



ZIMBABWE

**MINISTRY OF LANDS, AGRICULTURE, WATER, CLIMATE AND RURAL
RESETTLEMENT**

Meteorological Services Department

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COUNTRY

ZIMBABWE

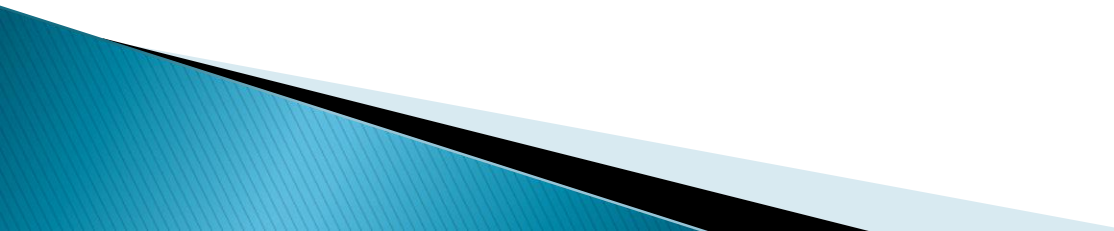
TITLE

CHALLENGES IN TRANSITION
FROM MERCURY INSTRUMENTS
TO ALTERNATIVE MEASUREMENT
TECHNOLOGIES 03-07

Introduction

- Mercury and its compounds are among the top priority chemicals of major environment and public health concern globally.
- In developing countries the implementation of the Minamata convention on mercury proves to be more challenging owing to limited resources.

Background

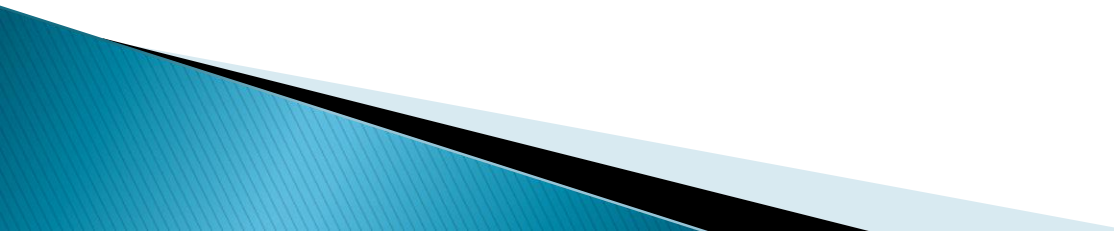
- ▶ Zimbabwe Meteorological Services Department has Forty seven manual weather stations all of which use mercury instruments.
 - ▶ After carrying out an equipment assessment on mercury added products in the department , not less than USD 1,2 million dollars is required to replace these instruments if we are to meet the 2020 deadline
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Background

- As a low income country the figure is too big considering that purchasing of meteorological instruments may not be a priority

Challenges

Financial constraints

- Zimbabwe Meteorological Services Department is not a private entity.
 - The department offers a service to the nation and hence does not generate revenue. For capital expenditure it entirely relies on fiscal budget.
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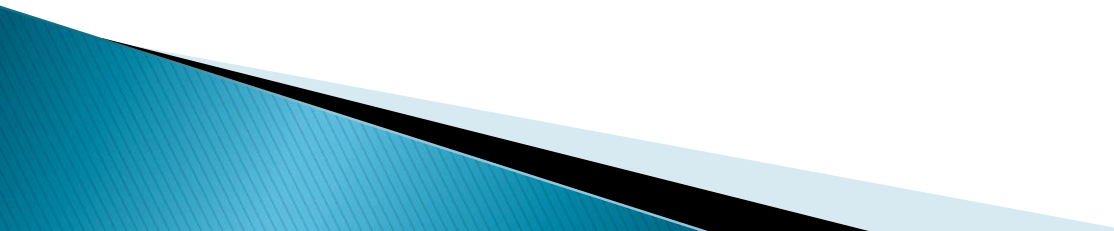
Challenges

Cost of AWS and Digital Instruments.

- Although competition is now high in the industry of manufacturing meteorological instruments, prices for digital instruments and AWS are still high for low income countries.

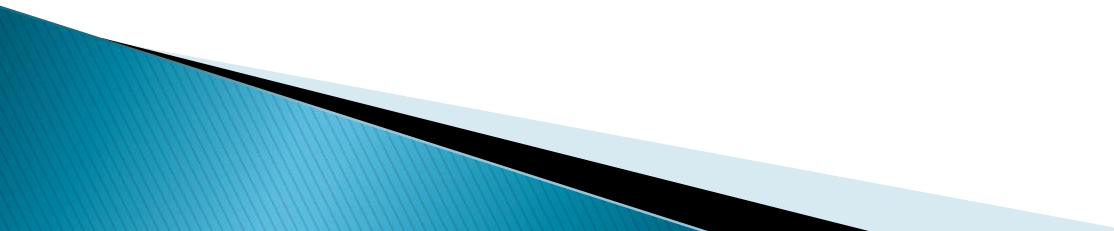
Challenges

Priority

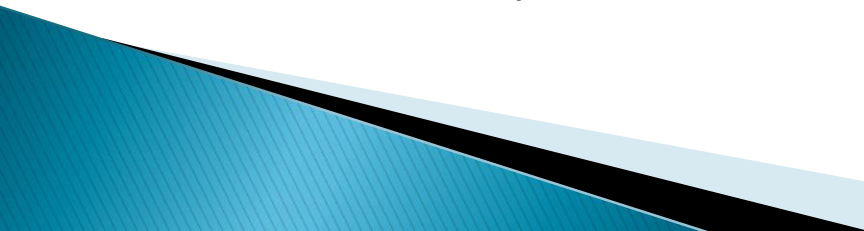
- In Africa, mercury is extensively used by artisanal and small gold miners posing great danger to human health and the environment and Zimbabwe is not an exceptional.
 - Priority is given to pressing issues leaving very slim chances to budget for meteorological instruments.
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Challenges

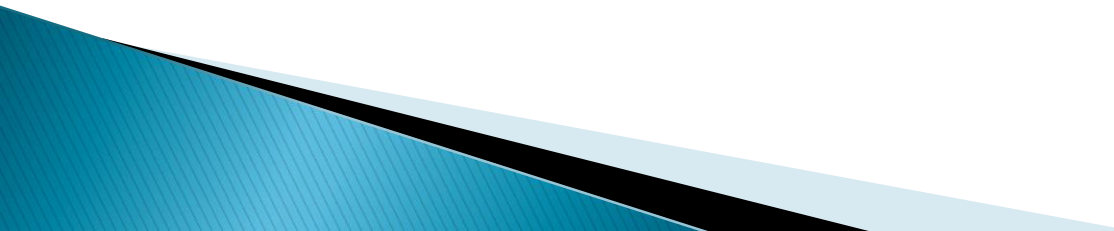
Terrestrial Network Infrastructure

- Zimbabwe have 3 main cellular companies which provide voice and internet services.
 - Internet services are better in towns and cities where the coverage is also good.
 - There is limited or no internet connection in other remote areas.
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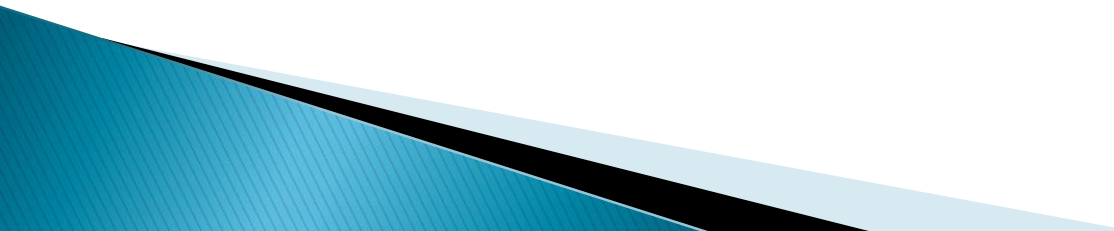
Challenges

- Considering the operation of Automatic Weather stations it is a great challenge for those stations in remote areas to utilize AWS
 - Since AWS sent real time data using GSM/GPRS it is very difficult if the network is limited or poor.
 - In this case we end up having an AWS recording data on an SD card requiring regular visit to the site to download data.
 - Real time data communication requires good internet connectivity to avoid delays
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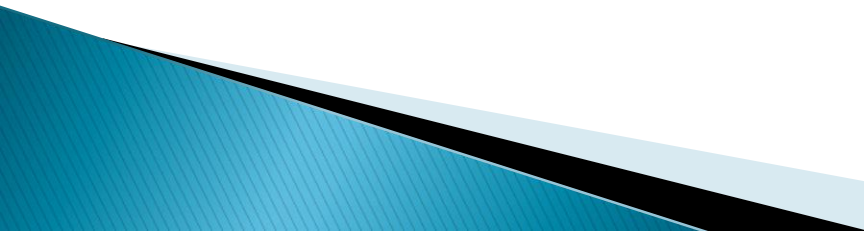
National grid coverage and Power outages

- Power supply is the backbone for telecommunication systems using GPRS.
 - In the event of power failure transmission of data will be interrupted.
 - In Zimbabwe there are other areas which are not connected to national grid where our Meteorological stations are located
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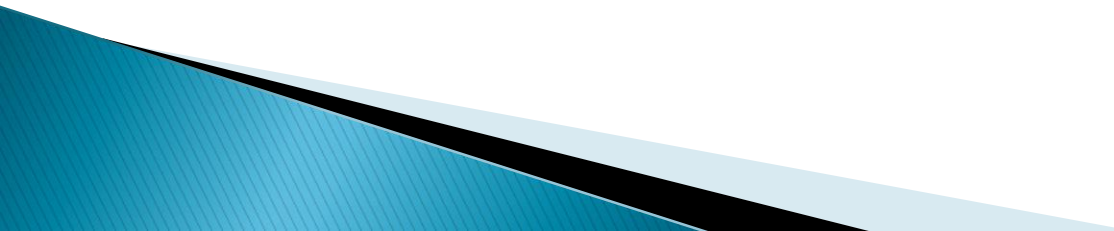
National grid coverage and Power outages.

- In these areas a good solar system is required to power up computers and provide lighting system.
 - For internet connectivity in these areas VSATs are a solution however the service is expensive.
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Resistance to change

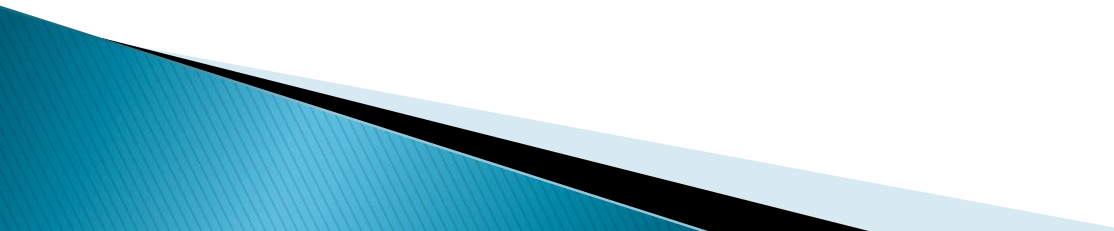
- Automation has more advantages such as real-time transfer, reduced error rate, reduced human effort , scalability among others
 - However workers are afraid of losing their jobs if manual instruments are to be replaced by digital instruments/AWS.
 - Let us consider for example a manual station which is manned by four men and eventually replaced by an AWS. The big question is ‘What will happen to the men who were manning the station?’
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Training and awareness

- The transition process requires all people involved to be aware of the potential hazards of mercury to both health and the environment.
 - People should be trained on the operation, maintenance and calibration of digital instruments and Automatic Weather stations.
 - More resources should be channelled towards training.
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Opportunities

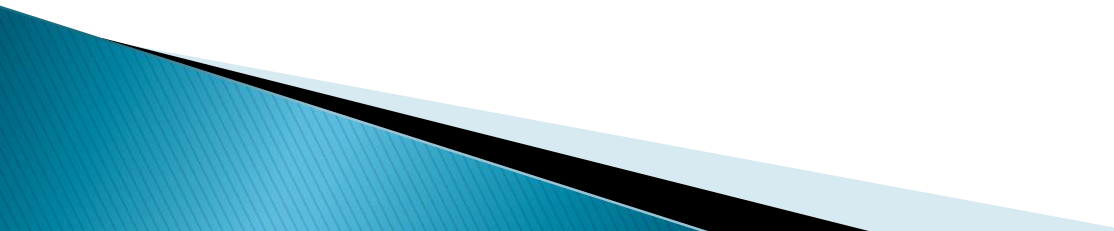
Public Private Partnerships

- There is a great opportunity for ZMSD to partner with private and Non-Governmental organizations in the implementation of Minamata convention.
 - The department can be assisted in personal skills development, infrastructure expansion, equipment purchasing and financially supported.
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Training and capacity building.

- ▶ Migration from mercury measuring instruments to digital instruments and AWS gives an opportunity for technical personnel and observers to acquire training in maintenance and calibration of instruments.

Recommendations

- Although there is a global fund to assist in the implementation of Minamata convention, I would like to suggest that WMO consider the fact that in developing countries there are more critical areas with higher priority as far as mercury is concerned, as such it should put aside a fund to address the issue of digitization in meteorological departments.
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Conclusion

- Although there are challenges , ZMSD has the capacity to implement the Minamata Convention if it is assisted financially.

Thank you!