

**WIGOS DEMONSTRATION PROJECT-KENYA**  
**V.5 (January 28, 2011)**

|                         |   |
|-------------------------|---|
| <b>Project Name</b>     | WIGOS Demonstration Project in Kenya  |
| <b>Acronym</b>          | WDP-K   |
| <b>Project Type</b>     | Demonstration Project   |
| <b>Project Status</b>   | In Progress   |
| <b>Project Overview</b> | <p>The project aims at integrating all the national observation systems in Kenya taking into account the three levels of WIGOS implementation.</p> <ul style="list-style-type: none"> <li>➤ Integration and Standardization of all National observations for purposes of Interoperability</li> <li>➤ Availability of National and RAI data through the WIS</li> <li>➤ Quality Management and Assurance</li> </ul> <p><b>Data Gathering, Integration and Standardization</b></p> <p>Kenya Meteorological Department (KMD) has planned to improve and integrate the national environmental observational systems in Kenya. These include land, sea, and upper air observations.</p> <p>To improve the Observational network , KMD has planned the following:</p> <ul style="list-style-type: none"> <li>• Increasing the number of automatic weather stations from 24 to 36 by June 2011;</li> <li>• Installation of two upper-air stations by June 2011;</li> <li>• Increasing the number of hydro- meteorological stations from ten to twelve by June of 2011;</li> <li>• Establishing a seismic network in the country. Three seismic sensors will be installed in different parts of the country by June 2011;</li> <li>• Installation of two urban climatology pollution monitoring stations</li> </ul> <p>Five Tidal stations have been installed at the Kenyan Indian ocean coast.</p> <p>KMD intends to integrate data and products from all the observational systems in KMD into one Information system taking into account the WMO recommended data formats and in line with WIGOS procedures. In support of this project, KMD is in the process of procuring an Integrated Meteorological Information System (IMIS).</p> <p>The IMIS will be able to pre process, decode, process, manage, perform quality control and integrate conventional surface and upper-air observations Stake holders who have</p> |

environmental observational systems have already been identified.

Software for coding data into the required Table Driven Code Format (TDCF) has been developed and training has been done for the use of the software. Testing of data coding is completed at national level. Testing of BUFR code is currently being done on the GTS

### **Availability of National and RAI data through the WIS**

- The IMIS will have a well defined Meta data database for interface with the WIS.
- Testing of BUFR code is currently being done on the GTS
- Nairobi RTH is already has a modern Message Switching System and the internet bandwidth has now been upgraded to 4Mbps.

### **Quality Management and Assurance**

1. Through the cost sharing effort of Finland VCP (through WMO) and the Government of Kenya , KMD will modernize the WMO **Regional Instrument Centre (RIC)** by installing the following:
  - ▶ Chamber for Calibration of humidity and temperature;
  - ▶ Stirred liquid oil bath for the calibration of thermometers and AWS temperature sensors;
  - ▶ Resistance measuring bridge for the calibration of AWS temperature sensors and references;
  - ▶ Wind Tunnel for calibration of wind instruments.

Tenders for the modernization of the centre are being processed by WMO and KMD.

2. Besides the existing Quality Control system, will be achieved through the IMIS system.

### **Project Aim**

The aim of the WIGOS/WIS Demonstration Project is to:

- Integrate all national observation systems including land, sea, and upper air observations from the Kenya Meteorological network and other national observing networks that provide time critical data and products.
- Significantly improve the availability of national and regional observational data and products.

- Standardize Instruments and methods of observation in Kenya.
- Provide End-product quality assurance

**Partners/Participant**

KMD has identified the following stakeholders who have environmental data networks:

| Institution   | Responsibility in WDP-K                                    |
|---|--|
| 1. Kenya Meteorological Department.   | Responsible for the Implementation of the project in Kenya |
| 2. The University of Nairobi (Department of Meteorology, Department of Geology) | Participant  |
| 3. Kenya Agricultural Research Institute (KARI)-13 AWS                          | Participant  |
| 4. Kenya Sugar Authority (KSA)-3 AWS  | Participant  |
| 5. Kenya Maritime Authority (KMA)- 2 Tidal gauges, Lamu and Mombasa             | Participant  |
| 6. Kenya Marine and Fisheries Research Institute (KMFRI)                        | Participant  |
| 7. Lake Victoria Environmental Programme (LVEP)                                 | Participant  |
| 8. Jomo Kenyatta University of Agriculture and Technology (JKUAT)               | Participant  |
| 9. National Environment Management Authority (NEMA)                             | Participant  |
| 10. Kenya Wildlife Services (KWS)   | Participant  |
| 11. Ministry of Agriculture   | Participant  |
| 12. Ministry of Water and Irrigation  | Participant  |
| 13. Voluntary Observers   | Participant  |
| 14. KENGEN - (Electricity Generating Company)                                   | Participant  |
| 15. Ministry of Forestry  | Participant  |

| 16. Department of Resource Surveys and Remote sensing (DRSRS)   | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
|---|---|---|-----------------------------|---|---------------------------|----------|----------------------------------|--------------------------------------|-----------|------|-----------|-------------------------------------|---|-------------|---|-----------|---|----------------------------|-------------|------------------------------------|------------|---|---|--|-----------------------------|-------|
| 17. Department of Mines and Geology   | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| 18. Regional Center for Mapping of Resources for Development (RCMRD)  | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| 19. Kenya Bureau of Standards (KEBS)  | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| 20. Water Resources Management Authority (WRMA)   | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| 21. National Environment Management Authority (NEMA)  | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| 22 Kenya Water Institute (KEWI)   | Participant   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| KMD has signed a Memorandum Of Understanding (MOU) with Meteo France International (MFI) to assist KMD to successfully realize the Implementation of WIGOS and WIS within the implementation timeframe. |   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| <b>Funding Sources</b>  | The implementation of the Demonstration Project will be funded from the National Budget and support through WMO VCP and WIGOS&WIS Trust Fund.   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| <b>Overall Project Costs</b>  | Estimated at being around US\$ 6,000,000  |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| <b>Project Timescale</b>  | 2008 – 2011   |   |                             |   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
|   | <table border="1"> <thead> <tr> <th>Activity</th> <th>Objective/Action</th> <th>Status</th> <th>Implementation constraint</th> <th>Due Date</th> </tr> </thead> <tbody> <tr> <td>Identification of Focal Point(s)</td> <td>National Coordination of the project</td> <td>Completed</td> <td>none</td> <td>Completed</td> </tr> <tr> <td>Taking Environmental data inventory</td> <td>Identify all types of environment data and products available in Kenya.</td> <td>In Progress</td> <td>Lack of cooperation from some possible partners</td> <td>June 2011</td> </tr> <tr> <td>Improvement of National observational network</td> <td>Increase data availability</td> <td>In progress</td> <td>Low national budgetary allocation.</td> <td>Continuous</td> </tr> <tr> <td>Modernizing the Regional Instrument Calibration Centre (RICC)</td> <td>Install the following:<br/>-Calibration chamber for humidity and</td> <td>Technical evaluation completed. Waiting for equipment delivery through</td> <td>Progress is slow within WMO</td> <td>-----</td> </tr> </tbody> </table> | Activity  | Objective/Action            | Status  | Implementation constraint | Due Date | Identification of Focal Point(s) | National Coordination of the project | Completed | none | Completed | Taking Environmental data inventory | Identify all types of environment data and products available in Kenya. | In Progress | Lack of cooperation from some possible partners | June 2011 | Improvement of National observational network | Increase data availability | In progress | Low national budgetary allocation. | Continuous | Modernizing the Regional Instrument Calibration Centre (RICC) | Install the following:<br>-Calibration chamber for humidity and | Technical evaluation completed. Waiting for equipment delivery through | Progress is slow within WMO | ----- |
|   | Activity  | Objective/Action  | Status                      | Implementation constraint                       | Due Date                  |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
|   | Identification of Focal Point(s)  | National Coordination of the project                                    | Completed                   | none  | Completed                 |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
|   | Taking Environmental data inventory   | Identify all types of environment data and products available in Kenya. | In Progress                 | Lack of cooperation from some possible partners | June 2011                 |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
|   | Improvement of National observational network   | Increase data availability  | In progress                 | Low national budgetary allocation.              | Continuous                |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |
| Modernizing the Regional Instrument Calibration Centre (RICC)   | Install the following:<br>-Calibration chamber for humidity and   | Technical evaluation completed. Waiting for equipment delivery through  | Progress is slow within WMO | -----   |                           |          |                                  |                                      |           |      |           |                                     |   |             |   |           |   |                            |             |                                    |            |   |   |  |                             |       |

|   |   |   |                          |          |
|---|---|---|--------------------------|----------|
|   | <p>temperature ;</p> <ul style="list-style-type: none"> <li>-Stirred liquid oil bath for the calibration of thermometers and AWS temperature sensors;</li> <li>-Resistance measuring bridge for the calibration of AWS temperature sensors and references</li> <li>-Wind Tunnel for calibration of wind instruments.</li> </ul> | WMO   |                          |          |
| Implementation of the WMO Table Driven Code Format (TDCF) in all data coding. | Code all environmental data using TDCF.   | <ul style="list-style-type: none"> <li>- (TDCF) BUFR and CREX template done;</li> <li>-Training has been complete;</li> <li>-Testing of data transmission in BUFR on GTS ongoing</li> </ul> | Low budgetary allocation | Dec 2010 |
| Identification of stakeholders  | Identify all national institutions with environmental observations.   | <ul style="list-style-type: none"> <li>- A number of stakeholders/partners have been identified.</li> <li>-Meetings have been held to discuss the way forward.</li> </ul>                   |                          | Dec 2010 |
| Development of Meta data catalogue  | Development of Metadata catalogue for WIS   | Waiting for the first Metadata catalogue to be developed by Meteo France from the existing Volume C as discussed in the Expert Team on Operations and Implementation of the GTS             |                          |          |

|                                  |   |   |                                     |  |           |
|----------------------------------|---|---|-------------------------------------|--|-----------|
|                                  | Formation of an inter-ministerial committee   | - bring together all ministries hosting institutions with environmental data.<br><br>-discuss the implementation procedure for the integration. | In progress                         | Educating the targeted partners on the benefits of data integration. | June 2011 |
|                                  | Integration of data and products to one information System  | -Install an Integrated Meteorological Information System (IMIS) with a well defined metadata for data and products.                             | IMIS system procurement in progress | Low national budgetary allocation                                    | June 2011 |
| <b>Expected Key Deliverables</b> | <ol style="list-style-type: none"> <li>1. Availability of more data for operation and research</li> <li>2. Homogeneity, interoperability and compatibility of observations from related observation networks</li> <li>3. Conformity of data and information generated by observation networks with a comprehensive, standardized set of WIS data and information</li> <li>4. A well defined meta data catalogue at WIS level</li> </ol> |   |                                     |  |           |
| <b>Project Links</b>             | <a href="http://www.meteo.go.ke/WIGOS-Kenya.pdf">http://www.meteo.go.ke/WIGOS-Kenya.pdf</a>   |   |                                     |  |           |
| <b>Project Summary</b>           | To be given periodically  |   |                                     |  |           |
| <b>Date updated</b>              | Friday, January 28, 2011  |   |                                     |  |           |
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