National Stakeholder Consultations on Water: Supporting the Post-2015 Development Agenda

Antigua & Barbuda

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The Post 2015 Water Thematic Consultation

Priorities on Water Resources and Issues on WRM Monitoring and Reporting

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ANTIGUA & BARBUDA

Priorities on Water Resources and Issues on WRM Monitoring & Reporting

1. Importance of Water in National Development

Water is vital for our nation's existence – we drink it, we wash with it, we farm with it, we cook with it, we wash away waste with it – how sustainably we manage, develop, and use it will determine how sustainably we evolve as a people.

Antigua and Barbuda's rainfall averages 1,000 mm per year; however, this rain is seasonal with high inter-annual variability. For example, a single storm event (e.g. hurricane) can produce 400 mm of rainfall over a 2-day period. This demonstrates the importance of managing runoff water during wet periods so that it can be available during drier periods.

Most of Antigua's daily water supply is obtained from desalination water (approximately 70% during wet years and closer to 100% during very dry periods) with the remainder supplied by surface storage and wells.

Our demand for water is continually increasing with growing population, consumption patterns, and food demands. The water shortages currently experienced are due to a number of factors – not enough storage to hold water during rainfall events, not enough distribution pipes, not enough treatment plants, inefficient use of water in households, industry, and agriculture.

1.1. Food Security

Water quantity and quality plays a crucial role in contributing to the sustainability of agriculture, food production and by extension food security – food security plays a pivotal role in economic growth, political stability, and poverty reduction. With the population expected to increase, one can expect increased competition for water between food producers and other users in the coming years.

One of the main ingredients to achieving food security is the ***reliable access to safe and affordable water*** at acceptable levels of quality, availability and affordability. With the seasonal and inter-annual variability of rainfall in Antigua & Barbuda, much of freshwater must be stored in reservoirs and ponds and accessed by food producers during the drier periods.

1.2. Natural Environment

Ensuring ***clean water in adequate quantities*** is imperative for maintaining healthy ecosystems in the natural environment. A healthy natural environment provides human life-supporting goods and services

that are derived from aquatic ecosystems; some of these services and goods include regulations of floods, storage and water supply during dry periods, recharge of aquifers, irrigation for crops, coastline protection, climate change mitigation, and recreation and tourism.

The quantity and quality of water also determines the distribution and function of organisms in the ecosystem. The aquatic organisms take water from their surrounding while plants absorb water from the soil through their root system. Terrestrial animals take water from the plants they consume as well as directly from water storages.

Sewage must be treated before it reaches bodies of water (streams, reservoirs, aquifers, wetlands, oceans, etc.). Untreated sewage contaminates the water and, in time, can kill fish, coral reefs, and aquatic plants.

Maintaining the natural environment in a healthy state is vital for Antigua & Barbuda's future development as it has a significant impact on economic growth, political stability, and poverty.

1.3. Sanitation

If the entire population Antigua & Barbuda is provided with safe and convenient access to sanitation and drinking water then they would be marked improvement in the quality of life which will promote health, economic and environmental benefits while reducing poverty.

Investment in water and sanitation provides basic services and contributes to nutrition which leads to higher school and work attendance and productivity – such an environment promotes social equity and economic growth. Also, good quality water will require less costly water treatment.

Poor water and sanitation can adversely impact tourists visiting ANTIGUA & BARBUDA which can reduce foreign investment in the country. With climate change causing extremes in flooding and droughts, more investment will be required in resilient water and sanitation systems to ensure availability and safety of the water supply.

2. Key National Priorities for the S.D. of Water

2.1. Key WRM Priorities

2.1.1. Agriculture

The Ministry of Agriculture (MoA) recognizes that there is need for a ***clean, affordable, reliable source of freshwater*** to meet irrigation demands. In addition to increase the potential water storage, some effort is required by the Antigua Public Utilities Authority (APUA) and the MoA to promote best practices and water saving technologies. It is determined that priority should be given to:

- Constructing mini-dams in the Body Ponds and Pot Works watersheds;

- Cleaning badly silted reservoirs and ponds around Antigua; and
- Promoting soil and water conservation techniques to farmers in Antigua & Barbuda

To promote sustainable water quality and supply for agriculture, priority should be given to establishing an ***integrated watershed management strategy*** with emphasis on conservation of soil and water as well as water quality from the upper-watershed slopes to the coastal wetlands. To facilitate such an approach, it is determined that priority should be given to:

- Sensitizing farmers on the use and application of chemicals to minimize the impact of diffuse pollution, mainly from agriculture and forestry;
- Stakeholder representation and involvement in watershed management plans and development actions; and
- Improving coordination between the agricultural sector and the APUA, Environment Division, and the Central Board of Health (CBH).

There is need to develop a **pre and post disaster management plan for agriculture** as it relates to drought, floods, and hurricanes. The plan requires that priority should be given to:

- Planning for contingencies in preparation for breakdowns in essential services;
- Updating hazard maps, vulnerability zones, and capacity analysis; and
- Building capacity across agencies at all levels.

The ***promotion of appropriate and effective technology*** as it relates to water management in the agricultural sector is important. In this regard, priority should be given to:

- Introducing drought tolerant crops in dry areas;
- Installing drip irrigation systems to reduce wastage of water; and
- Designing and installing effective drains to reduce flooding and erosion.

Securing land tenure will allow food producers to raise productivity while exploring their options to access clean sources of water. In this regard, priority should be given to ***formalizing meaningful land tenure arrangements*** between food producers and the Ministry of Agriculture.

2.1.2. APUA

The APUA recognizes that an ***Integrated Water Resource Management (IWRM) policy*** is required to sustainably develop, manage, and use water. At present, an IWRM policy document has been completed by the APUA with input from a number of stakeholders. The document is awaiting final feedback before being presented to the cabinet of Antigua & Barbuda. This IWRM policy supports linkages between water supply and wastewater, water and agriculture, water and the environment, and water for other uses. In this regard, it is determined that priority should be given to:

- Establishing an institutional framework to advance the policies and legislation;
- Developing appropriate management instruments to support institutions; and

- Implementing the IWRM strategy.

The APUA is exploring the possibility of ***increasing freshwater storage*** to reduce the overall cost of water production. In this regard, it is determined that priority should be given to:

- Repairing dams in the Body Ponds and Pot Works watersheds;
- Cleaning badly silted reservoirs around Antigua; and
- Promoting water conservation techniques to the general public.

The APUA is aware that infrastructural development and water conservation campaigns will need ***reliable streams of finance.*** In this regard, It is determined that priority should be given to:

- Developing public and private sector partnerships;
- Establishing fees for ecosystem services; and
- Collaborating with UN organizations supporting climate change mitigation and adaptation projects and programs.

2.1.3. Industry

The tourism sector is the largest contributor (about 60%) to GDP in Antigua & Barbuda. A number of large hotels with added condominiums have been built close to Antigua and Barbuda's coastline. There is need to ***monitor, evaluate, and report on the wastewater and stormwater maintenance and operation systems*** at these tourism plants to ensure no pollution is entering wetlands or the ocean. In this regard, it was determined that priority should be given to:

- Formalizing collaboration mechanism between the APUA, Environment Division, and the CBH as regards to monitoring, evaluating and reporting water quality in major freshwater bodies and the marine environment;
- Ensuring wastewater and stormwater design meets DCA approval; and
- Ensuring compliance during installation and operation of wastewater and stormwater systems.

2.1.4. Energy

Significant energy is required to produce and pump desalination water. This energy requires fossil fuel (oil, gas) which drives-up the cost of producing desalination water. There is need to examine whether it's feasible to ***replace fossil fuels with renewable energy (solar, wind, waves)*** to power desalination units as well as pumps delivering irrigation water to remote farms. In the regard, it was determined that priority should be given to:

- Planning the transition of desalination plants from fossil fuels to renewable solar energy;
- Converting irrigation pumps, especially in remote areas, from fossil fuel to solar energy; and
- Promoting energy saving technologies in operation of desalination plants.

2.2. Key WASH Priorities

The individual toilet facilities at homes and businesses in St. John's City need to be redesigned and consolidated to ***channel waste to a central treatment plant*** or satellite plants. In this regard, priority should be given to:

- Planning and installing a central sewage plant/satellite plants in St. John's City;
- Pumping the treated water to a central storage location; and
- Utilizing treated water for specific irrigation demands, washing equipment, etc.

Planners for housing development projects must evaluate on-site conditions to ascertain whether ***individual septic tanks and/or soakaways are more effective and efficient than a central sewage treatment plant***. New developments that plan to use septic tanks and/or soak-away will need to be properly designed (e.g. considering soil percolation rate, proximity to water source, etc). In this regard, priority should be given to:

- Selecting optimal wastewater method (i.e. individual or central) for new developments – collaboration between project engineers and DCA; and
- Ensuring compliance with designed parameters approved by the DCA.

Development companies owning vast tracts of land should meet basic infrastructural requirements before subdividing the land into lots for sale. In this regard, priority should be given to:

- Ensuring developers provide drawings, showing the layout of the entire land with adequate space for basic infrastructure (e.g. water supply lines, wastewater tanks/soakaways), before DCA approves subdivision.

There is need for ***Effective legislation supported by meaningful regulations*** to deter actions that adversely impact the "public good" – e.g. channeling wastewater in streams and drains. In this regard, priority should be given to:

- Reassessing appropriate penalties for wastewater mismanagement;
- Promoting awareness campaigns in the media regarding wastewater management and penalties for infractions; and
- Educating school children and general public as to the do's and don'ts of solid and liquid waste disposal.

Many residential homes have their own water storages (cisterns, tanks) and usually manage water treatment without pertinent information regarding the quality and quantity of water. In such cases, priority must be given to:

- Providing outreach programs on the importance of periodic quality assessments of water storage, chemical use and specified dosage; and
- Providing water quality testing and treatment guidance for private water storages by the CBH.

WASH should be promoted and encouraged so as to maximize the benefits of available water and reduce water related diseases. In this regards, it is determined that priority should be given to:

- Ensuring all schools have adequate water and sanitation facilities;
- Providing hygiene education programs to school children and food vendors (e.g. importance of regular hand washing, etc.); and
- Promoting WASH at the household level (e.g. appropriate wastewater treatment and improved hygiene practices).

2.3. Key WW/Q Priorities

The Wastewater and Water Quality (WW/Q) section supports the establishment of an ***integrated watershed management strategy*** that produces water quality management plans based on catchments rather than administrative boundaries. The plan should define water quality management objectives and set water quality standards.

The state of Antigua & Barbuda is in need of a comprehensive ***Water Pollution Control Act*** which identifies parameters for water standards targeting point and non-point sources of pollution. In this regard, it is determined that priority should be given to:

- Introducing new **Directives** (e.g. nitrates, bathing water, drinking water, urban wastewater, etc.), which would result in codes of practice for sensitive areas.

Substances emitted to the aquatic environment should require a directive to manage dangerous substances; such Directives would require ***licensing, monitoring and control***. In this regard, it is determined that priority should be given to:

- Establishing a licensing regime requiring hotels and other industries to apply and receive permits to discharge effluents in coastal areas; and
- Collecting and testing effluent data periodically and promptly by the CBH and the Environment Division.

A ***funding mechanism*** is needed to manage non-point pollution programs that target cropland, construction sites, stream bank erosion, nutrient loads, and runoff from roadways and lawns. The funding should target priority watersheds and focus on sensitive zones within these basins that contribute a significant amount of pollutants to reservoirs, stream ways and coastline ecosystems. In this regard, it is determined that priority should be given to generating ***revenue streams from ecosystem services***.

There is a lack of trained officers and professionals in wastewater management in Antigua & Barbuda in this regard, it is determined that priority should be given to ***providing scholarship programs*** to Antiguans and Barbudans for obtaining a degree or certification in the field relevant to wastewater management and water quality.

2.4. Suggested Future S.D. Targets for Water

Some of this suggested future sustainable development targets for water in Antigua & Barbuda include:

- Implementing an IWRM program by 2014
- Constructing 6 mini-dams for agricultural use by 2020
- Cleaning three major reservoirs by 2016
- Repairing four dams and their spillways by 2020
- Installing a sewage treatment system in St. John's City by 2020
- Converting three farms from fossil fuel to solar energy by 2020
- Installing a 100,000 gpd RO desalination plant in Barbuda by 2014
- Establishing a watershed council by 2015
- Developing a clean water Act by 2020
- Transitioning desalination plants from fossil fuel to solar by 2030

3. WRM Monitoring and Reporting Issues

Routine monitoring of sensitive water bodies is lacking in Antigua & Barbuda. As articulated in Section 2.1.1. (Agriculture), there is need for ***protection of key watersheds in Antigua & Barbuda from point and non-point pollution*** impacting our surface and groundwater resources as well as our wetlands and marine resources. In this regard, it is determined that consideration should be given to:

- Periodic monitoring, evaluating, and reporting on the quality of critical freshwater and seawater bodies with a formalized coordination strategy linking the APUA, CBH, and the Environment Division; and
- Ensuring compliance with the WHO water quality guidelines. This will require:
    - Compliance at the point of use
    - Reporting on quality to an oversight body
    - Water suppliers informing consumers of drinking water quality

A National Agency (e.g. ***Watershed Management Council***) should have lead responsibility for ensuring that the guidelines and protocols are adhered to and implemented in a properly structured monitoring program. In this regard, it is determined that consideration should be given to:

- Developing protocols to test compliance and effectiveness of Best Management Practices (BMP's) in protecting water quality; and
- Establishing filed operating committees (officers from CBH, APUA) to respond to residual chlorine and water pH on a daily basis. This would be a rapid test until the microbiological results are analyzed within a week.

Annex: List of Participants

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