Global Water Partnership Caribbean

Workshop Report

IWRM Knowledge Management Workshop

The University of the West Indies (UWI)
Cave Hill Campus

June 5th - 6th 2013

Global Water Partnership Caribbean

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1.0 Introduction

The Integrated Water Resources Management (IWRM) Knowledge Management Workshop was a joint venture between the Global Water Partnership Organisation (GWPO) based in Stockholm, the Global Water Partnership-Caribbean (GWP-C) and the Centre for Resource Management and Environmental Studies (CERMES) based at The University of the West Indies (UWI), Cave Hill Campus in Barbados.

The workshop is an outgrowth of the GWP-C Strategic Goal to **Reinforce Knowledge Sharing and Communications** *and focuses on developing the capacity to share knowledge and to promote a dynamic communications culture, so as to support better water management*. The aim of which is to provide a platform for the exchange of knowledge between various institutions and specialists and also to promote the use of the GWP IWRM Toolbox in universities for knowledge exchange and capacity development.

Attending the workshop were university professors, lecturers and specialists from various Caribbean countries including Barbados, Belize, Grenada, Guyana, Jamaica, Suriname, Trinidad and Tobago and the United States (US) Virgin Islands. Also in attendance were students currently pursuing their Master's degree in Natural Resource and Environmental Management at CERMES.

The workshop also aimed to promote the Toolbox as a repository for information on water resources in the Caribbean through the inclusion of more case studies arising out of the Caribbean. These case studies are an important aspect of the Toolbox as they illustrate projects undertaken; challenges and setbacks encountered; and also the methods and approaches that worked best in a particular cultural, economic and political context.

In the Caribbean, there are several universities and educational institutions which offer various water related courses and programmes but there is minimal communication between these institutions. The result is that each exists within a sphere of isolation as to what the other is offering and how they can learn from the other and make improvements. Additionally, very few institutions actually offer complete degree programmes in the area of IWRM while others simply offer a few courses. Some provide courses in water management which are indirectly related to the area with approaches from various perspectives of management. Furthermore, there is a lack of awareness and material that educators and specialists in the field can use in their teaching as a way to engage students in the real challenges faced during the planning and implementation processes of IWRM. The workshop therefore sought to facilitate a platform to address these issues.

The training was essentially divided into the following activities:

1) Overviews: GWP-C purpose and activities; GWP-C IWRM toolbox
2) Sharing of information on existing training initiatives in the Caribbean with respect to capacity building in Water Resource Management and how the academic community is contributing to IWRM
3) Open Discussions
4) Small Group Discussions

2.0 Opening Ceremony and Remarks

2.1 Welcome Remarks - Dr. Adrian Cashman, CERMES

Dr. Adrian Cashman welcomed participants to the island of Barbados and The UWI Cave Hill Campus the "gem in UWI's crown". He remarked that the time of the workshop was the most opportune with the Campus celebrating 50 years since its establishment. He spoke about the changes in the intellectual infrastructure and the transition of The UWI from being a regional player to a global one and a driving force of Caribbean development. He also pointed out that the work of the GWP-C and GWPO through the workshop was well aligned with the strategic goal and vision of The University. Dr. Cashman highlighted that the CERMES since 1986 served as a hub for environmental teaching and through its partnership with GWP-C is also helping to fill the need for professional development in the region. An important point brought out was that the region is good at science but there has been no significant progress in terms of the implementation of IWRM practices. The problem lies with getting the message across to the decision makers, by tailoring it so that they are persuaded to act. The prerequisite for getting the desired messages across to the intended audience requires the specialists and educators in the region to become better communicators. Finally, he highlighted the potential of the workshop to help with shaping and the sharing of that information.

2.2 Remarks - Ms. Avril Alexander, Regional Coordinator GWP-C

Ms. Avril Alexander acknowledged the presence of GWPO representatives from Stockholm, university lecturers and professors, water resources management specialists, students and members of the media. She pointed out to participants that this was the first time the IWRM Knowledge Management workshop was being held in the Caribbean and that she was pleased that GWPO approached GWP-C to have it done. She noted that the IWRM Toolbox is central to the Global Water Partnership's (GWP's) efforts to connect those who can provide knowledge with those who need knowledge on IWRM. The training taking place at this workshop would

therefore be part of a wider process of building awareness on IWRM and sharing knowledge on its use and implementation. It was expressed that the GWP-C hopes to build a closer working relationship on knowledge sharing on IWRM with Caribbean universities which would ultimately lead to the Toolbox being widely incorporated into IWRM education in the Caribbean. The Toolbox has been used over the past 10 years in university education in the areas of water resources management, urban and spatial planning courses and environmental sciences. Ms. Alexander stated that stakeholders have the power to impart knowledge on water management with the use of the Toolbox to their peers, students and other stakeholders who can further share the information. Finally, it was indicated that participants would recognise the added value the Toolbox can bring to their work and water resources management programmes at their universities and institutes.

2.3 Address - Ms. Patricia Atherley, Coordinator, UWI Learning Resource Centre

Ms. Patricia Atherley indicated that at the university level, blended learning is now the focus and gave an address highlighting the usefulness of web based tools as a part of blended learning, which by definition is the full incorporation of technology as a part of the learning process instead of just an addition. The use of different online teaching tools is contingent on their effectiveness in accomplishing the learning goals and objectives, with particular attention being paid to the course load. Considering that fact, the GWP Toolbox is indeed a web based tool. GWP's attempt to incorporate the IWRM Toolbox (an open education resource) in universities in the region shows there is need for a shift towards the blended learning approach to maximise the effective use of the Toolbox.

2.4 Closing - Professor Henry Smith, University of the Virgin Islands

Professor Henry Smith expressed his thankfulness to the workshop's organisers: GWPO, GWP-C and the CERMES. He also expressed appreciation to the participating university professors and lecturers, water resource management specialists and students. Professor Smith closed with the statement "It doesn't end with what happens here but the success comes with what happens after."

3.0 Overview of the IWRM Toolbox - Dr. Danka Thalmeinerova, GWPO Senior Knowledge Management Officer

3.1 General information

In giving her overview of the IWRM Toolbox, Dr. Danka Thalmeinerova first explained that the tools in the Toolbox are not the product of GWP solely but the product of numerous partners and that the GWP is primarily knowledge-based. She pointed out that the GWP is now in the process of phasing out its old strategy and doing an assessment of its results. The Partnership is also undergoing its desired transition from information management to knowledge management, sharing and implementation in order to more effectively meet its objectives.

Dr. Thalmeinerova explained that the objective of IWRM is not water management but human development. In keeping with its focus on knowledge management, lessons learnt by the GWP over the years were captured in various publications produced by the GWP technical committee in different languages and is available free of charge upon request. In addition to this, technical information from different regions is also produced but additional information is welcomed. A main challenge brought out was to determine how to incorporate IWRM into the curricula and the convergence of the **concept** of IWRM and the **practice.**

3.2 Contributing to the Toolbox

Relevant material has the potential to be included in the Toolbox and partners and participants are encouraged to contribute to the Toolbox (with the work they are currently undertaking or existing work that has not been documented) in the form of case studies.

3.3 Characteristics of a Case Study

Participants were given guidelines as to what are the characteristics of a case study. It was outlined that a case study should identify a problem that needs to be addressed, highlight the action taken, expected and unexpected outcomes, impact of action, resources needed, sustainability of outcomes, lessons learnt and links to supporting information. In addition, it was stated that the cases are not limited to success stories but also failures because lessons can also be learnt. Cases should also reflect the application of tools shown in the Toolbox and have a relevance to IWRM and how that approach supports water management across sectors. A case study is therefore a practical and not a theoretical solution or approach, giving guidelines or recommendations of what should be done rather than what was done.

4.0 IWRM and University Education

Presentations were made by educators from various universities and educational institutions in the Caribbean including: The University of Belize (UB), University of the Virgin Islands (UVI), University of Guyana (UG), College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT), University of the Southern Caribbean (USC), University of the West Indies, Mona Campus and The University of the West Indies, St. Augustine Campus (UWI. Each participant shared with the group related courses or programmes offered by their institution which are presented in Table 4.1 below.

Table 4.1: Illustration of water related programmes and courses offered by various educational institutions in the Caribbean, represented at the workshop.

University	Name(s) of Programmes/Departments With Water Related Content	Name of Water Related Course(s)	Number of Water Related Courses
University of Belize	• Natural Resource Management Programme	• Watershed Management Course Year 3.	1
University of the Virgin Islands		• Introduction to Meteorology	1
College of Science, Technology and Applied Arts of Trinidad and Tobago	• Associate Degree Water Resources Management and Technology	• Hydro Meteorology; Surface Water Hydrology; Ground Water Hydrology; Watershed Management and Soil Conservation; Water Quality Control; Drainage and Irrigation	23
	• B.Sc. Degree Water Resources Management and Technology	• Surface Water Hydrology II; Groundwater Hydrology I; Hydrological Data Development; Coastal Zone Management and Technology	
	• Associate Degree in Water and Wastewater Management Service and Technology	• Wastewater Engineering; Wastewater Operations and Maintenance; Wastewater Treatment Process; Wastewater Planning and Development; Advanced Wastewater Treatment	

University	Name(s) of Programmes/Departments With Water Related Content	Name of Water Related Course(s)	Number of Water Related Courses
	• B.Sc. Degree in Water and Wastewater Management Service and Technology	• Surface Water Hydrology II; Biological Principles of Water and Wastewater Management; Water Resource Management; Water and Wastewater Plant Operations and Maintenance; Chemistry for Water and Wastewater	
University of the West Indies, Mona Campus	• M.Sc. in Integrated Urban and Rural Environment (IUREM)	• Land and Water (Grad) • Waste Management Systems: Water and Waste Water (Grad) • Waste Management Systems: Solid Waste and Water and Waste Water	12
	• M.Sc. in Natural Resource Management: Marine and Terrestrial Ecosystems (NRM: Ma TE) Specialisation: (a) Land and Water (b) Water and Wastewater Management	• Land and Water (Grad) • Water and Waste Water Management (Grad) • IWRM GWP-C Website (Teaching Material) • GWP Toolbox (Teaching Material)	
	• B.Sc. Geography and Geology	• Water Resources (Undergrad) • Hydrology and Hydrological Modelling(Undergrad); Water Governance (Sub section) • Urban and Regional Planning (Undergrad)	
University of the West Indies, St. Augustine	• Major in National and Environmental Resource Management	• Integrated Watershed management • Introduction to Agro-Environmental Management	10
	• Major in Geography	• Climate and Biosphere Meteorology and Climatology	

University	Name(s) of Programmes/Departments With Water Related Content	Name of Water Related Course(s)	Number of Water Related Courses
	• B.Sc. Geomatics/B.Sc. Land Management	• Hydrographic Surveying • Hydrography	
	• B.Sc. Civil/Environmental Engineering	• Engineering Hydrology	
	• M.Sc. Water and Wastewater Service Management	• Advanced Engineering Hydrology • Water Resources Metrics • Water and Wastewater Engineering • Transport of Pollutants	
University of Guyana	• Faculty of Technology: Department of Civil Engineering	• Hydrology • Water and Wastewater Engineering • Drainage and Irrigation • Water Resources Planning and Development • Coastal Engineering	7
	• School of Earth and Environmental Sciences	• Aquatic Sciences • Water Resource Management	
	• Post Graduate Certificate in Water Resource Management		
	• Short Courses for the Water Sector in the Caribbean		
University of the Southern Caribbean	• Post Graduate Certificate in Waste Management • Water Quality Monitoring (Research) • M.Sc. Energy Management		

5.0 Discussions

5.1 Reaching decision-makers

Participants discussed the need to reach decision-makers and the need for citizens to be empowered by knowing their rights resulting in them having the desired impact on the politicians and decision-makers.

Moreover there is a need to know what the methods of engagement are when approaching the decision-makers and the importance of being backed by more research, case studies, models specifically developed for the region and the academic environment to offer reliability and credibility. Also driving the need for research is the fact that new methodologies are needed as old ones become obsolete and this also contributes to the credibility of the information provided to decision-makers.

5.2 Data Needs

Through collaboration with regional entities for instance the Caribbean Community Climate Change Centre (CCCCC), data could be obtained for research and this was recognised as a huge potential for countries that lacked the capacity to acquire the data themselves.

5.3 Communication and information exchange

The point was made that even though the workshop participants live in a small region they were not aware of what each other were doing and teaching in water resource management and this in itself was an inherent obstacle when approaching decision-makers because the experts in the region are not collaborating and networking to facilitate the exchange of information.

In order to be more effective a suitable communication strategy is needed. The free flow of information throughout the region and the implementation of the ideas are crucial, bearing in mind that the collaboration has to be win-win otherwise it could collapse. It was strongly recommended that there be a communication platform to facilitate two-way communication and not just the dissemination of information by one party.

4.4 Online courses

Efforts should be made to provide online courses. These online courses should not be intended to undermine tertiary level institutions but to spark interest in the area and direct those seeking further information and more specialised education to the relevant tertiary level institution.

6.0 The Need for Toolbox Case Studies and GWP Toolbox Opportunities – Dr. Danka Thalmeinerova, GWPO Senior Knowledge Management Officer

6.1 Guidance on Case Study Submissions

Dr. Thalmeinerova stated that it is the hope of the GWP that the workshop would lead to the submission of more case studies from the region. It was noted that even the research work of students were possible sources of case studies and that students should utilise the opportunity to have their thesis work published.

It was also noted that there needs to be follow-up on submitted case studies in order to update them or track additional progress and outcomes. The individual or institution beginning the research should be the one to do the follow-up, however this does not always take place. Regional GWP Secretariats can play a role in this process for those case studies submitted from their respective regions.

For case studies submitted, the selection of appropriate ones would be done by the GWPO Knowledge Management Officers Dr. Danka Thalmeinerova and Mr. Kenge Gunya and selected on the criteria of reliability and quality.

6.2 Potential Case Studies from the Caribbean

Workshop participants were divided into small groups in order to facilitate discussion on potential case studies from the region arising out of the work of the lecturers; or from other projects and initiatives which they were aware of and which could potentially be developed into a case study. See Annex 3 for a list of potential case studies arising from small group discussions.

7.0 The Development of a Caribbean Knowledge Centre

7.1 Convergence of Regional Expertise:

There is a need for the convergence of regional expertise in water management but what needs to be determined is the mechanism for accomplishing it. Knowledge Centres are tools that facilitate the realisation of that objective.

7.2 Coordinating Mechanism

In order to coordinate and manage all the processes of a Knowledge Centre a coordinating mechanism needs to be introduced where a particular group of personnel would manage the overall operations of the platform in addition to a hub of key stakeholders who would form a type of Steering Committee and would provide strategic objectives and goals. However, it must be noted that the choice of coordinating mechanism strongly influences the platform that would be used.

7.3 Possible Platforms

In the absence of Knowledge Centres, universities in the Caribbean can provide the platform for the establishment of such centres where training, collaboration on IWRM education, and the dissemination of information to users in an appropriate format can be facilitated.

Another possible platform that can provide the convergence of regional expertise would be the utilisation of a website that can facilitate collaboration, dissemination of information and training. The process could begin with the establishment of an online network possibly facilitated by the GWP-C's website where forums and seminars could take place which would then evolve and incorporate other aspects such as training through online short courses and dissemination of information to other stakeholders.

9.0 Recommendations and Possible Actions Arising out of the Workshop

The following recommendations and possible actions were produced during the workshop:

1. Due to the lack of information sharing and awareness of water-related programmes offered by the various tertiary level institutions in the Caribbean region there is a strong need to begin with at least the basic networking of stakeholders present at the workshop. This networking would be facilitated by the GWP-C website and managed by the GWP-C Secretariat.

   However, in the long-term there is a greater need for a better coordinating mechanism administered by a group of stakeholders in order to institutionalise the programme and provide sustainable funding to prevent the programme from collapsing.

2. This networking initiative should eventually evolve to accommodate the exchange of information ultimately growing to the point of offering various courses of different levels and duration as a means of providing water education to those who cannot

attend a physical institution but not replacing the role of physical institutions. The coordinating mechanism and platform to facilitate this is yet to be decided upon. These courses would be the result of a joint effort of water specialists, educators and academics in the region. However, this established programme should operate above the university structure, and in keeping with the "integrated" principle of the IWRM approach should involve members from industry and other stakeholders. However, this sharing of information must be a win-win situation to prevent the withholding of information.

3. There is a need for an effective communications framework and strategy to approach the decision-makers. Information needs to be produced in a language understood by the decision-makers.

4. There is the opportunity for stakeholders to make use of the current research and projects they are involved in to produce case studies to be submitted to GWPO for review and addition to the Toolbox website.

5. Current Caribbean case studies posted on the IWRM Toolbox website require updating and follow-up for any new information. The regional Secretariat could play a part in follow-up and updating of case studies they commissioned.

6. Projects of a high quality by students also have the potential to be accepted as case studies.

Annex 1: Agenda for IWRM Knowledge Management Workshop (GWP Toolbox)

Day One – June 5, 2013	
Time	**Activity**
9:00 a.m. – 9:30 a.m.	**Opening Ceremony & Remarks** Welcome Remarks: Mr. Peter Gibbs, Dean, The UWI, Faculty of Science and Technology Remarks: Ms. Avril Alexander, Regional Coordinator, GWP-C Vote of Thanks: Dr. Adrian Cashman, The UWI – CERMES
9:30 a.m. – 10:00 a.m.	**Purpose & Introductions** GWP-C Steering Committee Member: Dr. Adrian Cashman Address: Ms. Patricia Atherley, Coordinator – The UWI - Learning Resources Centre
10:00 a.m. - 10:15 a.m.	**Overview of GWP-Caribbean** GWP-C Regional Coordinator, Ms. Avril Alexander
10:15 a.m. – 10:45 a.m.	**Overview of the IWRM Toolbox** GWPO Knowledge Management Officer: Dr. Danka Thalmeinerova
10:45 a.m. – 11:00 a.m.	**Full Coffee Break**
11:00 a.m. – 12:30 p.m. 5-10 mins presentation 30 mins discussion	**<u>IWRM & University Education</u>** The purpose of this session is to share information on existing training initiatives in the wider Caribbean with respect to capacity building in water resources management, and how the academic community is contributing to IWRM. University of Belize — Dr. Elma Kay University of Puerto Rico — Dr. Edwin Hernandez University of the Virgin Islands — Professor Henry Smith University of Guyana — Ms. Shanomae Rose
12:30 p.m. – 1:30 p.m.	**Lunch**

1:30 p.m. – 3:00 p.m. 5-10 mins presentation 30 mins discussion	**<u>IWRM & University Education continued</u>** COSTAAT — Mrs. Glenda Charles-Harris University of the Southern Caribbean — Dr. Devon Gardner University of the West Indies – Mona — Drs. David Smith and Arpita Mandal University of the West Indies – St Augustine — Dr. Matthew Wilson
3:00 p.m. – 3:30 p.m.	**Coffee/Tea Break**
3:30 p.m. – 4:30 p.m.	**Caribbean Water Sector Knowledge Management, Needs and Dissemination: Synthesis of Points Arising from Previous Discussion** Small group discussions focusing on points arising, e.g. what's best practice, learning and teaching gaps, learning and teaching support, emerging trends, etc. (to be finalised on the day)
4:30 p.m. – 5:00 p.m.	**Wrap Up of Day 1** Mr. Kenge James Gunya

Day Two – June 6, 2013	
Time	**Activity**
9:00 a.m. – 9:15 a.m.	Introduction to Day 2 Dr. Adrian Cashman
9:15 a.m. – 10:30 a.m.	Need for Toolbox Case Studies and GWP Toolbox Opportunities Moderated by: Dr. Danka Thalmeinerova
10:30 a.m. – 10:45 a.m.	Full Coffee Break
10:45 a.m. – 12:00 a.m.	Knowledge Products and Services – Small Group Discussion Identification and Development of Case Studies What's Needed to Develop Case Studies Regional Technical Briefs

12:00 – 1:00 p.m.	Developing a Caribbean Knowledge Centre: Need for a Knowledge Centre – Objectives and Mission Concept & Functioning of a Centre – Type of Administration, financing requirements, supporting organisation and hosting Capacity Development and Knowledge Enhancement, Bridging the Science-Policy Interface Feasibility (E-Learning Approach?)
1:00 p.m. – 1:30 p.m.	Overview of Outcomes, Wrap Up & Next Steps Dr. Danka Thalmeinerova
1:30 p.m.	Lunch

Global Water Partnership Caribbean

Annex 2: List of Participants

#	Name of Participant	Title and Organisation	Contact Details
1	**Mr. Edmund BRATHWAITE** Water Resources Management Student	The UWI – CERMES, Cave Hill Campus Barbados	**Email:** edmundbrathwaite@gmail.com
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Annex 3: Potential Case Study Ideas from Small Group Discussions

Group Number	Individuals in Group	Potential Case Study
1	1. Prof. Henry Smith 2. Dr. Devon Gardener 3. Ms. Shanomae Rose	A Pilot Project is currently being done by the CCCCC in the area of Bio-Fuels Production, of which some types are water intensive. However there was no consultation and input from water managers and as a result, the issues of Water Resource Management are not featured in the documentation of production to reflect the implication for water resource management.
		There was a CARIWIN work project done between the CIMH and the Risk Centre at the Mc Gill University which looked at Draught and Precipitation Management. There are papers and resources available online that need to be looked at.
		Work done by the CEHI with Rain Water Harvesting (RWH) and Integrated and Costal Management Project in Antigua. Demonstrations were also done on RWH and Sewerage and Wastewater Management.
		Work done by CCCCC on the change of land use and crop shift and the associated change in water management. For instance the change of land use form growing of sugar cane crops to Housing and the change in water management

Group Number	Individuals in Group	Potential Case Study
2	1. Mrs. Glenda Charles-Harris 2. Dr. Arpita Mandal 3. Dr. David Smith	A project was done by Royal Bank of Canada Trinidad and Tobago which focused on the production of a manual for the setting up of RWH systems in Trinidad. The community was also educated on human health and the using of water domestically. The project was eventually stopped by the donors but manuals were distributed.
		A project instituted in Jamaica and St Thomas for the setting up of a Community water system because the National Water Commission (NWC) was not supplying the community with water. A source of water was located but the project was stopped for possible political reasons
		A project on the flood warning system in Jamaica; the Rio Cobre. Flooding provides a danger to motorists in the area. Further work is needed as to what line of action needs to be taken when the system is triggered
		Rainbow RWH project in Jamaica. Further investigation needs to be done to determine if the RWH done there was used by the Water Resource Authority (WRA)
3	1. Mrs. Marilyn Crichlow 2. Dr. Martin Forde 3. Dr. Matthew Wilson	There is a need for case studies into the existing IWRM plans in the region which worked and the ones that have not worked and the reason(s) why. It was highlighted that there is a tangible need for Government support for instance in Jamaica there was a ministry of Water established. In addition an institutional framework should be structured and in such a way so as to prevent a conflict of interest when one is expected to be a watchdog for the other. Possible Countries to look at would be Grenada, Barbados, Jamaica and Trinidad and Tobago. A project by USAID to review the Water Policies and Legislation in OECS countries would provide vital information in this project.

Group Number	Individuals in Group	Potential Case Study
4	1. Prof. Sieuwnath Naipal 2. Dr. Elma Kay 3. Dr. Adrian Cashman	Potential for a case study in Suriname where along a long water channel herbicides were used as a low cost method for controlling weed overgrowth along the channel, which happens to be a source of water for irrigating rice. There has been high yield since the implementation of the overgrowth control but there are long term negative effects. There is a water board that is in charge of maintaining the channel but they have a very limited budget. There is a problem with managing the water for the purpose of human use and the ecosystem. There is basic data available but there is a need for physical and institutional infrastructure in place and a reconsideration of how the water boards are structured.
		A possible Case study in Belize in a village called Monkey River and there has been agricultural development during the past 10 years and the water in the river is not being monitored. There is coastal erosion happening and people are moving out of the area. Data collected by CERMES students is available in Flow Data and Rainfall. Nothing had been done thus far.
		Also in Grenada there is the possibility of a case study on the development and implementation of IWRM legislation. Question to answer on why was there a review of the water sector. Where the country is now and how successful it has been.