Project Number:

Project Title: Establishment of a GIS-based public interface System for dissemination of Air Quality Data as a means for building public awareness for Climate Change

Project Short Title:

Start Date: August 2012

Estimated End Date: August 2013

Government Coop. Agency: Ministry of Water, Land, Environment & Climate Change
University of the West Indies, Jamaica Bauxite Institute.

Implementing Agency: NEPA

Project Site: Kingston, St. Andrew, Portmore and Spanish Town (St. Catherine), May Pen (Clarendon)
Mandeville (Manchester)
Montego Bay (St. James)

Beneficiary Country: Jamaica

Project Manager:

SUMMARY OF CONTRIBUTIONS

A) Project Budget

Description	**US$**
Project Personnel	30,000
Equipment	30,000
Training of Trainers	10,000
Monitoring & Evaluation	10,000
Miscellaneous and Other Costs	20,000
Total:	100,000

B) Cost Sharing

USD 100,000

Participating countries Contribution (in kind)

- Trainers
- Training Room / Business Centre
- Communication Facilities
- Infrastructure

Brief Description:

This project aims to use emerging ICT technologies to establish a GIS-based public interface for Air Quality Data. To achieve this objective, NEPA shall jointly with its funding Agency enhance the capacity to collect air quality data in the field and transfer real time data via wireless router. The Data will then be converted to a GIS-Interface for public use.

For the	**Signature**	**Date**	**Name/Title**
ITU:	_____	___/___/_____	
Partner(s):	_____	___/___/_____	
	_____	___/___/_____	

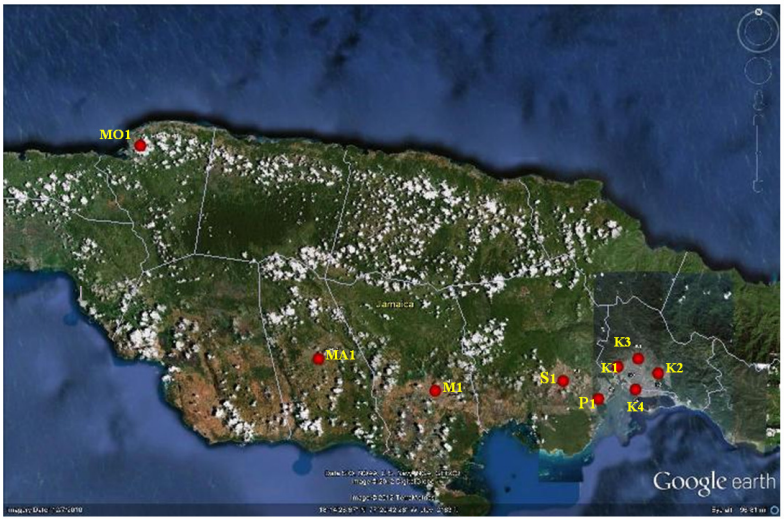
1. BACKGROUND AND CONTEXT

Purpose

The ambient air quality of our major urban centres has become a concern due to the increase in density of most of these areas which lead to a rise in air pollution from various sources. Traffic, road use, construction, agriculture, manufacturing, fuel storage, open burning and domestic activities all provide some form of air pollution that eventually affects the environment and human health. The purpose of this monitoring plan is to assess on a daily basis the air quality at a central point in six of the largest urban centres including the Kingston Metropolitan Area (KMA). The six urban centres are chosen based on them having the largest living populations in the country. Data gathered at these sites will be supported by other monitoring sites outside of this specific plan.

Basis for Urban Centres selected

The urban centres were selected based on data provided by the National Spatial Plan and Statistical Institute of Jamaica (STATIN), which provided the population of all urban centres across the island. The six largest populations were chosen with a threshold of 100,000 or more persons. The threshold of 100,000 or more was used based on reference taken from the Natural Resources Conservation Authority Ambient Air Quality Guideline 2006, Page 4-13, and Table: 4-5 Guidelines for Number of Urban Population Exposure Stations in Jamaica. Only 4 of the six centres had populations above 100,000. Hence the next five greatest populations were used. In future it is expected that funding will be received to cover all urban centres over 10,000 persons.



SITE	LOCATION	MONITOR CONTINUOS POLLUTANTS
K1	KINGSTON AND ST.ANDREW	SO_2, NO_2, CO, PM_{10}.$PM_{2.5}$, Pb, O_3
K2	KINGSTON AND ST.ANDREW	NO_2, CO, PM_{10}, $PM_{2.5}$, Pb, O_3
K3	KINGSTON AND ST.ANDREW	NO_2, PM_{10}, $PM_{2.5}$, O_3
K4	KINGSTON AND ST.ANDREW	NO_2, PM_{10}, $PM_{2.5}$, O_3
P1	PORTMORE	PM_{10}, $PM_{2.5}$,
S1	SPANISH TOWN	PM_{10}, $PM_{2.5}$,
M1	MAY PEN	PM_{10}, $PM_{2.5}$,
MA1	MANDEVILLE	PM_{10}, $PM_{2.5}$,
MO1	MONTEGO BAY	PM_{10}, $PM_{2.5}$,

Figure 1: Map showing Urban Centres to be monitored for Air Quality

Basis for Pollutants monitored
The pollutants chosen are:

- Particulate Matter Less than 10microns (PM_{10})
- Particulate Matter less than 2.5 Microns ($PM_{2.5}$)
- Nitrogen Dioxide (NO_2)
- Sulphur Dioxide (SO_2)
- Carbon Monoxide (CO)
- Lead (Pb)
- Ozone (O_3)

These are criteria air pollutants and are known respiratory irritants. The collection of Ozone data in particular is extremely important as it is a reflection of the level of Volitile Organics that are present in the area.

The pollutants listed above are most frequently used when indexing air quality. All these pollutants have the potential to vary on a greater frequency in the urban areas with population greater than 250,000. Hence only the KMA will have sites that monitor the entire range of pollutants continuously. PM_{10}/$PM_{2.5}$ will be monitored continuously at all sites. However the other pollutants will be assessed using passive or intermittent devices.

Use of data
As part of the National Air Quality Programme, NEPA intends to monitor up to 4 sites in the KMA continuously for all pollutants, and also monitor PM_{10}/$PM_{2.5}$ continuously in all the remaining urban centres and to make the index as real as possible passive/intermittent monitors will be used to capture data on the other pollutants at these locations. This will provide approximate constants that can be used to support the index ratings for these sites.

The data which is **intended** to be real time will be available to the public in an index form to indicate the air quality in those areas during normal conditions, special climatic events, natural or man made disasters and pollution incidents from any major or significant air emitting source that in all cases should be licensed by the Natural Resources Conservation Authority (NRCA). The data will be uploaded continuously to the Agency's website from the monitors and presented to the public giving them access to the current air quality of their city or town.

National/Regional Strategy: The Government of Jamaica has made a commitment to ensure continued improvements in ambient air quality in the country. The information gathered will therefore become part of a National Air Quality Database which will be geo-referenced to establish airsheds around the country. This GIS-based definition of airsheds for Jamaica could form the basis for the definition of regional airsheds for the Caribbean.

Project Strategy: The GOJ and the NRCA are currently trying to secure funds to establish monitoring stations. Once the monitoring stations are established, it is anticipated that the real-time data will be transferred via radio waves to servers at NEPA. The information will then be converted to a format that can be used by the public.

2. OVERALL PROJECT OBJECTIVE

To establish a real time data transfer for air quality information gathered in major towns of Jamaica.

3. OUTPUTS

- One GIS-based Air Quality database interface will be established by the project

Indicators

- Improved public dissemination of pertinent air quality data

4. ACTIVITIES

- Purchase of hardware and software to support data,
- Enhancement of Air Quality Database,
- Development of GIS-based public interface,
- Launch of interface to public as part of public awareness programme.

5. INPUTS

- Contribution from NRCA: funds to continue with the National Air Quality Programme,
- Contributions from NEPA: SQL Developer, specific computer hardware and software, GIS Officer, Public Awareness Officer,
- Contributions from ITU (in kind but some contributions in cash may be made available): cash for procuring support systems for public interface.

6. RISKS

The flow of funds from the GOJ and/or NRCA may not be readily available for establishment of the monitoring sites. This may delay transfer of information from sites outside of the KMA.

7. SUSTAINABILITY

NEPA currently has the expertise in house for constant monitoring and analysis of the air quality data and for population of the air quality database. The Agency also has a resident GIS Coordinator and a SQL Developer who will maintain the air quality database and related GIS public interface. Additionally, the Agency also gets guidance from a national air quality committee comprised of key public and private sector stakeholders involved in air quality monitoring, research and regulation.

8. MANAGEMENT

The project will be implemented by the assigned Project Manager in close coordination with the NEAP and project partners. NEPA and ITU as the implementing agencies will supervise and administer overall implementation of the project.

9. MONITORING AND EVALUATION

The Project Manager will coordinate preparation of, in collaboration with other stakeholders, progress reports, which will provide a summary of the project progress, the challenges as well as any necessary change management requests that may be required for the successful project implementation.

The progress of the project will be monitored through periodic evaluation reports issued by the project and an evaluation report will be prepared at the end of the project. The project will be evaluated against its targets on a quarterly basis via quarterly reports being prepared. Additionally, reports will be prepared for the funders as required, and project will be evaluated at end to ensure accurate delivery of outputs.

Upon conclusion of the project, the Project Manager will prepare a final project closure report with future recommendations that will be submitted to partners.

10. Budget

The estimated budget is attached as Annex 1.

11. Work plan

The work plan attached as Annex 2.

Annex 1: The Estimated Budget

Description	**USD**
Personal	30,000
Equipment	30,000
Training	10,000
Monitoring & Evaluation	10,000
Miscellaneous and Other Costs	20,000
Total:	**100,000**

Annex 2: Work Plan

A detailed project work plan for the project will be prepared at the beginning of the project and reviewed during project implementation.

Activity	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9-12
1. Collating/Gathering data for Database development									
2. Development of the Air Quality Database									
3. Population of Database									
4. Data analysis and creation of GIS interface									
5. Project Monitoring									
6. Project Closure report									