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**Chapter 1 Introduction**

This report summaries the work programme, objectives, benefits, knowledge gained, and positive impact on the institution (ACMAD) during the six months of the attachment period 1st November 2012 to 30th April, 2013 by Mr Tombong Komma (Principal Computer Operator Department of Water Resources, Banjul, The Gambia) attached to ACMAD under the Computing and Telecommunication Department (CTD) in Niamey, Niger.

 Starting with an outline of ACMAD’s strategy in the context of this attachment, the report continues with a summary of the objectives of the attachment together with the work programme which was developed to meet these objectives, the benefits of the attachment to ACMAD and how useful lessons learned during the attachment period would be put to good use by the personal attached at the end of attachment and recommendations.

**1.1 Background**

The centre’s motto is to contribute to the sustainable development of Africa by providing weather and climate information at continental, sub regional and national scale. In order to achieve this, there must be continuous strive to develop and expand the in-house expertise and capabilities in the field of technology. Accordingly, putting into consideration the scientific and technological advancements in this area of technology, in particular the work of the many research groups throughout Africa who are at the forefront of this field. A key area of application of this technology is within the Application of Meteorological information in early warning in real time and it is also necessary to increase the awareness and understanding of this area.

However, it was only with the financial support of ACMAD through the ClimDevAfrica program designed by African Union with the financial support of African Development Bank that this very attachment was made possible.

**1.2 Objectives**

For the Implementation of the project ISACIP, ACMAD put in place program of activities for strengthening human resource capacity of National Meteorological and Hydrological Services (NMHSs), their parent institutions and users of the climate information.

A collaboration (contribution and support) from member countries of NMHSs to ACMAD in the implementation of project activities led to the signing of memorandum of understanding between The Director General of ACMAD and Director of Department of Water Resources, Banjul, The Gambia for an extension of six months effective 1st November 2012 to 30th April 2013 at the end of the first term which was19th March 2012 to April to 18th September 2012 on availability to ACMAD human resources on attachment for the contribution to Information Communication Technological needs.

**Chapter 2: - Description of the establishment of attachment Objectives of establishment**

ACMAD’s mission is the provision of weather and climate information and for the promotion of sustainable development of Africa (notably within the context of national strategies for poverty eradication), in the fields of agriculture, water resources, health, public safety and renewable energy.

ACMAD carries out its mission through; capacity-building for the 53 National Meteorological Services (NMSs) of its Member States, in weather prediction, climate monitoring (extreme events…), transfer of technology (telecommunications, computing and rural communication).

Moreover, ACMAD encourages the NMSs to prepare strategic development plans which integrate new African initiatives (NEPAD, regional integration) and the socio-economic conditions related to the changing global environment (post Rio Conventions, Kyoto Protocol).

* to achieve its objectives, ACMAD:
* prepares and disseminates products and services;
* ensures development and transfer of tools and technology to NMHSs;
* monitors communications with users notably in rural communities;
* networks with NMHSs and regional development aid institutions;
* provides a window to technology partners, under conditions which are typical of the African situation;
* supplements Member States’ and partners contributions through a Resource Mobilisation policy;
* is a «nursery» for sustainable development of Africa;
* for ACMAD, climate and the environment are resources for development;

**2.1 Location and Brief history of establishment**

ACMAD is the Weather and Climate Centre with African continental competence. It was created in 1987 by the Conference of Ministers of the United Nations Economic Commission for Africa (UNECA) and the World Meteorological Organisation (WMO). ACMAD has been operational in Niamey since 1992. ACMAD is composed of 53 Member States, the 53 countries of "Africa" continent. To ensure its mission, ACMAD functions primarily with meteorologists detached by its Members States.

**2.2 Organizational structure (including organogram)**

The Centre is managed by a Board of governors composed of 12 Member States and a General Directorate assisted by a Scientific Advisory Committee, SACOM, created in 1996. It defines the scientific and technical orientation of the Centre.

ACMAD is run by a limited number of staff. The staff establishment may reach 30 persons or more according to the number of personnel on attachment from National Meteorological Services and those on the-Job training programmes.

**2.3 Organogram of ACMAD**

 Board of Governors

 Scientific Advisory Committee

 Director General

 Deputy Director General

Department of Department of Department of

Climate & Environment Telecommunication & Weather Watch & Computing Prediction.

 Finance & Administration

Human Resources Finance Secretariat

Vigirisc Project ISACIP Project

**2.4 The various departments/units in the establishment**

ACMAD is composed of Administration and Finance which is composed of three units, Human Resources, Finance and Secretariat. There are three main departments which are Department of Telecommunication and Computing, Department of Climate and Environment (DCE), Department of Weather Watch and prediction (DWWP). There are two projects vis. ISACIP and Vigirisc

**Chapter 3 :- Report on work actually carried out**

**3.1 Work Programme**

**See the program of contract signed**

**3.2 Contribution to Deployment of New Equipment Acquired by**

 **ISACIP Project and Configuration**

The project ISACIP purchased Xerox copier, I was nominated to be among those who attended the training on installation and configuration done by the personnel of the supplier of the equipment.

Installation of the equipment was done by the technician of the supplier institution BUROPA, he demonstrated on various components of the equipment and advice us not to go into the user interface e.g. in inserting IP address and internal configurations, according to him if the need arise they are to be contacted. The IP address allocated to the equipment was 192.168.2.200.

For user security reasons, we were shown how to configure different user accounts by the following steps:

* Scan
* Create Folder
* Under Folder Name (give the desired name)
* Under Password (give the desired password)
* Under Confirm Password retype the same password
* Apply

He also demonstrated how to scan as follows:

* Home
* Scan
* User Name (give the name created in the user account)
* Password (give the password created in the user account)
* Save
* Press on the Copy button (The Green button)

Remotely how to configure workgroup computers for access to the Xerox copier for printing through Local Area Network was as follows:

* Add Printer
* Add a local printer
* Create a new port
* Standard TCP/IP port
* Hostname or IP Address: 192.168.2.200
* Next
* Printer name Xerox workcentre 5745 pcl
* Next
* Share
* Next

The technician at the end of the training highly recommended the equipment be used on voltage stabilizer for voltage fluctuation may cause damage to the equipment.

Under the project ISACIP eight new laptops were acquired with one year license Bitdefender antivirus installed by the supplier. I was assign to check if the antiviruses were updated in all of them. After going through them, three were found not updated, I therefore updated them accordingly.

The Assistant to the ISACIP Project Coordinator Mme. Amina had some problem accessing the internet through wireless connection on the new laptop supplied to her due to problem of distance. I configured her laptop on LAN with a static IP address.

A consultant hired by ACMAD on Monitoring and Evaluation was given one of the new laptops with the operating system in English. I configured keyboard language for him into French as follows:

* Start
* Control Panel
* Language and Regional Settings
* Regional and Language Settings
* Keyboard and Language
* Change Keyboard
* Add
* Choose French fr from the list
* Click on ok

I also configured the laptop on LAN with a static IP address.

The Secretary to the Director General of ACMAD was supplied with one of the new desktop computers, Eudora 7.0 was installed and the database for Eudora was transferred into the new computer for the official e-mail of ACMAD.

I assisted Mrs. Abbas in the installation of the ten new desktop computers purchase under ISACIP project.

The laptop of Mr. Wade, after received from the supplier after they looked at the problem on it, it was found that they restored it to an earlier date which removed the Microsoft office, antivirus and other application softwares. I assisted in the re-installation of all the necessary application softwares.

I installed and configure skype for the Director General of ACMAD in his new laptop

**3.3 Database Activities**

As part of construction of a Climsoft database, data is harvested from the Eumetcast Retim reception station installed in the equipment room of Computing and Telecommunication Department on Messir Vision. I was given the task for the upkeep of this equipment and daily backup of the data.

This is a very old equipment and due to low memory problem quite often this equipment fails to capture reception, anytime this is noticed the Messir com and Messir Vision are restarted, for Messir com the operating system has a start-up problem, the system has to be rebooted several times before it accepts to operate.

The data is saved in C:\Emergency Backup on the Messir Vision computer and attached is an external backup drive. The procedure is as follows:

* Go to C:\Meteo\Plotting
* Choose the following files messir bdm
* Go back to C:\Emergency Backup and create a folder which commensurate with the date example on the 10th of January 2013 the folder would look like as follows: 20130110 here : 2013 is the year 01 is the month and 10 is the date
* Copy them to the newly created folder

**3.4 Data Rescue and Maintenance**

The hard drive of the former laptop of Director General of ACMAD was removed, put in a SATA external drive adapter plugged into one of the new laptops acquired through the ISACIP project scanned for presence of virus. A lot of viruses were detected and removed; hence the user files were put together in one folder and transferred onto his new laptop.

When the renovation team got to the office of the experts, I helped in moving the computers and fixing them in their new temporal locations.

In Dr. Njau’s Computer Spyware software blocked all operations, in normal operation mode all effort were made to remove to no avail, I therefore started the machine in safe mode and went as follows:

* Start
* All Programs
* Accessories
* System Tools
* System Restore

With system restore, I choose an earlier date for restore and after the system was restored to that date, the system after restart the Spyware software was uninstalled automatically and the system started functioning. I installed an antivirus called Smadav which is a freeware

Mr Cheick Khan at Vigirisc office encountered internet connection problem, after diagnosing the problem a new internet cable was crimped to replace the former one.

The laptop of the Secretary General of ACMAD failed to boot if started will always hang on start-up. I started it in safe mode by pressing F8 button at start-up, I shut down the laptop and restarted in normal mode then it was ok.

An HP LaserJet printer was installed in the office of Chief of DWWP but when tested the printout was not good, I searched for a similar printer and found one at the office of Finance, I swapped the turner and it was found out that the printer had no problem only the turner was faulty, so I advice him to change the turner.

Mr. Check Khan had some problem with his laptop, it failed to be connected to neither wireless nor LAN, there was a similar type of laptop with which I swapped the hard drive of his onto and both wireless and LAN worked.

With subsequent power cut off and the standby generator not in good shape it happened one time power went off before we could finish shutting down computers, the UPS in the DWWP room lost power on battery which resulted unplanned shutdown of all the computers connected to it. When light was back it was found that one of the synergie processing computers had power shock and failed to start. With Mr. Abani we did all our best to restore it into operation to no avail. We finally got resorted to looking for a similar type of computer from the stores and transferred the hard drive to it and tried to configure it with the parameters of the one with problem but to no avail.

The laptop of the Secretary General of ACMAD had problem browsing with Firefox browser, after thorough checking, I discovered that there were some add-ons which are not compatible with Firefox browser. All I did was uninstalled Firefox browser and advice him use Internet Explorer.

Due to frequent power cut offs, another desktop computer named as Tripoli had developed processor fan problem, after changing the processor fan, it was put on test after a few while the system went off, at first it was taught to be power supply problem, the power supply from a similar type of computer was inserted, it still does not come on, so I then concluded the problem as mother board failure. The hard drive was backup and another computer of similar type which also had a processor problem was cleaned and parts transferred. The hard drive was formatted, windows 7 and all necessary softwares were installed, and the data restored in it.

ACMAD after the first phase of the renovation decided to get rid off many old equipment, which included a lot of computer equipment. I was given the assignment to filter the few which could be useful to be kept in the store. The ones rejected in this process an order was received from the Director General of ACMAD through my Chief of department to try and check for possibility of retrieving data from them before permanently getting rid of them. This process involved opening every other computer remove the hard drive and any useful parts such as RAM chips memory and memory cooling fans and power supply.

**Methodology used to check these hard drives involves as follows:**

* Request was made for the provision of two Terabytes external drive from stores through my Chief of department
* Arranged one desktop computer from the store formatted and installed windows XP in it with one month kaspersky trial license update it through internet
* I plug the hard drives one after the other as a slave drive on to this desktop in parallel with the existing hard drive as primary, scan for virus and go through check for all user files and copy them into the two Terabytes external drive.
* Some computers kept within offices with slight problems, I remove hard drives check for presence of virus, backup all data found into the external backup drive, and put back the hard drive diagnose the computer and replace faulty parts with the ones I removed from the scraps. Once such computers are in good order are reassigned to other staff in need.
* The later step is in progress not yet completed the target is to attack the ones in the store after finishing the ones within offices.

The laptop of Mr. Cherche Baila the communication officer ACMAD had encountered drastic speed lost, after looking at it, the first problem noticed was two anti viruses co-exist conflicting one another, simply I removed one. The second task done, too many temporal files were found kept in the machine occupying space for nothing, these were removed, some unnecessary programs uninstalled and disk fragmentation was done and gave him advice to reduce user files and folders from the desktop.

The signal cable of the synegie receiving system was found cut, I solved the problem by simply using the reserve and fixed a new IF screw head.

At Climate and Environment I was assigned to create remote access in one of the computers to the synergie system for them to access the products. The steps taken on the computer located in Climate office were as follows:

* Start
* Control panel
* Network and internet
* Change Adapter Settings
* Right click on Local Area Network
* Click on the properties of Internet protocol version
* Advance
* Add I gave 192.168.0.11 as the additional IP and 255.255.255.0 as the submask
* I created a new short cut on the desktop
* In the properties of the short cut I inserted the following
* [\\192.168.0.4\syndocs\image\screenshot](file:///%5C%5C192.168.0.4%5Csyndocs%5Cimage%5Cscreenshot)

Upon double clicking on the shortcut automatically it will pin onto the synergie and display the screenshots remotely.

The processor fan on the messir vision was dusty and started making a lot of noise. I cleaned the whole computer, removed the processor fan lubricate it and insert it back.

I formatted one computer and re-installed windows XP, Microsoft office 2007 and other application softwares for the Kenyan Mr. Augustine who was attached under Department of Weather Watch and prediction I assisted Chief of CTD in changing the printer cartridge of the Director General of ACMAD.

The computer allocated to the store keeper due to power fluctuation developed power supply problem. Among the scrap items removed from the old computers changing of the power supply was made possible. As a result it was recommended to supply him a new UPS, the installation of which I facilitated.

In the office of Administration and Finance, the computer allocated to the Assistant was changed with another one after being found faulty, the later was repaired and redeployed.

The external drive of SG hard problem, after being checked it was found that the circuit board had some problems. In order to help him recover his files stored it, I used another external SATA drive adapter and transferred his hard drive there, with which he was able to access his files.

Windows Server 2003 user files were transferred into the two terra external backup drive.

 Two USB keys were received from Mr. Abani Head of CTD belonging to a trainee under Climate and Environment for diagnose for they both failed to start and one of them contains all the data he brought from the country for analyses. Out of the two I succeeded accessing the one containing his country data after scanning both for presence of virus.

The laptop of the ISACIP rv project Assistant after being used for long hours without AC power supply got hibernated. I removed and placed back the battery, charged it for few minutes with the Ac power supply plugged then it started normally.

After experiencing internet connectivity problem, the service provider was called for intervention. A CANOPY test was carried out with the help of one their technicians proofs that no good signal was being received. After communicating with their office it was found that one of the servers providing us internet service was not working. Internet was restored after their correction.

At the office of ACMAD secretariat, the official e-mail calcomp eudora installed into the new computer allocated to her was found not completely compatible with windows 7, after making a backup of user files into a backup, an attempt was made to install windows xp on the PC did not materialise, therefore eudora was installed into another computer with widows xp and user files were restored.

As part of the preparation of MESSA project I was assigned to sketch the ACMAD Climsoft diagram and the PUMA system see annex I and II respectively.

I was assigned to configure the laptop of an auditor of the ISACIP project on LAN as he was far from the access point of the wireless connection.

Messir REITM had push agent problem, hence it captures but does not transfer data onto Messir com, I reported the matter to the Head of the Department Mr. Abani, who helped in solving the problem by working on the transfer agent of the RETIM.

The former computer allocated to the store keeper was redeployed back to the Secretariat due to the fact that the new computer allocated to the later doest not fully match with euroda. I therefore had to backup the database from the new PC at secretariat and restored into the former.

As the Finance computers are on an independent network of the ACMAD main LAN and as it is a network without internet facility, therefore there is no antivirus. One of the computers malfunction and after its hard drive was removed and inserted into the case of an external SATA backup drive case and scanned, it was discovered to contain an autorun virus. A dispositive was therefore taken to scan the other remaining two computers in the same manner. For the server the hard drive type made was incompatible with the adapter.

This exercise was carried out with the two trainees attached under the department.

I demonstrated to the trainees on the computer of the store keeper how to configure to have access to a printer on LAN which is situated on a computer at DCE.

The opening switch of Director General’s door had a problem, after being diagnosed it was found out that the switch was broken. A replacement was opted, hence it was replaced the following day.

I helped the trainee on exporting data from rain-watch data from access into excel for Dr. Njau

**3.5 Networking and System Security**

I crimped a straight and cross linked cable for the new desktop computer supplied to the Chief of Administration and Finance of ACMAD and also worked on the switch which had slight problem. His computer was connected to the workgroup of the accounting server, by connecting the cross linked cable to the incoming cable from the main switch to secondary switch placed in his office to enable him share with switch with other colleagues in the office.

I assisted in the installation of kaspersky antivirus with one year license in some computers out of the seventy antivirus license product keys purchased by the ISACIP project,.

There was internet connection problem, a lot of effort was made to trace the root of the problem, which included making a test at the canopy, (the point of internet into the house), was found normal. I made a test on the liftinfor switch in the equipment room of CTD and the signal was found ok, but when a test was carried on the local switch that is where the problem would exist. I then decided isolating other switches placed in various offices one after the other, and each time checking the signal. After isolating the one at Climate and Environment the signal was normal. At first I taught the problem was with the switch, I therefore requested for a new switch, but to my surprise, when I started transferring the LAN cables to the new switch, it was found that two cables formed an infinity loop on the switch which was the root of the problem.

The LAN switch was initially placed on the floor at the Climate and Environment office giving LAN connection to Climate and Environment office and VIGIRISC office which used to cause a lot of interruption as users always complain disconnection due to human interference , as the location was not ideal. This switch was relocated attached on the wall with the help of a hand drill, four hole were drilled on the wall filled with wooden pieces and a wooden screw tightened in the four holes, because of the absence of material, a binding wire was used to attach the switch onto the four screws firmly, the LAN wires were taped together for good finishing.

**3.6 Management**

I attended two department meetings, one of which I was assigned to take note and produce minutes of the meeting, which I did.

There was meeting with the Chairman of Board of Governors which I attended. It was an open floor meeting in which people were allowed to share their views and pose questions.

I attended a meeting with the developers of the ACMAD new website to review and come out with suggestions.

There was a department meeting which I attended.

**3.7 Support to Energy and Power System**

At the office of Climate and Environment, it was reported that when ever there is power failure all unsaved files are lost, because the centralised UPS is no more securing them. Looking at their power connections, it was found out that the power coming from mains and that of the centralised UPS were linked, which resulted in that phase on the UPS stripped off. That means the power supply from the mains was the only source of supply to them. This problem was looked into with the electrician and corrected. The printer was also found on the UPS line in the same office, this was also transferred onto mains.

There was a problem with one of the circuit breakers overnight which resulted in lost of power on the main UPS in Department of Weather Watch and prediction, as a result all the computers in the main room were found off. As a temporal measure the output cable from the UPS was transferred into another UPS and the computers were all restarted.

During the absence of the Chief of the department went on two weeks official mission to Kenya Nairobi, the fan belt of the new power generator purchased under the ISACIP project had a problem, and due to frequently power cuts form the side of NIGELEC because of high temperatures, many a times I have to stay after working hours to put off or on all the systems when necessary, this include weekends.

**3.8 Capacity Building**

I was assigned to assist in interpretation from English to French for two weeks when two Gabonese staff had climsoft training with Mr. Albert Muhanda. This training started with general overview of climsoft software and then importation of data from excels into climsoft.

There was two days training conducted by the website developers for the CTD staff on overview and updating of the new website.

Two trainees one from Senegal and the other one Gabon were received for four and two months duration respectively under the department.

I took the two trainees on a conducted tour to see the installation of internet infrastructure from the antenna to the entry point into the house and how the signal is amplified before being directed to the main switch placed in the ACMAD equipment room locally called liptinfor switch. From the liptinfor switch to the local distribution switch via a frontal server. I saw them how the connection was made to other switches placed in various locations in ACMAD like in the Secretariat, Climate and Environment, former office of Experts, office of Chief of Administration and Finance and in Department of Weather Watch and prediction, each switch serving which individuals, in case of complain from users for lack of connectivity where to start diagnosis.

I also saw them the Synergie and RETIM on MESSIR form the projection of the satellite reception antenna to Digital Video Broadcasting (DVB) through a signal cable with IF screw connection, and how raw data is received dispatched to the processing machine and then onto the display after the products finalised for consumption.

We had the opportunity to crimp a straight and cross over cable, we discussed the international colour standard code for both cases.

**Chapter 4.0 Benefits and Lessons Learned**

To help describe the benefits and what has been learned form this attachment, each of the principal objectives will be considered in turn as follows:

By working with various units, attending meetings among other things, much was learned about the technical requirements of ACMAD and the ways in which it provides its products and services to the public. It was very interesting to work in a centre that has a notable track record of success in this area and hence much was learned.

 The CTD appears to favour a multi-disciplinary and multi-organisation approach to tackling what are often very demanding technical challenges of ACMAD. The teaming approach towards achieving these was good lessons learned and is very valuable.

In summary, the attachment has given me a unique opportunity to gain technical knowledge directly relevant to the aspirations of ACMAD

**4.1 Applying the Knowledge**

As technical personnel, it is appropriate to place more emphasis on gaining technical knowledge during this period of six months stay at ACMAD

There are many other examples of where knowledge gained during this attachment has had a significant and positive impact on the efforts of the ACMAD

**Chapter 5: Conclusions and Recommendations**

**5.1 Conclusion**

This attachment to ACMAD for the six months I belief has helped in the improvement of Information Technology infrastructure to a great deal. And a lot was benefited immensely in terms of personal development while ACMAD has likewise benefited from gaining valuable technical benefits on the other hand.

All the objectives set out at the commencement of this attachment have been met. And a lot was benefited immensely from this attachment in terms of personal development while ACMAD has likewise benefited from gaining valuable technical benefits on the other hand.

**5.2 Recommendations**

As ACMAD is highly engaged in dealing with huge volume of Data and Information, I would like to strongly recommend for consideration to be focused on timely acquisition of license for Antivirus for the security of such information and data.

Computing Telecommunication Department is composed of only two permanent staff, in the event anyone of them leaves will lead to lost of institutional memory which would paralyse a lot of activities at ACMAD, I therefore would like to focus the attention of the authorities for immediate consideration, of expansion of that department.

I would have no doubt in recommending to other organisations that they take advantage of the ACMAD attachment scheme as I am absolutely delighted with the benefits gained from this scheme.

 I therefore strongly recommend other institutions sending members of staff on attachment to ACMAD to help build up this institution for the benefit of Africa.

**5.3 Problems encountered during the programme**

The center lacks good working tools, this makes it very difficult to perform certain tasks correctly.

**Annex I**

**ACMAD Clicom System**

   

Climsoft Client (NWP) Messir Vision (CTD) NOAA/NCDC

 FTP FTP FTP

 

 Climsoft Server (DCE)

**Annex II**

**PUMA Diagram**

