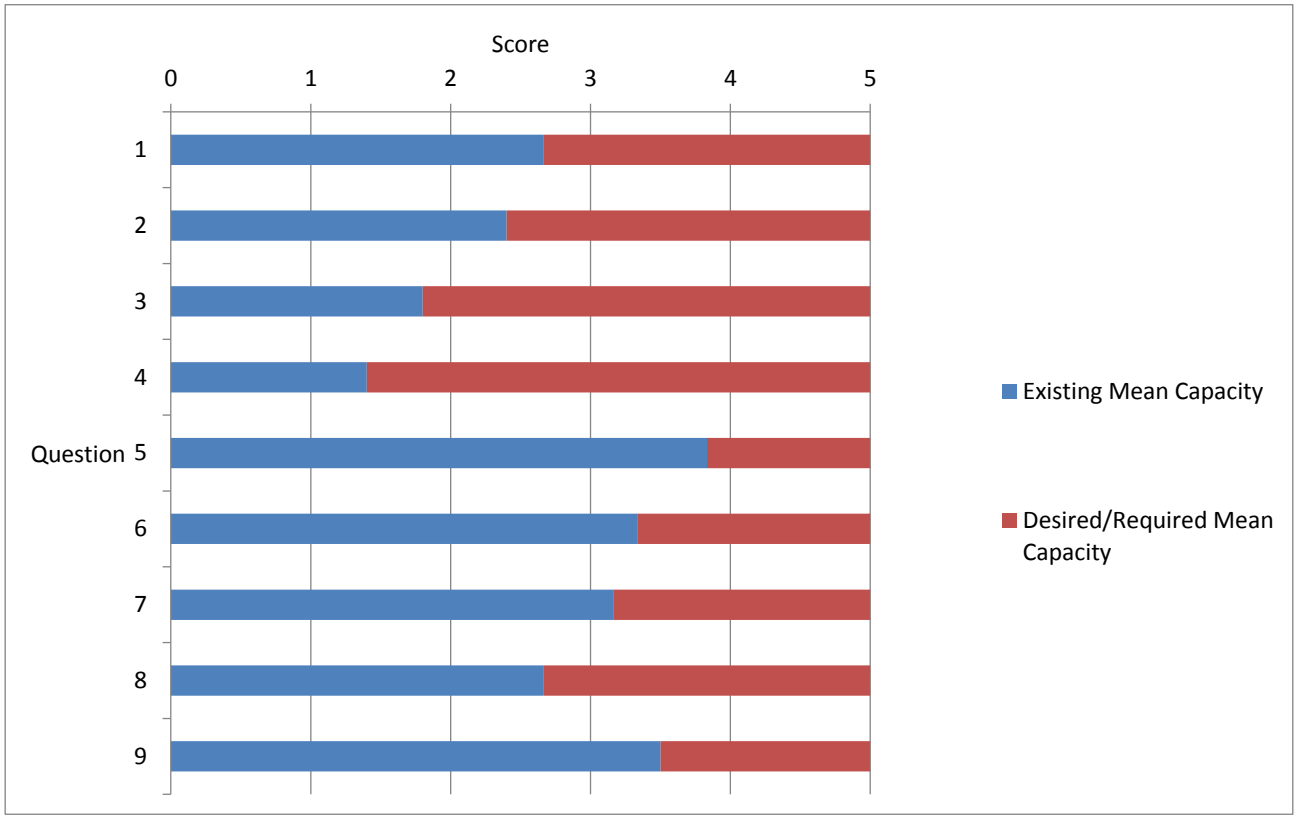


Table 3: Results for each Information Dissemination agency

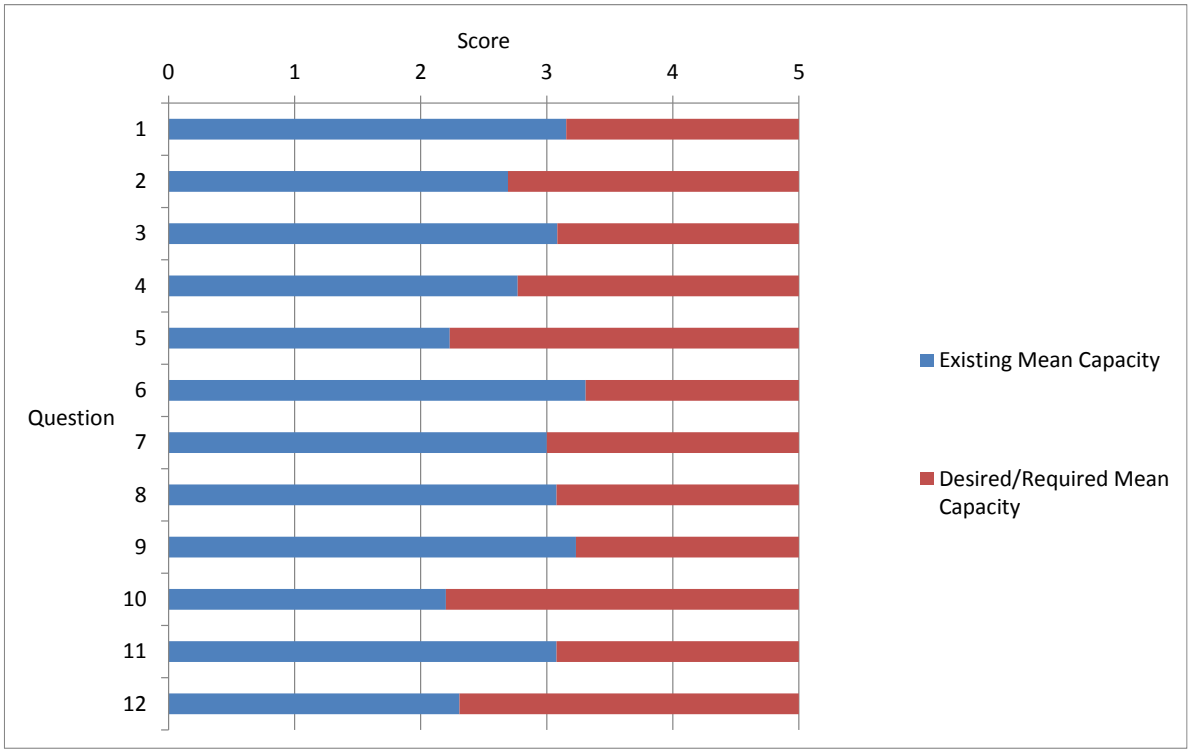
Matrix with color and number coded capacity indicating scores of 1 (red, poor capacity/knowledge/experience) to 5 (green, good capacity/knowledge/experience) for each Information Dissemination agency

Question	Indicateur de capacités	Situation de référence: Niveau réel des capacités/connaissances										
		1	2	3	4	5						
		Nul	**Faible**	**Moyen**	**Fort**	**Très Fort**						
	Structure	**CONASUR**	**SIG**	**CPF**	**SOS Sahel**	**INADES Formation**	**DGPEDD (Comite de CONASUR)**	**DGFF/MEDD**	**DEP/MAIDS**	**DGPA**	**DGPS**	**DGPV**
1.1	Quel est le niveau des capacités de votre organisme dans la diffusion des alertes ?	3	5	5	2	2	2	3	3	3	3	5
1.2	Dans quelle mesure êtes-vous actuellement capable de comprendre les alertes hydrométéorologiques afin de les simplifier pour les populations locales ?	3	2	5	2	2	3	4	2	2	1	3
1.3	Quel est le niveau de vos capacités en ressources techniques pour diffuser des alertes (ex., les systèmes téléphoniques privilégiés Flotte) ? Si les capacités font défaut, veuillez spécifier les besoins selon leur priorité (1 étant le plus besoin le plus urgent) dans la colonne réservée aux Commentaires.	2	5	4		2	1	3	3	2	3	5
1.4	Quel est le niveau de vos capacités en ressources humaines ? Si les capacités font défaut, veuillez spécifier les besoins selon leur priorité (1 étant le plus besoin le plus urgent) dans la colonne réservée aux Commentaires.	3	4	4	3	3	2	1	2	4	1	3
1.5	Quel est le niveau de vos capacités dans la fourniture d'alertes en langues locales?	3	4	3	3	4	1	1	2	2	1	2
1.6	Quel est le niveau de vos capacités dans la diffusion de messages à travers différents médias ? Veuillez noter dans la colonne réservé aux Commentaires lequel des médias que vous maîtrisez est le plus adapté aux populations rurales (ex., la radio, les textes) 1 représentant le média le plus efficace?	3	5	5	3	3	3	3	2	2	3	4
1.7	Quel est le niveau de vos capacités techniques dans l'organisation de fomation visant à mieux impliquer les populations locales dans ce projet de Système d'Alerte Précoce? Si les capacités font défaut, veuillez spécifier les besoins selon leur priorité pour la tenue de formation (1 étant le plus besoin le plus urgent) dans la colonne réservée aux Commentaires.	3	2	5	3	1	3	4	2	4	2	4

Question	Indicateur de capacités	Situation de référence: Niveau réel des capacités/connaissances												
		1	2	3	4	5								
		Nul	**Faible**	**Moyen**	**Fort**	**Très Fort**								
	Structure	**CONASUR**	**SIG**	**CPF**	**SOS Sahel**	**INADES Formation**	**DGPEDD (Comite de CONASUR)**	**DGFF/MEDD**	**DEP/MAIDS**	**DGPA**	**DGPS**	**DGPV**	**UNPCB**
1.8	En dehors de votre propre organisation, quel est le niveau de vos capacités dans la coordination soit avec les points focaux locaux de la CONASUR, la Confédération rurale du Burkina Faso soit les organisations de la société civile sur les changements climatiques (COS3C) ? Veuillez indiquer dans la colonne réservée aux Commentaires si une collaboration serait utile et pourquoi.	4	4	4	4	3	2	3	2	3	2	3	3
1.9	Quel est le niveau réel de vos capacités dans l'organisation d'ateliers conjoints avec d'autres organisations du secteur environnemental (cette question est posée en vue de rationaliser la diffusion d'alertes) ?	4	2	5	4	2	3	3	2	3	4	3	3
1.10	Selon votre expérience, quel est le niveau actuel des capacités des populations locales dans la réaction aux alertes? Veuillez noter dans la colonne réservée aux commentaires la date à laquelle les alertes ont été émises ou absentes et indiquez le fournisseur d'alertes.	4		2	2		3	2	1	2	2		2
1.11	Selon votre expérience, quel est le niveau de conscience des populations des changements climatiques ?	4	4	4	3	3	4	3	2	1	3	4	2
1.12	Quel est le niveau de connaissance des populations des mesures d'ADAPTATION aux changements climatiques et de quelle façon un avertissement météorologique peut-il les aider à devenir plus résilientes aux impacts des changements climatiques ?	3	4	3	2	2	1	2	1	1	3	3	2

Table 4: Average Results for Information Dissemination agencies

Bar chart indicates average capacity for all information distributors collectively based on the questions presented in Table 3 above.



Annex XII: Vulnerable agro-ecological zone assessment (NAPA 2008)

A GIS analysis based on multiple sources of environmental degradation data were used to select ten representative areas in terms of vulnerability to climate change and extreme weather events (floods, strong winds) in each of the three agro-climatic zones of the country. Subsequently, socio-economic criteria, including the poverty of the population and socio-cultural considerations were applied. This allowed five areas to be retained as shown in Figure 1.

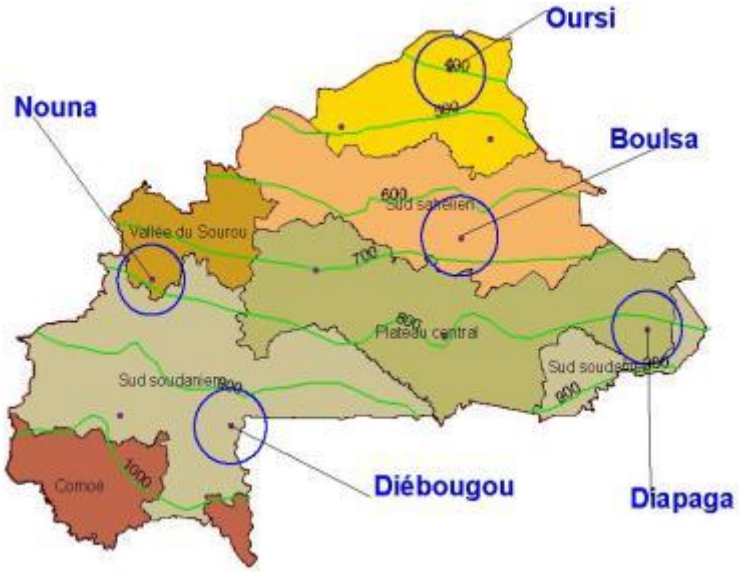


Figure 1: The most vulnerable representative agro-ecological areas in Burkina Faso (Source: Burkina Faso NAPA)

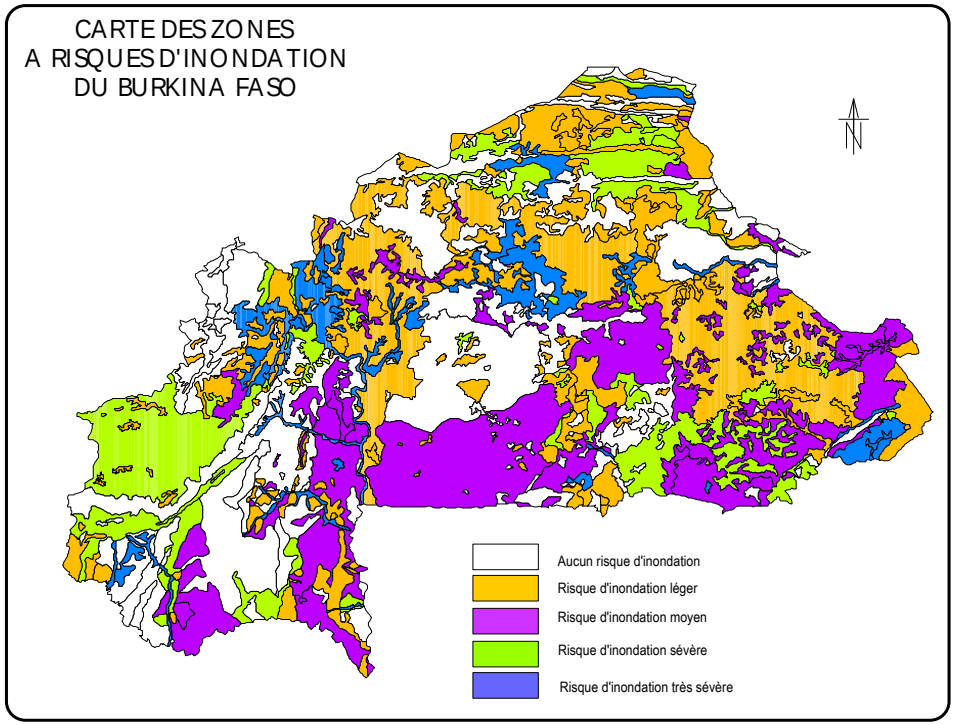


Figure 2: Risk of inundation (Source: DGM, Burkina Faso)

Prioritisation Process

165. To facilitate decisions on cost-effectiveness, a baseline capacity assessment was conducted during the project preparation Phase. The assessment enabled alert production and dissemination agencies to prioritize their needs (see Section 2.8). Due to project budget limitations, it was necessary to select from the long-list of equipment / capacity building needs and identify those within the scope and cost-effectiveness of this project. In response, a set of criteria to prioritize needs / requested activities was formulated. The criteria were also used to assess the relevance of this LDCF project to tackle these priority needs, given its overall objective. Table 3 shows the criteria for cost-effective adaptation interventions.

Tables 3a and 3b: Criteria for inclusion of activity in LDCF-GEF project

3a) Criteria for Selection of Information Production Activities
✓ The activity needed is within the scope (scale, cost and timeframe) of this project including the time it takes for procurement, installation and training;
✓ Requested acquisition / rehabilitation of hydro-meteorological infrastructure includes a mix of manual and automatic stations to ensure that data collection is not hindered by training needs associated with automatic stations;
✓ At least two supplier costs (where applicable) have been compared for new hydro-meteorological infrastructure;
✓ The placement of hydro-meteorological infrastructure represents the best network representation based on user-needs (public and private) and providing national coverage;
✓ Requirements for operation and maintenance (O&M) are not complex. The need for outsourcing O&M is limited;
✓ Capacity can be built in the relevant sectors to participate fully in the intervention;
✓ The activity has a high likelihood to achieve replication and sustainability;
✓ There is a strong alignment of the activity to national and sub-national adaptation priorities;
✓ The agency involved in alert production has Monitoring and Evaluation mechanisms (M&E) in place;

3b) Criteria for Selection of Information Dissemination Activities
✓ Capacity can be built in the relevant agency to assist with dissemination;
✓ Agency has the capability to disseminate information to a broad range of people, including the most vulnerable and women;
✓ The agency has mechanisms in place to transfer knowledge to decentralized branches;
✓ The agency is already trained in adaptation to climate change principles;
✓ Any equipment demanded for communication is necessary for improved alert dissemination;
✓ The activity has a high likelihood to achieve replication and sustainability;

3b) Criteria for Selection of Information Dissemination Activities
✓ There is a strong alignment of the activity to national and sub-national adaptation priorities;
✓ If applicable, the activity enables EWS/CI to be integrated into national policies and planning;
✓ Alert communication mechanism is able to reach women and other vulnerable populations

Annex 11: Terms of Reference

A. Comité de Projet

Le comité de projet est responsable des décisions relatives à l'orientation d'un projet lorsque des directives sont sollicitées par le Chef de Projet. Le Comité de Projet joue un rôle essentiel dans le suivi et les évaluations liés au projet en assurant la qualité de ces processus et produits, et en utilisant les évaluations pour améliorer la performance, la recevabilité et l'apprentissage. Il s'assure que les ressources nécessaires sont engagées, arbitre les conflits dans le cadre du projet et négocie une solution à tous les problèmes survenant avec les corps extérieurs. De plus, il approuve la désignation et les responsabilités du Chef de Projet et toute délégation de ses responsabilités dans le cadre de l'Assurance du Projet. Sur la base de l'approbation du Plan de Travail Annuel, le Comité de Projet peut également examiner et approuver les plans trimestriels (le cas échéant) et aussi entériner toute dérogation majeure aux plans initiaux.

Le Comité de Projet (CP) devrait comporter des représentants intra nationaux et nationaux pour orienter et superviser le projet. Le CP sera installé dans les locaux du SP/CONEDD et présidé par le Secrétaire du SP/CONEDD. Le CP se réunira chaque année pour discuter du projet et approuver les plans de travail annuels. Le CP comprendra des représentants du PNUD, du FEM-PNUD, des hauts responsables des ministères des Transports, des Infrastructures et du désenclavement, de l'Environnement (MEDD), du Ministèredel'Action Sociale et de la Solidarité Nationale (MASSAN), du Ministèredel'Agriculture (MAHRH), du Ministèredela Communication, de la Direction de la Protection Civile (DPC) et du Ministèrede la Promotion de la Femme (MPF), du Ministère de la Communication. Le Coordonnateur national du Projet (CNP) sera un membre d'office du CP chargé de rédiger les comptes rendus. Les membres potentiels du Comité de Projet sont passés en revue et recommandés pour approbation pendant la réunion du CEP. Les représentants des autres parties prenantes peuvent être intégrés comme il convient dans le Comité.

Le CP sera chargé de:

- Superviser et approuver les plans de travail annuels et les exigences à court terme en matière d'expertise
- Superviser les activités du projet en assurant le suivi des progrès et en approuvant les rapports annuels
- Réviser et approuver les plans de travail ainsi que les plans financiers et les rapports
- Fournir des conseils stratégiques aux institutions de mise en œuvre afin de garantir l'intégration des activités du projet dans les objectifs nationaux et infranationaux de résilience climatique et de développement durable.
- Assurer une coordination inter-structures et une diffusion transversale des résultats stratégiques
- Assurer la pleine participation des parties prenantes aux activités du projet
- Aider à l'organisation des revues du projet et des contrats de prestation de services au titre de l'assistance technique
- Fournir des orientations au Chef de Projet

B. Chef de projet

Le Chef de Projet devra rendre compte au Comité de Projet et diriger l'équipe de projet dans la planification et la réalisation du projet. Le CP sera hébergé par le SP/CONEDD et sera chargé de conduire le projet au quotidien au nom du Partenaire de mise en œuvre, selon les conditions établies par le Comité. La responsabilité principale du Chef de projet est de s'assurer que le projet produit les résultats spécifiés dans le descriptif de projet, selon la norme de qualité requise et dans les limites imposées en matière de temps et de coût. Le CP sera responsable de la gestion financière et des décaissements, et sera tenu de

rendre compte au gouvernement et au PNUD Le CP se réunira chaque mois avec le Comité de soutien technique qui sera composé de points focaux issus des organismes de production et de dissémination d'informations émanant du SAP et du CONASUR.

Responsabilités

- Assurer un partenariat efficace entre les bureaux sous-nationaux et les structures nationales participantes
- Gérer les ressources financières en collaboration avec le Coordonnateur national du projet (CNP) en vue de réaliser les résultats conformément aux produits et aux activités spécifiés dans le descriptif du projet
- Diriger l'élaboration et la mise en œuvre des plans de travail annuels axés sur les résultats et des cadres logiques, tels qu'approuvés par la direction
- Assurer la liaison avec les activités connexes et parallèles avec la coopération des ministères et des bureaux d'exécution
- Assurer le suivi des activités du projet, y compris des questions financières, et élaborer des rapports d'activités mensuels et trimestriels, et organiser des évaluations mensuelles et trimestrielles des progrès réalisés
- Appuyer le CNP dans l'organisation des réunions d'équipe et des conférences d'apprentissage
- Coordonner la répartition des rôles au sein de l'équipe et organiser les systèmes de contrôle et de suivi
- Rendre compte et fournir des retours d'informations sur les stratégies, les activités et l'avancement du projet ainsi que les obstacles rencontrés par Comité de Projet
- Organiser une réunion tous les trimestres avec le Comité de soutien technique

C. Coordonnateur national de Projet

Le Chef de Projet désignera un Coordonnateur national du projet qui sera responsable de l'administration globale du projet. Le CNP rend compte au ministère de l'Eau et assure la liaison avec le PNUD. Le CNP sera logé au sein du ministère de l'Eau et sera chargé de:

- Contrôler et coordonner quotidiennement la mise en œuvre des activités du projet
- Recruter et superviser le personnel technique et le personnel chargé de la formation, tel que requis pour la mise en œuvre du projet
- Nouer et conserver des relations étroites avec les organismes étatiques compétents, le PNUD, les ONG, la société civile, les organisations internationales et les partenaires de mise en œuvre du projet
- Coordonner de manière optimale l'équipe du projet dans l'exécution de ses devoirs en assurant une utilisation efficiente et efficace des ressources
- Coordonner les intrants dans les plans de travail annuels axés sur les résultats et les cadres logiques, tel que requis par la direction.
- Procéder à la répartition annuelle du plan de travail pour l'ensemble des objectifs du projet; et préparer des plans de travail trimestriels.
- Coordonner les intrants dans tous les rapports de projet, tel que requis (incluant les rapports annuels sur le projet, le rapport initial, les rapports trimestriels et le rapport final)
- Élaborer des rapports de situation et financiers trimestriels pour commentaires et approbation par le Chef de Projet
- Coordonner la mise en place d'équipes de travail sous-nationales.

- Organiser des réunions d'équipe annuelles pour partager les expériences et les enseignements tirés

D. Comité de soutien technique (Suivi et évaluation)

Le Comité de soutien technique sera composé des points focaux de la Direction générale de météorologie (DGM, de la Direction Générale des Ressources en Eau (DGRE) du Comité National de Secours d'Urgence et de Réhabilitation (CONASUR) et de l'Observatoire National de l'Environnement (DCIME), du Système d'Information du Gouvernement (SIG). Ils se réuniront périodiquement avec le CP pour apporter des conseils techniques. Ils fourniront également un appui au CP dans l'administration et la gestion du projet, selon les besoins du projet lui-même ou du Chef de Projet. Dans le cas où il existe des dissensions dans le groupe, la décision finale appartient au CP.

E. Assistant financier et administratif

Un assistant administratif et financier devra rendre compte au CNP et sera recruté par le SP/CONEDD. Ses responsabilités seront les suivantes:

- Créer et mettre à jour les dossiers relatifs au projet et les systèmes de comptabilité tout en veillant à la compatibilité avec les procédures comptables financières du SP/CONEDD et du PNUD.
- Préparer les révisions budgétaires du projet et soutenir l'élaboration des plans annuels de travail
- Traiter les demandes de paiement à des fins de règlement incluant les avances trimestrielles aux partenaires de mise en œuvre à l'issue d'un examen conjoint
- Mettre à jour les plans financiers, élaborer des rapports de situation, des rapports d'étape et d'autres rapports financiers
- Procéder aux formalités de clôture financière du projet, notamment la présentation de rapports finaux, le transfert et la cession des équipements, le traitement des révisions semi-définitives, et le soutien à l'équipe professionnelle dans l'élaboration des rapports d'évaluation finaux
- Soutenir l'attribution des marchés dans des délais rapides et veiller aux autres droits admissibles au personnel, aux experts et aux consultants en préparant des plans de recrutement annuels.
- Recueillir et mettre à jour les informations relatives au projet et établir des procédures de contrôle des documents
- Administrer les réunions du Comité de Projet
- Administrer le contrôle des révisions du projet
- Produire, copier et distribuer tous les rapports de projet
- Fournir de l'aide dans l'utilisation du système ATLAS pour le suivi et le rapportage

F. Expert en suivi-évaluation Recrutement d'agent contractuel à plein temps

L'expert en suivi-évaluation devra rendre compte et apporter son soutien au CNP, au CP et aux équipes de projet dans la préparation des systèmes de suivi-évaluation nécessaires pour le suivi et l'évaluation de la qualité des progrès, l'identification, la collecte, l'analyse, la documentation et la vulgarisation des enseignements tirés par le biais d'une réunion annuelle sur le projet, et soutenir la préparation des justificatifs du projet pour le partage des informations à travers le mécanisme d'apprentissage en matière d'adaptation (ALM) du PNUD.

Responsabilités

- Établir la stratégie globale de suivi-évaluation axée sur les résultats selon les plans de suivi-évaluation spécifiés dans le descriptif du projet.
- Orienter et coordonner la revue du cadre de résultats du projet, notamment :

a. Fournir des conseils techniques pour la révision des indicateurs de performance;
b. Faciliter la revue annuelle des risques organisée par le CP;
c. Évaluer le niveau de réalisation des objectifs.

- Préparer des modèles de rapport et soutenir le CNP dans l'élaboration des rapports nécessaires. Orienter les équipes du projet dans la préparation de leurs rapports périodiques conformément aux formats de rapport approuvés. Cela inclut les rapports d'activités trimestriels, les rapports annuels de projet, les rapports initiaux et les rapports techniques spéciaux.
- Promouvoir la planification et le suivi participatifs des activités en informant les institutions de formation sur le contenu du projet.
- Aider le CNP à rassembler les rapports techniques et autres documents du projet et contribuer à l'ALM.

G. Comité interinstitutionnel et multidisciplinairede promouvoir la Synergie (CIMS)

La plateforme multi-agences (Comité interinstitutionnel et multidisciplinaire, CIMS) sera créée dans le cadre du projet afin d'assurer une synergie entre les agences SAP et entre les initiatives liées au SAP au cours de la mise en œuvre du projet. Cette plateforme sera un groupe multidisciplinaire composé de points focaux des ministères/organisations concernés au niveau national et local. Les membres doivent représenter au minimum les organisations suivantes: CONASUR (représentants nationaux et locaux), la Direction Générale de l'Environnement (DGE), la Direction Générale de l'habitat et de l'Urbanisme (DGHU), la DGRE, la DGM, le ministère de la Santé (DNSP), la Direction du Conseil agricole et de la Formation professionnelle (DICAF), l'Office national de la sécurité alimentaire (ONASA), the Ministère de la Décentralisation (DAT), et les ONG, OSC, . Ils travailleront dans le cadre du projet périodiquement (de préférence, avant les périodes de risque météorologique/climatique élevé) et rendront compte au Comité de Projet et au Bureau de Pays du PNUD.

Les rôles des points focaux seront les suivants:

- Assurer la coordination et la collaboration entre les agences SAP
- Assurer la synergie entre les initiatives liées au SAP
- Résoudre les problèmes de dédoublement

Les livrables doivent inclure:

- La soumission d'un rapport initial du projet pendant le premier trimestre au Comité de Projet et au BP du PNUD indiquant
  - ✓ les projets nécessitant une synergie avec la justification
  - ✓ les agences nécessitant des efforts de collaboration avec la justification
  - ✓ le plan d'action requis pour mettre en œuvre les activités visant le renforcement des synergies
- Les rapports semestriels actualisés devront être soumis au Comité de Projet et au BP du PNUD, pour montrer la manière dont la synergie a été créée/renforcée
- Un rapport de synthèse final sur le renforcement de la synergie et la manière dont cela peut être prolongé au-delà du projet

H. Spécialiste en prévisions météorologiques à identifier à travers lepartenariat sous régional Le spécialiste soutiendra le projet en fournissant une expertise en matière de prévisions météorologiques sur une période courte (alerte précoce, sur une base quotidienne et hebdomadaire). Le spécialiste formera les

responsables concernés dans l'utilisation et le traitement des données d'observation météorologiques, la prévision et la mise au point de spécifications pour les prévisions basées sur la réduction d'échelle à adapter selon les zones climatiques spécifiques nationales. Il contribuera à former le personnel de la DGM dans l'interprétation des risques hydrométéorologiques et des scénarios de vulnérabilité pour l'évaluation des efforts d'atténuation et de mobilisation et rendra compte à l'unité de gestion du projet.

Responsabilités

- Préparer les spécifications concernant les données météorologiques et le protocole de collecte de données.
- Revoir la qualité et l'utilité des données existantes et fournir des conseils concernant les exigences relatives à la collecte et à la sauvegarde des données
- Examiner les modèles numériques de prévision météorologique et recommander le (s) meilleur modèle (s) pour le pays d'utilisation, compte tenu des capacités techniques, financières et opérationnelles du service météorologique
- Fournir des spécifications relatives à la formation et un protocole pour la prévision météorologique numérique
- Concentrer les prévisions sur les menaces les plus pertinentes relatives aux phénomènes météorologiques extrêmes (inondations, sécheresses, vents forts))
- Établir une collaboration avec le service hydrologique, la DGRE et la DCIME afin d'assurer le partage des données pour les prévisions de phénomènes météorologiques extrêmes (ex. la mesure de l'intensité des pluies et les données satellitaires sur l'humidité du sol)
- Travailler avec la DGRE afin de mettre au point des critères et des procédures d'utilisation normalisées pour définir les seuils d'alerte
- Planifier le partage de connaissances (y compris les prévisions financières) indiquant les possibilités de formation continue de l'OMM qui devraient être exploitées au niveau régional et international

I. Spécialiste des risques et vulnérabilités liés au climat/ spécialiste des plateformes d'informations climatiquesà identifier à travers le partenariat sous régional

Le climat affecte presque toutes les activités humaines. Sa variabilité inhérente, notamment les phénomènes météorologiques extrêmes (comme les inondations, les sécheresses et les ouragans), affecte également les systèmes terrestres et biologiques dont dépend la survie de la société. La sensibilisation du public sur les impacts du climat exige que la météorologie fournisse des informations climatiques pertinentes à un groupe d'usagers diversifié de manière opportune et efficace. Le climatologue spécialisé combine souvent une vaste expérience dans le domaine des sciences sociales et une connaissance approfondie des sciences physiques, de la théorie fournie par la communauté des chercheurs, et des données environnementales générées et contrôlées selon des modèles afin de répondre aux questions spécifiques des clients. Le spécialiste soutiendra le projet en apportant une analyse de scénarios climatiques sur des délais plus longs (en termes de saison et plus). Le spécialiste formera les responsables concernés sur l'utilisation et le traitement des données d'observation climatique et sur l'élaboration de scénarios de vulnérabilité et de risque climatiques. Il contribuera à former le personnel de la DGM, de la DGRE et de la DCIME sur les aspects relatifs à l'analyse des risques climatiques, le renforcement des capacités et la planification climatique intégrée et rendra compte à l'unité de gestion du projet.

Responsabilités

- Examiner la qualité et l'utilité des données existantes. Décrire les besoins en données et les cadres analytiques pour les examens de risque et de vulnérabilité. Soutenir la DGM/DCIME/DGRE à entreprendre les analyses
- Surveiller les techniques d'observation et de mesure visant à maintenir l'intégrité et la représentativité des bases de données à court et long terme pour une évaluation exacte et objective des changements climatiques
- Préparer les spécifications relatives aux données climatiques et un protocole de collecte de données
- Étudier les tendances climatiques de la zone et préparer des prévisions météorologiques
- Modéliser les impacts potentiels sur les analyses de sensibilité et de vulnérabilité climatiques dans un contexte de croissance démographique et économique
- Aider à la préparation des scénarios climatiques futurs ainsi que leur évaluation à des fins de planification, incluant les évaluations des impacts climatiques et les analyses d'arbitrage.
- Soutenir les producteurs d'informations en vue d'identifier les options stratégiques et pratiques de mise en œuvre visant à intégrer les initiatives de résilience climatiques selon leur potentiel d'atténuation, leur rentabilité, leurs avantages connexes, leur faisabilité politique et leur acceptation par le public
- Assister l'unité de gestion du projet dans l'élaboration de plans de résilience climatique basés sur l'analyse d'options, et les enseignements tirés de la phase pilote de mise en œuvre.
- Planifier le partage des connaissances (y compris les estimations financières) indiquant les possibilités de formation sur les risques et les vulnérabilités climatiques qui devraient être exploitées, tant au niveau régional qu'international.
- Participer aux ateliers des parties prenantes et aux réunions du Comité de projet et y faire des exposés le cas échéant

J.Spécialiste de la durabilité du Radar Contrat de maintenance et de transfert de compétence

Un spécialiste sera engagé pendant deux semaines pour former l'ASECNA en matière de réparation de leur radar qui existe à Ouagadougou. Ils rendront compte à la DGM. La liste des livrables requis comprend:

Responsabilités

- Rapports de formation
- Planifier pour un financement durable du radar y compris les pièces de rechange
- Accord sur des mécanismes d'appui plus rentables

K. Spécialiste de la plateforme des informations climatiques (Contrat institutionnel au niveau national)

Ce spécialiste aidera à la mise en place de la résilience au climat dans les différents secteurs socio-économiques à travers le Burkina Faso en analysant les investissements du secteur privé et en menant une étude pilote. Le spécialiste appuiera le développement d'une plateforme d'informations climatiques viable qui fournira des données de climat et de marché fiables et à temps pour une gamme de producteur socio-économiques et autres parties prenantes telles que les prestataires des assurances.Des investissements sélectionnés seront choisis sur la base de leur capacité à valoriser la capacité d'adaptation des populations locales.(e.g. agriculture) et les intérêts du secteur privé (e.g. coton et secteur minier). Le consultant fixera

le travail de terrain pour tester l'investissement le plus viable pour les produits qui s'adaptent au climat dans une étude pilote.

Responsabilités

- Identifier les secteurs et branches d'activités nécessitant un accès aux informations climatiques, la fréquence requise d'accès, la volonté et l'engagement à payer pour obtenir des informations climatiques améliorées
- Identifier les modalités d'accès à l'information actuellement utilisées incluant la capacité en matière de technologie de l'information et de la communication (TIC), l'accès aux médias et le coût d'accès
- Examiner la capacité à traiter et traduire les données en analyses de risques adaptées aux différents besoins et exigences des utilisateurs finaux
- Analyser les modèles de revenus actuels
- Identifier les phases nécessaires pour la mise en place d'une plateforme d'informations climatiques
- Identifier les facteurs essentiels à la réussite des plateformes d'informations climatiques
- Élaborer une étude pilote avec l'appui de laDGM, la DGRE la DCIME pour mettre en œuvre la plateforme d'informations climatiques la plus viable financièrement et profitable à un maximum de bénéficiaires
- Après la mise en œuvre de l'étude pilote, évaluer les résultats de celle-ci et rédiger un rapport synthétisé pour le PMU, la DGM, la DGRE la DCIME

L. Spécialiste en développement de technologies de l'information et en d'entreprise basé sur les plateformes de téléphonie mobile (marché international, de courte durée, 2 semaines par an durant les 2 dernières années)

Le renforcement de la résilience face aux phénomènes météorologiques extrêmes, aux impacts des changements climatiques et à l'insécurité alimentaire est un défi majeur au Burkina. En fournissant des informations climatiques et des prévisions météorologiques aux agriculteurs par voie de téléphonie mobile, la résilience des populations les plus vulnérables peut être améliorée. Pour faciliter la diffusion des informations climatiques (IC) et les messages des systèmes d'alerte précoce (SAP), un spécialiste doit être recruté pendant un mois afin de conduire des études de marché et des études techniques sur la manière de relier les IC/SAP aux plateformes de téléphonie mobile.

Les responsabilités du spécialiste doivent inclure:

- Travailler avec les prestataires de téléphonie mobile, la, DGM, la DGRE, la DCIME et le ministère de l'Agriculture pour examiner la manière dont les informations et les alertes sur le climat peuvent être fournies au grand public à moindre coût par SMS ou par système de messagerie vocale
- Réaliser une étude de marché sur les besoins spécifiques des agriculteurs béninois, incluant les informations spécifiques nécessaires sur les fruits / légumes à différents moments de l'année
- Élaborer une étude de faisabilité sur la manière dont le Burkina peut intégrer les informations et les alertes sur le climat dans les plateformes de téléphonie mobile existantes, par exemple la banque de données du Centre international pour l'agriculture et les sciences biologiques de CABI/Plantwise et d'autres initiatives connexes
- Formuler un plan pour aider le Burkina à mieux intégrer le projet FPMA avec le projet pilote pour la résilience climatique (PPCR) et la manière d'établir un lien avec les initiatives régionales et internationales

M. Spécialiste en modélisation hydrologique à identifier à travers le partenariat sous régional

L'hydrologue travaillera en étroite collaboration avec la DGRE pour développer la capacité de modélisation hydrologique pour la prévision des crues avec les logiciels HECRES et MIKE BASIN. Le spécialiste doit avoir une expertise dans la gestion de bassins hydrographiques et d'équipements de contrôle hydrologique et être en mesure d'intégrer les opérations de barrage dans les modèles.Le candidat doit avoir une bonne connaissance de l'étalonnage des équipements hydrologiques. Il doit aussi bien connaitre les techniques et équipements classiques et modernes de collecte de données hydrologiques, notamment avoir des connaissances actualisées sur la télédétection et la technologie de transmission de données.

Ses responsabilités sont:

- prendre en compte les impacts potentiels de la variabilité climatique et les changements sur les ressources en eau ainsi que les incertitudes des effets des modèles climatologiques
- apporter un appui-conseil sur l'évaluation des inondations potentielles extrêmes et de la sécheresse, les prévisions et les alertes.
- Conduire une enquête sur les méthodes de calcul de la PMP/PMF(Précipitation Maximale Probable/Crue Maximale Probable) et les autres méthodes de calcul d'inondation
- Fournir les meilleures pratiques disponibles basées sur les normes nationales pour l'estimation des données de conception hydrologiques pour les cas d'inondations graves
- Fournir les simulations de modélisation sur l'accroissement du stress lié à l'eau au cours de la sécheresse en vue d'assurer une gestion réelle des ressources en eau dans de pareilles circonstances
- Evaluer les besoins en information hydrologique pour contribuer à la formulation des normes sur les mesures et le traitement des données et formuler des propositions pour la conception et l'évaluation d'un réseau de suivi
- Calibrer et tester les modèles hydrologiques HECRES et MIKE BASIN en utilisant les produits issus des modèles météorologiques de préférence sous forme de grille
- Développer des seuils d'alerte pour les inondations et la sécheresse en collaboration avec la DGM/DGRE

N. Formation en matière d'installation, d'exploitation et d'entretien d'infrastructures météorologiques structure d'exécution qui sera assurée conjointement avec le fournisseur des stations météorologiques

En raison de l'achat de nouvelles stations météorologiques, un expert est requis pour renforcer les capacités de la DGM en matière d'exploitation et de maintenance des stations météorologiques. Ses fonctions incluent:

- Installer les stations synoptiques et climatiques automatiques
- Former la DGM en exploitation de stations, notamment les exigences en matière de transmission/ stockage/ traitement de données
- Former la DGM en entretien et réparation de stations à l'aide de pièces détachées
- Renforcer les capacités de la DGM en matière de budgétisation de coûts récurrents

O. Formation en matière d'installation, d'exploitation et d'entretien d'infrastructures de suivi hydrologique structure d'exécution qui sera assurée conjointement avec le fournisseur des stations hydrologique

En raison de l'acquisition du nouveau matériel hydrologique à travers ce projet, un expert est requis pour renforcer les capacités de la DGRE en matière d'exploitation et d'entretien du matériel. Ses fonctions incluent:

- Installer les stations de mesure du débit et des niveaux d'eau
- Former la DGRE sur la manière d'utiliser les équipements notamment les exigences en matière de transmission/ stockage/ traitement de données
- Former la DGRE en entretien et réparation es équipements à l'aide de pièces détachées
- Renforcer les capacités de la DGRE en matière de budgétisation de coûts récurrents

P. Renforcement des capacités des experts techniques nationaux Partenariat sous régional et collaboration nationale

Une série d'opportunités de partage de connaissances sera offerte au personnel technique qualifié pour soutenir la collecte d'informations hydrométéorologiques et le développement d'un système d'alerte précoce multirisque national. Une formation professionnelle et pratique (c.-à-d. l'apprentissage par la pratique) sera dispensée par les agences nationales, régionales et internationales sur les dernières pratiques et techniques.

Le personnel sera recruté au niveau des institutions suivantes:

DGM

- Formation en matière d'étalonnage, d'exploitation et de maintenance d'équipements de suivi météorologique
- Modélisation climatique et analyse de données climatiques
- Prévisions météorologiques numériques

Annex 12: Capacity Assessment Scorecard

CAPACITY ASSESSMENT SCORECARD

PROJECT: STRENGTHENING CLIMATE INFORMATION AND EARLY WARNING SYSTEMS IN AFRICA FOR CLIMATE RESILIENT DEVELOPMENT AND ADAPTATION TO CLIMATE CHANGE

This capacity assessment scorecard will be adapted and applied to:

PROJECT OUTCOME 1: Enhanced capacity of national hydro-meteorological services (DGM/DGRE) and environmental institutions (DCIME) to monitor extreme weather and climate change (droughts, floods, strong winds)

PROJECT OUTCOME 2: Efficient and effective use of hydro-meteorological and environmental information for making early warnings and seasonal forecasts which feed into long-term development plans

The scorecard is arranged according to functional capacities for agencies to both monitor and forecast climate-related hazard information, share and package such information with relevant agencies, disseminate both warnings and advisories based on such information and provide appropriate legal and procedural frameworks.

To establish the baseline capacity stakeholders are asked to score their understanding of the existing capacity, where they would like to move the capacity to in the project timeframe, and how they would prioritize each capacity.

The scoring can be adapted and locally defined. The standard scale is:

1. No evidence of capacity
2. Anecdotal evidence of capacity
3. Partially developed capacity
4. Widespread, but not comprehensive capacity
5. Fully developed capacity

CAPACITY OF AGENCIES TO PRODUCE INFORMATION							
Capacity Indicator	Baseline: Level of Existing Capacity					Target level of Capacity in the project timeframe	Priority of Capacity (h/m/l)
	1	2	3	4	5		
Capacity to service the observational infrastructure e.g. hydrological and meteorological stations, radar, upper air monitoring, satellite technology etc.		2				5	H
Capacity to generate weather/climate forecasts e.g. Numerical weather prediction (1-7 days), seasonal forecasts etc.		2				4	M
Capacity to utilize internationally and regionally available monitoring and forecast products		2				5	M
Capacity to send local observations to international centres		2				5	L
Capacity to record and use national/local observations for monitoring current meteorological and hydrological hazards in a timely manner			3			5	H
Capacity to record and use national/local observations to forecast future meteorological and hydrological hazards in a timely manner		2				5	H
Capacity to utilise satellite information for climate and environmental monitoring.			3			5	H
Capacity to form partnerships with key stakeholders to ensure effective delivery of agricultural/hydrological support services			3			5	H
Capacity to be able to monitor the cost of operations and maintenance of current equipment		2				5	H
Capacity to assess and understand key stakeholder's needs for climate information		2				5	H
Capacity to enable a free flow of information (e.g. generate, and provide access to data and information to partners and other users)		2				5	H
Capacity to plan cost recovery mechanisms		2				4	H
Capacity to sell products to the private sector	1					5	H

CAPACITY OF AGENCIES TO PACKAGE INFORMATION							
Capacity Indicator	Baseline: Level of Existing Capacity					Target level of Capacity in the project timeframe	Priority of Capacity (h/m/l)
	1	2	3	4	5		
Capacity to fully understand impacts of climate variability and change on food security (e.g. on fisheries , crop production, livestock, etc)			3			5	H
Capacity to fully understand impacts of climate variability and change on water resources and flooding (e.g. dam management and flood risk modelling)			3			5	H
Capacity to combine climate monitoring and forecast information with current agricultural assessments to provide agriculturally specific advisories		2				5	H
Capacity to combine climate monitoring and forecast information with current hydrological assessments to provide hydrologically specific advisories		2				4	H
Capacity to partner with national government structures and academic institutions to develop tailored, sectorally specific information and packaged products		2				4	M
Capacity to feed climate information into policy briefs and long-term strategies		2				5	H
Capacity to analyze relevant data/information for policy strategies such as agricultural production, infrastructure development, credit, insurance and marketing	1					3	M
Capacity to feed climate information, forecasts and tailored information to disaster risk management agencies and frameworks		2				5	H
Capacity of disaster risk management agencies to assess information in a timely manner		2				5	H

CAPACITY OF AGENCIES TO DISSEMINATE INFORMATION							
Capacity Indicator	Baseline: Level of Existing Capacity					Target level of Capacity in the project timeframe	Priority of Capacity (h/m/l)
	1	2	3	4	5		
Capacity to disseminate warnings and advisories in local languages			3			5	M
Capacity to disseminate alerts in a wide range of media (e.g., privileged telephone communication systems, CB radios, SMS alerts etc.)			3			5	H
Capacity for district and community focal points to understand the content of warnings and advisories		2				5	H
Capacity to establish and sustain mechanisms to raise awareness on the impacts of climate shocks and long-term change		2				4	M
Capacity to coordinate with government agencies to respond to warnings		2				4	H
Capacity to coordinate with CSOs to respond to warnings		2				4	H
Capacity to disseminate warnings and advisories to the district level or community focal points		2				5	H
Capacity of local populations to understand climate change and it's long term effects		2				4	M
Capacity to receive feedback on the usefulness of alerts from affected communities	1					4	H

CAPACITY OF LEGISLATIVE AND GOVERNANCE FRAMEWORK							
Capacity Indicator	Baseline: Level of Existing Capacity					Target level of Capacity in the project timeframe	Priority of Capacity (h/m/l)
	1	2	3	4	5		
Capacity for national coordination of emergency response activities			3			4	L
Capacity of standard operating procedures to guide the production, dissemination and response to warnings	1					5	H
Capacity of legislative system to mandate designated authorities e.g. which authority will disseminate warnings, which will produce warnings etc.	1					3	L
Capacity of multiple agencies to contribute to the issuing of warnings through national structures e.g. disaster management committees etc.			3			5	M

BASELINE: 74; TARGET: 161

Annex 13: Environmental and Social Screening Procedure

UNDP Environmental and Social Screening Template

(December 2012)

QUESTION 1:

Une évaluation ou étude environnementale et sociale combinée a-t-elle déjà été réalisée pour le projet envisagé par les partenaires d'exécution ou le/les donateur(s) ?

Cochez une réponse et suivez les instructions :

☒ **NON** → Passez à la Question 2 (ne pas remplir le Tableau 1.1)

☐ **OUI** → Aucun étude environnementale et sociale complémentaire n'est nécessaire si la documentation existante satisfait les normes d'assurance qualité du PNUD, et que les recommandations de gestion environnementale et sociale sont intégrées dans le projet. Vous devez donc suivre les étapes suivantes pour achever la procédure d'examen :

1. Utiliser le Tableau 1.1 ci-dessous pour évaluer la documentation existante. (Il est recommandé que cette évaluation soit conduite conjointement au bureau, par le Promoteur du projet et les points focaux concernés).
2. S'assurer que le Document de projet reprend bien les recommandations énoncées dans l'étude environnementale et sociale du partenaire chargé de la mise en œuvre.
3. Résumer l'information pertinente figurant dans l'étude environnementale et sociale du partenaire d'exécution dans l'Annexe A.2 du présent formulaire d'examen préalable, en choisissant la Catégorie 1.
4. Soumettre l'Annexe A au CEP, accompagnée de toute la documentation utile.

Note : Des orientations supplémentaires sur l'utilisation des systèmes nationaux d'évaluation environnementale et sociale sont fournies dans l'Annexe B.

TABLEAU 1.1 : LISTE DE CONTRÔLE POUR L'EXAMEN DE L'ASSURANCE QUALITÉ DE L'ÉTUDE ENVIRONNEMENTALE ET SOCIALE EXISTANTE	**Oui/Non**
1. L'évaluation/étude répond-elle à ses termes de référence, en ce qui concerne tant la procédure que de son contenu ?	
2. L'évaluation/étude fournit-elle une évaluation satisfaisante du projet proposé ?	
3. L'évaluation/étude contient-elle l'information nécessaire à la prise de décision ?	
4. L'évaluation/étude décrit-elle des mesures spécifiques de gestion environnementale et sociale (par exemple : mesures d'atténuation, suivi, plaidoyer, et renforcement des capacités) ?	
5. L'évaluation/étude identifie-t-elle les besoins de capacité des institutions chargées de la mise en œuvre des questions de gestion environnementales et sociales ?	
6. L'évaluation/étude a-t-elle été menée à travers un processus consultatif, avec un fort engagement des parties prenantes, notamment en tenant compte du point de vue des hommes	

et des femmes ?	
7. L'évaluation/étude considère-t-elle l'adéquation du coût et du montage financier en ce qui concerne les questions de gestion environnementale et sociale ?	
Tableau 1.1 (suite) Pour toute réponse « non », décrivez ci-dessous comment la question a été ou sera résolue (par exemple, modifications apportées ou étude complémentaire effectuée).	

QUESTION 2 :

Tous les produits et activités décrits dans le Document du projet relèvent-ils des catégories suivantes ?

- ☒ Passation des marchés (dans ce cas ils doivent se conformer à l'Éthique des achats et au Guide des achats écologiques du PNUD)
- ☒ Élaboration d'un rapport
- ☒ Formation
- ☒ Évènement/atelier/réunion/conférence (voir le *Green Meeting Guide*)
- ☒ Communication et diffusion des résultats

Cochez une réponse et suivez les instructions :

- ☒ **NON** → Passez à la Question 3
- ☐ **Oui** → Aucune étude environnementale et sociale complémentaire n'est nécessaire. Sélectionnez la Catégorie 1 dans l'Annexe A.2 et soumettez le formulaire rempli (Annexe A) au CEP.

QUESTION 3 :

Le projet proposé comprend-il des activités et produits qui soutiennent des processus de planification en amont susceptibles d'avoir des impacts environnementaux et sociaux potentiels ou

d'être vulnérables à un changement environnemental et social (voir des exemples dans le Tableau 3.1) ? (À noter que des processus de planification en amont peuvent intervenir à des niveaux mondiaux, régionaux, nationaux, locaux et sectoriels)

Cochez la réponse appropriée et suivez les instructions :

☐ **NON** → Passez à la Question 4.

☒ **OUI** → Suivez les étapes suivantes pour achever la procédure d'examen :

1. Ajustez, si nécessaire, la conception du projet pour y intégrer l'appui du PNUD au(x) pays, afin de veiller à ce que les questions environnementales et sociales soient correctement prises en compte pendant le processus de planification en amont. Voir à la Section 7 de cette note d'orientation l'élaboration des services, outils, orientations et approches d'intégration environnementaux et sociaux pouvant être utilisés.
2. Résumez l'appui à l'intégration environnementale et sociale dans l'Annexe A.2, Section C du Formulaire d'examen préalable et cochez la « Catégorie 2 ».
3. Si le projet proposé comprend UNIQUEMENT des processus de planification en amont, l'examen préalable est terminée, et vous pouvez soumettre au PAC le Formulaire d'examen préalable environnemental et social rempli (Annexe A). Si des activités de mise en œuvre en aval font également partie du projet, continuez avec la Question 4.

TABLEAU 3. 1 EXEMPLES DE PROCESSUS DE PLANIFICATION EN AMONT AYANT DES IMPACTS ENVIRONNEMENTAUX ET SOCIAUX POTENTIELS EN AVAL	Cocher la/les case(s) appropriée(s)
1. Appui à l'élaboration ou révision de stratégies, politiques, plans et programmes au **niveau mondial**. *Par exemple, renforcement des capacités et soutien en matière de négociations et d'accords internationaux. D'autres exemples peuvent comprendre la gouvernance de l'eau au niveau mondial ou un projet mondial lié aux OMD.*	
2. Appui à l'élaboration ou révision de stratégies, politiques, plans et programmes au **niveau régional**. *Par exemple, renforcement des capacités et soutien en matière de programmes et planification transfrontaliers (gestion de bassins versants, migration, eaux internationales, développement et accès à l'énergie, adaptation au changement climatique, etc.)*	
3. Appui à l'élaboration ou révision de stratégies, politiques, plans et programmes au **niveau national**. *Par exemple, renforcement des capacités et soutien en matière de politiques, plans, stratégies et budgets de développement nationaux, plans et stratégies basés sur les OMD (par exemple SRP/DSRP, MAAN), plans sectoriels.*	X
4. Appui à l'élaboration ou révision de stratégies, politiques, plans et programmes au **niveau infranational/local**. *Par exemple, renforcement des capacités et soutien en matière de plans de développement et cadres réglementaires de niveau district ou local, plans*	X

TABLEAU 3. 1 EXEMPLES DE PROCESSUS DE PLANIFICATION EN AMONT AYANT DES IMPACTS ENVIRONNEMENTAUX ET SOCIAUX POTENTIELS EN AVAL	Cocher la/les case(s) appropriée(s)
urbains, plans d'aménagement et d'affectation des terres, plans sectoriels, plans de développement provinciaux, fourniture de services, fonds d'investissement, conseils et méthodes techniques, implication des parties prenantes.	

QUESTION 4 :

Le projet proposé comprend-il l'exécution d'activités en aval qui pourraient avoir des impacts environnementaux et sociaux potentiels ou être vulnérables au changement environnemental et social ?

Pour répondre à cette question, vous devez d'abord sélectionner les réponses appropriées dans le Tableau 4.1. Si la réponse à toutes les questions du Tableau 4.1 est « Non » ou « Ne s'applique pas », la réponse à la Question 4 est « NON ». Si vous répondez « Oui » à l'une des questions du Tableau 4.1 (même un seul « Oui » peut être le signe d'une question importante à prendre en compte dans une nouvelle étude et une nouvelle gestion) alors la réponse à la Question 4 est « OUI »:

☒ **NON** → Pas d'étude et gestion environnementales et sociales complémentaires exigées pour les activités en aval. Sélectionnez la « Catégorie 1 » dans l'Annexe A.2 et soumettez le Formulaire d'examen préalable environnemental et social au CEP.

☐ **OUI** → Suivre les étapes suivantes pour achever la procédure d'examen :

1. Consultez la Section 8 de cette note d'orientation pour déterminer l'étendue de l'étude et de la gestion environnementales et sociales complémentaires qui serait nécessaires pour le projet.
2. Révisez le Document du Projet pour y inclure des mesures de gestion environnementale et sociale. Lorsqu'une activité complémentaire d'étude et de gestion environnementales et sociales ne peut être entreprise avant le CEP, un plan pour l'entreprendre dans un délai acceptable après l'approbation du CEP (par exemple en tant que première étape du projet) doit être défini dans l'Annexe A.2.
3. Sélectionnez la « Catégorie 3 » dans l'Annexe A.2, et soumettez au CEP le Formulaire d'examen préalable complété (Annexe A) ainsi que la documentation utile.

TABLEAU 4.1 : QUESTIONS COMPLÉMENTAIRES VISANT À DÉTERMINER LA NÉCESSITÉ ET L'ÉTENDUE POSSIBLE D'UNE ÉTUDE ET D'UNE GESTION ENVIRONNEMENTALES ET SOCIALES COMPLÉMENTAIRES	
1. Biodiversité et ressources naturelles	**Réponse** (Oui/Non/

TABLEAU 4.1 : QUESTIONS COMPLÉMENTAIRES VISANT À DÉTERMINER LA NÉCESSITÉ ET L'ÉTENDUE POSSIBLE D'UNE ÉTUDE ET D'UNE GESTION ENVIRONNEMENTALES ET SOCIALES COMPLÉMENTAIRES		
		Ne s'applique pas)
1.1	Le projet proposé donnera-t-il lieu à une transformation ou dégradation de l'habitat modifié, de l'habitat naturel ou de l'habitat essentiel	Non
1.2	Des activités de développement sont-elles prévues au sein de zones protégées par la loi (par exemple réserve naturelle, parc national) dans un but de protection ou de conservation de la biodiversité ?	Non
1.3	Le projet proposé présente-t-il un risque d'introduction d'espèces étrangères invasives ?	Non
1.4	Le projet implique-t-il l'exploitation de forêts naturelles ou le développement de plantations en dehors d'un système indépendant de certification forestière garantissant une gestion durable de la forêt (*tel que, par exemple, le PEFC – Système de reconnaissance des certifications forestières– ou les processus mis en place ou acceptés par l'autorité environnementale nationale compétente*) ?	Non
1.5	Le projet implique-t-il la production et la pêche de populations de poissons ou d'autres espèces aquatiques en dehors d'un système indépendant de certification garantissant la durabilité (*tel que, par exemple, le système de certification du* Marine Stewardship Council, *ou les certifications, normes, ou processus mis en place ou acceptés par l'autorité environnementale nationale compétente*) ?	Non
1.6	Le projet implique-t-il une importante extraction, dérivation ou retenue d'eaux de surface ou souterraines ? *Par exemple, construction de barrages, réservoirs, aménagements de bassins versants, extraction d'eaux souterraines.*	Non
1.7	Le projet présente-t-il un risque de dégradation des sols ?	Non
2.	**Pollution**	**Réponse** (Oui/Non/ Ne s'applique pas)
2.1	Le projet proposé donnera-t-il lieu à un rejet de polluants dans l'environnement dû à des circonstances normales ou exceptionnelles, susceptible d'avoir des impacts négatifs locaux, régionaux ou transfrontaliers ?	Non
2.2	Le projet proposé donnera-t-il lieu à la production de déchets qui ne peuvent être récupérés, réutilisés, ou éliminés d'une manière satisfaisante du point de vue environnemental et social ?	Non
2.3	Le projet proposé impliquera-t-il la fabrication, le commerce, le rejet et/ou l'utilisation de produits chimiques ou dangereux soumis à une mesure internationale d'interdiction ou d'abandon progressif ? *Par exemple, DDT, PCB et autres produits chimiques cités par les conventions internationales telles que la Convention de Stockholm sur les polluants organiques persistants ou le Protocole de Montréal.*	Non

TABLEAU 4.1 : QUESTIONS COMPLÉMENTAIRES VISANT À DÉTERMINER LA NÉCESSITÉ ET L'ÉTENDUE POSSIBLE D'UNE ÉTUDE ET D'UNE GESTION ENVIRONNEMENTALES ET SOCIALES COMPLÉMENTAIRES		
2.4	Existe-t-il un potentiel de rejet de produits dangereux dans l'environnement suite à leur production, transport, manutention, stockage et utilisation dans les activités du projet ?	Non
2.5	Le projet proposé comprend-il l'emploi de pesticides ayant un effet négatif connu sur l'environnement ou la santé humaine ?	Non
3.	**Changement climatique**	**Réponse** (Oui/Non/ Ne s'applique pas)
3.1	Le projet proposé donnera-t-il lieu à des émissions significatives[19] de gaz à effet de serre ? *L'Annexe C fournit des orientations supplémentaires pour répondre à cette question.*	Non
3.2	Le projet proposé est-il susceptible d'augmenter de façon directe ou indirecte la vulnérabilité environnementale et sociale au changement climatique, maintenant ou à l'avenir (pratiques dites « mal adaptées ») ? Vous pouvez vous référer aux orientations supplémentaires fournies par l'Annexe C pour vous aider à répondre à cette question. *Par exemple, un projet qui impliquerait indirectement l'élimination des mangroves des zones côtières ou encouragerait des plans d'affectation des terres entraînant la construction de maisons sur des plaines inondables accroîtrait la vulnérabilité de la population environnante au changement climatique, en particulier aux inondations.*	Non
4.	**Équité et égalité sociale**	**Réponse** (Oui/Non/ Ne s'applique pas)
4.1	Le projet proposé aurait-il des impacts environnementaux et sociaux qui affecteraient les peuples autochtones ou d'autres groupes vulnérables ?	Non
4.2	Le projet pourrait-il avoir un impact important sur l'égalité des sexes et l'autonomisation des femmes[20]?	Non
4.3	Le projet proposé est-il susceptible d'accroître directement ou indirectement les inégalités sociales, maintenant ou dans le futur ?	Non
4.4	Le projet proposé aura-t-il des impacts différents sur les femmes et les hommes, les différents groupes ethniques et classes sociales ?	Non

[19] Significatives correspond à des émissions de CO_2 supérieures à 100 000 tonnes par an (à partir de sources tant directes qu'indirectes). L'Annexe E fournit des orientations supplémentaires sur la manière de calculer le volume potentiel des émissions de CO_2.

[20] Les femmes sont souvent plus vulnérables que les hommes à la dégradation de l'environnement et à la rareté des ressources. Elles ont généralement des droits plus faibles et plus incertains sur les ressources qu'elles gèrent (en particulier la terre), et passent de plus longues heures à aller chercher de l'eau, du bois de chauffage, etc. (OCDE, 2006). Les femmes sont également plus souvent exclues des autres processus de développement social, économique et politique.

TABLEAU 4.1 : QUESTIONS COMPLÉMENTAIRES VISANT À DÉTERMINER LA NÉCESSITÉ ET L'ÉTENDUE POSSIBLE D'UNE ÉTUDE ET D'UNE GESTION ENVIRONNEMENTALES ET SOCIALES COMPLÉMENTAIRES	
4.5 Y a-t-il eu des problèmes pour impliquer les femmes et certains autres groupes clés de parties prenantes dans la conception du projet ?	Non
4.6 Le projet aura-t-il des implications spécifiques en matière de droits de l'homme pour les groupes vulnérables ?	Non
5. Démographie	**Réponse** (Oui/Non/ Ne s'applique pas)
5.1 Le projet pourrait-il donner lieu à un afflux important de population au sein de la (des) communauté(s) affectée(s) ?	Non
5.2 Le projet proposé pourrait-il entraîner une importante réinstallation, volontaire ou non, de populations ? *Par exemple, des projets ayant des avantages environnementaux et sociaux (par exemple, zones protégées, adaptation au changement climatique) ayant un impact sur le peuplement, et en particulier sur certains groupes désavantagés qui s'y trouvent.*	Non
5.3 Le projet proposé peut-il conduire à une augmentation significative de la densité de population, qui pourrait affecter la durabilité environnementale et sociale du projet ? *Par exemple, un projet ayant pour but le financement d'une infrastructure touristique dans une zone donnée (par exemple, zone côtière, montagne) peut conduire à une augmentation significative de la densité de population, qui pourrait avoir des impacts environnementaux et sociaux graves (par exemple, destruction de l'écologie de la zone, pollution sonore, problèmes de gestion des déchets, charge de travail plus importante pour les femmes).*	Non
1. Culture	**Réponse** (Oui/Non/ Ne s'applique pas)
6.1 Le projet est-il susceptible d'affecter de façon significative les traditions culturelles des communautés concernées, y compris les rôles respectifs des hommes et des femmes ?	Non
6.2 Le projet proposé donnera-t-il lieu à des interventions physiques (pendant la construction ou la mise en œuvre) qui affecteraient des zones ayant une importance physique ou culturelle connue pour les groupes autochtones et d'autres communautés manifestant des demandes culturelles stables et reconnues ?	Non
6.3 Le projet proposé entraînera-t-il la « scission » physique d'une communauté ? *Par exemple, à cause de la construction d'une route, d'une ligne électrique ou d'un barrage divisant une communauté.*	Non
2. Santé et sécurité	**Réponse**

TABLEAU 4.1 : QUESTIONS COMPLÉMENTAIRES VISANT À DÉTERMINER LA NÉCESSITÉ ET L'ÉTENDUE POSSIBLE D'UNE ÉTUDE ET D'UNE GESTION ENVIRONNEMENTALES ET SOCIALES COMPLÉMENTAIRES		
		(Oui/Non/ Ne s'applique pas)
7.1	Le projet proposé serait-il susceptible d'accroître ou d'entraîner l'accroissement de la vulnérabilité aux tremblements de terre, aux affaissements et glissements de terrain, à l'érosion, aux inondations ou à des conditions climatiques extrêmes ? *Par exemple, les projets de développement au sein d'une plaine inondable ou d'une zone sujette aux glissements de terrains.*	Non
7.2	Le projet entraînera-t-il des risques accrus pour la santé suite à un changement dans les conditions de vie et de travail ? En particulier, risque-t-il de conduire à une augmentation de l'infection par le VIH/SIDA ?	Non
7.3	Le projet proposé nécessitera-t-il des services de santé supplémentaires, notamment le dépistage ?	Non
3.	**Socio-économie**	**Réponse** (Oui/Non/ Ne s'applique pas)
8.1	Le projet proposé peut-il avoir des impacts susceptibles d'affecter l'aptitude des femmes et des hommes à utiliser, mettre en valeur et protéger les ressources naturelles et d'autres actifs du capital naturel ? *Par exemple, des activités qui pourraient conduire à la dégradation ou à l'épuisement des ressources naturelles dans des communautés qui en dépendent pour leur développement, leurs moyens d'existence et leur bien-être ?*	Non
8.2	Le projet proposé est-il susceptible d'affecter de manière significative le régime foncier et/ou les modes de propriété traditionnels et culturels ?	Non
8.3	Le projet proposé peut-il affecter de façon négative le niveau des revenus ou les opportunités d'emploi des groupes vulnérable ?	Non
9.	**Effets cumulatifs et/ou secondaires**	**Réponse** (Oui/Non/ Ne s'applique pas)
9.1	L'emplacement du projet proposé est-il soumis à des plans d'affectation des terres actuellement approuvés (exemples : routes, peuplements) qui pourraient affecter la durabilité environnementale et sociale du projet ? *Par exemple, de futurs plans pour la croissance urbaine, le développement industriel, l'infrastructure de transport, etc.*	Non

TABLEAU 4.1 : QUESTIONS COMPLÉMENTAIRES VISANT À DÉTERMINER LA NÉCESSITÉ ET L'ÉTENDUE POSSIBLE D'UNE ÉTUDE ET D'UNE GESTION ENVIRONNEMENTALES ET SOCIALES COMPLÉMENTAIRES		
9.2	Le projet proposé donnera-t-il lieu à un développement secondaire ou induit qui pourrait avoir des effets environnementaux et sociaux, ou un effet cumulatif avec d'autres activités existantes ou prévues dans la région ? *Par exemple, une nouvelle route traversant un espace forestier aura des impacts environnementaux et sociaux directs liés au déboisement et aux terrassements associés à la construction et à la réinstallation potentielle des habitants. Il s'agit là d'impacts directs. En plus, la nouvelle route devrait aussi entraîner de nouveaux développements commerciaux et domestiques (maisons, magasins, entreprises). À leur tour, ceux-ci auront des impacts indirects (ceux-ci sont parfois qualifiés d'impacts « secondaires » ou « induits »). Si des développements semblables sont prévus dans le même espace forestier, l'effet cumulatif doit alors être pris en considération.*	Non

ANNEXE A.2 : RÉSUMÉ DE L'EXAMEN PRÉALABLE ENVIRONNEMENTAL ET SOCIAL

(à remplir après avoir terminé l'Annexe A.1)

Nom du projet proposé :

A. Résultat de l'examen préalable environnemental et social

Sélectionnez un des points suivants :

☐ Catégorie 1. Aucune action complémentaire n'est nécessaire.

☒ Catégorie 2. Une étude et une gestion complémentaires sont nécessaires. D'éventuels avantages, impacts et/ou risques environnementaux et sociaux sont associés au projet (ou à une de ses composantes), mais ils sont essentiellement indirects ou à très long-terme, et sont dès lors extrêmement difficiles si pas impossibles à identifier ou évaluer directement.

☐ Catégorie 3. Une étude et une gestion complémentaires sont nécessaires. Le projet (ou une de ses composantes) comporte des impacts ou des risques environnementaux et sociaux potentiels qu'il est possible de s'identifier avec un degré raisonnable de certitude. Si la Catégorie 3 est cochée, sélectionnez une ou plusieurs des sous-catégories suivantes :

☐ Catégorie 3a : Les impacts et les risques sont limités en taille. Ils peuvent être identifiés avec un degré raisonnable de certitude et souvent être pris en charge par l'application de pratiques modèles standards. Ils nécessitent néanmoins une étude et une évaluation complémentaires minimales et ciblées afin d'identifier et déterminer si une étude environnementale et sociale complète est nécessaire (dans ce cas, le projet passerait dans la Catégorie 3b).

☐ Catégorie 3b : Les impacts et les risques pourraient être importants, rendant nécessaire une étude environnementale et sociale complète. Dans ce cas, un travail de détermination de la portée devra être entrepris pour identifier le niveau et l'approche les plus appropriés pour cette évaluation.

B. Questions environnementales et sociales (pour les projets nécessitant une étude et une gestion environnementales et sociales complémentaires)

Dans cette section, dressez la liste des questions environnementales et sociales clés éventuellement soulevées par le projet. Cela peut comprendre aussi bien les opportunités environnementales et sociales qui peuvent être saisies pour renforcer le projet, que les risques qui doivent être gérés. Vous pouvez utiliser les réponses fournies dans le Tableau 4.1 comme base pour ce résumé, ainsi que toute étude et gestion complémentaire effectuée.

Ce projet appuie au développement d'un système d'alerte précoce (SAP) et il vise à améliorer une meilleure collection d'information sur le climat (IC) au Burkina Faso. Le premier volet de ce projet consiste à l'acquisition des équipements de surveillance de l'environnement avec l'accent sur les aspects météorologique et hydropique. Ces équipements doivent être placés prenant en compte des principales recommandations à l'issue de consultations participative avec les populations locales ainsi que les représentants des acteurs décentralisés. Le choix de placement des équipements favorisera des endroits qui maximisent les bénéfices locales de l'information du temps / des données climatiques utilisées pour soutenir les activités d'adaptation (par exemple, la sélection de type de culture / fourrage, la rotation des cultures, les pratiques de stockage de l'eau). Le régime foncier n'est pas considéré comme un problème parce que les sites sont détenus par le gouvernement.

Composante 2 de ce projet consacre au renforcement des capacités et le développement des mécanismes de partage de données et de communication. Aucun d'entre eux n'aura des impacts sociaux ou environnementaux. D'autre part, le projet appuie la révision de la SCADD et l'intégration de SAP / IC dans les politiques nationales dans le but de promouvoir les initiatives de l'adaptation aux changements climatiques. Les révisions de politique nationale ne sont pas obligatoires, cependant SAP / IC devrait être un outil de la planification en vue de favoriser la société résiliente au changement climatique. Les informations climatiques adaptés aux besoins de différent secteurs servirons à élaborer une planification à long terme afin d'améliorer la sécurité alimentaire ainsi que les autres secteurs y relatif à la question de la pauvreté.

C. Étapes suivantes (pour les projets nécessitant une étude et une gestion environnementales et sociales complémentaires) :

Dans cette section, vous devez résumer les actions qui seront entreprises pour prendre en charge les questions énumérées ci-dessus. Si votre projet comprend des composantes relevant des Catégories 2 ou 3, les prochaines étapes devraient comprendre une étude et une gestion environnementales et sociales complémentaires, et les résultats de ce travail devront également être résumés ici. Des orientations utiles peuvent être trouvées à la Section 7 pour la Catégorie 2, et à la Section 8 pour la Catégorie 3.

Les garanties environnementales étant appliquées sont les aspects suivants:

1) Adapter SAP / IC pour mieux soutenir les activités de secteur agricole et les pratiques de gestion des terres et d'eau

2) Communiquer avec le gouvernement local ainsi que les acteurs décentralisés afin de trouver le meilleur positionnement/attribution des stations / des équipements

Les garanties sociales étant appliquées sont les suivantes:

1) Assurer la concertation participative avec la population locale et les représentants des acteurs décentralisés dans le choix de placement des stations / des équipements

2) Maximiser les bénéfices générés par l'installation des équipements à l'endroit de la population le plus vulnérable aux effets néfaste des changements climatiques

3) Assurer la participation des organisations représentent les femmes

3) Faciliter les commentaires des populations marginalisées avec le mécanisme rétroactif de communication

D. Signatures

Promoteur du projet **Date**

CEP **Date**

Directeur du programme **Date**

Annex 14: Responses to Donor Comments

United States Government Comments	
Burkina Faso: Strengthening Climate Services and Early Warning Systems in Burkina Faso for Climate Resilient Development and Adaptation to Climate Change	
Include detailed activities related to production of climate/hydrological information, communications and sustaining this work and retaining expertise, particularly under component 2.	The production of climate/hydrological information is addressed in Output 2.2. A feasibility study following by a pilot study (Activities 2.2.2 and 2.2.3) will be used to demonstrate the economic potential of tailoring and selling weather/climate information to different agricultural sectors (e.g., cotton), the mining industry and the building construction industry. A workshop between the information production agencies and representatives from the private sector has indicated that more frequent and longer time scale national bulletins can be revenue-generating products (e.g., seasonal forecasts to predict the rainy season or daily forecasts to indicate maximum wind speeds for cotton cultivation). The LDCF project will reinforce the capacity of the DGM/DGRE/DCIME (Output 2.2 p 36) to produce such tailored climate products and hence the attractiveness of products that the private sector is willing to pay for. Tailoring products to the private sector will thus serve as a way to gain revenue and recover costs. Cost recovery funds can help with equipment O&M costs and modernization of equipment. Outputs 2.6 and 2.7 (p 50-51) focus on the communication of information including the development of a Standard Operating Procedure (SOP) to clearly identify the role of the Disaster Risk Management unit (CONASUR) and how there will be a chain of communication with NGOs/CSOs down to the local level (mayors). Also, Output 2.7 includes a public awareness campaign to inform the local populations on the utility of this information for adaptation to climate change. Expertise in generating hydro-meteorological information will be retained by mandating all trained technicians/engineers within the NHMS to remain in their position for 10 years to ensure knowledge sharing. This and the development of new products and a diversified sector is expected to help retain trained staff.
Maintain close relationships and establish partnerships with relevant organizations working on climate and hydrometeorological services in the project region and make use of lessons learned from related efforts. This will strengthen capacity and connectivity within the broader region.	This project is using the Global Framework for Climate Services established by WMO as a related initiative. Under this project, WMO already developed a National Framework for Climate Services in Burkina following a three-day workshop led by WMO in late July 2012. A pilot project is planned to occur in Burkina (funding approximately $2.65m) with the goals of developing National Climate and Health Working Groups and partnering climate services and water resources management. This project will ensure there is a solid collaboration with EWS-related projects supporting climate and hydrometeorological services in the west African region including ClimDevAfrica (climate information in Africa), AGRHYMET (agriculture), ViGIRisC (establishment of vigilance systems for climate risk), Niger-Hycos and Volta-Hycos (transboundary hydrological modeling in the Niger and Volta watersheds) and AMESD (satellite data retrieval to assist with food security forecasts).
Describe how the project will ensure that the production of information is driven by the needs of the users and delivered through appropriate user-friendly channels	As discussed during the workshop between the information production agencies and private sector representatives, service delivery of climate/weather information products will be targeted towards the cotton, building construction and mining industries who have already expressed interest in purchasing tailored products (Annex 4). User-friendly communications, SMS services and the Governmental Information Service (SIG) will be supported to provide user-driven information and make it accessible. SIG already has numerous effective ways of communicating to the general public (call

	center, toll-free number, etc See Section 2.4.4 p 35), but they rarely collaborate with NHMS. The LDCF project will develop a partnership between SIG, the DRM (CONASUR) and the information producers to generate alerts rapidly. End-user feedback on the utility of information will be highly valued in project implementation and thereafter by including a feedback chain to enable end-users to voice their needs/concerns to local EWS focal points (Activity 2.6.4 p 40).
Include clear explanations of how local communities and women will be involved in shaping the project and describe how the project will benefit vulnerable populations and individuals.	Under Activity 2.6.3 (p 39) grass-roots based NGOs/CSOs and local mayors will be trained on how to most efficiently and effectively communicate alerts and information. A Standard Operating Procedure (SOP) for communication will be developed to clearly define the roles of each agency in the EWS/CI communication chain. The SOP will include designating EWS/CI focal points which the local communities can contact. End-user feedback on the efficacy and speed of EWS/CI alerts will be made possible by including a feedback chain to enable end-users to voice their needs/concerns to the local EWS/CI focal points (Activity 2.6.4 p 40). Furthermore, local populations will be used to assess the project indicators (See Project Results Framework Section 3). In the beginning of the project, a gender dis-aggregated survey will be conducted to determine how many people receive alerts (highlighting women). This same survey will be conducted at the end of the project once the EWS system has been implemented. The Stakeholder Involvement Plan (Section 2.9 p 52 Annex 5) describes how women-focused NGOs/CSOs (WILDAF and the Women's Forestry Association) will be responsible for conducting the survey in order to ensure that women receive alerts. Furthermore, during the preparation phase (see Annex 4, Key assessment report and section 2.9 Stakeholder Baseline Analysis p 52) these women-focused NGO/CSOs were fully integrated into the participatory design process.
Activities related to data stewardship should be expanded to include a plan for data sharing throughout the region and globally.	As evidenced by Burkina's active role in the Niger-Hycos and Volta-Hycos projects (international watershed hydrological model development projects), transboundary data sharing is quite critical for Burkina. Weather patterns move progressively over the region (p 12). This project will facilitate data sharing by using an existing server at DCIME as a centralized EWS information server (Output 2.4, p 37). Technical NHMS, research organizations and the Disaster Risk Management Unit (CONASUR) will be able to have privileged access to this information. An ftp connection will also be established to facilitate data sharing regionally. Globally, data will be communicated to the Global Telecommunication System in Activity 2.4.1 (p37). Furthermore, the database will serve to build links with the catastrophe databases in Burkina managed by the China and Japan National Centers for Catastrophes and link to the open access spatial data from the UN Office for Outer Space Affaires (UN OOSA) and the UN SPIDER project which is concerned with developing the capacity of countries to use an open network of all types of space-based information to support disaster management activities.
Clearly articulate the sectors that will benefit from the project, and include considerations of the adaptation priorities and needs of local communities.	The capacity of climate/environmental information production agencies (DGM/DGRE/DCIME) to provide rapid alerts and tailor climate products to the needs of various socio-economic sectors will be reinforced providing benefits to approximately 150 people within these respective ministries (e.g., agriculture, health, cotton, Section 2.3.4 p 22) (Approximately 340 people will benefit in the NHMS and the DRM, see Section 2.3.4 p24). Similarly the decentralized information dissemination agencies will be trained to understand EWS/CI technical jargon so that it can be relayed simply to local populations. This entails that approximately 840 people in local CONASUR branches, NGOs/CSOS will become beneficiaries of the

	project. Data sharing will also extend weather/climate information to the Ministries of Health and Agriculture which account for 20,000 beneficiaries. By the project enabling a pilot study on tailoring climate services and market research on the potential for mobile phone-based agricultural advisories, Burkina farmers can take advantage of improved local forecasts of winds, rain and temperature. Together with satellite imagery used for land-use planning and monitoring, tailored climate products can also provide significant local environmental benefits, detailing best water management practices which is crucial to help Burkina's fight against desertification. At the local level, early warnings and climate hazard mapping can provide economic benefits by reducing losses of agricultural produce, infrastructure (roads and bridges) and disruption to people's livelihoods. The selected target zones are considered the most vulnerable agro-ecological zones as identified in Burkina's NAPA (2007). Communities will also immediately benefit from the Standard Operating Procedure to be implemented for alert communication. The total population benefiting from these developments has the potential to grow immensely if warnings extend to a reasonable percentage of the total population e.g. through a mobile phone relay. Also, the feedback mechanism can enable the communication mechanism to be improved via end-user comments/suggestions. Finally, during project development it was indicated that at least 12 private sector industries or companies, spanning a range of sectors, can benefit from EWS/CI.
The proposal requests funding for an "appropriately equipped hydrological boat for comprehensive profiling of salinity". We request UNEP and UNDP to explain why this platform was chosen over lower cost platforms.	In this project, one Zodiac inflatable boat (for the Hydrological Service, DGRE B) will be purchased because it is the most cost-effective method to deploy instruments at different locations for hydrological monitoring, as opposed to having 6 or so permanent fixed structures which would be more costly.
General comments on PIFs	
Given the similarity between all the PIFs, it is recommended to develop one regional PIF OR conduct more in-depth analysis of gaps and needs for each country.	The outputs for this LDCF project have been tailored to address the gaps and needs for the NHMS, (DGM (including ASECNA (radio-soundings) and SAAGA (Radar)), DGRE and DCIME) as well as the Disaster Risk Management Unit (CONASUR), relevant NGOs/CSOs (see Stakeholder section 2.9 p 51) and local communities in Benin. The gaps and needs of these key early warning institutions and end-users of early warning system information have been identified through multi-stakeholder consultations conducted including the inception workshop held during September 2012 which was used to identify relevant EWS agencies involved with climate and hydro-meteorological information production as well as agencies that should be implicated in alert dissemination to vulnerable populations, most notably farmers and rural women. This workshop was also used to detail the baseline of EWS-related initiatives (outlining gaps, successes and failures) and identify potential co-financing sources including institutions who are managing/developing relevant on-going/planned EWS related initiatives. A second mission workshop in November 2012 was used to 1) to define and validate Early Warning System (EWS) costs provided by each agency in Benin 2) to perform a capacity assessment of all information production and dissemination agencies and 3) to formalize the roles of each EWS agency in information dissemination. Results from the self-assessment on capacity and prioritized needs are detailed in Annex 4. Thirdly, and most recently, the final validation workshop was held in April 2013 and was used to confirm the Management Arrangements, partnerships, project indicators, risks, assumptions, synergy mechanisms and project outputs and budgets.

Long term data records require sustainability and therefore need more detail for output 2.5 (sustainable financing) and how it will overcome barriers.	Long-term data records will be reinforced by digitizing data in Component 1 (Activities 1.1.5 and 1.2.6 p 29) and having designated servers for data storage, including back-up methods, in each information production agency. In order to ensure that data will continue to be collected, several design aspects to ensure project financial sustainability have been made (See Sustainability Section 2.7 p 49 for more details). 1) Equipment procurement will be staggered so that enough technical support is available to continue operation and maintenance of existing equipment and to be trained on new equipment installations. This will prevent any interruptions in equipment operation/data collection. 2) Continued support for monitoring will be established by developing a framework for DGM/DGRE/DCIME to properly plan sustainable government budget lines including cost recovery mechanisms (Output 1.4 p 32). To date, all equipment operation and maintenance is funded by existing government budget lines. 3) Tailoring products to the private sector will also serve as a way to recover costs in the long term. Significant capacity building regionally will be supported so that cross-sectoral weather/climate/hydrological products can be delivered. By making EWS/CI more useful to various sectors, this pushes the Government to include core budget lines to support monitoring equipment operation and maintenance due to the cross-sectoral importance of EWS/CI (e.g., health epidemics linking to temperature trends, agricultural advisories based on rain patterns)
Ensure that integration of hydro-met system, satellite, gauges and radars is considered. Radars are expensive to install and maintain and can exceed national budgets.	Burkina Faso is using a mix of technologies because the radar and radiosonde launching station are already installed and the costs of rehabilitation and training are considered to offer a cost effective solution for providing these data. Radar data is generated by SAAGA, one operational arm of the Met Service while radiosonde data is generated by another operational arm, ASECNA. Data, such as is the case presently, will be transferred to DGM. In the case of the radar data where power outages have been frequent, a microwave link will be used to improve data transmission (Activity 1.3.3 p30). This project will also support satellite data use and analysis through its capacity reinforcement for the environmental data institution (DCIME). Finally, to integrate all of this information, Burkina Faso will procure the SYNERGIE system (MeteoFrance).
Projects will be challenged by a lack of IT infrastructure (bandwidth, etc.) to collect, analyse, exchange and archive data.	Significant IT equipment has been included in Component 1 for data downloading, data archive and exchange and in Component 2; the already existing server at DCIME will be configured to exchange data between ministries/organizations (Activity 2.4.1 p38). Back-up servers will also be acquired where appropriate. For new IT developments training in data transmission/storage/usage will be provided by a Communications expert in Output 1.6 (p 32), for DGM, DGRE and DCIME. It is recognized that bandwidth is limited in Burkina Faso and is listed as a risk in the Project Results Framework Section 3 and the Risk Analysis Annex 1. To improve bandwidth, an activity has been developed to establish a public-private partnership and service level agreement between DNM and the mobile service/internet service provider (SONABEL) with regards to standardizing start-up costs for servers and modems as well as increasing bandwidth for internet connections.
There is a lack of workstations to make forecasts, access global products for downscaling etc.	The SYNERGIE (MeteoFrance) forecasting interface will be procured under Component 2.1 (p36) including required IT equipment to handle forecast visualization, data assimilation and downscaling. Data in SYNERGIE comes from a combination of weather station, radiosonde and satellite observations. There is significant budget allotted to training for DGM/ASECNA and use of the SYNERGIE system as well as budget and an activity to plan for license renewal

	after completion of the project. ASECNA, who is already performing forecasting and familiar with forecasting technologies such as SYNERGIE, will assist in continual knowledge sharing with DGM (ASECNA acts as an operational arm of DGM). Three (3) work stations for data collection/use and forecasting will be procured under Activity 2.1.1 p 36.
There is a lack of private capital to support the large costs of modernisation.	A workshop was conducted in the beginning of March 2013 (see meeting notes in Annex 5 p139) including the information production agencies, DGM/DGRE/DCIME and private sector representatives from the cotton, building construction, and mining industries. All 3 sectors show high potential for future investment in tailored weather/climate products. Specifically, the building industry needs high quality forecasts to know when to shelter their building materials while the cotton industry requires rain gauge information near specific cotton plots in order to plan their cultivations. Revenues obtained from selling tailored products to the private sector can help with equipment O&M costs and costs to continue to modernize equipment. Recurring costs for weather/climate/environmental monitoring will be included in national budget lines in order to ensure their financial sustainability.
Specific details on which hazards are important and where should be included.	Burkina Faso hazards include floods, drought, and strong winds (e.g., harmattan trade winds from the Sahara desert). Target vulnerable areas experience all of these risks to some degree depending on the climate regime (3 regimes, see Figure 8, Annex 4 p140) as detailed in the Burkina NAPA (2007). The most northern climate regime closer to the Sahara experiences more drought and harmattan winds while the southern regimes have experienced more severe flooding. This was discussed during workshops and considered when deciding target EWS activities.
More analyses of climate needs to be included in determining where hydromet stations should be located.	Climate stations with the role of measuring climate variables (namely temperature and rainfall) will be procured and DGM has conducted feasibility studies to see where these specific stations should be best placed. They have concluded that they need a climate station in each of the provinces and a rain gauge in each of the departments (Global Project For Modernization and Reform of Burkina Faso's National Meteorological Service, October 2007, Annex 4) and this assessment will be built on (refined through discussions during implementation) to determine hydromet locations.
To ensure that the appropriate climate observations are recorded and applied, the following considerations should be included:	
Clear descriptions of the types of observations that are required and how they will feed into an EWS appropriately.	Weather stations will measure temperature, rainfall, soil moisture, evapotranspiration and pressure variables on the surface or in the case of wind, 2 or 10 m above the surface each hour. These measurements will be important for making assessments of current agrometeorological conditions. Flow meters and water level meters will provide discharge measurements every hour, and will feed into flood monitoring and forecasts. Radar will be used to measure rainfall droplets at a rate of every 10 minutes and then averaged every hour in order to identify locations at risk of flash flooding (combined with monitoring of saturated soils). Radiosondes will give a vertical profile of atmospheric variables including temperature and pressure two times a day (at noon and midnight in accordance with WMO standards) which will support daily weather forecast generation using both external forecasting products (e.g., COSMO, NCEP GFS, and ECMWF) and allowing subjective analyses of these forecasts by trained meteorologists. For climate analyses, climate stations measuring rainfall and temperature and satellite images used to detect images of the Earth's surface on a daily basis will be used to predict climate trends, the occurrence of flood/drought periods, and soil

	moisture measurements to identify long dry periods.
Provide data to world climatic data centres.	Yes, climate/meteorological data will be supplied to GTS (Activity 2.4.1 p38) (Global Telecommunication System) – the international system for met data collection/analysis and hydrological data will be provided to the WHYCOS project (World Hydrological Cycle Observing System, WMO). BKF provides data to WHYCOS through its on-going Niger-Hycos and Volta-Hycos projects.
Clearly distinguish between weather and climate observations and how they are used.	Weather observations will be used in hydro-meteorological models to produce daily forecasts for predicting extreme and severe weather and potentially for deriving weather-related seasonal forecasts such as for dry spells etc. They also form the basis for monitoring the current state of the atmosphere and surface conditions and long-term, are accumulated to be used for climate studies. Climate observations will be used for long-term predictions (on the order of years) and will be provided to planners (DCIME, Ministry of Agriculture etc) and will feed into the next PRSPs (SCADD and Burkina's PEI). Output 2.1 p 35 and Output 2.3 p 38. Both weather and climate observations may also be used within downscaling models for predicting the future seasonal and long-term climate, depending on the methodology used.
Details should be provided on whether additional funding for procurement of technology can be accessed.	The project will build off of existing initiatives which are in the process of procuring equipment. The first LDCF financed project supporting Burkina' NAPA installed 10 manual synoptic weather stations and 6 automatic agro-climate stations in two agro-ecological zones (See Baseline Section 2.4.1 p 25). A GFDRR project has also purchased hydro-meteorological equipment including hydrological flow meters and rain gauges in pilot zones (Section 2.4.1 p 25). Additionally funding to maintain and operate the equipment will be provided by the government in their budget lines. New equipment is not planned in the immediate future but has been outlined in the feasibility studies of DGM and DGRE (See Annex 4) and future funding sources will be identified where they exist.
Project goals include mitigation of flood/drought losses but have insufficient hydrological modeling described in the PIF.	Hydrological modeling with HECRES and MIKEBASIN models (to provide watershed modeling and hydropower/pipeline modeling respectively) has been added since the PIF. Current capacityfor hydrological modeling in Burkina Faso is low and will need to be built during the project. Please see Output 1.1 for details.
Include considerations of how capacity of hydrological services (and agriculture) can be improved e.g. issue flood and drought monitoring and early warnings.	Hydrological services in Burkina Faso need to be improved because current technical capacity is weak. The hydrological service (DGRE) has focused on hydropower/dam management modeling up until now. This project will be used to collect more hydrological measurements (flow and water level) and combine this information with upstream/downstream watershed models in order to predict floods and potential periods of droughts (e.g., when reservoir levels are low). The project document now considers/identifies a range of capacities that need to be built to improve flood and drought warnings.
Address links and gaps between representatives of hydromet and agriculture e.g. will the meteorological data work with hydrological/agricultural models, or will it require manipulating?	The NHMS and the agriculture sector already work together to produce alerts for famine. The alerts are produced by multi-disciplinary working groups (GTPs). The GTPs will continue to be used in this project for technical support. Data will still likely require manipulating, especially with the generation of new products. Generally, the hydrological/agricultural models require temperature, rainfall, wind, evapotranspiration and soil moisture inputs on daily to monthly timescales, which are provided by existing stations, though it is sometimes difficult to obtain continuous daily data (this will be improved through new AWS and AWLS fitted with GPRS modems). New stations will also expand the network coverage measuring these weather/climate characteristics.
In Component 2 there is a need to articulate the types of	Burkina Faso requires early warnings on short-term scales, (hourly,

forecasts that will be produced.	daily and weekly) to produce weather forecast bulletins indicating rainfall intensity and wind speeds daily. They also require long-term seasonal forecasts for extreme weather (floods, droughts and strong wind periods) to help with generating agricultural advisories. *Output 1.2 p30).
The focus of the PIF tends to be on early warnings and does not include long term changes to extreme weather events. Ensure that climate information can be integrated into development plans.	The focus of the project is developing 'EWS/CI' (Early Warning System / Climate Information). The project is therefore focused on strengthening climate information for both short-term, seasonal forecasts and long-term climate predictions. The latter is mostly through the collecting of daily data over a long period, which will help both detect trends and observe changes in extreme weather events. These data can also be used with suitable downscaling models and CMIP5 data to project future climate change. Integration of EWS/CI into the next Poverty Reduction Strategy Papers, (PRSPs, namely SCADD and PEI) is an activity in Output 2.5 Activity 2.5.1 (p 39). This activity mandates the EWS synergy building platform (CIMS) to facilitate and promote as a national priority the integration of EWS/CI into development plans to help Burkina Faso prepare for crises/catastrophes.
Hydromet products which are sold for a fee will limit uptake by vulnerable populations.	Hydromet products will be free for the general population such as the current situation. Fees will be obtained from the private sector that has the means to pay for tailored climate products i.e. specifically designed for a particular sector. Revenue from these fees can be used to tailor products for local end-users (e.g., subsistence farmers) who do not have financial means to pay. A market research study will also be conducted to see if it is feasible to sell mobile-phone agricultural advisories such as the idea of Plantwise.org.
Include consideration of how the project will benefit women, noting that evidence suggests that women do not receive EW messages via radio.	Yes, this has been reflected and citations to Karen O'Brien's research on women's lack of involvement in EWS are cited. The gendered division of household labour in Burkina means that women are responsible for the majority of subsistence household chores where they are more dependent on natural resources (e.g., fetching water); in addition, they may be excluded from some activities due to cultural norms, or due to lack of capital and ownership arrangements that confer all rights to men in the family. To ensure that this project is successful in proving alerts to women, a gender dis-aggregated survey will be conducted to determine how many people receive alerts (highlighting women). This same survey will be conducted at the end of the project once the EWS system has been implemented. The Stakeholder Involvement Plan (Section 2.9 p 52 Annex 5) describes how women-focused NGOs/CSOs (WILDAF and the Women's Forestry Association) will be responsible for conducting the survey in order to ensure that women receive alerts. Furthermore, during the preparation phase (see Annex 4, Key assessment report and section 2.9 Stakeholder Baseline Analysis p 52) these women-focused NGO/CSOs will be fully integrated into the participatory design process.
ACMAD, GEO and AfriGEOSS are not mentioned despite coordinating earth observations and climate observations.	This project will build off the ViGIRisC project (ACMAD) by using their knowledge on EWS in the region and exploiting knowledge sharing opportunities sponsored by the ViGIRisC project. The LDCF project includes funds to send DGM personnel to ViGIRisC's training courses for West Africa in Output 2.1.2 p 36 (General discussion in Section 2.4.2 p27). This project will also build collaboration with the ClimDevAfrica programme part of GCOS (the Global Climate Observing System) (Related initiatives p 22). Already, ClimDevAfrica through ACMAD provides capacity building to DGM by providing a fellowship for specific training in ACMAD in Niger. Furthermore, a related initiative in Burkina is the AGRHYMET

	initiative which incorporates satellite data (formerly the AMESD project and now the MESA project) to improve climate information and the WHYCOS (World Hydrological Cycle Observing System) projects (Niger-HYCOS) which exploit and share satellite information related to hydrology to model common drainage basins which traverse country boundaries (Section 2.4.2 p27).
There is a need to include WMO and the GFCS initiative.	The GFCS initiative (WMO) is very active in Burkina Faso and is considered an on-going related initiative (Section 2.3.1 p 20). In July 2012, the GFCS funded a workshop in Burkina Faso to establish a framework for climate services at the national level (See conclusions Annex 4+E41). This initiative was a first step to improving communication between different sectors (health, agriculture, food security, private) on their needs for climate services. Other goals of this project are to: strengthen capacity for disaster risk reduction and early warning, perform large-scale data recovery and digitization, and develop National Climate and Health Working Groups, partner climate services and water resources management. Due to the related initiatives of GFCS with the LDCF project, the WMO regional focal point is considered a coordination entity in the Implementation Arrangement. As such, the project will relay project developments to the WMO focal point to ensure there is synergy with WMO activities.
Clarify how it plans to promote coordination between ministries at both the national and provincial level. We appreciate the involvement of multiple government agencies and institutions as this EWS will not only require input from various sector experts but also produce information applicable to numerous ministries and institutions.	Synergy with other initiatives, particularly those housed in the Disaster Risk Management Unit (CONASUR) was voiced as a major issue during project development. As a result, in Component 2, an Output has been developed to create a Multi-agency and Inter-disciplinary platform for Synergy (CIMS) to ensure coordination with other EWS agencies (from national down to local levels) and synergy with EWS-related initiatives to maximize project complementarity. This includes early warnings already in place for famine. Technical focal points from information production and dissemination agencies will form a technical support group. They will work with the already formed GTPs, Technical Working Groups, which produce alerts for famine and dam management and include focal points from cross-sector institutions/organizations. The Disaster Risk Management agency, CONASUR, will have a decentralization support committee including representatives on regional (prefect), local community levels (mayors), and representatives from NGOs/CSOs to help with information and alert dissemination.
Outline how users will be involved both in the design of the EWS and in deciding what information is produced from the EWS as well as how information will be disseminated. Better results can be achieved by ensuring that climate information and early warning system products are user-driven and communicated to users through various innovative channels	The Burkina Faso EWS/CI includes the development of a feedback mechanism in the Standard Operating Procedure for communication to be implemented. The feedback mechanism via SMS and toll-free numbers to designated EWS focal points will ensure that end-users are engaged and are able to provide their suggestions on how to improve communication and alerts. They will also be able to get involved in a pilot study to demonstrate how best agricultural weather advisories should be customized to their needs. Climate/weather products that are service-based and end-user driven, such as weather bulletins and SMS agricultural advisories (Plantwise.org) will be developed under Output 2.2.
Clarify how it will communicate results, lessons learned and best practices identified throughout the project to the various stakeholders both during and after the project; and	The Multi-agency and Inter-disciplinary platform for Synergy (CIMS) will hold regular information, lessons learnt and good practices meetings to strengthen collaboration among EWS agencies and EWS-related initiatives. From a project development point of view, the UNDP Monitoring and Evaluation mechanism will be used to track project progress with the quantitative indictors outlined in the Project Results Framework (See Section 3).
Engage local stakeholders, including community-based organizations and environmental NGOs in both the	All relevant NGO/CSOs including women representing NGOs (WILDAF) have been consulted during project development and will

development and implementation of the program	continue to be engaged through the Stakeholder Implementation Plan. Also, Output 2.7 is dedicated to working with the local stakeholders through a public awareness campaign and holding workshops in the target EWS regions in order to get local stakeholder input.

Germany comments on the PIF "Strengthening Climate Services and Early Warning Systems in the Gambia for Climate Resilient Development and Adaptation to Climate Change- 2nd Phase of the GOTG/GEF/UNEP LDCF NAPA Early Warning Project"	
A robust strategy to ensure sustainability of project, particularly with reference to investments in infrastructure and climate services, should include commitments from partners as well as an assessment of risks related to the sustainability of investments.	In terms of risks for the sustainability of this project, the Validation workshop concluded that there are 2 main risks which must be accounted for (See Risk Analysis Annex 1). It is possible that Burkina Faso will not have enough government financing to continue monitoring and to cover recurring O&M costs. It is also possible that there will be a lack of qualified personnel within the NHMS to operate and maintain new equipment, data transmission/treatment/storage processes and forecasting models. To combat these risks, this project is focused on making EWS/CI useful to various sectors (e.g., agriculture, health, and economics) (See Activities 2.2.2 and 2.2.5 p 37). By developing products that are user-driven the EWS/CI responds directly to national needs (e.g., targeted agricultural advisories to improve the cotton sector's production). Through this approach, the Government will gain incentives to include budget lines to provide continual support for climate/weather/environmental monitoring due to its cross-sectoral importance and profitability (even if just the potential for profit is demonstrated by the end of the project). Furthermore, in Activity 1.6.3, capacity for long-term operation and maintenance planning and budgeting will be built in all information production agencies through regional support training. Co-financing agreements have already been agreed upon to support the project as well (Table 1 p 23). The Ministry on Sustainable Development has agreed to support the project with approximately $40,000 while the World Bank PNGTIII project will be co-financing the project for $54 m. In both cases, the Ministry and the World Bank see the utility of weather/climate information to help the local populations adapt to weather risks and a changing climate.
As the proposed project requires very specialized technical expertise on meteorology (hardware and software), provide detailed information on how expertise and comparative advantages of partners is incorporated in the project	Significant technical capacity building is included for DGM in Output 2.1 (p 37). At the moment, the majority of forecasting skills are housed within ASECNA, the operational arm of DGM concerned with civil aviation. ASECNA will be responsible for transferring their forecasting skills and sharing their hardware (work stations) and software with DGM. Furthermore, Activity 2.2.2 (p 37) will support knowledge sharing for DGM on Numerical Weather Prediction models (e.g., WRF and COSMO) with international centers (e.g., MeteoFrance) and regional centers (ACMAD, responsible for the African Early Warning and Advisory Climate Services, AEWACS or ViGIRisC project and for the ClimDevAfrica programme) to build forecasting expertise. Additionally, it should be noted that 10% of the budget will be used to support a pool of technical regional experts whose role will be to support this project full-time in the fields of hydrology, meteorology/climatology forecasting and prediction, and communication systems. (See TORs in Annex 6).
The additional cost reasoning should be outlined more clearly. Much of the investment is for the weather related observational network and brings considerable co-benefits for economic activities, logistics and transport. However, a baseline development of maintaining and upgrading of infrastructure is not described. Please elaborate on the climate and climate change related benefits in comparison to the business as usual investment.	Approximately, 60% of the hydro-meteorological equipment is functional. Equipment is not functioning because there have been insufficient government funds to maintain and operate the hydro-met stations. To have better infrastructure, LDCF resources in Component 1 will be used to procure, install and/or rehabilitate critical infrastructure required to build and strengthen the climate-related observational network nationally for multi-risk purposes (floods, droughts, and strong winds) (Output 1.1 and 1.2 p 35). All existing EWS projects are focused on predicting floods, famine or best dam management practices in

	localized geographical areas. In contrast, this component will focus on establishing national hydro-meteorological monitoring capabilities in order to produce EWS/CI for the three climate zones in Burkina, particularly the most vulnerable agro-ecological zones indicated by the NAPA. Through this project, the weather and hydrological equipment will be upgraded by increasing the frequency of data transmission (via SMS or GPRS) and procuring complementary automated equipment to the existing manual equipment. Data transmission is expected to go from 1 month to 1 day (Activity 1.1.4 and 1.2.4 p 33 and 35 respectively) where equipment is installed. Capacity building will initially be provided by the equipment manufacturers (generally for 2 weeks after installation). Capacity will continue to be built to maintain and operate equipment with regional technical support training on at least a biannual basis (See TORs Annex 6). Furthermore, equipment has been budgeted to include the cost of spare parts (approximated to be 25% of running costs if not known) and field trip validation costs to verify equipment operations are also included (Output 1.1 and 1.2 p 33 and 35).
An up to five percent fee for "National implementation" is mentioned. Strong partner involvement and ownership in the implementation of this project is important but should not be at the expense of overall project management fees. Please outline how the five percent fee relates to the agency fees.	The Project Management Costs are the costs to run the project by the National Implementing Partner (The Permanent Secretariat for the National Advisory on the Environment). These funds will be used to support the Project Coordinator, Financial and Administrative Assistant, Indemnity fees for the Project Coordinator, and will cover in-country logistics and supplies. These costs are distinct from Agency fees which are to provide oversight and quality assurance of the project-- which in this case is by UNDP (through its country office, region based staff and HQ-based staff).
Recommend targeting the amount of people that should be reached through communication channels in sub-component 2.2 (quantification) and to make sure that the most vulnerable populations are reached.	On a local level, Burkina's NAPA has outlined that, currently, the extreme northern, eastern and western regions in addition to the central plateau are particularly vulnerable and require improved rapid warnings for food security and extreme weather events (NAPA 2007, Figure 1 p 24). During the project planning phase, five tentative localities having a total population of approximately 4 million people have been outlined based on the NAPA and the responses from NGOs during the capacity assessment held during the second workshop. Further analysis to validate and specify the choice of zones to gauge project indicators will be conducted by DCIME during project implementation (Activity 2.1.5 p 36). NGOs/CSOs who are grass-root based will be implicated in this project to make sure the most vulnerable are reached (See Stakeholder Implementation Plan Section 2.9.1 p 52). Also, the project is being by co-financing institutions, such as the World Bank's PNGT3 project, which has developed significant ground based presence through their project in the target vulnerable zones which will be exploited for information dissemination (See Discussion in Section on Adaptation Alternatives p 35).
It is recommended to explain the selection process i.e. definition of the "most vulnerable communities" in Output 3.2.	Five tentative localities have been chosen to target and test EWS/CI (Section 2.3.4, National and Local Benefits p 25). These are areas defined by the BKF NAPA (2007) as vulnerable agro-ecological zones. The local people's vulnerability is in reference to their inability to be food secure and/or to have been greatly impacted by weather/climate risks such as drought or floods.

The World Bank's comments on LDCF EWS PIFs	
There is concern that approving these projects based on a template is at the expense of more robust proposals (perhaps more targeted) and could pose a reputational risk to the GEF.	Throughout the project preparation activities there have been extensive consultations with stakeholders and government in Burkina Faso to ensure that all outputs address identified needs and barriers specific to Burkina Faso. Where aspects of the original PIF were deemed not appropriate they have been removed and all remaining components and outputs have been modified to accommodate the concerns articulated in the

	comment.Burkina can be considered to be a step forward from many other countries in Africa with regards to EWS/CI because WMO has already conducted a workshop to support the development of a framework for climate services. Project development has taken this into consideration as well as other baseline initiatives which have purchased equipment (e.g., LDCF financed NAPA and GFDRR project). Consequently, Component 1 deals with specific equipment procurement/rehabilitation and training needs for DGM/DGRE and DCIME (the Met, Hydrological and Environmental Data service respectively). Outputs include radar repair and an additional radiosonde launch. The second component deals with how the data collected will be targeted to the subsistence farmers and the potential private sector clients (building, mining and cotton). The project will build off regional initiatives (ViGIRisC, AMESD) and baseline projects (UNDP-COGEL, WA-WASH USAID). All risks, assumptions, outputs and indicators are specific to Burkina.
There is insufficient assessment of current state of hydro-met sector, past failures and their causes.	This question relates to several aspects of the project, including the radar in Ouagadougou, which will be repaired as part of this project. The cause of radar failure was lack of technical capacity and spare parts to perform repairs. As requested by government, this project will build specialized capacity within SAAGA in order to be self-sufficient with regard to radar repairs and have the ability to plan for recurring costs (Output 1.3 p 36). Whilst it is recognised that this is no guarantee that the radar will remain operational after repair, this is considered a cost-effective solution, which will move towards self-sufficiency in the long-term. Hydro-meteorological equipment failure has also been caused by a lack of technical personnel to maintain and operate the equipment. Many technical personnel have recently retired. This project includes significant technical recruitment considering the needs to maintain/operate new equipment and run forecasting models. Terms of reference mandate that any new personnel who are trained must remain in their respective institution for at least 5 years in order to ensure knowledge sharing (See TORs Annex 6). Capacity will continue to be built to maintain and operate equipment with regional technical support training on a biannual basis (See TORs Annex 6). Furthermore, equipment has been budgeted to include the cost of spare parts (approximated to be 25% of running costs if not known) and field trip validation costs to verify equipment operation are considered (Output 1.1 and 1.2 p 33 and 35). Furthermore, in Activity 1.6.3, capacity for long-term operation and maintenance planning and budgeting will be built in all information production agencies through regional support training.
There is insufficient consideration of the limitations of current capacity, which currently prevents many of the proposed activities in some countries.	A thorough baseline assessment has been undertaken during the project preparation phase to identify the main limitations and barriers to the proposed outputs and activities. Where technical and human capacity is weak, outputs and suggested activities have been adapted to address these weaknesses. Even with capacity building activities, which are listed in the Replicability Section 2.8 p 50, it is still expected that activities, building on these training and knowledge sharing opportunities, will encounter difficulties due to existing barriers. These barriers are present in all projects of this nature and include slow data transmission from manual hydro-meteorological infrastructure, institutional cooperation, poor long-term budget planning, and insufficient technically skilled human resources (Section 1.3 p 9). As a result, the design reflects what has been learned from trying to tackle these barriers through other projects (See Baseline initiatives Section 2.4.2 p 30) and identified in the risks of the Project Results Framework (Section 3 p 60). Countermeasures and management responses to these limitations are listed in the Risk Analysis (Annex 1 p77).
Cost estimates are unrealistic and do not include variation between countries and O&M (operations & management) costs.	Costs are based on budgets provided by each national agency during project development (DGM, SAAGA, ASECNA, DGRE, DCIME, CONASUR and CPF See Annex 4). The choice of equipment/technology/approach has been based on a cost-effectiveness evaluation (See Section 2.6 p 45). Costs have been weighed against the intensive time and expenses required for training with new equipment where appropriate. In each of their respective budgets both future running costs and the ease of maintenance were considered. For DGM, they want to automate the meteorological network and based on their success with automatic stations under the LDCF financed NAPA1 project, only automatic weather stations will be procured (Output 1.2). In contrast, DGRE has more limited experience so a mix of automatic and manual equipment has been proposed (See Output 1.1 p 34). Repairing the radar and launching an additional radiosonde were considered cost-effective given the benefits derived from continuing these operations. All costs for monitoring equipment, IT equipment (to support DCIME with satellite data visualization and the

	procurement of the SYNERGIE system for forecasting) are based on a combination of government estimates and supplier costs – making allowances for local taxes etc. Operational and training costs in terms of supporting data transmission through SMS/GSM, training manual observers and security for hydro-meteorological stations, are included. Maintenance costs such as to re-calibrate rating curves or sensors on weather stations as well as basic upkeep and the costs for associated field visits have been included (Output 1.1 and 1.2). Costs for purchasing spare sensors and parts (25%) are also included.