

Second Global Conference on Land-Ocean Connections (GLOC-2)

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The Global Wastewater Initiative Session 3rd October 2013 Meeting Report



**Hilton Hotel, Montego Bay, Jamaica
October 3, 2013**

1. Background and Overview

1.1 Background

Wastewater is a global concern and has a direct impact on our water resources and the biological diversity of aquatic ecosystems, disrupting the fundamental integrity of our life support systems, on which a wide range of sectors from urban development to food production and industry depend. Despite the magnitude of wastewater challenges, most politicians and policy makers, both at global and local levels, give low priority to the provision of sustainable wastewater management. A major driving force to stimulate effective wastewater management is the realisation that wastewater is a resource, and not just a noxious material to be hidden out of sight and out of mind.

Wastewater, when properly managed, is a huge source of water (even the strongest domestic sewage is over 99% water) and nutrients, which could supply much of the fertilizer normally required for crop production. Wastewater sludge can also be used on agricultural land as soil conditioner and fertilizer, to manufacture construction materials, and to generate biogas, biofuel, heat and electricity to grid systems. However, when poorly managed, wastewater can lead to eutrophication, dead zones, loss of ecosystem services and of economic opportunities. It affects climate change as wastewater-related emissions of methane (CH₄) and nitrous oxide (N₂O) are more harmful than CO₂.

There are many potential benefits of wastewater (and its sludge), although these are not necessarily known everywhere nor are they universally realized. On the contrary, there is a common perception that managing wastewater is a waste of energy and money.

This session, held during the second day of the Global Land Ocean Connections Conference (GLOC-2) examined the nature of the global wastewater challenge and more importantly, explored adequate responses and joint actions for better wastewater management. The session brought together several wastewater experts, including members of the Global Wastewater Initiative (GWI).

1.2 Objectives of this Session

The objectives of this Session were (i) to raise awareness on the need to better manage wastewater, (ii) to get voluntary commitments from stakeholders and build a strong GWI and; (ii) to provide guidance for the GWI partnership forum in terms of priority activities.

The expected outcomes were: increased awareness on wastewater issues; a strong wastewater partnership established; and activities agreed to feed into the GWI work plan.

2. Session proceedings and content

The wastewater session, on October 3rd, 2013 had a comprehensive and thorough agenda (see Appendix 1). A briefing note on key subjects and working documents was circulated in advance. Following formal introductions, in order to deliver on the objectives, the agenda combined oral presentations and plenary discussions.

2.1. Session A: Setting the scene: The Global Challenge, key issues for the future and some responses

a) Presentations and panels discussions

This Session was chaired by Dr. Graham Alabaster, UN-Habitat & Co-Chair of the UN-Water Task Force (TF) of Wastewater. Dr. Alabaster welcomed all participants and thanked them for the work in setting up the session. He also, as Co-Chair of the UN-Water TF on Wastewater, presented the on-going development of targets and indicators for wastewater/water quality in a draft SDG on Water. He described the UN-Water TF work within the Sustainable Development Goals process and gave an update on the process so far, as well as the work ahead for the TF to deliver the indicators and targets for this stream.

Regarding the indicators, Dr. Alabaster stated that possible indicators are the following:

- Increase (in X% as compared to 201X) the volume of treated wastewater that is directly used for human activities (e.g. agriculture)
- Increase (in X% as compared to 201X) the volume of wastewater that is directly used for human activities (e.g. Agriculture) in a safe and productive manner
- % of water reused from the total amount of wastewater generated
- River water quality (classification system)
- Establishment and enforcement of regulatory frameworks for water quality
- Quantity of phosphorous and nitrogen discharged into nature

Dr Manzoor Qadir, UN-INWEH, delivered a keynote on *Wastewater, global issue, trends and impacts*. He said that the climate is driving the global issues related to water quality and this is a reality because the higher temperatures and changes in floods and droughts affect water quality leading to many forms of water pollution. It is also true that wastewater-related emissions have a real effect on climate change and that the rising seawater levels and seawater intrusion affect water quality negatively in coastal areas and the dry areas are expected to become drier, with implications for aggravating water scarcity.

He emphasized that wastewater management is a big challenge for developing countries due to a variety of issues, including: lack of proper infrastructure, poor practices in wastewater re-use (especially in agriculture/irrigation), increasing unplanned development and urbanisation, shortage of skilled human resources (high need for capacity building), lack of regulatory frameworks and lack of political buy-in for prioritizing wastewater management. This is mainly due to inadequate budgetary allocation for maintenance of existing systems and implementation of new collection and treatment systems. There is a direct relationship between the income level of a country and the level of wastewater treatment.

Regarding the global, regional, and national trends for wastewater production, treatment, and use, he presented a summary of a work done by Sato *et al.* 2013 on Agricultural Water Management. The results are based on databases from 181 countries and published and web-based country level databases and sources such as FAO-AQUASTAT, Eurostat, and USEPA. The main conclusions are: (i) for the national level data for 181 countries on wastewater production, treatment, and use, only 30% of countries have complete data; (ii) only 37% of data available on wastewater in 181 countries is recent data; and (iii) for wastewater treatment associated with national level economic situation, he concluded that wastewater treatment is an income generating activity.

Mr Pireh Otieno, UN-Habitat, provided an overview of *shortcutting the trends, responses and opportunities* to the global wastewater challenge. Mr Otieno stressed that within the framework of urbanization trends from 1960 to 2025, the future urban expansion will be in less developed regions and many cities and towns are growing in coastal zones. Increased global trend of urbanisation, particularly along coasts, has severe impact on the environment, due to improper sanitation and treatment of wastewater generated by the increased population. However, urbanization should not necessarily be viewed as a threat but as an opportunity and solution to confront human development challenges including wastewater management, especially in developing countries. A new urban agenda is being developed to advocate compact and mixed use cities including open spaces, proximity and connectivity, and land and systems identified for wastewater management facilities.

International efforts on urbanisation have focused on sanitation without linking sanitation and water provision to wastewater management and all three need to be considered together, as they are intricately linked. However, wastewater is not wasted water, and we better start looking at working with it and conversion to usable material. It is indeed an under-utilized resource, so there is need to move beyond the question of how to remove waste from homes and workplaces to issues revolving around what to do with it. Focus should be on wastewater treatment and conversion of waste into energy and useful products such as fertilizers, briquettes or building materials. Mr Otieno stressed that the gaps in wastewater management are huge, however, we can reverse the trends if we put our efforts to meet the following needs:

- Global target (or a strong component on wastewater in the water target)
- Proper Monitoring system (to track progress)
- Increasing political support and understanding of the value of wastewater management
- Supportive policies and institutional frameworks
- Appropriate technology
- Funding to support wastewater management

Following the presentations, a panel discussion, comprised of Dr. Idrissa Doucoure (WSA), Mr. Chris Corbin (GEF/CRew), Dr. Manzoor Qadir (UNU-INWEH) and Ms. Mary Beth Sutton (Caribbean SEA & TenneSEA) covered the following questions:

- What is the status from regions?
- What can we do to reverse the trends?
- What opportunities are there to upscale?
- Is the proposed global response adequate and appropriate?

The comments from panellists and exchanges with the participants allowed to deepen the questions, explore potential responses and make recommendations.

b) Conclusions and recommendations

- Better wastewater management is required at local, national and international level.
- The key to proper management is viewing wastewater not as “waste” but as a valuable “resource” – for agriculture, energy production, etc. This will influence policy makers to implement proper collection and treatment systems and develop and implement a better regulatory framework.

- Regions are different
- Educate politicians and insert wastewater within the political agenda
- Improve communication; use Media
- Address the issue of scaling up and ownership
- Prepare a resolution on wastewater management to Ramsar Contracting parties for the next COP 2014
- Wastewater must eventually provide sustainable solutions that work in a diversity of locations and situations around the globe, are energy and cost-efficient, that focus on re-use and resource recovery, minimize transfers of potentially hazardous constituents to the environment, mitigate greenhouse gas emissions, and ensure healthy natural ecosystems.
- Proper monitoring system needed; set a global target for discharge standards and the implementation of proper wastewater management; political support to be increased; support policies and institutional frameworks and funding
- GWI is an adequate and appropriate Global Response

2.2. Session B: Developing the future agenda for joint actions to promote sustainable wastewater management. Chair: Dr. Jacqueline Alder, UNEP

a) Presentations and panel discussions

Wastewater re-use: opportunities, risks and challenges, by Dr. Gueladio Cisse (Swiss Tropical & Public Health Institute),

Dr Gueladio Cissé gave a presentation on “Wastewater Reuse: Opportunities, Risks and Challenges”. He stated that particularly in water stressed areas, integrated water resources management is needed that involves considering wastewater reuse as an important opportunity. An approximate estimate of global wastewater production is 1,500 km³ per day and recycling of wastewater for peri-urban agriculture already happens in 4 of 5 cities across the developing world. Wastewater is estimated to directly or indirectly irrigate about 20 million hectares of land globally— almost 7% of total irrigated areas. Wastewater is a resource rather than a problem.

Dr Gueladio also stressed that the major wastewater related diseases are Diarrhoea, Typhoid, Schistosomiasis, Ascariasis, Hookworm disease, Lymphatic filariasis, and Hepatitis A. The vector-borne diseases of relevance to wastewater use are Dengue, Filariasis, Japanese encephalitis and Malaria. Direct health effects are disease outbreaks (food, water and vector borne); persistent diseases (e.g. intestinal helminth infections, diarrhoeal diseases) and non-communicable diseases (e.g. from industrial waste).

Regarding the issue of ecosystems health risks, he also explained that wastewater from industries is on the rise; and global annual water use by industry is expected to rise from an estimated 725 km³ in 1995 to about 1,170 km³ by 2025, by which time industrial water usage will represent 24% of all water abstractions. This will particularly impact on aquatic ecosystems receiving wastewater from industries.

As challenges, he pointed out that the increasing occurrence of flooding events in a context of predominant, very simple, traditional excreta disposal facilities (latrines) and traditional sources of water (like unprotected wells), will threaten water quality and consequently health. Safe wastewater reuse is therefore a strategic component of the Global Wastewater Initiative.

Reducing pressure on freshwater, pollution and wastewater discharge, by Mr. Steve Ntifo, Jacobs-UK

Mr. Steve Ntifo from Jacobs UK Ltd gave a presentation on reducing pressure on freshwater, pollution and wastewater discharge. He stated that the following issues are pertinent to address the pressure on freshwater. Mr. Ntifo listed the sources of pollution and types of wastewaters including Domestic (organic, chemical), Industrial and commercial (chemical, organic, particulate), Agricultural and Rural Land Use (pesticides, fertiliser, organic), and Urban and non-agricultural (chemical, road offs, products, animal sources).

He also explained that to reduce pressure on freshwater there is a need to establish protection zones for freshwater sources (surface water and groundwater), regulate activities within these freshwater protection zones (e.g. pesticide use, fertiliser use, animal manure, sewage discharges), mainstream the integrated water quality and water quantity management within river basins and catchment and set objectives for water quantity and quality and determine how and when to achieve them.

While presenting some traditional wastewater treatment solutions, Mr. Ntifo clearly concluded that wastewater and water services should be paid for in a transparent way (to know costs and revenues of the service – and drive efficiency as required).

Natural Resources Conservation Authority Wastewater and sludge regulations, by Ms. Paulette Kolbush, NEPA, Jamaica

Ms Paulette Kolbush, NEPA presented the new reform policy on wastewater and sludge regulations promulgated in 2013 and which are now implemented. The regulations address management and disposal of wastewater from sewage and industrial sources. It is revolutionary in the sense that all disposal and operation of facilities are now subject to a license. The Polluter Pays Principle is incorporated as annual discharge fees are payable according to type and volume of waste discharge. In addition, environmentally sound reuse of the waste generated will lead to discounts in the discharge fees.

Economic valuation of wastewater as an incentive for sustainable wastewater management, by Dr Francesc Hernandez-Sancho, University of Valencia, Consultant

Dr. Francesc Hernandez Sancho, delivered the preliminary outputs from the ongoing study on the economic valuation of wastewater- cost of action versus cost of non-action. One of the Millennium goals of UN is to reduce the number of persons without access to safe drinking water and improve sanitation by 2015. Linked to this goal is the need for investment in wastewater treatment systems, especially in developing countries, to achieve objectives. Because of budget issues and the present global economic crisis, national funds in developing states are insufficient and critical investments are delayed or cancelled. Wastewater treatment systems are also not seen as critical or important so there is no drive to implement the systems required. He presented several methodologies which are available to show that comparing cost of no action (no system) versus action (system in

place) is great and enormously beneficial. He also provided analytical comparison from the cost of a wastewater treatment system versus total health effects of no action- medical expenses, decreased productivity, pain and suffering, and premature death. He concluded by showing concrete examples which illustrate that it is worth investing in wastewater management.

The Global Wastewater Initiative (GWI) as a response, by Dr Birguy Lamizana, UNEP

Dr Birguy Lamizana, GPA/FMEB, UNEP, gave a presentation on “The Global Wastewater Initiative GWI- As a Response”. She detailed why there is need for a GWI because first of all wastewater is a global concern and while poorly managed wastewater it results in loss of ecosystem services and of economic opportunities and affects climate change because of wastewater-related emissions of methane (CH₄) and nitrous oxide (N₂O) are more harmful than CO₂. She stated that the proper management of wastewater makes it a huge source of water and nutrients for crop production; and wastewater sludge can be used as soil conditioner, fertilizer or construction materials, and also to generate biogas and biofuel. Despite these opportunities provided by wastewater there is a common perception that managing wastewater is a waste of energy and money. She also alluded to the fact that wastewater is a resource, not a waste.

Dr. Lamizana explained that the GWI is a multi-stakeholder platform which will be comprised of UN agencies, international organizations, governments, scientists, private sectors, industries and Major groups and stakeholders to provide the foundations (including information, tools and policy mechanisms) for partnerships to initiate comprehensive, effective and sustained programmes addressing wastewater management. This partnership will be based on a voluntary and multiple stakeholders’ platform to:

- Facilitate cooperation, coordination, and synergy among the different players
- Provide opportunity to work under thematic groups on major issues, challenges and potentialities of WW such as WW reuse, nutrient removal, biogas production, etc.
- Provide the foundations (including information, tools and policy mechanisms) for partnerships to initiate comprehensive, effective and sustained programmes addressing wastewater management
- Encourage new investments in wastewater management

She presented the proposed focus areas (to be agreed upon) and insisted that a Partnership needed to look at global initiatives – common purpose, common cause and be voluntary. Dr. Lamizana stressed that the GWI is an evolving structure and so far, 23 members (IGOs, UN agencies, Development banks, NGOs, Private sector, research Institutes etc.) replied as formal members. It is planned to establish thematic groups, a Partnership Forum, an International Steering Committee (to be created on October 4th) and to date UNEP/GPA serves as Secretariat (provides guidance; reporting; fund-raising; outreach etc.).

Following the presentations, a panel discussion, comprised of Dr. Gueladio Cisse (STPHI), Dr. Paul Ouedraogo (Ramsar Convention), Mr. Steve Ntifo (Jacobs-UK), Ms. Bistra Milaylova (WECF) and Mr. Jostein Nygard (GPO) covered the following questions:

- What could be the GWI role and added value?
- How to organise the partnership for effective delivery?
- What actions on the ground can be undertaken?
- What policy analysis and reforms are needed to shortcut trend?

The comments from panellists and exchanges with the participants allowed to deepen the questions. The participants agreed on some suggestions, commented on various issues related to wastewater and proposed some recommendations.

b) Conclusions and recommendations

- Global response is required for wastewater as it is a global challenge and poorly managed wastewater leads to loss of ecosystems and economic opportunities and contributes to climate change.
- Common perception that management of wastewater is a waste of money needs to be changed through sound science and economic tools.
- Key to the management of wastewater is “Reduce, reuse, recycle and recover”
- Better management of wastewater should be tackled as a global initiative, as the impacts are seen globally, but the details should be formulated at a regional level.
- Adaptation of wastewater systems to impacts of climate change should be researched along with cost-effectiveness of the various solutions.
 - Need to look at point and non-point sources as a whole, although data is lacking, particularly regarding non-point sources.
 - All polluters should be held accountable and incentives can be used in addition to traditional enforcement activities to encourage compliance and good environmental stewardship.
- Providing wastewater as a true service
- Create a long term sustainable and profitable wastewater service sector in every country
- Put in place governance and ownership – parliaments to consumers
- Economic valuation of the benefits vs. costs of implementing sound wastewater management systems can be used as a tool to encourage and persuade policy makers to implement.

GW I could do the following to expand its role and provide added value:

- Raise awareness amongst states, NGOs, Public etc.
- Promote wastewater resource management and safe re-use
- Link research being proposed with governments and national organisations to make them more useful
- Concrete action plans and funding opportunities should be developed and researched
- Safety and security around hotspots where wastewater treatment is an issue should be initial focus to make work more relevant
- Gather information on institutional framework and legislation around the world to compare and provide information especially related to implications for cross implementation.
- Collate demonstration projects and coordinate and share outcomes of successful and unsuccessful projects implemented by partners as a learning tool
- Promote the reduction of water consumption
- Improve business footprint by encouraging development of business models

GW I Partnership should be organised to ensure:

- Comparisons are done of existing alliances with those already in the field to avoid duplication and to address only gaps.

- Clear role and responsibilities of partnership should be stated
- Tasks groups, if established, should be for specific issues and members must be knowledge based e.g. technical, funding, legislation
- Link with other global wastewater initiatives to encourage support
- Have right organisations on board

Actions on the ground that GWI can undertake:

- Influence wastewater management worldwide as a vision of the GWI
- Produce regularly reports on the state of the world's wastewater management systems and their services
- Provide interim evaluation of states implementation of SDG targets
- Regional workshops on burning topics should be organised and linked with other MEAs. These workshops should include persons from all fields affected by wastewater management
- Use videos and new publicity formats for presenting new ideas
- Sensitize funders on issues and have phasing of funding to increase chance of scaling up
- Increase work with local actors to get message across and reach more decision makers

What policy analysis and reforms are needed to shortcut trends?

- Prepare studies that clearly outline human impact and marine environment impact
- Impact on marine environment requires more research
- Develop projects that compare costs of the system to reach the goals set in selected regions and the cost of implementation
- Encapsulate costs analysis in a simple budgetary analysis to convince law makers to implement change
- Collect information on baseline status of wastewater policies and laws for countries to be involved including effectiveness of compliance and enforcement of existing policies and laws.
- Policy sharing among governments required
- Make wastewater management a bigger issue than cost of services
- Use existing conventions to push and encourage wastewater management as a resolution to COP to encourage countries to implement changes

Appendix 1: Agenda

Wastewater Session Agenda, October 3rd 2013

Subject	Global Wastewater Initiative: global challenges, key issues and some responses; and developing the future agenda for joint actions	Run Dates	3 October 2013
Background	<p>Wastewater is a global concern and has a direct impact on our water resources, the biological diversity of aquatic ecosystems, disrupting the fundamental integrity of our life support systems, on which a wide range of sectors from urban development to food production and industry depend. But, despite the magnitude of wastewater challenges, most politicians and policy makers, both at global and local levels, give low priority to the provision of sustainable wastewater management. A major driving force to stimulate effective wastewater management is the realisation that wastewater is a resource, and not just a noxious material to be hidden out of sight and out of mind.</p> <p>Wastewater, when properly managed, is a huge source of water (even the strongest domestic sewage is over 99% water), of nutrients which could supply much of fertilizer normally required for crop production. Wastewater sludge can also be used on agricultural land as soil conditioner and fertilizer, to manufacture construction materials, and to generate biogas, biofuel, electricity, heat and in gas to grid systems. However, when poorly managed, wastewater can lead to eutrophication, dead zones, loss of ecosystem services and of economic opportunities. It affects climate change as wastewater-related emissions of methane (CH₄) and nitrous oxide (N₂O) are more harmful than CO₂.</p> <p>There are many potential benefits of wastewater (and its sludge), although these are not necessarily known everywhere nor are they universally realized. On the contrary, there is a common perception that managing wastewater is a waste of energy and money. This session will examine the nature of global wastewater challenge and more importantly, explore adequate responses and joint actions for a better wastewater management.</p>		
Chair/Facilitator	Dr. Graham Alabaster and Dr. Jacqueline Alder	Time: Start	08:30
Location		Time: End	18:00
Attendees:	Representatives of governments, River basin organization, Private sector, Research institute, Scientific community, NGOs and UN agencies.		
Objectives	<p>To raise awareness on the need to better manage wastewater</p> <p>To get voluntary commitments from stakeholders and build a strong GWI</p> <p>To provide guidance for the GWI partnership forum in terms of priority activities</p>		
Key questions	<p>What are the major wastewater challenges at global and regional levels?</p> <p>What can be done to reverse the trends?</p> <p>What are the opportunities for better management and cooperation?</p>		
Expected recommendations from the discussion	<p>Increased awareness on wastewater issues; established a strong wastewater partnership</p> <p>Wastewater and Agreed activities to feed into GWI workplan</p>		
Organization partners	<p>GWI Partners: ADB, AfDB, CBD,FAO, GEF, Ramsar Convention, UEMOA, UNDP, UN-DESA, US-EPA, WECF, WSA, and others</p>		
Structure for discussion	Presentations and panel discussions		

Program Outline		
Duration	Topic	Lead/Chair/Facilitator/Speaker
08.30-13.00	Session A-Setting the scene: The Global challenge, key issues for the future and some responses- Chair: Graham Alabaster, UN-Habitat & Co-chair of UN- Water TF on Wastewater	
08:30- 08:45	Introduction to the session	Dr. Graham Alabaster, UN-Water
8:45 – 09:15	Wastewater, global issue, trends and impacts	Dr Manzoor Qadir, UN-INWEH
09:15 - 9:45	Shortcutting the trends, responses and opportunities	Mr Pireh Otieno, UN-Habitat
9:45 - 10:30	Integrating wastewater in the global development agenda- (Target setting and indicators setting), plus discussion	Dr. Graham Alabaster, UN-Water
<i>10:30 –11:00</i>	<i>Coffee</i>	
<i>11:00 –13:00</i>	<p>– Panel discussion: on Session A- The Global challenge, key issues for the future and some responses</p> <p>– Questions to be considered:</p> <ul style="list-style-type: none"> ○ What is the status from regions? ○ What can we do to reverse the trends? ○ What opportunities are there to upscale? ○ Is the proposed global response adequate & appropriate? <p>Wrap- up of the session- recommendations by the Chair</p>	<p>Panelists to include Representatives from Development Banks, UN-agencies, IGO</p> <p>Dr Idrissa Doucoure (WSA) Mr Chris Corbin (GEF-CreW) Dr Manzoor Qadir (UN-INWEH) Ms Mary Beth Sutton (Caribbean SEA and TenneSEA)</p>
<i>13:00– 14:00</i>	<i>Lunch</i>	
14:00– 18:00	Session B: Developing the future agenda for joint actions to promote sustainable WW management. Chair Dr Jacqueline Alder	
<i>15:30 – 1600</i>	<i>Coffee</i>	
14:00– 14:15	Introduction to the session: Key strategies for sustainable wastewater management	Dr Jacqueline Alder
14:15– 14:45	Wastewater re-use : opportunities, risks and challenges	Dr Gueladio Cisse , Swiss Tropical & Public Health Institute
14:45– 15:30	Reducing pressure on freshwater, pollution and wastewater discharge	Mr. Steve Ntifo, Jacobs-UK
15:30– 16:00	<i>Coffee</i>	
16:00-16:30	<i>Economic valuation of wastewater as an incentive for sustainable wastewater management</i>	<i>Dr Francesc Hernández-Sancho, Consultant</i>
16:30-17:00	<i>The Global Wastewater Initiative (GWI) as a response-</i>	<i>Dr Birguy Lamizana, UNEP/GPA</i>
17:00– 18:00	<p>Panel discussion: Framing the next steps: Key strategies and actions for sustainable wastewater management</p> <p>Questions to be considered:</p> <ul style="list-style-type: none"> ○ What could be the GWI role and added value? 	<p>Panelists include Representatives from Women Organization, Private sector, Research institutes,</p> <p>– Dr Gueladio Cisse (Swiss Tropical & Public Health Institute),</p>

	<ul style="list-style-type: none"> ○ how to organize the partnership for effective delivery? H ○ what actions on the ground can be undertaken? W ○ what policy analysis and reforms are needed to shortcut trends? W <p>Wrap- up of the session: recommendations by the Chair</p>	<ul style="list-style-type: none"> – Dr Paul Ouedraogo (Ramsar Convention), – Mr Steve Ntifo (Jacobs), – Dr Bistra Mihaylova (WECEF), – Mr Jostein NyGard (GPO)
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