



UNESCO Intergovernmental Hydrological Programme (IHP)
National Report of The Bahamas, 2021
XIV Meeting of CoNaPHIs (Virtual Meetings, 26-28 April, 2021)

UNESCO-IHP Activities | Related Activities October 2018 thru March 2021

In The Bahamas, the Water and Sewage Corporation (WSC) continues to simultaneously exist as a regulatory body (via the Water Resources Management Unit - WRMU) and a public utility company; competing with several other private utility providers. WSC also shares regulatory oversight with other governmental agencies, such as the Ministry of Works (MOW), Ministry Of the Environment - Department of Environmental, Protection & Planning (DEPP), and the Ministry of Health - Department of Environmental Health Services (DEHS).

No formal IHP Meetings held during 2019 | 2020 with the core representatives of the National Committee [communications is via telephone / email]. The most recent formal meetings were held with the UNESCO National Commission during the Sept-2017 hosting of the XII CoNaPHIs Meeting in The Bahamas. [The IHP National Committee has had more than the usual discussions \(via virtual platform\), as the push is toward ensuring that the hydrological knowledge is disseminated via the University of The Bahamas \(UB\).](#)

The 'Core Individuals' of the IHP National Committee comprise of the following (all directly employed, or previously employed by WSC in a Hydrological Capacity):

- Senior Hydrologist | Department Head – Water Resources Management Unit (WRMU) and UNESCO-IHP Focal Point – The Bahamas,
- Past Hydrogeological Consultant (WSC) – Retired July-2015,
- Retired Hydrologist | Past Director at the Bahamas Environmental, Science, & Technology (BEST) Commission under the Ministry of the Environment – Presently with the University of The Bahamas,
- Retired Hydrologist | Water Quality Manager (WSC) – Retired 2019.

Priority Areas of Concern for Water Resources Management in The Bahamas remain to be:

- Climate Change / Variation - as it relates to rising sea levels, and storm surges associated with tropical storms. [[Sustainable Development](#) | [Vulnerability](#) | [Adaptation Measures](#)],
- Water Supply | Water Security - Transition from natural water supply areas (fresh groundwater supplies) to reverse osmosis sources and the partial/total abandonment of these areas [[Regulatory Framework](#) | [Renewable Energy](#)]; potential development of the unprotected groundwater areas [[Groundwater Governance](#)],
- Operational | Renewable Energy - Over-extraction of groundwater lenses, distribution water losses due to the antiquated systems [[NRW](#)]; or, use of conventional energy to produce/distribute water supplies {[OTEC](#) | [SDC/SWAC Research](#) – where a 20°C (36°F) temperature differential of cool/warm seawater is harvested to run a heat engine, using a low boiling point liquid like ammonia as the 'working fluid'}.





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SDC/SWAC uses cool seawater for the chiller applications. Required review of other alternative energy options to integrate towards the efficient production of the water service. [Note: NRW = Non Revenue Water \(Water Loss\), OTEC = Ocean Thermal Energy Conversion, and SDC = Seawater District Cooling \(SWAC = Seawater Air Conditioning\),](#)

- Environmental | Conservation - Land & coastal development, excavation of Wetland Areas, Forestry Reserves, Marina Construction, Golf Course Developments (or additional high water consumers); and other key concerns (fuel facilities, industrial and commercial effluents; their disposal, and storage). [[Groundwater Discussions, Explorations & Management; all per established IWRM policies, towards satisfying SDG-6.5.1](#)],
- General Water, Sanitation & Hygiene (WaSH) – The primary sewerage disposal method for households is by way of septic tank. While septic tanks do serve as primary treatment (separation), the effluent discharge is generally via a drainage field into the groundwater lens. The common use of providing water outside of the urban areas (and a cost effective option by residents) is by way of private groundwater wells. [[Water & Sanitation | Groundwater Governance](#)].

Activities within the framework of IHP at the National Level, capacity-building, and training activities are (2020 - 2021):

- UNESCO Graphic: North Andros Water Resources Area (a proposed UNESCO-IHP Project Site – resource area presently not in optimal use). Grand Bahama Water Resources Area (a priority water resources supply area for the island). Most recently, a Grand Bahama Water Resources Area has received GEF Funding for inclusion of studies/research under the UN Water Integrated Water, Land and Ecosystems Management in Caribbean Small Island Developing States (GEF-IWECO) Project Works (proposed to incorporate UNESCO-IHP activities). International university groundwater research continues for the North Andros Water Resources Area.

[UNESCO-IHP sponsored representative in Grand Bahama \(GB\), following the passage of Hurricane Dorian in Sept-2019 \(to continue thru 2021\). The Israeli humanitarian NGO IsraAid assisted GB with water resources response in Sept-2019 and has expanded related efforts to Abaco. In Jan-2020, UNESCO-IHP Focal Point efforts to pair both UNESCO-IHP and IsraAid for the full coverage of the primary groundwater resource areas of The Bahamas: Andros Abaco, and GB.](#)

- National Science Committee under The Bahamas National Commission for UNESCO (since Sept-2018), and commitment by the UNESCO-IHP Focal Point to Chair the same.





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- Formal UNESCO-IHP Committee formation at the University of The Bahamas (2018 - 2020). During the UNESCO XII CoNaPHIs Meetings – Nassau, The Bahamas (Sept-2017); the commitment was made to establish the same in the University of The Bahamas (UB) system, under their Sustainable Development Programme for SIDs.

To date, UB has been paired with ongoing activities inclusive of: IsraAid [groundwater resources investigations on Abaco, Andros, and GB], UNESCO-Graphic [groundwater resources | climate change on Andros & GB], unicef [Marsh Harbour, Abaco Wellfield Solarization Project], GWP-C + UNEP [sponsored efforts to complete the collection of data for SDG Indicator 6.5.1 – Degree of IWRM Implementation], and UNESCO-IHE + Technical University of Delft [efforts to address environment and water related matters on GB].

- UNESCO-IHP Ecohydrology LAC Project Site: Lake Victoria, Exuma Wetlands Restoration Project Proposal, under the call for UNESCO-Ecohydrology. "Ecohydrology considers the functional interrelations between hydrology and aquatic ecosystems and their biota at the catchment (watershed) scale. It considers the use of ecosystem processes as tools to meet freshwater resource management goals, such as enhancing natural processes of nutrient retention to avoid harmful algal blooms. In effect, it proposes a 'dual regulation' of the system by simultaneously using ecological and hydrological processes to enhance the overall integrity of aquatic ecosystems in the face of human-mediated alterations." [An additional proposed UNESCO-Ecohydrology project study area is Lake Cunningham, New Providence.](#)

Cooperation with International | Regional water centres under the auspices of UNESCO (2018 – 2020):

- UNESCO-IHP Council Meetings (Virtual Platform) for IHP Phase IX – Paris, France (2020 - 2021). In the determination of “additionally continued efforts to meet the eight indicators of Sustainable development Goal 6 (SDG6), along with other important and related water goals at various scales will underscore UNESCO’s efforts during the Ninth Phase of the IHP (2022-2029).”
- UNESCO-IHP Co-Sponsored Caribbean Water and Wastewater Association (CWWA) Annual Convention & Water Ministers High Level Forum (HLF) Participation – Saint Kitts & Nevis (Oct-2019).
- UNESCO-Ecohydrology Demo Project Site Meetings at Puerto Ayora, Galapagos Islands (Galapagos, 2019). Presentation on The Bahamas Victoria Pond Restoration Site, Georgetown Exuma {Project site managed by Kathleen Sullivan Sealy, Ph.D - University of Miami, FL. USA}.





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- CWWA Annual Convention & Water Ministers HLF Participation – Montego Bay, Jamaica (October-2018). Recall that during the XII Meeting UNESCO CoNaPHIs in Nassau, The Bahamas (18-20 September 2017). A resolution was presented and approved for UNESCO-IHP and the CWWA to enter into a Memorandum of Understanding.
- UNESCO International Science School Attendance – Havana, Cuba (May-2018): “Building resilient societies through the links between research, disaster risk reduction and climate change adaptation in the Caribbean”. Bahamas presentation on the UNESCO Graphic Project Data and related ongoing research into OTEC/SDC for use in The Bahamas.

Publications:

- UNESCO-IHP Graphic Latin America & Caribbean (LAC) Publication of Case Studies for 2017/2018 ([updated for further research in Dec-2020](#)). **Case Study on Climate Change and Water Resources, in The Bahamas** {Use of the reverse geothermal conditions, towards adaptation measures}, By John A. Bowleg, P.E.
- UNESCO-IHP Ecohydrology LAC Project Site Reports for Exuma Site 2017/2018 ([present 2021 updates for UNESCO-IHP publication](#)). **Victoria Pond Restoration Project. Great Exuma, The Bahamas. Eco-Hydrology Demonstration Project.** By Kathleen Sullivan Sealey, Ph.D. (assisted by John A. Bowleg, P.E.).

Participation in International Scientific Meetings (2019 – 2020):

- Inter American Development Bank (IaDB) Sponsored Sanitation Initiative Workshop – Panama City, Panama (June-2019),
- 125th China Import & Export Trade Fair - Guangzhou, China (Apr-2019).

Other Regional activities:

- Assist the University of The Bahamas (UB) with the incorporation of specific water features for the Bahamas World Expo 2020-2021 Pavilion in Dubai, UAE.





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Future Activities of UNESCO-IHP Committee (Bahamas)

Activities planned until December 2021:

- The Bahamas to attend the XIV CoNaPHIs Meetings (Virtual),
- UNESCO-Graphic (partial sponsored) Hurricane Dorian Response activities on Grand Bahama to continue in March/April-2021,
- UNESCO-Graphic + IsraAid coordinated activities for Andros, Abaco, and Grand Bahama,
- UNESCO-Ecohydrology activities for The Bahamas,
- Continued UNESCO-IHP Committee functions at the University of The Bahamas.

Activities foreseen for 2021-2022:

- [Chairman activities of the UNESCO-IHP Focal Point toward the UNESCO-Bahamas Science Committee,](#)
- [Continued UNESCO-Graphic projects works on Andros & Grand Bahama, and](#)
- [Continued UNESCO-Ecohydrology works for The Bahamas.](#)

Activities envisaged in the long term:

- [Permanent establishment of a Bahamas CoNaPHIs within the University of The Bahamas System for groundwater resources research & development at the National Level.](#)
- [UNESCO-IHP workshops and Programmes under the University of The Bahamas.](#)
- [UB to serve as the base for water resources research & development in The Bahamas, and Water Resources Regulations \(WSC-WRMU functions\) compiled under the Ministry Of the Environment, with the transition of WSC to a wholly Utility Firm. Desired UNESCO-IHP supported efforts at UB for water resources.](#)

