Workshop Minutes

Day 1

1.1. Welcoming Remarks

Bonizella Biagini, CIRDA Manager, starts off by stating the objective of the workshop. She mentions that the focus will be on country projects, their experiences and challenges. Boni gives a brief overview of the 11 Climate Information/ Early Warning Systems (CI/ EWS) country projects and reminds us of CIRDA's raison d'être. CIRDA came into being as a programme only after the documentation for the national CI/EWS projects had been submitted and when the GEF Board suggested a regional project to support coordination. CIRDA offers capacity building and therefore experts have been hired for that purpose. The programme has several specific objectives among which: facilitating access to reliable data, the dissemination of information and warnings, guiding the purchase of technologies and the improvement of capacity. Moreover, CIRDA has been asked to contribute to National Adaptation Plans and the programme is also helping with the tailoring of products according to country-specific and private sector needs while fostering public-private partnerships. CIRDA's 2015 annual workplan has 2 components. First, it aims to enhance national capacities to monitor and forecast extreme weather, climate- and hydrology-related variables. Second, CIRDA will be focusing on the efficient and effective use of CI for adaptation, development and the dissemination of early warnings. Boni notes that CIRDA needs a higher level of cooperation between participant countries and she stresses the fact that data needs to reach end users. Just collecting data is definitely not enough and PPPs are an important opportunity for financial sustainability. We want to have a high level of dialogue between projects. Surely there are problems that several projects are facing at the same time. Therefore, we can collaborate on the identification of common solutions. Lastly, Boni encourages participants to share experiences, discuss solutions that may address common challenges and even assess the effectiveness of CIRDA as a coordinator.

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Gerd Trogemann, Manager of the Regional Service Centre (RSC), welcomes everyone and mentions that CIRDA is at the heart of what UNDP does. He continues and talks about regional centres and offers an overview of the offices in Addis Ababa.

1.2. Introduction to the Purpose and Goals of the Meeting

John Snow, Chief Technical Advisor on Meteorology, notes that this is a different type of meeting, relatively smaller than previous CIRDA events. The purpose is to share success stories and challenges. In this context, the participants play the role of trainers and CIRDA is here to listen and learn about the challenges that you are encountering and how to best address them. It is clear that there are commonalities. The idea is to learn from one another. John announces that CIRDA will be introducing new resource people and that from now on we will be increasingly focusing on how to use collected data. Lastly, John quickly goes through the agenda.

1.3. In-country Mission Plan for Fall 2015 – CIRDA's New Members

Greg Benchwick

As Senior Communications Specialist, his job is to formulate a communication strategy for the CIRDA programme. He mentions that we need to find a way to democratize information sharing: migrate from a top-down approach to a bottom-up system whereby those implementing the projects and the end users are informing the top levels. It is crucial to be an effective listener. He will be available to answer any questions and notes that PowerPoint presentations will be shared on the CIRDA website.

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Chibesa Pensulo wants to know if Greg will have an input into country-level communication strategies. Greg mentions that his role is to set a common narrative across all of the 11 CIRDA partner countries, but then country offices will also need to contribute, with Greg's support if necessary.

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Pascal Okello Onegiu mentions that they have also hired a communications strategist and he thinks that Uganda should share their communication material with Greg.

Joost Hoedjes

He joined CIRDA as Country Support Specialist based in Kenya. His specialties are hydrology and meteorology. He can offer help concerning the hydro-met stations; from advice on sensors to matters related to data centres, data processing and modelling and finally the integration of hydro with met data. Joost emphasises that hydro and met agencies need to work together. He will also play a role in the setting up of Long Term Agreements (LTAs). He has the experience while CIRDA partner countries have specific questions. Joost can turn these questions into equipment specifications. Joost has already visited Burkina Faso and Ethiopia as a CIRDA expert. Liberia might be next.

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Pascal Okello Onegiu, notes that there is no LTA for hydro purposes in Uganda. The plan is to have it modular: monitoring, data transmission, product development, training etc. Since the LTA will be modular, you can mix and match. If you have developed your observation systems then you can use only the parts of the LTA that complete your observation network.

Jean Ngamini

Country Support Specialist. He also works for ASECNA dealing with air traffic security in Africa. He is based in Senegal and has so far visited Burkina Faso as a CIRDA expert. He will offer technical support on hydro-met matters.

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Kumeh Assaf notes that Liberia is looking forward to the LTA and he sees collaboration with the aviation sector as a low hanging fruit. Equipment is run down and needs maintenance. He expresses his interest in having CIRDA experts come to Liberia to explore cooperation with the aviation sector.

Ulrich Diasso

Country Support Specialist. His speciality is meteorology, dealing with weather forecasting and climate monitoring. He is based in Burkina Faso.

Georgie George

Country Support Specialist. He is based in South Africa and he is a technologies expert. He has visited Uganda as a CIRDA expert. Background especially in radar engineering, focus on user requirements, implementation and data processing. He has been explaining to politicians why equipment is not working: i.e. lack of mainstreaming maintenance costs into budgets. He was also involved in R&D and the commercialisation of products (energy and insurance products). He emphasises that purchasing technology is not enough; one must make sure it is useful and that it suits country needs.

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Tapona Manjolo mentions the need for guidance on technical specifications. Moreover, she needs insight on policy issues at country level, how to get to a policy that is conducive to the implementation of hydro-met initiatives such as CIRDA. She notes that policy makers find it difficult to understand the jargon of met offices and asks for more focus on end users as opposed to hardware-related matters. Let us have additional guidance on policy issues and end users. At the end of the day we just want to reach the most remote communities and enable them to incorporate the new information.

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John comments that CIRDA can certainly help translate the met jargon and offer guidance on policy issues. He notes that CIRDA has already mentioned that emphasis will now be on communications and reaching end users.

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Kumeh Assaf is especially glad that there are specialists with West African experience and who are also based in the region.

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Daniel Alfei mentions that in Tanzania they have already installed the necessary equipment, including Automated Weather Stations (AWS). Can we have CIRDA visit the AWS sites and provide advice on using the equipment? Georgie and Joost say that this can be definitely done.

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Ababu Anage asks about the concrete modality in which the CIRDA experts can support the installation of the equipment. Georgie mentions that CIRDA can verify and validate the installation, but, if necessary, they can also be there for the installation itself.

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Moses Massah asks about the instances when equipment would be installed on GSM towers. Is it the GSM or the government responsible for negotiating the installation of stations on GSM towers? He is curious to know how other countries are dealing with this. John notes that the towers do not always pertain to GSM companies. There are various ways in which this can be dealt with.

1.4. Introduction and Overview of the CIRDA Market Study

Anthony Mills, Private Sector Technical Advisor, mentions that the goal is to identify long-term PPPs and feasible, country-specific solutions; nevertheless, we need additional information about local contexts in order to engage with the private sector. Most likely we will end up having country-tailored case studies and we have to come out with individualized recipes to achieve that. We are only a couple of weeks into the study and it will go on for the next few months. About the conceptual framework, there are public organisations which are doing much of the work as data generators. Then the government and private sector are building on that. Among the consumers and end users of hydro-met data, we have identified the aviation sector and energy companies. Farmers are treated as a slightly separate entity of the private sector. The question is how you provide them with the information they need. Moreover, Anthony talks about the structure of the study. Brief digression to the World Met Congress in Geneva, May-June 2015, which was about future challenges and opportunities for the role of the private sector in meteorology. Several action points, opportunities and advantages of PPPs have come out and ultimately a warning was issued that commercial interests could lead to exaggerated info in order to attract attention.

On the one hand we have revenue coming from governments, climate services and grants. How can we increase income streams from the private sector? We need a business approach, we need to strategize. What is the niche of the met agency? How to brand it? How to market it? What is your competitive advantage? You need to ensure continuity and you can use laws and regulations in your favour. As WMO indicates, you already have a considerable infrastructure as a public good provider/ manager. Anthony then mentions further points on how to get good PPPs. He notes the importance of defining your niche vs. the private sector niche. The roles need to be very well determined. You need to look at new partnerships with NGOs, research institutions and acknowledge the competitive advantage of the private sector in terms of innovation and market penetration. We have to be aware of innovations, such as 3D printing, which have been bringing down costs. Are you really engaging with your users to understand their needs? What do we have to sell? For instance, a SMS telling the farmer when to plant, irrigate and fertilise? Mining, aviation, tourism operators could also benefit from hydro-met information and therefore, they should be regarded as potential partners. Very importantly, you need credibility. Potential barriers: the met staff is not really qualified to provide specialised private sector products or there are companies directly competing with met services.

Timeline for the market assessment: in September we will be interviewing the private sector. In October we will look at how we can actually build the partnerships. Presenting intermediary results during the next workshop in Zambia. Anthony mentions which sort of information would be greatly appreciated in order to document the study. For example, information on the mission and mandates of National Hydrological and Meteorological Services (NHMS) and their medium- and long-term outlooks. He notes the usefulness of receiving contacts from the aviation, agriculture, energy, mining, insurance, health and mobile sectors as well as from disaster risk reduction agencies.

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John notes that one of the things that he moved past quite quickly in terms of PPPs was the credibility of NHMSs. Plenty of things hinge on the quality of the products that are issued and how they are perceived. He adds that more detailed discussions on this topic will take place in Lusaka.

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Chibesa Pensulo acknowledges the importance of confidence and she notes that it is mostly engineers and technical people implementing the projects and therefore, we lack the capacity to engage and negotiate with the private sector. She asks whether there will be some capacity building on this matter. Alan Miller, Private Sector Engagement Technical Advisor, notes the issue raised by Chibesa and he will see if more feel the same.

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Francophone countries point out the need to have a French version of the market study questionnaire.

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Khalid Muwembe notes that telecom companies have their own in-house strategies and he points to the poor communication capacity of met agencies.

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Alan mentions that there are several reasons for doing the market study. Discussions with telecom companies are essential. In Uganda, CIRDA met with cell phone and tower companies. The private sector and weather services have their own objectives. Cell phone companies are very much interested but they do not develop message content. Engaging with the private sector will require adding skills and capacity that does not currently exist in most countries. CIRDA will find a capacity builder on PPPs. Alan emphasizes the need for interest and readiness to engage in PPPs. CIRDA is totally prepared and we will work with those countries that are looking ahead and that are legally prepared and clear that this is what they want.

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Anthony asks whether there is any traction on the private sector taking place and that national teams are aware of. Uganda mentions postal services and Liberia the maritime sector. Kumeh Assaf adds that many industries are trying to jump the met services and do themselves the work that they need. He invites CIRDA to come to Liberia, engage with the private sector and explore opportunities. Anthony asks Kumeh whether Liberia's national environment is conducive to PPPs. Kumeh believes that the context is good.

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Abbas Kitogo notes the short timespan that is available for data collection and considers this a challenge. Moreover, some institutions are not ready to share information and the amount of information that CIRDA wants is hard to achieve.

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Anthony says that we lack the time to do a study that dives deep into the topic. The market study that we are working on offers a broad approach, it researches the information-rich stories and puts forward some avenues that countries may be able to follow. In essence, this is an ongoing process. Ideally we will get individual country studies.

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Onesimus Muhwezi mentions that CIRDA's focus on PPPs has increasingly become more important; nevertheless, this has not been specifically included in the design of the projects. How do we move from where we are rather than waiting for the study to be released? How many of the private sector potential partners are we actually inviting? He is concerned that we do not have that many private sector representatives participating in workshops. He hopes that going forward this will change. Anthony mentions that CIRDA has done something in that regard during the workshop in Uganda. GEF does have some flexibility if you identify a good PPP. Boni believes that PPPs are essential for the success of the project and adds that it is hard to imagine how one country can spend all of its allocated funds on installing technologies alone and still attain the targeted outcomes. Investing in PPPs is part of adaptation and it represents a way to make sure that the hydro-climatic information is reaching end users. Otherwise, it will prove very difficult, if not impossible, to achieve the objectives of the project. The project is for vulnerable populations, for development and adaptation purposes. We cannot stop at the level of collecting and storing data. That will not address the problem that CIRDA is trying to solve. I am very happy about the initial discussions Onesimus had with Anthony, but I would have expected more direct involvement on the part of the Ugandan Country Office.

1.5. Reports from Strengthening National CI/EWS Projects

Chaired by Ben Larroquette, Regional Technical Advisor, UNDP-GEF.

Benin

Arnaud Zannou mentions several accomplishments and notes the 61% project global delivery rate. Their equipment providers have already been contracted and delivery is ongoing. They have also benefited from EWS capacity building and they have implemented both the technical and institutional frameworks that are necessary to do climate modelling. In Benin they began procurement early. Arnaud enumerates the entities involved as data

producers, warning and climate information users; he then describes the contribution of each department/agency and the links between them. He also talks about Benin's first ever flood warning system, which relies on ground measurement, data processing, information analysis and the dissemination of warnings. There are four warning levels: green (normal situation), yellow (situation to be monitored), orange (medium risk of catastrophe) and red (high risk of catastrophe). All the data they collect goes to a common server that other agencies can access. Benin experienced a major flooding disaster in 2010 and coordination was not effective back then. He talks about the services that each agency is providing and the technology that is required. In Benin they do not have met radars, they only have AWS. In terms of the project's social and economic impact, farmers now have better information on when to plant and when to move animals to secure areas. Similarly, fishermen know whether going out at sea is dangerous. Moreover, private entities from the tourism, banking and insurance sectors can take better decisions regarding their products. Furthermore, the ministry in charge of transportation can decide whether it is better to close roads in case of extreme weather. Last but not least, the government has also put in place an agency that is modelling the impacts of climate change. Benin notes that they need capacity building on the use and processing of data and as far as success is regarded, Arnaud considers that the collaboration between various agencies and projects as well as the training on EWS have been crucially important. Benin is looking into extending their observation network, developing and selling tailored products and also improving their data quality control processes. In 2016 they plan to finalise the development of their EWS, use to a larger extent the data they produce, update some relevant national policies and strategic documents and set up a national centre for the forecasting of hydro-climatic risks.

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Mark Tadross, Technical Advisor, asks whether the country has ever had a failed forecast. Benin mentions that the accuracy of their forecast depends on data from other countries, particularly in the case of flood warnings. Cooperation between neighbouring countries can definitely be improved and obtaining data has been difficult to date. This is a challenge and we need to improve regional cooperation so that early warnings are as accurate as possible.

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Abbas Kitogo asks whether Benin has encountered other data challenges and where they stand with their private sector engagement. Benin mentions that there is significant turnover among the sector's employees and this poses a challenge. Benin also needs to improve its knowledge of private sector needs for the sake of financial sustainability.

Burkina Faso

Rigobert Bayala talks about the key departments, agencies and services involved in the dissemination of the early warning information. They are the Social Action and National Solidarity Ministry, the Agriculture, Hydraulic Resources and Food Security Ministry, the Infrastructure and Transport Ministry and the Environment and Fisheries Ministry. The met office and ASECNA are both under the Infrastructure and Transport Ministry. Burkina Faso is considering PPPs with Telmob Burkina, Airtel and Telecel Burkina. Rigobert is asking how the CIRDA team can help them approach the telecom companies. It is a very difficult process. Whenever they approach the private sector, the latter is under the impression that they are being asked for sponsorship. The private sector is reluctant and it does not trust the project's intentions to get involved in win-win public-private partnerships. Rigobert talks about the SAAGA program whose scope has been to increase rainfall by cloud seeding. Currently, there are several related initiatives that are being implemented in Burkina Faso. In terms of future plans, Burkina Faso wants to register progress on the commercialisation of hydro-met products and services and also develop the 3-2-1 self-help SMS service via Airtel. Burkina Faso has also mentioned that CIRDA's support would be greatly appreciated for the development of PPPs (i.e. build a partnership with telecom companies or with the providers of weather index-based insurance), budgetary guidelines and a strategy to foster data sharing with neighbouring countries, which would also include non-CIRDA countries. Aki Kogachi, adds that in Burkina Faso they have only achieved 7% of the delivery rate; nevertheless, they expect that the rate will shoot up soon. They have to finalize procurement.

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Ben wants to point out that Burkina Faso is a few steps ahead of all of us in terms of PPPs. This happened despite of the difficulties in contacting international companies, which tend to redirect you to their regional headquarters in Nairobi. We all have a comparative advantage and we should use Burkina Faso as an example in terms of PPPs and approaching cell companies.

Ethiopia

Ababu Anage presents the organisational structure of the major partners involved in the implementation of the CI/ EWS project: the National Meteorological Agency (NMA), the Disaster Risk Management and Food Security Sector, the Hydrology and Water Quality Directorate (HWQD), Addis Ababa University, the Ministry of Finance and Economic Development and finally the Ministry of Environment and Forestry. For instance, NMA has been supporting the enhancement of food security, the provision of farm-level agro-meteorological services and the production of climate-based health bulletins, among other achievements. The HWQD has installed and upgraded hydro stations and organised training sessions to build the necessary capacity. As for future plans, Ethiopia aims to finalise the installation and commissioning of the hydro-met equipment, generate hydro-met information, finalise the district-level risk profiling and do more communications work. With regard to procurement, Ethiopia has been very much successful as they have completed most of the required procurement activities.

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Tanzania notes that in their case budgets are not factoring in the costs related to equipment maintenance and they ask what other countries are doing in this regard. Second, Tanzania would like to know which were the factors that favoured Ethiopia's fast procurement. Ethiopia mentions that they are partly dealing with budgetary issues by means of obliging suppliers to provide spare parts and remote advice for several years after the purchasing date so that maintenance is taken care of at least temporarily. Ben mentions that this approach does not address the issue of sustainability directly. He advocates for PPPs so that maintenance in particular and sustainability at large are addressed. Regarding Tanzania's second question, Ethiopia mentions that the commitment of the Country Office in terms of delivery and that of the involved agencies in terms of specifications has been significant. Moreover, Mark has also guided them on technical specifications. Ben adds that Ethiopia has taken care of procurement very early in the life of the project. Ethiopia has seen it as a priority and they did it in-house, without PSOs.

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Tapona Manjolo asks whether it has ever been tried by met offices to advocate for more funds from their governments.

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Ben wraps up the session and mentions the strengths of the three countries that have presented their projects. Benin has been successful in issuing early warnings, Burkina Faso has done a lot in terms of PPPs and Ethiopia is almost done with the procurement process. Ben emphasizes that we need new and innovative ways to disseminate information. Maybe move away from radio and TV and embrace SMS.

The Gambia

The project in the Gambia started about a year after everyone else (July 2015) and it has the peculiarity that both UNDP and UNEP are guiding project implementation. Lamin Mai Touray mentions several ministries and government agencies that are involved in the project and he details their contribution. As far as the private sector is regarded, the Gambian Chamber of Commerce and Industry is leading the engagement of the private sector. They have already deployed three AWS, an MSG Satellite Receiving Station, ten Automatic Water Level, Temperature and Conductivity Measurement Instruments and 37 Ground Water Monitoring Instruments. Others are pending. Several sectors are currently making use of the information, among which there are the agricultural, health, aviation, disaster management, construction, water resources, marine and fisheries sectors. The met agency is on its way to becoming an autonomous body. In terms of future plans, they want to complete a market analysis to identify which services the new agency can provide and develop a cost-recovery policy and sustainable business plan. The Gambia also wishes to rehabilitate the Bansang hydrological station, acquire flood forecasting software and hardware and provide training on flood modelling, forecasting and mitigation. Besides having started late, the project has other challenges to overcome. For instance there might be political limits and the lack of coordination between government stakeholders as well as the limited human capital may further impede progress

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Ben notes that this is really the beginning for the Gambia. Their project management unit was just set up last month. However, they have a business plan for their met agency and that is a reason to congratulate them. The money is all coming from the LDCF but the proposal was jointly written by UNDP and UNEP. The key point in staff sustainability is to approach the finance ministry and make it grasp the importance of the people in this field and why they should be supported.

Liberia

Kumeh Assaf points out the fact that even if all of the 11 CIRDA partner countries are LDCs, they still have different baseline contexts. In Liberia, the Ebola health crisis has been a major setback. In Liberia, there is no coordinated climate information or early warning system, the infrastructure and capacity related to weather, climate and environmental observation is currently sparse and on top of everything, human resources are scarce as well. The Hydrological Services are under the Ministry of Lands, Mines and Energy and the Met. Department is governed by the Ministry of Transport. Lastly, the National Disaster Relief Commission is under the Ministry of Foreign Affairs. Nevertheless, there are other ministries that are involved. The team in Liberia is looking forward to the finalisation of the LTA. They have discussed with the WMO about sending in experts for hydro-met services and Kumeh notes that the project might need to retain the services of a Technical Advisor on hydrology. A MoU has been signed with the Liberian Airport Authority to facilitate the setup of a National Meteorological Centre. It also covers training and equipment upgrade. An assessment of sites where hydrological equipment will be installed has been conducted. What is more, training arrangements are ongoing. For the future, Liberia wishes to put in place the infrastructure that is needed to reach end users. They also want to conduct a market study and shape their communication strategy. Last but not least, the Liberian team wants to acquire the skills to conduct vulnerability assessments and map disaster-prone areas.

Malawi

Samuel Gama mentions that the ministries/ agencies involved in the implementation of the CI/EWS project are the Office of the Vice-president via the Department of Disaster Management Affairs, the Ministry of Natural Resources, Energy and Mining via the Department of Climate Change and Met Services and the Ministry of Agriculture and Irrigation via the Department of Water Resources. They wish to finalise procurement, install the AWS that they have already procured, integrate hydro-climatic information into district development plans, improve data management and digitize met data. Moreover, they also wish to improve their knowledge about user needs and importantly, they want to organise training sessions to enhance the skills of the hydro-met personnel. Malawi mentioned several challenges that they need to overcome. Equipment, for instance, is still the victim of vandalism. Coordination between concurrent projects needs to be improved so that efforts are not doubled unnecessarily. They also have to find a better way to disseminate information because it has become apparent that illiteracy is acting as an obstacle. In addition, the frequent blackouts that they experience are putting an additional strain on the need to supply timely information. Last but not least, Malawi also notes that procurement is slow and it takes time to register progress.

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Mariatu Swaray notes that when they installed the AWS, they have involved community members to take care of the equipment and avoid vandalism. Alan mentions that, as previously discussed, vandalism can be avoided by installing the stations on towers. Malawi says that this is an area to explore and that they also need to consider the standards imposed by WMO. Georgie adds that WMO supports this kind of positioning of sensors as data will ultimately serve local communities.

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John and Boni wrap up the day and they recommend that presenters focus more on challenges for the next day.

Day 2

2.1. Reports from Strengthening National CI/EWS Projects - Continued

Chaired by Ben Larroquette, Regional Technical Advisor, UNDP-GEF.

Sierra Leone

Mariatu Swaray underlines Sierra Leone's difficult context. The recent civil war and the Ebola outbreak have significantly impacted the country: monitoring stations have all been totally or partially affected. After the declaration of the Ebola public emergency in July 2014, public gatherings have all been banned and movement across the country was restricted. Sierra Leone is in the process of transforming the met service into an agency so that they can start recovering costs. The bill is pending Cabinet approval. They are expanding their staff while also giving attention to the building of forecasting and meteorology skills. Moreover, they have been discussing with the Sierra Leone University to include a meteorology programme. The initiative is pending the approval of the Senate. Mariatu makes note of two other related and ongoing projects: the European Meteorological Satellite Reception Station, which is working in conjunction with the African Monitoring of the Environment for Sustainable

Development initiative of the Ministry for Agriculture and Food Security and the IFAD project which is installing new weather stations. Besides the challenges that have been already mentioned, Sierra Leone is also dealing with the low retention of staff, the limited in-country PPP opportunities, the weak coordination and the insufficiently skilled staff. Mariatu enumerates the areas in which CIRDA could be of help. She mentions the need for guidance to form PPPs, do procurement and deal with technical matters, the need for support in establishing a plan for the training of human resources and form south-south relationships. The plan is to transform the soon-to-be met agency into a reliable service provider.

Tanzania

Daniel Alfei mentions the ministries, departments and agencies that are involved in the implementation of the project and their role. The entities are the following: the Department of the Environment, the Disaster Management Department, the Ministry of Agriculture, Food Security and Cooperatives, the Ministry of Transportation that hosts the Met Agency and finally, the Ministry of Water. Tanzania has started developing Standard Operating Procedures for droughts and floods that highlight each partner's roles and responsibilities as well as the types of warnings, responses and communication outlets. They are also currently conducting a feasibility study on the setup of a 24-hour Emergency Operation Centre responsible for emergency preparedness and management. Tanzania then presents an informative table on the stations that they currently have, the number of those that are operational and the number of stations that they would ideally have. From their data it appears that they lack in particular AWS and Automatic Rainfall Stations. They have trained specialists on the maintenance and usage of the newly acquired AWS and they have initiated the process of developing an integrated database for hydro-climatic data. Tanzania is also working on the digitization of historical data. Daniel makes an inventory of concurrent initiatives: a World Bank project, the Southern Africa Community initiative on hydrology, the East Africa Community initiative for regions around Lake Victoria and lastly they are also receiving support from the WMO and the UK met office on data management. For the future they plan to purchase additional observation stations, servers for data storage, transmission and software for forecasting purposes. The Tanzanian team is also looking into the commercialisation of products and services for cost recovery and outreach to end users. Daniel notes that Tanzania's hydro-met observation capacity is insufficient, hydro-met products and services are unable to offer localized information and communication is poor. CIRDA's support on PPPs would be greatly appreciated.

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Malawi is interested in cross-border cooperation because the country is mainly affected by floods coming from Tanzania. Ben notes that there is a political agreement between Tanzania, Malawi and other countries around Lake Victoria. Unfortunately it is not enforced in a satisfactory manner.

Uganda

Pascal Onegiu Okello offers a detailed description of Uganda's progress against the outputs that were set out in the Project Document. He then mentions current opportunities among which there are the political support for met services, UNMA's new management team and several assessment reports that have been commissioned to inform income generating activities. The challenges that Uganda has so far encountered are operational (i.e. slow procurement) and programmatic (i.e. reluctance towards the adoption of innovative technologies and the poor visibility of UNMA). Pascal notes that the sugar corporations are particularly interested in having access to weather data. As for the future, they want to increase the density of AWS, allow for a better use of hydro-climatic data, strengthen the infrastructure needed to disseminate information and also develop products that can serve cost recovery. Lastly, Pascal asks whether mounting AWS on rooftops is an option.

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Boni asks about Pascal's experience in the Philippines. Pascal mentions that he was there with Chibesa Pensulo and Daniel Alfei and therefore he invites them to take the floor with him. The mission to the Philippines lasted for one week (5 working days). MeteoGroup and the Weather Philippines Foundation hosted them. The objective was to learn from their experience in terms of data generation for commercial purposes. Pascal notes that the country is highly disaster-prone and this has given a strong basis for private sector engagement. The technologies that they use have been adopted from Europe. It costs USD 5,000 to have a complete station and they have 750 such stations that have been installed with the support of the private sector vs. 150 stations provided by the government. The marine and aviation sectors are ready to buy more and in terms of systems, they are using modern, lean, effective systems.

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Chibesa Pensulo notes that the country has provided the evidence that lower-cost stations are as effective as the expensive stations that are being bought in Africa. She was also appreciating the Philippines' effective use of corporate social responsibility. Based on this argument, companies are enticed into funding the purchase of stations. The general public ends up having better access to data via a website that is updated hourly or even more frequently, if certain sectors demand it. We could also exploit the same argument of corporate social responsibility in Africa and support our met agencies.

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Alfei was impressed by how the met team in the Philippines was working with the Foundation. They are providing localized information and the low cost at which they are purchasing their stations is surprising. They are paying close to 15,000 USD per station in Tanzania.

Zambia

Chibesa Pensulo presents the ministries and departments that are involved in the implementation of the project: the Ministry of Transport, Works, Supply and Communications, which is governing over Zambia's Met Department, the Ministry of Mines, Energy and Water Development, the Ministry of Agriculture and Livestock, the Ministry of Finance governing over the Climate Change Secretariat, the Ministry of Lands, Natural Resources and Environmental Protection and the Disaster Management and Mitigation Unit. Chibesa mentioned that Zambia has approximately 40 AWS and 30 manual weather stations. There are plans to allow the met agency to gather funds for cost recovery. She notes that the Zambian met services are rather reactive than proactive. At the beginning of the project they have procured computers and servers. They have also conducted training sessions for the operation of the machines they bought. Several meetings have been organised to bring together project partners and other community stakeholders. In terms of PPPs, Zambia met with Airtel, Zamtel, the NICO and Madison insurance companies. They have also conducted a baseline study of households and several important companies. Zambia has just published their 1st CI/ EWS brochure and they hired a communications consultant. Regarding procurement, they have selected a supplier for manual stations and for AWS, they have an LTA that is also shared with WFP. In terms of future plans, they want to collaborate with a telecom company. They are very interested but need more support from CIRDA in this regard. Moreover, they also need support to choose among various technologies.

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Aki Kogachi asked about the task force team and its planned lifetime. Chibesa mentioned they hope it will still be active after the project.

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Question from Khalid Muwembe on M&E. Chibesa mentioned that the team does not have a clear framework in mind. She does not have the documentation yet.

São Tomé and Príncipe

Laurent-Mascar Ngoma notes that the two ministries involved in the implementation of the project: the Ministry of Infrastructure, Natural Resources and the Environment, that coordinates both the Met Institute and the Water Directorate, and the Ministry of Internal Affairs. The Met Institute is still financially dependent on the state budget, even though the institution is supposed to be financially autonomous. The Met Institute and the National Company of Aviation are preparing a protocol to define the cost of the services provided by the former party. They have two synoptic stations, seven AWS, 16 classical monitoring stations and seven rain gauges. They have conducted a national capacity assessment of the existing infrastructure, the gaps and needs related to disaster risk reduction and preparedness. Based on this assessment a set of recommendations has been issued. Fishermen and farmers are expected to benefit significantly from the implementation of the project. Coastal communities are at risk from flooding and sea encroaching. They are recommending people to move away from the coast and they managed to make them understand that this is a necessity. The tender process for the purchasing of equipment for EWS has been finalized. Laurent-Mascar mentioned that training sessions have been organised and partnerships with universities are being sought out to train the met staff. Moreover, they have also trained journalists on public and private sector issues for disaster risk management. Furthermore, they are focusing on local communities. The team is conducting training sessions to make sure that the targeted local populations are ready in case of emergencies. Regarding their future plans, they want to finalise the installation of the purchased equipment, operationalise EWS platforms and improve the infrastructure needed for emergency response. They also wish to better explore private sector and south-south cooperation opportunities. Laurent-Mascar sees the engagement of local communities as an opportunity for behavioural change.

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Alan complimenting the country team.

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Tapona Manjolo is wondering how they managed to move people away from the coast. Laurent-Mascar comments that the relocation of coastal communities was an aggressive campaign of sensitization. A communication officer has worked on this in the field for 6 months. So it was mainly because of her that this was possible. She negotiated with them in that they could keep their houses close to the coast to store their fishing equipment and produce, but that they would have to live in a location away from the coast. Liberia shares their own experience in terms of relocation and notes the difficulty. They also point to the fact that there was no allocation in the Project Document to compensate people for moving and therefore they had to go to government authorities for funds.

2.2. Panel Discussion to Recap Common Themes, Challenges and Possible Synergies

John is impressed by the significant effort, however he notes that communication/actions are mainly top-down. This programme's purpose is to provide information, early warnings to users which are not just private sector stakeholders but also, most importantly, the people who are directly impacted by hydro-climatic events. Based on the presentations, John learned that governments have already tried to investigate the needs of the vulnerable people (the bottom). The needs that have been identified at the bottom should determine the activities of the projects and where to deploy our scarce resources. Think about the bottom, who is actually going out there to talk to people and do surveys? The climate could care less about geopolitical boundaries. Pretty good discussion on floods being transboundary. We have to seek more regional cooperation. There are some treaties but others have to be built after you have consulted with the end users and people at the bottom. We had many discussions on sustainability. Many of you underestimate how difficult this will be. Business plans are of utmost importance. A good business plan, whether or not your government allows you to recover costs, will help you get your strategy clear.

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Georgie notes that you have to make sure that your data is credible and that the information will be of use. Pressure from local communities has so far driven met agencies to do better. How can you make sure that you are getting the right data? Collecting and storing data is not enough. You have to compile information that will be of use. Then, how do you keep the people that you have trained?

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Ngamini adds that some met services are going through the modification of their status. The problem is how you are going to finance the authority. When you are under the government umbrella, it is difficult to go out and collect the funds. Just more thought on that is needed.

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Alan asked the participant countries about how much they have interacted. Not much initially, but Alan is happy that the situation has changed. When you talk about the private sector, you actually talk about sustainability. He wonders about the usefulness of rehabilitating the existing stations. Why should we expect that the stations will actually work after rehabilitation? We are not advocates for cell phone towers; it is just that we have seen it as a good solution. It offers security, power and communication. If you have other solutions for these three problems, then we are opened. There is a synergy between innovation and the possibility for business applications. The tight relationship between technologies and business opportunities has not been stressed enough. Localized info vs. systems for synoptic stations. You have to be generating information that is timely and spatially relevant so that you serve the purpose of early warnings. When we met with the private sector in Uganda, Alan got the impression that for them it was quite trivial what the CI/EWS projects needed in terms of communication. It is one thing to inform the private sector and another to go forward and say that you want to work with a company and relate your needs with theirs and find solutions for that. Of course, new skills will be needed to further PPPs. Having a business plan will lead to knowing what staff we need and what sort of training. A few observations: large companies are more opened to social responsibility. Foreign companies are perhaps even more interested in maintaining their image. This element is perfectly appropriate for you to take out during conversations. Finally, reference to some news piece about the UK met office. In Liberia and Sierra Leone, as you are forced into reconstruction, the building of your observation network almost from scratch should be seen as more of an opportunity than a burden.

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Boni is impressed by the progress and commitment of CIRDA's partner countries. The commitment is tangible and this is the base for success. Between the lines, a few common issues have been signalled: the need for capacity building, the insufficient national AWS coverage and the poor communication facilities. Moreover, there appears to

be a disconnection between those who wish to solve the problem and those who hold the data. You have to convince me that I am wrong when I say that you are isolated from reality and that you are not concerned about vulnerable people. Climate change does not discriminate and LDCs will be particularly affected. If you mount your station on a tower, the data will not be used for synoptic purposes but it will hugely help those needing information for adaptation purposes. This project has all the conditions to succeed. We have the funds, capacity and commitment, but we get lost into many little details.

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Aki Kogachi comments that the PowerPoint presentations could have served the purpose of the workshop better. We could have focused more on processes, the implication of local communities and business plans. Burkina Faso is going through decentralisation and the community will eventually be better involved. You said that there is too much of a top down approach, nevertheless, we are actually having a bottom-up approach as well. It just did not come out from the PowerPoint presentations.

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Pascal Okello Onegiu comments on the top-down approach. He thinks that at this point in the life of the project, this top-down approach is somewhat acceptable as we are just consulting on equipment specifications. He needs some clarification on the LTA as far as capacity building is regarded. Pascal to Alan on the issue of rehabilitating weather stations and the value that comes out of it. Pascal makes a note on the need for consistent historical data, which is the reason why Uganda wants to rehabilitate its existent stations. For instance, historical data is key for the weather index-based insurance. If we do not keep them, then we will have data gaps. As for corporate social responsibility, a sugar company requested UNMA to make a presentation. Pascal tells Boni that he is a disciple of saving lives.

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Georgie mentions to Pascal that the LTA will work as a shopping list that you can pick and choose from, including capacity building.

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Khalid Muwembe agrees with Boni. One has to bear in mind that adaptation relies on timely and good data. When you look at met services in LDCs, you realise that the infrastructure is insufficient for that purpose. We know that this sort of project will help. Uganda requires 240 stations minimum. Then, there is the issue of forecasting. We know very well it depends on past and present data. Because the infrastructure is so bad, we want to use this project to build it so that we can get the data. Then moving on to innovation.

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John echoes what Alan said. It is not our goal to rehabilitate existing stations. If those sites that you have will help the CI/EWS project, then fine. If not, we need to look elsewhere. The provision of early warnings and climate information is the objective of CIRDA. The pressure for credible information has become very strong. That is exactly the reason why we are seeing novel experiments. If we just rehabilitate equipment, at the end of the day, is there anything going to be different?

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Alan to Pascal on the weather index-based insurance. You should be developing this sort of initiative where the farmers are, whether you have the historical data or not. I have talked with a number of insurance companies and they are, in fact, involved in finding new data sets. I do not understand why you would be looking at sites that have historical data, unless they are also where the vulnerable people are located. In my view, there will be instances when attempting to respond to the needs of the vulnerable will not match business opportunities. However, it is hard to believe that international agencies or companies will find it more efficient to work it out on their own rather than working in collaboration with met agencies. Alan notes that we are not the project that will provide you with 240 stations. The number of stations we provide will only cover your needs in part. We are on the same page but I am drawing a slightly different conclusion. I believe that improving outreach and business involvement, may get you more stations in the long term than CIRDA can possibly offer you anyway.

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The localisation of stations should serve business needs. The fear of change is significant. Kumeh Assaf mentions that there should be a balance between traditional and modern technologies in order to alleviate our fears.

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Jennifer Tushabe Kiiza comments that one of the challenges related to PPPs is that of packaging the information. Maybe Greg can help us with that. About the Philippines lower cost stations, can we include their provider in the LTAs?

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São Tomé and Príncipe has a few points to make on meeting the needs of end users. Is it not the time to reflect on what we have done so far and see if there is a need to address additional aspects? The issues we are facing might be associated to the design of the project which was agreed upon before we consulted with end users. As we are entering the second year of implementation, we could look at it again and this time involve stakeholders and end users. Maybe there are things that we can change to foster results. Bottom-up approach, what can we do to have the participation of the end user? Is it not the time as well to ask each country to go back and look at the project logical framework? What sort of changes are the CIRDA partner countries expecting to see at the end of the project? Maybe good exercise for each country to refresh their minds about the project. We are expecting the LTA and then we can move on. Maybe time to reflect on the specifics of each country and their own individualized theory of change.

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Ethiopia believes it is very premature to talk about whether this project has transformed anything. Nevertheless, he is optimistic in this concern.

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Mark mentions the critical thing is operations, building human resources, getting the budgets to incorporate certain necessary costs.

2.3. Design Philosophy behind the new CIRDA LTA

John mentions several procurement challenges among which the lack of capacity to independently provide neutral technical specifications and connect requests with project outcomes and outputs. Moreover, there is a narrow focus on the speed of spending money rather than the ultimate project goals. In addition to that, there is also too much energy spent on hardware and AWS with little view toward the ultimate system use or data integration. CIRDA wants to maximize to the extent possible regional programmatic consistency, increase purchasing power and obtain economies of scale, enable ease of procurement execution, enable comprehensive solutions while also allowing for individual solution components and last but not least, minimize operational risk through the acquisition of functional end to end systems. Focus to date has been on meteorology. Hydrology focus coming soon. The plan is to have an LTA for hydrology as well. John then mentions two procurement modalities as far as LTAs are regarded. Lastly, John talks about the organisation of the forecasting process. A variety of inputs, quality assurance and control.

2.4. Support in the Procurement of Equipment and Services

Introduction to an LTA and Procurement Support for CIRDA, Procurement Support Unit, UN- BoM

The presentation was done by Mettelena Herring and Joaquin Albiach, BoM - PSO. How and when to use LTAs? Mettelena mentions that the lifespan of LTAs is of 3 years, in general, but for CIRDA they could get it up to 5 years. An LTA makes the procurement process simpler in terms of resources and the time needed for delivery. Once the LTA has been established, procurement can be done directly. An RFP covers the element of services as well. We wanted to procure services and goods at the same time. It was a challenge for them to argue that services were also an important component, besides the goods. Otherwise an ITB would have been imposed. There are two LTAs soon to be agreed on and then we can also use the ADCON LTA from WFP. Zambia and Burkina Faso are currently using the ADCON LTA. In terms of accessing and utilising an LTA, when there are several LTA holders, one has to go through an LTA secondary bidding which is a very simplified procedure that focuses on the financial offer and delivery time. Mettelena presents the steps of the secondary bidding process. Joaquin talks about the distribution of responsibilities, advantages and disadvantages of LTAs. Moreover, he notes a few lessons that came out of previous processes. You have to develop very clear and detailed specifications that convey the exact equipment requirements, otherwise you might have to deal with protesting vendors. You also need to develop a more detailed specifications list to allow bidders to submit comparable offers. Lastly, pay attention to warranty conditions.

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Pascal Okello Onegiu asks about the secondary bidding process. Mettelena mentions that the PSO will definitely help with that. Secondary bidding only takes a few days, maximum 2 weeks.

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Mettelena/ Joaquin confirmed that the PSO only assists and guides the procurement process. In the case of CIRDA, the Country Offices are the ones issuing the procurement order and then conducting procurement.

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Uganda asks what kind of assistance the PSO will provide to Country Offices. Ben mentions that you can still outsource procurement to the PSO against a fee. The question is do you have the capacity to do in-house procurement? If not, just outsource it. Liberia is interested in outsourcing their procurement process. Mettelena can definitely conduct procurement for you but bear in mind that with LTAs, things will be easier.

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Mettelena recommends Tanzania that if they already have a supplier in mind, then direct contracting with strong recommendation is better than having a competitive bidding.

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John recommends an engineer as well as a technician to support the writing of specifications. There is a fine line between minor and major deviations when bidding. Mettelena adds that you can piggyback on someone else's tender process but you have to make sure that your requirements are the same.

Zambia's Experience Working with an LTA for Hydro-met Equipment

They found out about the ADCON LTA only after they had already purchased from them and when they expressed their interest to continue buying from them. Before ADCON, they were buying from Delta T, but their AWS had no remote telemetry units. ADCON was able to offer that. Upon purchasing AWS from ADCON, the supplier can also offer training, installation, monitoring and real-time data display on Google Earth.

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Joost asks if there are differences in ADCON prices with and without an LTA. Mettelena says that prices should be lower but she does not know the exact numbers. Mettelena and Boni emphasize that LTAs are just a recommendation. You can go through a tender process if you wish. LTAs are not imposed. It is up to the countries to decide.

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Uganda is also saying that they would be interested to outsource procurement and they ask if CIRDA would be able to cover the fee. Boni does not have an exact answer to that; donors wanted to encourage procurement by the bulk in order to get discounts.

2.5. Country Clinics with CIRDA Experts

Team #1: Allan Miller and Joost Hoedjes

Discussion with Burkina Faso

Are there any obligations for companies to pass on early warnings? Aki says no, that is not the case. Moreover, there is no budget to send early earnings. It depends on the willingness of the telecom companies to do it. It worked out on one instance. Alan mentions that the private sector is quite often very sceptical of data quality. It would help if there was a regulator. In Burkina Faso we found that if we presented this as an issue of corporate social responsibility and international good practice, then we typically got positive reactions. Recommendation to have one of the ministries communicate to telecom companies and stress the fact that for a long-term relationship between Airtel and Burkina Faso, it is best if they collaborated. One option would be to invite people from Airtel's regional Office in Nairobi to discuss collaboration in Burkina Faso. As Aki said, we have to go up the food chain (i.e. go to the regional offices of private companies). We could persuade telecom providers by saying that we have a significant number of CIRDA partner countries ready to initiate collaboration. This is where CIRDA has value added. Raise the level and make a bigger Africa conversation. Aki mentions that when they were meeting with companies and they invoked business collaboration, they were not very excited. They were much more interested when we were talking about value added services. Discussion on the applications that the telecom companies do not develop but use. If one company gets one application, then the others might see it as a missed opportunity and therefore act by including it. Alan reminded of the 3-2-1 message, emphasized the advantages and the fact that the service was free and helping the telecom improving its retention rate. Alan mentioned that HNI, who attended the Kampala workshop, might be invited again.

Discussion with the Gambia

Almamy Camara mentions that the met office has been working with the aviation sector for a while and they are now planning to meet other private-sector stakeholders to better understand their needs. Alan is curious to know more about their relationship with the aviation sector. They have a letter of agreement with the aviation sector but it does not specify cost recovery. Joost notices a parallel between Uganda and Gambia in terms of agreements between their met agencies and the aviation sector. Gambia knows the exact cost of the services they provide to the

aviation sector. The met office asked them to cover that cost, but aviation refused after they checked the act of the met office and noticed that they cannot do cost recovery. Aviation wondered how it would have been possible for them to explain their auditors the payments to the met office. Joost mentioned that in the case of Uganda, it was possible to do the payment via the Ministry of Finance to avoid issues. In Gambia there are one public and three private providers of telecom services. In case of emergencies, they send the early warning to the Disaster Management Department, which gets in contact with GSM companies to send the message. The agricultural sector might also offer some opportunities.

Team #2: John Snow and Ulrich Diasso

Discussion with Tanzania

Talk about building an integrated database and have a protocol in terms of data format, transmission and storage. John gives the example of NETCDF which allows to move between very different types of data in a common format. Alfei mentioned that they have been discussing with CIRDA the issue of data digitisation. They have their archives but they want to store the data electronically as well. John mentions Mark Tadross as a contact on matters related to data archiving and digitisation. The problem with data archiving is that lots of people are doing this but in different formats. If you have a good historical database, then you can make use of many forecasting tools. As we move into 2016 we are going to talk more about what we can do with the data once we have collected it. Ulrich discusses some software options for what Tanzania needs. Also an expert should be sent to Tanzania.

Discussion with the Gambia

Gambia opens a discussion on airfield products, but John mentions that CIRDA is not in the business of supporting airfield products. CIRDA would rather spend funds on EWS and adopt a direction that directly supports EWS. Gambia's argument is that the approach they propose serves the collection of data which in turn supports EWS. John believes that this type of equipment, although there is nothing wrong with it, will not serve EWS and CIRDA is not about this.

Team #3: Georgie George and Jean Ngamini

Discussion with Sierra Leone

The focus of the discussion was to establish the ability of the LTA to acquire the necessary observation infrastructure and services. There is a distinct lack of skills in the local met agency. There are currently only six people in the national met service, which has a long history with UKMO. UKMO has also developed a business plan outlining the needs and development plans of the met service. Sierra Leone would ideally like a contract with UKMO for the provision of forecasting services. The procurement of this will be difficult as they would have to argue to the PSO in favour of a direct contracting of the service. Sierra Leone has a requirement to re-establish the current conditions network (CCN). The challenge they face is if it would be possible to integrate the information from the ADCON LTA and new LTAs into the UKMO system. It is outside the scope of the CIRDA team to recommend which agency to partner with. Sierra Leone prefers to collaborate with UKMO due to their long standing relationship and understanding of the local conditions and practices. CIRDA technical team will review the UKMO-developed business plan and the technical requirements for the current conditions network to see if it will address the needs of the met service. A country mission can be set up pending the outcomes of the review.

Discussion with Burkina Faso

Their met services are having difficulties getting their budget approved by the National Treasury. Since they are under the Ministry of Transport they find it difficult to argue in favour of adding the provision of disaster management services to their budget. Burkina Faso wanted to discuss some of the strategies used by other partner countries to increase their budgets. The met services have no strategy or business plan guiding their operations. A pilot project for weather index-based insurance is in the process of being launched. The preliminary indication for the premiums in the programme is around USD 8 per annum. This is considered quite high as the average household is living on less than USD 1 a day. There is concern that the programme will not be sustainable since there are huge gaps in surface observation data. Satellite data is being used to support the index insurance programme. The CIRDA team suggests that the met service develops an organisational strategy and business plan for the next five years. A lot of this information is already available, but is fragmented. CIRDA can assist in reviewing the goals and requirements of the met service and make some suggestions on the use of technology to realise their goals. CIRDA can also possibly provide guidance on cost recovery and commercial programmes.

Discussion with Uganda

UNMA initially requested to purchase just the standard surface observation network. The initial agreement in the previous week's mission was to have a split between the standard surface observation network (20) and the innovative tower-based observation and early warning systems (10). The database management system is currently under development by the National University and the Automatic Message Switching System (AMSS) procurement is being finalised. It was pointed out that these two initiatives are a fragmented approach as the overall system integration was not considered. A suggestion was made to consider a full turnkey installation that would address the surface observation and current conditions network, the early warning systems, database management and the forecasting system. The AMSS could still be utilised at it would be used to transmit messages to the right services. CIRDA would still like to look at this equipment to see if it would be redundant to the services of the LTA. The programme with the University could still be supported as a research project. Data from the network could be fed to this system to be used as a backup and research system. CIRDA will assist in drafting a user requirement for UNMA to consider the design of the elements described above.

Day 3

3.1. Looking Forward beyond Installation of Instrumentation and the Acquisition of Data

Boni invites the CIRDA experts to briefly talk about the next year. Georgie brings up the website of Weather Philippines (weather.com.ph) to show the fairly good station spread. We should aspire to that. Joost mentions that hydrology has been left a bit behind. Focus on the LTA. Catch up on this topic. We have to integrate the met with the hydro information. Boni agrees that hydro-related matters have been previously neglected. John comments that hardware is just a means to an end. It is important that we shift attention from procurement to forecasting tools and the dissemination of information. The "last mile" is a significant problem for Africa. Looking for appropriate nowcasting and forecasting tools, i.e. the COSMO model.

Greg mentions the importance of listening before packaging the information. You need to know your end users intimately. A policy maker will need a very different message than a pastoralist, fisherman or farmer. We need to find national communication consultants, train journalists and work on a toolkit about building communication strategies. A need for country specific advocacy, which is different than just sharing info directly with the end user. We are working on a publication regarding PPPs, separate than the market study, and we are also creating individual country studies. CIRDA needs to improve our ability to listen.

Boni notes that Ban Ki-moon has previously underlined the importance of data for climate change resilience. The private sector is needed and it is key to ensuring financial sustainability. The 11 CI/EWS projects are doing pioneer work which is also highly relevant to the UN system at large. Alan understands the sort of problems that come up when trying to collaborate with the private sector or with government bodies. Our position as CIRDA, as a UNDP programme, gives us some leverage to raise the appreciation of stakeholders.

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Maritu Swaray brings up the gender component of the projects. What is the best gender friendly approach to the implementation of the projects? Greg mentions a possible engagement with UNWomen.

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Khalid Muwembe to Georgie: the Philippines example was very interesting and he would be delighted to have this in Uganda. He notes some issues about configuration. To John: how do we make sure that the vulnerable communities get the right advice? We need to have multi-stakeholder involvement: disaster and met presence to issue early warnings and ensure appropriate responses.

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Liberia wonders whether CIRDA started thinking about telecom companies in West Africa and how to choose between various companies. Georgie mentioned that CIRDA has engaged with companies from all West African CIRDA countries. Joost notes that in the particular case of Burkina Faso, they found it very difficult to engage with the national telecom company.

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Mariatu is interested in shaping lessons learned and implementing them in other countries. Greg mentions that CIRDA could produce a weekly update on projects so that a dialogue is created. He also talks about the CIRDA blog (http://undp-cirda.blogspot.com) and the website where one can find the PowerPoint presentations (http://www.undp-alm.org/projects/cirda/meetings-and-workshops).

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A longer list of LTAs could serve the project better. Uganda does not have clear information on who has done what already. Moreover, it would be useful if CIRDA could come up with some template for an agreement that can be done between met agencies and private sector companies.

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John mentions that in the case of hydro-met agencies, that are only somewhat independent, one of the models that appears to work is the one in which these agencies have a publicly charted entity supporting them in terms of private sector interactions. This entity would act as an interface and in turn, it would provide finances back to the met services.

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Joost tells Onesimus that on the WMO website there are many MoU templates that can be used by the met services. Alan adds that besides the WMO, there is also the WB PPP reference workbook. Alan could also contact former IFC colleagues in Nairobi but only if there is explicit interest from the CIRDA country projects.

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Jennifer Tushabe Kiiza mentions that in Uganda they have stations with equipment that is not in use. This is because of a combination of factors: lack of funds and scarce human resources to maintain the equipment. We might need CIRDA experts to help with a maintenance plan. Pascal agrees that we should move on from hardware-related matters and focus more on using the information we collect. Uganda will need support to meet with private companies and deal with nondisclosure agreements. It is not clear which entity takes responsibility to sign contracts.

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For Benin, 2016 and 2017 are very important because development-related public policies are being revised. So this is a great opportunity to emphasize the importance of climate information. They need assistance to choose what kind of software and technologies should be used to package information. Is there going to be guidance on this? Moreover, they need capacity building for data management.

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Daniel Alfei notes that Tanzania has a pile of info from the last couple of decades. However, it is not digitised. Their government is not giving enough money to the met services and there is an acute need to get funds from PPPs. Weather index-based insurance would be useful.

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São Tomé and Príncipe talks about appropriation and sustainability. Appropriation in the sense that we need to know the end user and the institutions offering support to manage the equipment and deliver services. It is important to have all systems operating next year. Train people to analyse and maintain systems. Sustainability in the sense that after the early waring network becomes operational, it is important to have visits from the regional team to help on sustainability issues.

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Zambia notes that they really lack a good EWS. They have more of a disaster coping presence. Once they will have the equipment in place it will get much better. A major concern is that they need to craft reactions to short- and medium-term installing disasters. Creating shelter areas? What is our advice to the various sectors? We need CIRDA to support us in this concern.

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Ethiopia mentions that training and PPPs are needed and timely. Issues of sustainability after the CIRDA project ends. He asks about the possibility to have a second phase of this project.

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Abbas notes that we need to publicise project achievements. How do we do that?

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Burkina Faso suggests that in preparation for the Lusaka workshop, we could mobilise the headquarters of telecom companies. They wonder if any country is successfully receiving data from other countries. Burkina Faso is also reforming public policies and this is a great opportunity to emphasize the importance of climate information.

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Gambia needs training and capacity building. They wish to develop their own website and they are looking forward to CIRDA's support and field visits.

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Malawi underlines the need to finalise the installation of the equipment and notes the insufficiency of stations. Moreover, there are cross-boundary issues regarding cooperation that need to be addressed.

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Joost says that 2016 is the year of communication and hydrology since these two components have been previously neglected. Boni underlines the importance of operations and maintenance, digitization and software packaging. Most of the innovative technologies are easier to operate and maintain. On top of that they may be even cheaper. We have to be opened to innovation. Boni encourages everyone to put requests in writing and CIRDA will use the ideas to shape the workshop in Lusaka.

3.2. Covering the Last Mile

Anthony mentions that it is important to understand the context and the relationships between stakeholders. Why do certain relationships exist and how are they maintained? This helps to get an idea of what conditions need to be in place for the optimal operation of NHMS. He talks about the value chain of climate services and about traditional and non-traditional ways of disseminating information. He gives statistics and concrete examples of ways to cover the last mile.

3.3. Planning for the Workshop in Lusaka

The workshop will be about the last mile and reaching end users. A couple of proposals: 10-12 or 17-19 of November.

Location: Lusaka/ Livingstone (maybe study tour). However, participants felt strongly about postponing the next workshop to January, 2016. Boni concluded that discussions seem to point to the second half of January. Also, some preference was expressed for Lusaka as opposed to Livingstone. No final decision.

3.4. Country Clinics with CIRDA Experts

Team #1.1.: Alan Miller

Discussion with Zambia and Uganda

In Zambia the met office is purely public and it cannot recover costs. What are the opportunities for them in this case? Second, nobody in the team has the skills to approach the private sector. What can we do about that? Alan mentions that you have to make people more aware of what is possible. We recognized from the beginning that this would be an awareness raising process and that it is going to take time. Given the Zambian context, Alan has a few suggestions: engage more with other ministries and innovative NGOs like HNI and talk to companies like Airtel and exploit the social responsibility aspect. Chibesa said that if we were to go the Ministry of Finance, they would certainly be very interested. We do not have a business plan and we do not have the capacity to create one. They had a partnership with another ministry but it was unsuccessful. Alan suggests that they develop a business plan for starters, with support of course. Considering that Chibesa was happy with the Philippines experience, Alan also suggests Korea as another lesson to be checked out.

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Uganda is currently going into the oil production business and Pascal was wondering if there are any opportunities for the met office in this regard.

Team #1.2.: Joost Hoedjes

Discussion with Uganda

They have governance-related problems. Discussion about a supplier in particular, CEBA, whose quoted price was high. Joost gives the example of Burkina Faso regarding hydro specs and mentions that Uganda could also make use of the same specs. Uganda is concerned about dictating what to procure to partners. The hydro network has funding. A good system is in place. 40 additional stations are needed and some of the existing ones need rehabilitation. We also need approximately 290 additional gauges.

Discussion with Tanzania

They want to use the newly generated data, integrate it with historic data and provide maps. They need support on choosing the software for maps and training to learn how to do forecasting maps. Tanzania is also interested in having CIRDA experts inspect sites and equipment and advise on ways to use information. Joost mentions the hydro LTA which will be modular as the met LTA. Joost notes that Tanzania is advanced with its met stations: by the end of September procurement will be finalised and by the end of December, they will add another 20 AWS. Tanzania has more than two decades of data on paper. Joost explained the met LTA to Tanzania. Tanzania has installed 10 hydro stations and some automatic rain gauges. Tanzania is asking whether they should wait for the LTA. More likely they will do procurement directly. Joost says it is better to go with direct procurement and then LTA. Tanzania will share their specs with Joost so that he can review them. In terms of software, in case one opts for direct purchasing, training and support will not be included. LTAs will include that.

Team #2: John Snow and Ulrich Diasso

Discussion with Uganda

Discussion on the LTA. Right now the LTA for ADCON offers sensors, telecom components and base stations. John asks Uganda whether they had any experience working with lightning data. It is cost efficient. Radars are very hard to maintain and they are also expensive. Discussion on configuration. John mentions that both Burkina Faso and Zambia have been satisfied with ADCON. Very different conditions and yet the ADCON equipment has worked well; i.e. humid vs. dry environments. Encouragement to connect with universities in terms of technologies. They can get things better adapted to their needs.

Team #3: Georgie George and Jean Ngamini

Discussion with the Gambia

The met service wants to establish a EWS network. A commercial provider quoted them a price of USD 100,000 per year for a single sensor. This was presented to the project steering committee who felt that the costs were too high. A decision was then made to rather install more surface observation systems. CIRDA advised to review the requirement for the EWS under the original project requirements. The costs will be negotiated under the LTA to provide a better option. A request was made for CIRDA to assist with developing the specifications for an upper air/ a pilot sounding for upper air observations. It is understood that the CIRDA programme will not cover the costs of the procurement of the upper air observation equipment. Some of the software provided under the WMO agreements is limited in operation. A request was made for CRIDA to assist in the review of these agreements with WMO. It still has to be determined if it is within the scope of the CIRDA project team to participate in these investigations. There is a requirement to purchase seven AWS under the LTA. The Gambia has identified seven possible placement sites. A site assessment still has to be completed to determine if these sites meet the minimum requirements for security, power and communications. The CIRDA team will review the original requirements for the Gambia under the project deliverables. A user requirements statement should be drawn up and provided to the two companies under the LTA as well as ADCON.

Discussion with Liberia

There is a need to build a complete met service from scratch. Most of the resources of the met department are in disrepair. The original requirement called for 11 synoptic stations. Liberia recognises that this is not feasible as they have challenges related to security, power and communications at most of the identified sites. They would like to implement a full turnkey solution with the majority of the equipment deployed to tower installations and at least one installation at the airport where the new met service is located. The CIRDA team will review the original requirements for Liberia under the project deliverables. A user requirements statement should be drawn up and provided to the two companies under the LTA as well as ADCON. A country mission may be required to determine the operational requirements of the met service.

Discussion with Benin

The met service has purchased: 20 AWS, 25 hydrological stations, five ocean stations. They have not purchased: installation, training, servers and software for data storage, forecasting and EWS. The met service has drafted a ToR for the procurement of the missing components listed above. The CIRDA team has requested information on the type of equipment purchased to see if the data can be integrated into the systems provided under the new LTA.

3.5. Closing remarks

Boni notes that there will be boots on the ground. Work in progress, we can change, add, etc. Be very blunt when you disagree so that we can improve results. Ababu Anage appreciated the workshop because it met his expectations. Anthony encourages everyone to think about who should be interviewed for the market study. Mark mentions that we still have a lot of work ahead of us in terms of reaching end users. Alan underlines the need to turn raw data into information. Huge payoff when we will manage to inform the fishermen, farmers and school children, among others.

Workshop Evaluation

A number of 23 participants have filled in the Workshop Evaluation. Most of them have replied to all of the questions, however, there were a few exceptions. This was taken into consideration for computations. 74% of the participants felt that the workshop met their objectives. The remainder of 26% evaluated that some of their objectives have been met. Moreover, 87% of the participants agreed that the workshop was very relevant to their position and 83% considered the content of the workshop very helpful. Nobody felt strongly displeased with any of the aspects that have been evaluated. In terms of improving the format of the workshop, some of the participants have suggested an increased number of study cases, a better presentation of success stories and lessons learned, the preparation of project posters in advance of the workshop to be discussed during breaks, the inclusion of field visits and perhaps seek input from country offices when workshop agendas are being established. Also, there were a few participants who felt that more time was needed for country clinics, panel debates and mixed country discussions.

Most of the participants felt that the 11 country presentations have been the most useful part of the workshop. In order of preference, this session was followed by the Last Mile Presentation and the Panel Looking beyond Installation of Instrumentation and the Acquisition of Data.