Improving Climate Data and Information Management Project

SPCR Jamaica

ENVIRONMENTAL MANAGEMENT FRAMEWORK

MARCH 2014

ANNEX VII-B

DISCLOSURE WORKSHOP 2

March 14, 2014

Presentation

- Part I Project and Site Information
  - Background and Rationale
  - Project scope and activity
  - Environmental Setting
  - National Legal and Regulatory Requirements
  - World Bank Environmental Safeguards
  - Stakeholder Consultations
  - Institutional Considerations
- Part II Environmental Screening and Scoping
- Part III Mitigation Measures
- Part IV Environmental Management Plan
- Annexes

Project Background and Rationale

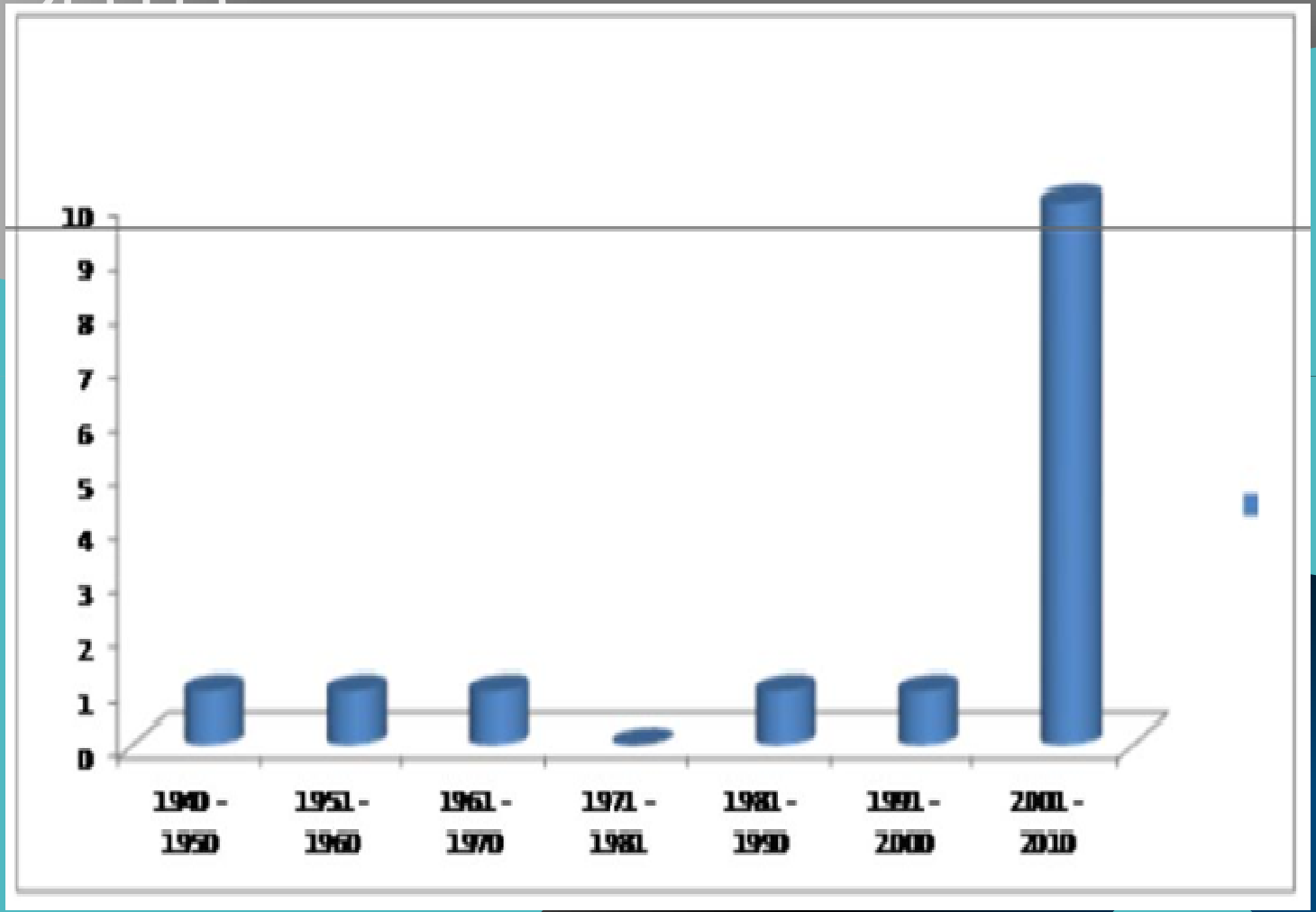
- Development objective
  - *to improve the quality and use of climate related information for effective planning and action at local and national levels.*
  - Contribute to the knowledge platform to improve decision-making with regard to strategies for achieving disaster risk reduction.
- *Goal Four – Vision 2030*
  - Hazard Risk Reduction and Adaptation to Climate Change

Rationale

- Climate triggered extreme events have been the bane of Jamaica's social and economic development for decades.

- 2001-2012 in particular, hydro-meteorological hazards have caused damage and losses estimated at over J$113 billion - more than J$11 billion per year - estimated as 1-2% of Jamaica's GDP.

Climate events - 1940-2010



…rationale

- Climate change projections for Jamaica suggest that changes in temperature, precipitation and sea level rise will increase vulnerability to disasters
  - Increasing variability, unpredictability, extremes
- Initiatives to build climate resilience imperative.
- Database required to inform the required programs is currently inadequate

Parameter	PRECIS Model	SDM
Temperature	Increase of: 0.4-0.9˚C by 2015 0.5-1.0˚C by 2030s 0.7-1.8˚C by 2050s 1.8-3.5˚C by 2080s South-western Jamaica will experience the greatest change in	Increase of: 0.5-0.7˚C by 2015 0.8-1.3˚C by 2030s 1.1-1.8˚C by 2050s 1.9-2.6˚C by 2080s March - May will see greatest increase
Precipitation	Rainfall decrease in most regions by the 2050s By 2080s, decrease ranging from 25% to 40% of current rainfall levels will take place in all regions	General pattern of decreased rainfall overtime Significant decrease in rainfall starting in 2050s June - November will have most pronounced decrease
Other	N/A	Stream flow of some major rivers will decrease due to reduced rainfall

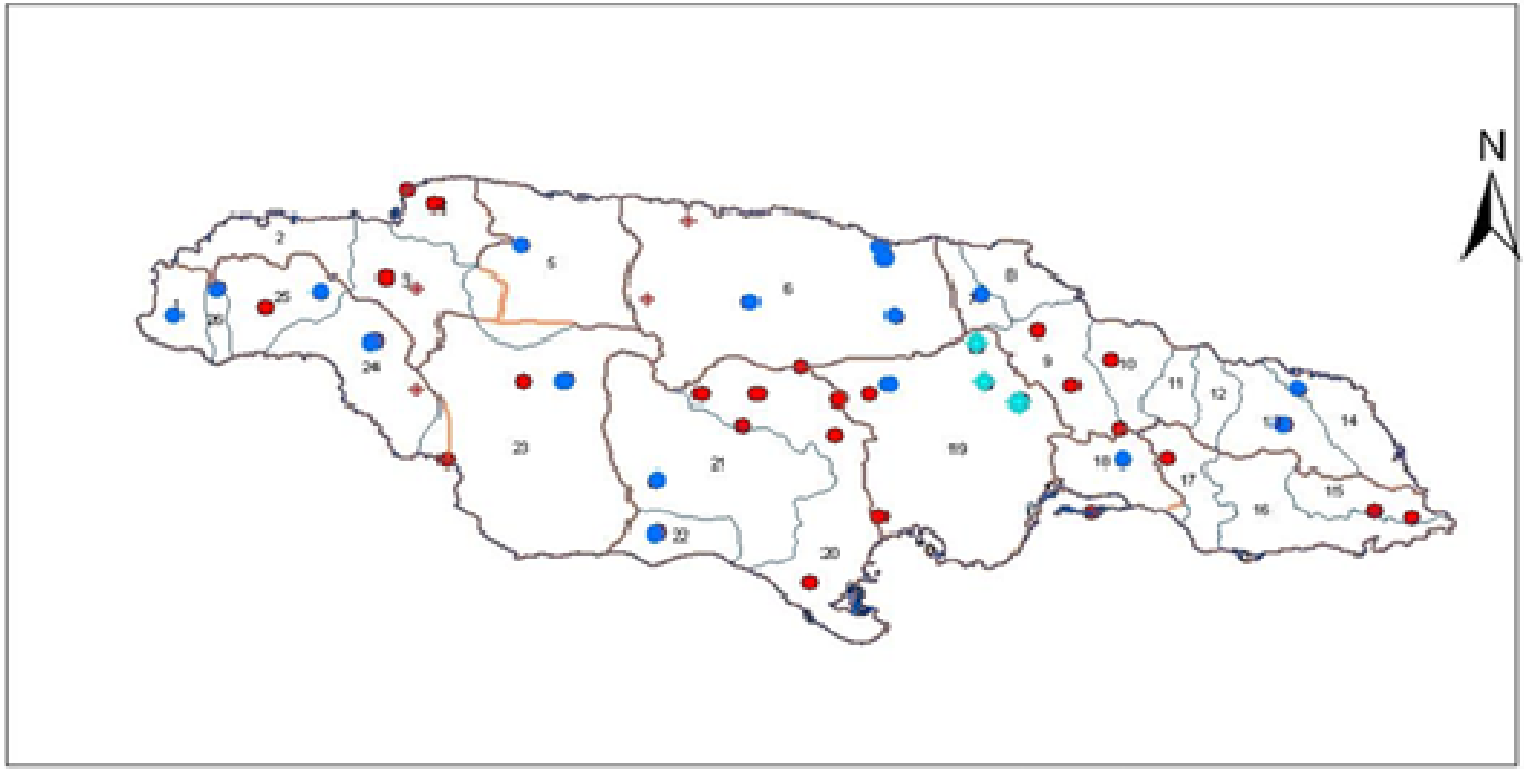
Project Scope and Activities

- Upgrading and providing new, critically needed equipment and systems
- Operator training for improved collection, processing and forecasting of hydro-meteorological and agro-meteorological data
- Ultimately improve the availability and reliability of data for climate change scenario modeling, risk analysis, warning systems, and knowledge sharing

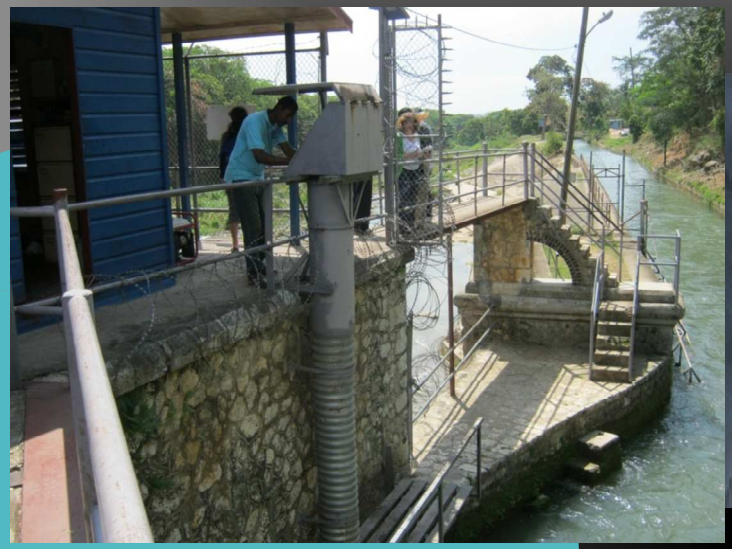
Scope

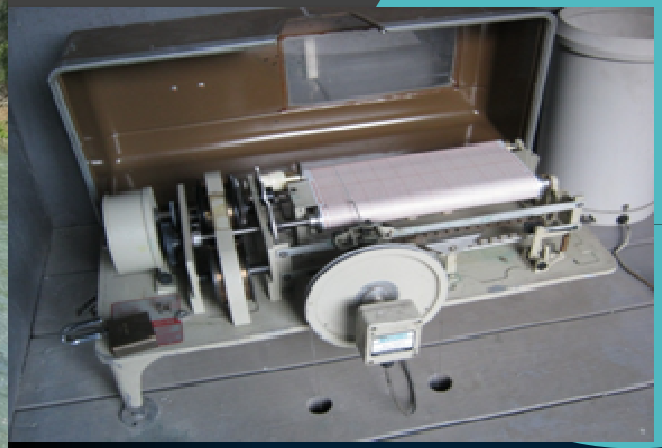
- ***Sub-component 1.1: Hydro- and agro-meteorological high priority equipment and spare parts.***
  - supply, installation, calibration and training of staff for 26 all-weather stations;
  - communications repeaters for transmitting data in real time;
  - agro-meteorological stations;
  - automatic recording rain gauges to augment/replace the existing manual gauges;
  - stream flow/ river gauging loggers for flood and drought forecasting (new loggers , replacements and upgrades)
  - upgrades to the rainfall intensity gauging network
  - ground water monitoring equipment
  - Back-up power supplies for MET services, WRA and RADA.
- **Sites will not be new, but the logging equipment will be.**

INTENSITY RAINFALL GAUGING NETWORK OF JAMAICA



WRA'S STREAM GAUGING NETWORK OF JAMAICA

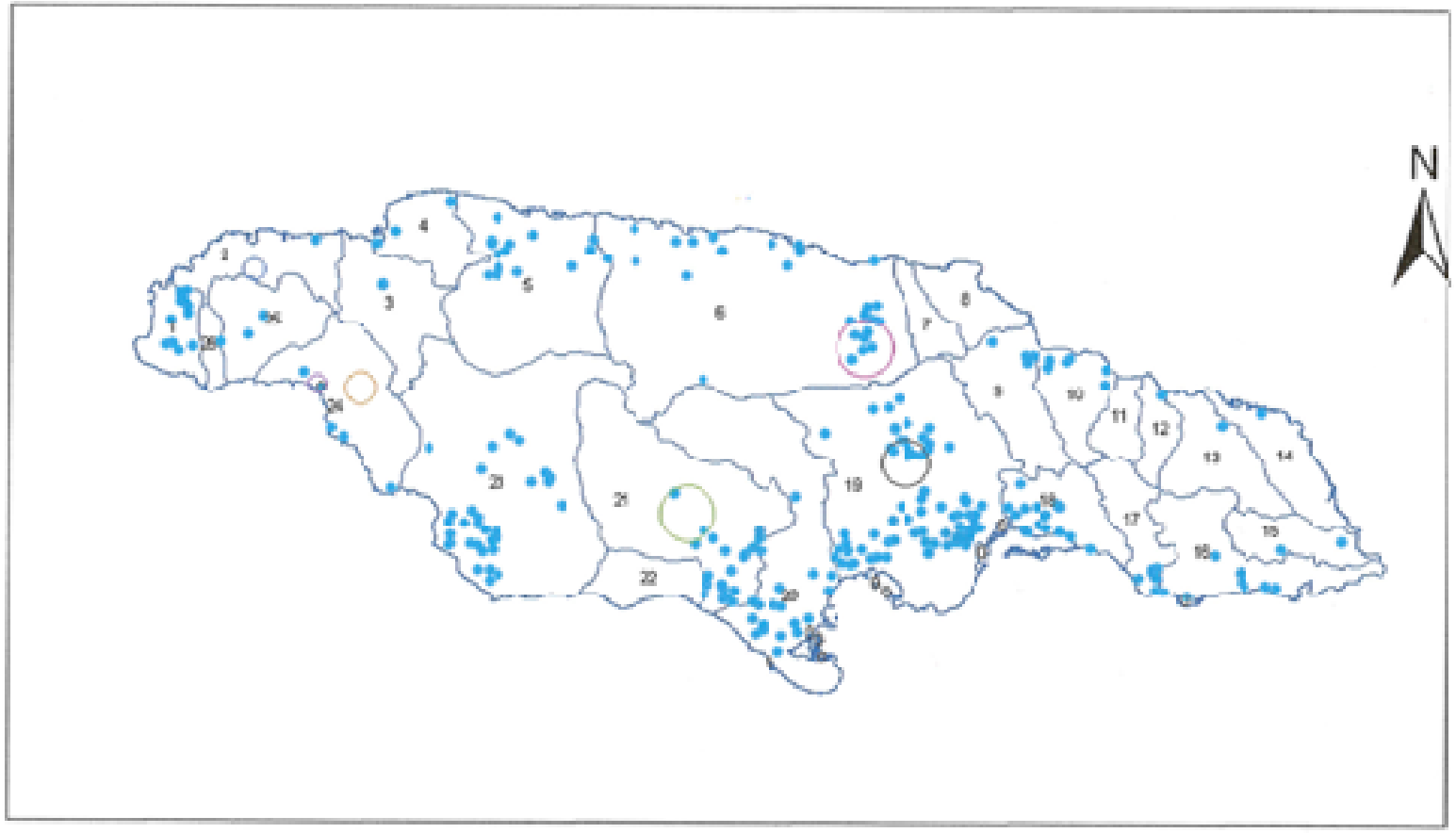




…Scope

- Equipment will be used to
  - improve instrumentation in key watersheds for measurement and monitoring of water supply potential + flash-flood potential and risk
  - infill data gaps between stations
  - provide near real-time data to facilitate improved forecasting and early warning systems.
  - enable provision of accurate and timely wind speed information to trigger payments administered under the Caribbean Catastrophe Risk Insurance Facility (CCRIF).

WRA's MONTHLY GROUNDWATER MONITORING WELLS



Groundwater monitoring

- Crucial to the management of water resources and flood projections.
- Major aquifers in western 2/3 island accommodate the greater portion of the island's groundwater resources.
- Installation of loggers on some of these monitoring wells
- Enhance WRA's capacity to develop, calibrate and verify groundwater models for managing water resources, and for forecasting in times of groundwater induced flooding.

Installation requirements

- Monitoring sites not yet confirmed – will be defined during implementation phase .
- May have varying needs – access road improvement, site improvement for new equipment,

Radar Installation

- Subcomponent 2
  - Located 729 m a.s.l in the general area of Cooper's Hill, St. Andrew
    - New radar will be installed at existing location so footprint will not change.
- Replace the existing timeworn S-band weather radar system that was acquired in 1999.
- Obsolete - Significant downtime
- Constraint to tracking weather systems approaching island

Installation requirements – Radar Site

- Transportation from port to site
- Reconditioning of the tower with metal cleaning, welding and repainting
- Refurbishing of the building - removal of worn carpets, cleaning of walls, windows and doors, replacement of windows and doors, repair of roof etc.
- Disposal of waste and transportation from the site must be executed with best practice.

Radar site

- Upgrade power supply - Install solar powered system.
- Upgrade water storage - install rainwater harvesting system - remediate existing tanks - connect rainwater catchment to tank
- Install Standby power generation to support existing power supply.
- Fuel storage? Small amount may be required for emergency generation .

Marine Observation Station

- Current tide gauge situated on existing (historic) concrete tide monitoring house located on the east end of the JDF coast guard station
- Monitoring sea level rise - CC monitoring
- Real time information for Harbour Master's Dept
- Tsunami warning centre
- Weather station also mounted
- Structure in poor condition – needs repair and upgrading

….marine observation

- Demolition and disposal of obsolete equipment
- Site preparation

Non-Civil works

- Data sharing platform
- Coherent formal collaboration mechanism needed
- Facilitate streamlined system of data capture, analysis, interpretation and dissemination among the agencies.
- Multiple public and private agencies as well as mining and sugar companies collect climate data independently or somewhat jointly.
- Data sharing across agencies currently not fluid.
- Project would support measures to streamline the sharing of climate data among the different stakeholders
- Training and capacity building
- Public awareness

Climate data capture from Field Stations

Met Service, WRA, Agriculture & Fisheries, Private Sources, etc.

National Platform: Met. Service, WRA, Universities, Research Institutes

Climate Data Collation, analysis, interpretation

Generation and Dissemination of Information

Information Users

Public Sector, Private Sector, local Communities, Universities, Research Institutes etc.

National Legal and Regulatory Framework

- National environmental regulatory requirements are prescribed by the Environmental Permit & License System (P&L) of 1997
- No major negative issues projected, overall outcome will have a strong positive impact.
- Some aspects of the project need to be assessed for environmental impact, but the specific actions are not yet known. EMF has been prepared
- Any aboveground fuel storage in excess of 880 gallons or underground storage in excess of 1,100 gallons that may be associated with standby power generation, will need a license
- Regulatory requirements of the Government of Jamaica must be met.

Legislative Imperatives for 2014

- Recent review of policy, plans, legislation and regulations for climate resilience in Jamaica - commissioned by the PIOJ
- Current policy and legislative framework is not adequate to respond to the ongoing requirements of climate change

- Water Resources (Amendment) Act
- Disaster Management Act
- Town and Country Planning Act
- Meteorological Act
- National Building Act and promulgation of the Building Code
- Renewable Energy Act

World Bank Safeguard Policies

- *Seek to prevent and mitigate undue harm to people and their environment in the development process.*
- Provide guidelines for Bank and borrower staff in the identification, preparation, and implementation of programs and projects.
- EMF document providing the guidelines
- Described as a cornerstone of the Bank's support to sustainable poverty reduction

World Bank Safeguards

- Environmental assessments - integrated with the project cycle such that environmental screening occurs at the project identification stage – identify issues early in project cycle.
- Magnitude and sensitivity of the project and the attendant issues determine whether a full assessment is required.
- Design environmental improvements into projects, avoid, mitigate, or compensate for adverse impacts.
- Objective - avoid costs and delays in implementation due to unanticipated problems.
- Attention to Stakeholder/Beneficiary engagement

Project classification

Category A	**A full EIA is required, as the project may have diverse and significant environmental impacts**
Category B	**Although a full EA is not required, environmental analysis is appropriate, as the project may have specific environmental impacts**
Category C	**Environmental analysis is normally unnecessary, as the project is unlikely to have any environmental impacts**

…Safeguards

- WB Safeguard policies that could be triggered by actions are as follows:
- *Environmental Assessment*
- *Natural Habitats*
- *Physical and cultural resources*
- *Involuntary resettlement*

Stakeholder Consultations

- SPCR Consultations
- Data Generators and Users
- Data Beneficiaries
- EMF Disclosure

Project Beneficiaries and Engagement

- Hydromet data - Public good – entire population – reduce dislocation and loss – build resilience
- Increase awareness and knowledge –influence behaviour
- KAP Survey - Major knowledge gap - strong demand for increased awareness and improved climate literacy.
- Climate Communication Plan Phase 1 – PPCR - Messages developed
- 3 Broad Groups Stakeholders
  - Generators of Data and Providers of Information
  - Users of Information
  - Beneficiaries of Information

Public Sector Agencies

- MWLECC - Met Services, WRA and CCD
- MoAF - RADA
- MoLGCD - ODPEM
- MOH

MWELCC - Met Services, WRA and CCD - responsible for implementing approx. 62 % in value of Project sub-components

Project Beneficiaries and

List of Stakeholders - based on Sector/Function

Financing and Executing Agencies	Water resources	Met & climate data	Agriculture	Communication	Infrastructure and Utilities	Disaster Risk Management	Private Enterprise	Political representatives	Civil society	Monitoring and evaluation
Planning Institute of Jamaica (PIOJ)	Water Resources Authority	Met Services	Ministry of Agriculture and Fisheries	Caribbean Institute of Mass Communication (CARIMAC)	National Water Commission	Office of Disaster Preparedness and Emergency Management (ODPEM)	Private sector agricultural enterprise	Members of Parliament	Community-Based Organisations (CBOs)	National Environment and Planning Agency
World Bank	Ministry of Land, Water, Environment and Climate Change	University of the West Indies – Climate Studies	Rural Agricultural Development Agency (RADA)	Jamaica Information Service (JIS)	Jamaica Public Service Co (JPSCo)	Emergency Responders	Environment and Development Professionals (including engineers, architects, planners, etc.)	Councillors	NGOs- Red Cross, ADRA, Salvation Army etc. NGOs	Met Services
Ministry of Finance and Planning	National Irrigation Commission	Climate Change Division		PANOS Caribbean	Ministry of Transport, Works and Housing (MTWH)	Ministry of Health	General Insurance sector			Water Resources Authority
	National Water Commission					General Insurance sector				Planning Institute of Jamaica (PIOJ)
						Mines and Geology Division				World Bank

Application of Outputs

OUTPUT	APPLICATION
Climate and hydrological data and models - Water sector	• water availability and quality • promote micro-scale water harvesting technologies.
Climate data, modeling and scenario building- Agriculture sector and farmers	• use of climate smart cropping methods • use of drought tolerant crops • pest management mechanisms
Climate data and modeling - Fisheries sector	• importance of protecting mangroves to increase fish stock • respecting closed seasons • fish farming as a livelihood alternative
Hydrological and Met data – Health sector	• Effect of water supply and quality on sanitation • likely increase of vector borne illnesses such as malaria and dengue

OUTPUT	• APPLICATION
	• the need for tourism structures to withstand certain wind speeds • the availability of financial products that can support financial risk management • retrofitting and building adaptation • water recycling • water conservation measures • identify vulnerability • respect marine zones • consider product diversification to reduce dependence on climate sensitive resources.
Climate data and scenarios – Vulnerability and risk assessments	• importance of following building codes • need for identifying “no build” zones • the linking of disaster risk management and physical planning
Climate and hydrological models and scenarios - Insurance sector	• increase in risk to properties and persons • the various insurance options that exist
Climate and hydrological data and scenarios – Energy sector	• risk threatening the sustainability of hydropower energy supply in the future
Improved data to be provided and the data sharing platform	• communities involvement in watershed management and conservation activities • sector policies and programmes

…screening

- Project activities mainly positive environmental and social impacts
- improving weather and climate information and forecasting
- contribute to strengthening disaster risk management, reduction of vulnerability and loss, and increased productivity.

Regulatory Requirements

- NEPA Permit and License system
- No ICDIMP activities within prescribed categories for environmental permit
- Screening of activities under the Met Services and the WRA- civil works .
- Replacement of the Doppler Radar entailed some small civil works and other activities with some environmental consideration

Exclusion Screening

- List elements necessary for screening of each of the subprojects and activities in the future – applied once specifics are known about a particular location or action.
- Responsibility of the Implementing Agency (MSJ, WRA, or others) to review each proposed activity based on the specifics of each proposed location - as details become available during project implementation.
- Evaluation of whether a particular activity would potentially affect natural habitat or physical cultural resources, or involve any land acquisition, use or access.
- In such cases the associated World Bank Safeguard Policy would be triggered and the project activity would be ineligible and excluded from consideration.
- This screening function applicable to all proposed activities.

Project Screening & Exclusion Criteria

CRITERIA	YES / NO	
➢ Does the proposed project require the major construction or upgrading of new roads or opening new access routes?		
➢ Does the proposed project require the acquisition of any land, either temporarily or permanently; the removal of crops or destruction of any personal property; or, create any new restrictions to access of any sites, locations or roadways?		
➢ Would the works require leveling and clearing of lands with natural habitat (those water or land areas where most of the original plant and animal species are still present)?		
➢ Would the works affect cultural property, including any archeological or historical sites?		
➢ Is the project in a natural protected area, or could the project impact or affect the habitat of endangered species of plants or animals?		
➢ Could the project adversely affect natural resources (water intakes) or waterways (streams, rivers, or wetlands) by sedimentation, pollution, flooding, draining, or filling?		
➢ Will the project modify any coastal zone feature, reef or marine features?		

Indicative Impacts and Mitigating Measures

- intended to serve as a guide for the WRA and MSJ during the scoping of particular locations, actions, and plans.

- These screening/scoping and mitigation measures can be inserted in the contractual agreement with selected contractors.
- Each location or action must be screened by WRA and/or MSJ to ensure that all the pertinent environmental factors are being taken into account

Indicative Impacts and Mitigating Measures

Issues/Impact	Mitigation Consideration	Subcomponent
Site assessment for new and existing installations	Hazard vulnerability- flood and seismic risk, slope failure, etc.	All sites, especially AWS and stream gauges
Property ownership, use or access	Prohibit any land acquisition (temporary or permanent), change in land use (such as	All sites
Ease of Access	Minimal vegetation clearance and earthwork – minimize vegetation clearance and habitat destruction	All sites
	Prohibit expansion of roads or acquisition of lands for access	All sites
Waste management	Proper disposal of packaging for material - off site Avoid any burning	All sites
Installation of cables or	Minimize earthworks and slope instability	All sites

Work in stream beds	Maintain riparian rights and do not affect water use	Stream gages
	Control sediment generation and discharge	Stream gages
	Prohibit heavy equipment in streams or on banks; use	Stream gages
Refurbish old buildings	Appropriate disposal of debris generated, packaging, paint containers, chemical residue, etc. Use licensed waste disposal contractors to ensure	Radar site Stream gauge sites AWS
New structures	Minimise earthworks, consider site vulnerability to hazards	Stream gauge sites AWS
Materials Supply (Gravel, Concrete, Asphalt, etc.)	Environmental compliance of suppliers re dust control, and material spillage/loss during transport, delivery and storage	Stream gauge AWS Radar site
Noise	Close to residential area so consider time of day for installation. Ensure muffler systems attached for	Radar site
Dust	Regular wetting	All sites where necessary
Chance Find of Cultural Artifacts	Contact relevant authorities – Jamaica National Heritage Trust	All sites – weather and hydrological installations
Management of Solid Wastes	Collection, transport, and disposal of any debris	All sites
Management of toxic substances	Enforce use of safety gear for workers. Package empty containers for disposal by contractor.	All sites
Management of Hazardous waste	Contain waste and Contact NEPA	All sites

Emissions from Construction Equipment/vehicles	Keep equipment/vehicles in good running order	All sites
Management of spills from equipment	Appropriate clean up	All sites
Worker Health and safety	Sensitize workers and adhere to safety standards – protective gear as appropriate.	All sites
Management of wastewater from refurbishing and maintenance	Avoid runoff	Radar site

Standard Contract Language for Mitigation Measures

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
1. General Conditions	Notification and Worker Safety	(a) The Parish Council and respective communities have been notified of upcoming activities (b) The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites e.g. Library, post office, parish council office, site of the works, etc. (c) All legally required permits have been acquired for construction and/or rehabilitation (d) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. (e) On site construction workers will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) (f) Appropriate signposting of the radar site will

A. General Rehabilitation and /or Construction Activities	**Air Quality**	**(a) During interior refurbishing old carpeting, windows, doors etc. will be carefully removed and debris transported to temporary storage area on site** **(b) Debris shall be kept in controlled area and covered with tarpaulin** **(c) The surrounding environment (sidewalks, roads) shall be kept free of debris to minimize dust** **(e) There will be no open burning of construction / waste material at the site** **(f) There will be no excessive idling of construction vehicles at sites**
	Noise	(a) Construction noise will be limited to day time. (b) During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed. Equipment should be in good working order to further minimize noise

Water Quality	**(a) The site will establish appropriate erosion and sediment control measures such as e.g. silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers. No equipment should be used in or near channel bed and sides**
Waste management	(a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. (b) Construction waste will be collected and transported to landfill by licensed collectors

B. Wastewater treatment	Water Quality	(a) Existing system for handling sanitary wastes and wastewater from radar site to be inspected and upgraded if deemed necessary. (b) Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.
C. Historic building(s)	Cultural Heritage	(a) If installations of any new equipment are close to a designated historic structure, or located in a designated historic district, notification shall be made and approvals/permits obtained from Jamaica National Heritage Trust, Parish Councils (b) Provisions must be made for artifacts or other possible "chance finds" encountered in excavation or construction to be noted and registered, responsible officials at JNHT contacted.
D. Acquisition of land	Land Use or Access	(a) If acquisition or temporary use of land was not expected but is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, then the Bank's Task Team Leader shall be immediately consulted.

E. Toxic Materials	Asbestos management	(a) If asbestos is located on the project site, it shall be treated as hazardous material. (b Asbestos should be handled and disposed by skilled & experienced professionals (c) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. (d) Security measures will be taken against unauthorized removal from the site.
	Toxic / hazardous waste management	(a) Temporary storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information (b) The containers of hazardous substances shall be placed in a leak-proof container to prevent spillage and leaching (c) As far as practicable paints with toxic ingredients or solvents or lead-based paints should not be used (d) Any use of pesticides must be made by licensed and trained companies.

F. Affected forests, wetlands and/or protected areas	Protection	(a) All recognized natural habitats, wetlands and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. (b) A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided (c) Adjacent wetlands and streams shall be protected from construction site run-off with appropriate erosion and sediment control features - e.g. silt fences (e) No work is allowed in any Protected Area or Natural Habitats.
G Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	(a) In compliance with national regulations the contractor will ensure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to • Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards • Traffic management system and staff training, especially for site access and transportation of radar from port to installation site. - • Adjustment of working hours to local traffic patterns

Environmental Management Plan

- Defined by the Implementing Agencies (WRA and MSJ) using the methods described in Part II of this EMF.
- Includes procedures for :
  - definition of mitigation measures
  - enforcement of contract provisions,
  - record keeping of screening and inspections
  - reporting to PIOJ and the World Bank.

EMP

- WRA and MSJ will supervise their contractors in the field to ensure that the mitigation measures are indeed carried out according to monitoring program
- A simple monitoring program would entail:

- Project start-up. site selection, equipment transport and installation, installation of data systems, installation of tide gauge, refurbishing of Coopers Hill site offices for Radar installation
- Three month intervals for the first year - monitor on-going site selection and installation - AWS, stream gauges
- Twice per year after Year 1 to the end of the project for the longer duration subcomponents.

EMP

- Monitoring activities and EMP will be periodically reviewed by the world bank
- Will form the criteria for safeguards compliance in future evaluations.
- Final evaluation will be guided by the indicators for environmental quality objectives

In Summary

- Engagement of stakeholders pivotal to the successful implementation of the Investment Project
- Project beneficiaries have been identified, categorized and consulted.
- Sub-components of ICDIMP to be screened according to the Environmental Management Framework of the World Bank.
- Mitigation measures have been identified as appropriate
- Compiled in an Environmental Management Plan.
- **Conditions to be included in Contracts for small works**