



*Key Elements for a National Policy for the Reuse of
Treated Wastewater*

Jamaica



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Content

1	Situational Analysis	5
1.1	Current Situation	5
1.2	Key Challenges	5
1.3	Reuse opportunities in Jamaica	6
2	Key Elements of the Policy	7
2.1	Long-term Vision	7
2.2	Goal	7
2.3	Objectives until 2030	7
2.4	Strategic actions	8
2.4.1	Strategic actions - 01: Baseline and public awareness	8
2.4.2	Strategic actions - 02: Legislative framework	10
2.4.3	Strategic actions - 03: Institutional Framework	11
3	Proposed Policy Components	13
	Annex	14
	Participants of Technical Working Group (TWG) Meetings	14

Tables

Table 1.	Opportunities for reuse of treated wastewater at short mid and long-term	6
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1 Situational Analysis

1.1 Current Situation

Water in sufficient quantity and quality is the base for economic growth and general wellbeing; yet in some parts of the country, the **overexploitation of groundwater** has been contributing to saltwater intrusion, resulting in a **decline in freshwater quantity and quality**, and negatively impacting future generations, especially as consequential challenges related to climate change are leading to increased stress on limited water resources.

1.2 Key Challenges

1. Currently, **freshwater** is **not widely perceived** as a **limited resource**, while **treated wastewater** is seen as a **waste**, not a resource.
2. **Concerns** about the level and consistency of the **quality of treated wastewater** lead to concerns about the reuse of wastewater for many purposes.
3. In the absence of **incentives and/or disincentives**, the reuse of treated wastewater is **not perceived as attractive by many key stakeholders**
4. Much of the **existing infrastructure**, including the wastewater treatment plants (WWTP), did **not contemplate the reuse of treated wastewater**. As a consequence, required standards for wastewater quality are not currently being

achieved further complicating the existing situation is the absence of **conveyance and distribution systems** associated with these WWTPs.

1.3 Reuse opportunities in Jamaica

Table 1. Opportunities for reuse of treated wastewater at short mid and long-term¹

Short-term	Mid-term	Long-term
Aquifer recharge		
Irrigation of green spaces, recreational areas and cemeteries (incl. within tourism sector)		
Non-potable industrial uses (e.g., cement industry, cooling)		
Fire-fighting		
	Toilet flushing or other lower quality uses in tourism sector	Laundry in tourism sector
Irrigation of agroforests (e.g., timber, fruit trees), pastures and sugar cane		
		Potable use

Pilot projects, water quality management and public awareness campaigning



Source: © GIZ/AKUT

¹ Short-term: up to 5 years;
mid-term: 5 to 10 years (requires policy and subsequent measures);
long-term: over 10 (requires change of perceptions and behaviors)

2 Key Elements of the Policy

2.1 Long-term Vision

Treated wastewater is sustainably managed and used as an accepted **water source**, enabling the **conservation of the country's freshwater resources**, sustainable economic growth and development, climate resilience and general wellbeing.

2.2 Goal

To ensure the **provision of treated wastewater** of specific quality and quantity intended **for various purposes**, thus contributing to water security and to the reduction of pollution loads introduced into the Caribbean Sea.

2.3 Objectives until 2030

1. To achieve a volume of reused treated wastewater of xx m³/year by 2030.
 - a. To improve the perception of Jamaicans regarding treated wastewater as a resource for non-potable uses.
 - b. To further enhance the legislative and institutional frameworks governing the reuse of treated wastewater.
 - c. To ensure that wastewater is available at the reuse locations in a quality according to the approved standards for reuse through the implementation of appropriate infrastructure.

2.4 Strategic actions

2.4.1 Strategic actions - 01² : Baseline and public awareness

1. Identify **current applications along existing irrigation infrastructure** and the **quality** of existing irrigation water sources.
 - Conduct surveys to identify the current applications of irrigation water distributed using existing irrigation infrastructure and their sources.
 - Collect and analyse water quality data from existing irrigation water sources and compare to treated wastewater quality for reuse in irrigation
 - Hold meetings with farmers and other key stakeholders to discuss their water needs and identify opportunities for wastewater reuse.
2. Determine a **water balance** considering water volumes per type of use and locations as well as volume, quality and location of WWTP effluents on **monthly basis to reflect seasonal changes**.
 - Collect data on the volumes and quality of effluent produced by WWTPs on a monthly basis to reflect seasonal changes.
 - Conduct water balance analyses to determine water volumes per type of use and location on monthly basis.
 - Identify potential areas for improvement in water management practices/type of irrigation.
3. Develop, implement and monitor **pilot projects** to demonstrate the viability of the use of treated wastewater to support critical economic and recreational activities, including agriculture.

² Set of Strategic Actions related to Objective 1 (01); for each of the three Objectives (see 2.3 Objectives until 2030) a set of Strategic Actions for the implementation of the Policy is being proposed.

- Identify and select economic activities (e.g., agriculture, tourism, aquifer recharge, industrial) to showcase the benefits and potential of wastewater reuse for different purposes.
 - For the identified pilots, identify the acceptable water quality for the pilot use, assess the quality and quantity of treated wastewater available, the infrastructure required to transport and distribute the water to the site for reuse.
 - Develop and implement the pilot with a monitoring and evaluation plan of the pilot projects, and use the results to inform and create confidence for scaling- up.
4. Develop and implement a **public education and awareness campaign/programme** on the potential benefits of wastewater reuse for different purposes, based on the results of above actions. Include **water use efficiency as crosscutting** topic in the campaign.
- Conduct Knowledge, Attitude, Practices and Behaviour (KAPB) surveys to inform the public education and awareness campaign/programme.
 - Develop and disseminate educational materials tailored to the needs and preferences of different target audiences, and ensure they are culturally appropriate and accessible
 - Monitor and evaluate the effectiveness of the educational campaigns/programmes, and use the results to refine and improve future outreach efforts.

2.4.2 Strategic actions - 02: Legislative framework

1. Amend the Natural Resources Conservation (Wastewater and Sludge) Regulations and the Public Health Act, to define effluent standards for different types of reuse.
 - Identify different types of reuse and define the respective quality requirements.
 - Establish minimum health standards under the *Public Health Act* for the different intended uses, including different types of crops.
 - Amend the relevant legislation accordingly.
2. Identify and entrench obligations and incentives for reuse of treated wastewater and conservation of freshwater
 - Define stipulations for obligations and incentives for reuse of treated wastewater and conservation of freshwater in the NRCA and WRA legislation, including licensing schemes.
 - Consult with stakeholders to identify potential incentives for the reuse of treated wastewater and conservation of freshwater.
 - Amend the relevant legislation accordingly.
3. Identify potential **urban planning / building requirements** (e.g., tourism, industry, green spaces), specify actions to consider potential for the reuse of treated wastewater in urban planning.
 - In siting an industrial zone, considerations will be given to the inclusion of a WWTP of certain capacity serving a dual purpose (i.e., treating wastewater and providing process water) based on the respective requisite studies.
 - Adapt the developer's manual to include reuse of treated wastewater.
 - Identify and include which new building requirements are needed in case of reuse.

- Explore the possible amendment of the building code and the building act to facilitate reuse of treated wastewater in the housing/ construction/ tourism/ industrial sectors.

2.4.3 Strategic actions - 03: Institutional Framework

1. Enhance the scope of the **effluent quality monitoring programme** (incl. online monitoring and automatic shut-off system when effluent quality is outside approved parameters) to ensure output quality and initiate implementation in most relevant WWTP.
 - Widen the scope of the effluent quality monitoring programme, including the use of online monitoring and automatic shut-off systems.
 - Implement the enhanced effluent quality monitoring programme in selected WWTPs to test its effectiveness (pilot for monitoring).
 - Disseminate the results to key stakeholders (i.e., regulators and users of treated wastewater) on an ongoing basis.
2. Develop and implement a **capacity building programme** targeting personnel of wastewater treatment facilities and laboratories related to the relevant regulatory authorities.
 - Develop a comprehensive training programme for personnel of wastewater treatment facilities and laboratories.
 - Conduct training sessions for personnel of selected wastewater treatment facilities and laboratories.
 - Monitor and evaluate the effectiveness of the capacity building programme, make adjustments as necessary.
3. Facilitate new investments to upgrade / modernize existing publicly-owned wastewater treatment plants (including online water meter to allow measurement of treated wastewater provided for reuse).

- The operators of publicly-owned wastewater treatment plants will undertake the development of the Capital Investment Plans/Programme (including WwTP upgrade and rehabilitation for wastewater reuse) and seek financing for their implementation.
 - Engage the Ministry of Finance, Economic Regulator (OUR) and other relevant government agencies to assist in the identification and institution of the measures (e.g., fiscal, tariff).
 - Enhance the inclusion of reuse of treated wastewater in PPPs in regards to the upgrade of the existing WwTP.
4. Facilitate investment in new infrastructure for wastewater reuse, e.g., additional conveyance and distribution infrastructure (incl. pumps and sustainable energy considerations), as well as aquifer recharge facilities.
- Identify and institute measures to facilitate greater investment for conveyance of treated wastewater for reuse.
 - Develop PPPs to facilitate greater investments in the reuse of treated wastewater.

3 Proposed Policy Components

- I. Introduction
- II. Legal and Institutional Framework
- III. Situational Analysis
- IV. Policy
 - 1. Vision, Goals and Strategic Objectives
 - 2. Strategic Actions and Measures
 - 3. Review and Evaluation
 - 4. Implementation Plan

Annex

Participants of Technical Working Group (TWG) Meetings

Participants first TWG Meeting - April 14, 2023

Name of participant	Organisation	Acronym
Avian Morgan-Johnson	Water Resources Authority	WRA
Carmalita Barnett	Ministry of Economic Growth and Job Creation	MEGJC
Emile Meyers	National Irrigation Commission Limited	NIC
Gillian Guthrie	Ministry of Economic Growth and Job Creation	MEGJC
Lewis Lakeman	National Water Commission	NWC
Michael Williams	Ministry of Health and Wellness	MoHW
Patrick Watson	Ministry of Local Government and Rural Development	MLGCD
Peter Clarke	Water Resources Authority	WRA
Richard Nelson	National Environment and Planning Agency	NEPA
Wendy Smith	National Water Commission	NWC
Zahra Oliphant	National Fisheries Authority	NFA

Participants second TWG Meeting - April 27, 2023

Name of participant	Organisation	Acronym
Avian Morgan-Johnson	Water Resources Authority	WRA
Carmalita Barnett	Ministry of Economic Growth and Job Creation	MEGJC
Dr. Galvin Bellamy	National Fisheries Authority	NFA
Everton Robinson	Rural Agriculture Development Agency	RADA
Gillian Guthrie	Ministry of Economic Growth and Job Creation	MEGJC
Michael Williams	Ministry of Health and Wellness	MoHW
Patrick Watson	Ministry of Local Government and Rural Development	MLGCD
Richard Nelson	National Environment and Planning Agency	NEPA
Wendy Smith	National Water Commission	NWC
Zahra Oliphant	National Fisheries Authority	NFA

Participants third TWG Meeting - May 18, 2023

Name of participant	Organisation	Acronym
Avian Morgan-Johnson	Water Resources Authority	WRA
Carmalita Barnett	Ministry of Economic Growth and Job Creation	MEGJC
Dr. Galvin Bellamy	National Fisheries Authority	NFA
Gillian Guthrie	Ministry of Economic Growth and Job Creation	MEGJC
Lewis Lakeman	National Water Commission	NWC
Peter Clarke	Water Resources Authority	WRA
Richard Nelson	National Environment and Planning Agency	NEPA
Wendy Smith	National Water Commission	NWC

Participants fourth TWG Meeting - June 12, 2023

Name of participant	Organisation	Acronym
Carmalita Barnett	Ministry of Economic Growth and Job Creation	MEGJC
Gillian Guthrie	Ministry of Economic Growth and Job Creation	MEGJC
Lewis Lakeman	National Water Commission	NWC
Richard Nelson	National Environment and Planning Agency	NEPA
Wendy Smith	National Water Commission	NWC
Zahra Oliphant	National Fisheries Authority	NFA

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