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Roatan, Honduras, 5 to 6 June 2019

The GEF CReW Project Proposal

CReW+: An integrated approach to water and wastewater management using innovative solutions and promoting financing mechanisms in the Wider Caribbean Region



UNITED NATIONS ENVIRONMENT PROGRAMME

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Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة

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PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

- 1.1 Project title:** CReW+: An integrated approach to water and wastewater management using innovative solutions and promoting financing mechanisms in the Wider Caribbean Region
- 1.2 Project number:** GFL/9601
PMS: 01444
- 1.3 Project type:** FSP
- 1.4 Trust Fund:** GEF
- 1.5 Strategic objectives:** GEF 6: IW-2 (Programmes 3 and 4), IW-3 (Programmes 5 and 6), [LD-3 (Programme 4), LD-4 (Program 5) BD-4 (Programme 4) – IDB]
- 1.6 UNEP priority:** SP-5 EA b) with benefits to: SP-3 EA 1), SP-6 and SP-7
- 1.7 Geographical scope:** Regional: Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago
- 1.8 Mode of execution:** Internal
- 1.9 Project executing organization:** UN Environment Car/RCU
- 1.10 Duration of project:** 36 months
Commencing: September 2019
Completion: August 2022

1.11 Cost of project

	US\$	%
Cost to the GEF Trust Fund		
UN Environment	6,398,100	3.89%
IDB	9,004,557	5.47%
GEF Grant sub-total		9.36%
Co-financing		
Loan		
IDB	138,675,000	84.28%
Grant		
IDB	708,000	0.43%
PAHO-WHO	162,000	0.10%

	US\$	%
In-kind		
UN Environment	7,860,807	4.78%
CWWA	200,000	0.12%
CAWASA	100,000	0.06%
CARPHA	130,000	0.08%
PAHO-WHO	900,000	0.55%
Saint Lucia	394,500	0.24%
Co-financing Sub-total	149,130,307	90.64%
Total GEF GRANT and CO-FINANCING	164,532,964	100.00%

1.12 Project summary

The discharge of partially and untreated domestic wastewater and ineffective water resource management are a central challenge in the WCR. The project will demonstrate the integration of the strategic objectives of the GEF International Waters (IW), Land Degradation (LD) and Biodiversity (BD) focal areas within a natural resources and watershed management framework, building upon past initiatives and in close coordination with other regional and national projects and initiatives. The project is focussed on addressing critical policy, legislation and capacity gaps to ensure long term and sustainable management of water and wastewater, and is focussed on the compilation and implementation of innovative solutions for ensure sustainable financing and implementation of small-scale, local, rural, peri-urban and community-based solutions. CREW+ will stimulate and assist countries and communities mainly in rural and peri-urban areas to identify and implement innovative technological solutions based on their specific needs and which are both replicable and sustainable in the long-term. The incorporation of additional LD and BD funds from STAR allocations from one country confirms the cross-cutting influence of water and wastewater management to the other focal areas of GEF such as LD. Improving water and wastewater management through integrated approaches contributes directly to other socio-economic concerns such as human health and job creation. The project will also address a number of key SDG Goals and Targets, and will ensure socioeconomic benefits at the community and national level.

The objective of CREW+ is to “To implement innovative technical small-scale solutions in the Wider Caribbean Region using an integrated water and wastewater management approach building on sustainable financing mechanisms piloted through the Caribbean Regional Fund for Wastewater Management.” By building on the frameworks and lessons of earlier projects (including CREW), CREW+ will implement small-scale, local, rural, peri-urban, and community-based technological solutions for integrated water and wastewater management. The project aims to implement solutions for the improved management of wastewater that can be up-scaled and replicated so as to significantly reduce the negative impact of domestic wastewater on the environment and people of the Wider Caribbean Region and to similarly implement appropriate solutions at selected watersheds and freshwater basins to ensure greater water security for vulnerable rural communities. This will be achieved through targeted water resources conservation measures, wastewater and water re-use, improved land use practices and greater water use efficiency. These interventions will increase resilience of local communities to the impacts of droughts and more generally to the impacts of climate change and climate variability on the water sector.

CREW+ consists of four main components, each with specific outcomes and outputs as elaborated in the Results Framework ([Appendix 3](#)) following the Theory of Change logic and the problem tree analysis (see [Figure 2.3](#)):

- | | |
|--------------|--|
| Component 1: | Institutional, policy, legislative and regulatory reforms for Integrated Water and Wastewater Management (IWWM). |
| Component 2: | Sustainable and tailor-made financing options for urban, peri-urban and rural IWWM. |
| Component 3: | Provision of innovative small-scale, local, rural, peri-urban and community-based solutions for IWWM. |
| Component 4. | Knowledge Management and Advocacy on the importance of IWWM order to achieve the Sustainable Development Goals. |

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ACRONYMS AND ABBREVIATIONS

AECID	Spanish Agency for International Development Cooperation
AIDIS	Inter-American Association of Water and Sanitation Engineering
BD	Biodiversity Focal Area (GEF)
CAF	Development Bank of Latin America
CaFAN	Caribbean Farmers Network
CARICOM	Caribbean Community
CANARI	Caribbean Natural Resources Institute
CARDI	Caribbean Agricultural Research and Development Institute
CARIMAC	Caribbean Institute of Mass Communication
CARPHA	Caribbean Public Health Agency
CAWASA	Caribbean Water and Sewerage Association
CCCCC	Caribbean Community Climate Change Centre
CDB	Caribbean Development Bank
CERMES	Centre for Resource Management and Environment Studies of the University of the West Indies, Barbados
CHTA	Caribbean Hotel and Tourism Association
CIMH	Caribbean Institute of Meteorology and Hydrology
CTO	Caribbean Tourism Organization ()
CWWA	Caribbean Water and Wastewater Association
ECLAC	Economic Commission for Latin America and the Caribbean
GDP	Gross domestic Product
GEF	Global Environment Facility
GEF-SGP	GEF Small Grants Programme
GEO	Global Environment Outlook
GPA	Global Partnership for the Protection of Marine Environment from Land-based Activities
GPNM	Global Partnership on Nutrient Management
GNC	Global Nutrient Cycling (GEF project)
GWP-C	Global Water Partnership – Caribbean
GWP-CA	Global Water Partnership- Central America
FAO	Food and Agriculture Organisation of the United Nations
IDB	Inter-American Development Bank
IPCC	Intergovernmental Panel on Climate Change
IICA	Inter-American Institute for Cooperation on Agriculture
INMS	The GEF-International Nitrogen Management System
IW	International Waters Focal Areas (GEF)
IWCAM	Integrated Watershed and Coastal Area Management (GEF project)
IWEco	Integrating Land, Water and Ecosystems Management (GEF project)
IW:LEARN	International Waters Learning Exchange and Resource Network (GEF project)
IWRM	Integrated Water Resources Management
IWWM	Integrated wastewater and water resource management
J-CCCP	Japan-Caribbean Climate Change Partnership
KAP	Knowledge, Practices and Attitudes study (report under CReW)
LBS	Land Based Sources of Marine Pollution Protocol
LAC	Latin American and the Caribbean
LD	Land Degradation Focal Area (GEF)

M&E	Monitoring and Evaluation
MARPOL	International Convention for the Prevention of Pollution from Ships
NAMAs	Nationally Appropriate Mitigation Actions
NAP	National Adaptation Plan
NGO	Non-governmental Organization
OAS	Organization of American States ()
OECS	Organisation of Eastern Caribbean States
PAHO	Pan American Health Organization
RRASCA	Regional Network for Water and Sanitation in Central America
RSP	Regional Seas Programme
RWH	Rain Water Harvesting
CLME+SAP	Strategic Action Programme for the Caribbean Sea and North Brazil Shelf (GEF)
SICA	Central American Integration System
SIDS	Small Island Developing States
SPAW	The Protocol Concerning Specially Protected Areas and Wildlife
SMART	Specific; Measurable; Achievable, Attributable; Relevant; Time-bound, Trackable
TDA	Transboundary Diagnostic Analysis
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP CEP Convention	UN Environment Caribbean Environment Program/Secretariat to the Cartagena
UNEP/GPA	UN Environment Global Program of Action
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-IHP	International Hydrological Programme (of UNESCO)
UNU-INWEH	United Nations University Institute for Water, Environment & Health
US EPA	US Environmental Protection Agency
UWI	University of the West Indies
WACDEP	Water Climate and Development Programme
WCR	Wider Caribbean Region
WHO	World Health Organization

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1 Background and Context

2.1.1 Location and geography

The Wider Caribbean Region (WCR) is the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of 30° north latitude and within 200 nautical miles of the Atlantic coasts of the States as defined by Article 2 and 25 of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention)¹ (UNEP CEP, 1986). The area of the WCR is about 3.3 million km², with an average depth of 2,200 m and coastal length of 55,383 km. The area covers 28 island and continental States, as well as several islands, which are dependent territories. Of the 28 States in the WCR, nine island States in the Caribbean Sea (Barbados, Cuba, Dominican Republic, Grenada, Jamaica, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines and Trinidad and Tobago) and nine continental States (Belize, Colombia, Costa Rica, Guatemala, Guyana, Honduras, Mexico, Panama, and Suriname) are participating in this project entitled “CReW+: An Integrated Approach to Water and Wastewater Management Using Innovative Solutions and Promoting Financing Mechanisms in the Wider Caribbean Region” (Figure 2.1). Out of the nine continental States participating in the project, six countries are located in the Central America region and three are in South America (Colombia, Guyana and Suriname). Among the 18 participating countries, eight countries use Spanish as their main official language (Colombia, Costa Rica, Cuba, Dominican Republic, Guatemala, Honduras, Mexico and Panama), nine use English (Barbados, Belize, Grenada, Guyana, Jamaica, St Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Trinidad and Tobago) and one uses Dutch (Suriname).

2.1.2 Socio-economic situation

Approximately 245 million people live in the 18 countries participating in this project. Mexico has the highest population (130.8 million) followed by Colombia (49.5 million), Guatemala (17.2 million), Cuba (11.5 million), and Dominican Republic (10.9 million). Islands other than Cuba and Dominican Republic have relatively smaller populations such as in Saint Kitts and Nevis (56,000), Grenada (108,000) and the Saint Vincent and the Grenadines (110,000) (Table 2.1). The population of the 18 countries participating in the project is projected to grow with a declining growth rate (UN DESA, 2017). Continental countries tend to have high urbanization such as in Mexico (80.2%) and Colombia (80.8%) while some small islands have higher population in rural areas such as in Saint Lucia (18.7%) and Barbados (31.1%).

1 Text of the convention is available at:

<http://www.cep.unep.org/cartagena-convention/text-of-the-cartagena-convention>

Figure 2.1: Participating countries of the CReW+ project



The majority of the population in Latin America and the Caribbean region live within 100-200 km of shoreline and the concentration of coastal population is expected to increase (Simpson, 2012). The ocean is, therefore, an integral part of socio-economic activities in the region. Recently, the World Bank estimated that gross revenue generated from ocean economy in the Caribbean Sea was US\$ 407 billion in 2012, which was equivalent to 14 to 27% of world's total ocean economy. The major contributors for the WCR's ocean economy was the shipping sector (76%) followed by the tourism industry (47.1%). It is projected that the total contribution of maritime and coastal tourism to GDP in the region will continue growing (Patil, 2016). In 2017, tourism contributed US\$ 17.9 billion to the Caribbean islands and it is expected to grow 3.6% per year from 2018 to 2028 (World Travel Tourism Council, 2018).

While tourism is an important economic activity, it can also add pressure to the marine environment. Larger ships are required to hold wastewater in tanks under the International Convention for the Prevention of Pollution from Ships (MARPOL) but recreational boats and coastal cargo vessels do not always have holding tanks and they may discharge wastewater in the marine environment. Lack of sufficient port reception facility for wastewater further exacerbate the situation. The investment to the tourism sector in the Caribbean islands was US\$ 7.1 billion in 2017 and it is projected to reach \$10.6 billion in 2028 (World Travel Tourism Council, 2018). Several hotels and resort complex are being developed to accommodate the increasing number of tourists in the region. However, these buildings are often required to have their own on-site wastewater treatment plants due to the lack of municipal services. It has been reported that only 25% of these treatment plants are in good operational conditions (UNEP CEP, 2010b). As water quality in near beaches is of concern for human health and for touristic attractiveness, sound wastewater management is a key issue for sustainable development in the WCR.

Table 2.1 Population size of the CReW + participating countries (UN DESA, 2018)

Country	Total population in 2018 (thousand)	Urban (thousand)	Rural (thousand)	Percentage urban (%)
Barbados	286	89	197	31.1
Belize	382	175	208	45.7
Colombia	49 465	39 956	9 508	80.8
Costa Rica	4 953	3 930	1 023	79.3
Cuba	11 489	8 851	2 638	77
Dominican Republic	10 883	8 823	2 060	81.1
Grenada	108	39	69	36.3
Guatemala	17 245	8 804	8 441	51.1
Guyana	782	208	574	26.6
Honduras	9 417	5 377	4 040	57.1
Jamaica	2 899	1 614	1 285	55.7
Mexico	130 759	104 811	25 948	80.2
Panama	4 163	2 818	1 344	67.7
Saint Kitts and Nevis	56	17	39	30.8
Saint Lucia	180	34	146	18.7
Saint Vincent and the Grenadines	110	58	53	52.2
Suriname	568	375	193	66.1
Total	245 119	186 711	58 408	-Average: 55.0

In addition to ocean-based economy, agriculture has been a key industry in the region. According to the Food and Agriculture Organisation of the United Nations (FAO), agriculture contributed approximately 7% of total GDP in 2015 in the 18 countries participating in the project ([Table 2.1](#)), which is higher than the global average (2.9%). Agriculture has higher value added to GDP in continental countries such as in Guyana (21.3%) and Honduras (14.5%) compared to small islands such as Saint Kitts and Nevis (1.8%). Small islands tend to have more permanent crops such as bananas as compared to the continental countries ([FAO, 2014](#)).

Agriculture is the mayor water user in the region. In most of the countries where agriculture has a high contribution to GDP including Guyana (94%), Dominican Republic (80%) and Mexico (76%), agriculture use is the main purpose of water withdrawal. But in Trinidad and Tobago, only 4% of water withdrawn is used for agriculture and the majority is withdrawn for industrial (34%) and municipal use (62%). In Grenada, St. Kitts and Nevis, and St. Vincent and the Grenadines, water withdrawal is mostly for municipal use ([FAO, 2016](#)).

The agriculture sector in Latin America and the Caribbean has been growing at an average rate of 3.2% during 2006-2011. Increased productivity has been the main driver for the growth, followed by enhanced resource use. However significant differences exist among the countries in the region with regard to the growth and its contributing factors. From 2011 to 2013, Barbados (-5%), St. Kitts and Nevis (-1.8%) and Trinidad and Tobago (-12.4%) experienced decline while other countries such as Honduras (6.8%) and Saint Lucia (6.5%) experienced high growth in the sector ([IICA, 2015](#)). It is expected that the sector will continue growing and in the continental Latin America, crop area will increase 24% by 2025, relative to 2013-2015 period ([FAO, 2016](#)).

In the 18 countries, approximately 9 million hectares are equipped for irrigation (FAO, 2014). Reuse of treated as well as untreated wastewater for agricultural purpose in the region has not been well quantified due to the lack of data. But there are some studies and projects showing the practice of wastewater reuse for agriculture purposes in the region. For example, in el Valle de Tula, Mexico, 90,000 ha has been irrigated with diluted wastewater (FAO, 2017). Wastewater reuse as a resource is expected to grow (Krushelnyska, 2018) especially due to climate change since the sector is facing a challenge to increase productivity in a sustainable manner adapting to climate change impacts (FAO, 2012).

Table 2.2. Water resource and agriculture sector in the WCR

Country	Water Resources	Agriculture	Irrigation	
	Water resource per capita in 2010 (m ³ /yr/cap) (FAO, 2016)	Percent GDP (Agriculture) 2010-12 (FAO, 2014)	Potential area for irrigation (thousand ha) in 2012 (FAO, 2016)	Total area equipped for irrigation (thousand ha) in 2009 (FAO, 2016)
Barbados	293	-	4	5
Belize	59455	-		4
Colombia	46052	6.5	6589	900
Costa Rica	24125	6.4	430	108
Cuba	3386	5	2700	870
Dominican Republic	2115	6	710	275
Grenada		5.3		
Guatemala	7735	11.3	2620	200
Guyana	319629	21.3		150
Honduras	12621	14.5	500	80
Jamaica	3431	6.5	188	25
Mexico	4031	4.1	9766	6300
Panama	42081	4.4	187	43
Saint Kitts and Nevis	462	1.8		0
Saint Lucia		3.4		3
Saint Vincent and the Grenadines		6.3		1
Suriname	232381	9.7		57
Trinidad and Tobago	2864	0.6	30	7

In addition to tourism and agriculture, the WCR has a wide range of industrial activities. Traditionally, economies in the region are highly dependent on the use of natural resources. As such, the mining and petroleum industry has been an important sector for several countries in the region. Among the 18 participating countries in this project, the petroleum industry has a prominent economic contribution in Mexico, Colombia, and Trinidad and Tobago. In addition to these proven oil reserves, the Guyana-Suriname basin is recently gaining heated attention as it may possess one of the biggest oil reserves in the world. Several new offshore oil reserves have been discovered in Guyana and exploration is being planned in Suriname (Addison, 2018).

While the economy in the WCR is growing and the region has made significant improvements in human development, the benefits are not equally distributed. The region has high inequality and such disparity

exists between urban and rural areas. In the rural areas, 46.2 % of the population in rural areas was affected by poverty in 2015 while in urban areas 23.8 % was living under the poverty line. Around 56% of workers are in vulnerable employment in rural areas as compared to 27% in urban areas (ILO, 2015). It should be noted that a large population of indigenous communities and the youth live in rural areas. Poverty affects 46% of the indigenous population, which is twice as much as non-indigenous population (World Bank, 2015). Youth unemployment rate continues to rise in the region and 19.5% of the youth was unemployed in 2017 (ILO, 2017).

2.1.3 Main environmental issues and threats

The WCR is generally considered to be rich in water resources. Approximately 31% of the world's freshwater resources are found in Latin America and the Caribbean region. Yet, water is not evenly distributed over the region or within countries. Guyana has the world's highest water resource per capita (Table 2.2). On the other hand, many Caribbean islands are considered water scarce. Barbados, for example, is one of the most water scarce countries in the world and relies for 90% of its water supply on ground water. Other countries also experience seasonal water shortages. In Grenada and St. Vincent and Grenadines, water demand exceeds supply during the dry season (Cashman, 2014). Some countries in the region including Barbados uses desalination plants to supplement water supply. Water security is of great concern for some countries due to the changing precipitation pattern in the context of climate change.

Freshwater resources in the region are being increasingly polluted. It is estimated that 25% of water resource from the rivers in the Latin America and the Caribbean region has been severely contaminated with faecal coliforms levels in excess of 1000cfu/100ml (UNEP, 2016a). Industry, agriculture, and mining all contribute to pollution, but domestic wastewater is a major pollution source (FAO, 2017).

Untreated wastewater is usually discharged to the coastal and marine environment due to the lack of sufficient and/or poorly functioning wastewater treatment facilities. Excessive nutrients in the marine environment leads to hypoxia while high organic matter can cause eutrophication. Metals contained in wastewater such as mercury and lead from the industry can be toxic to aquatic species. Other substances such as endocrine disrupting compounds may pose threats to the health of human and aquatic organisms (World Bank, 2018). In the Gulf of Mexico, dead zones have been found where oxygen levels are too low to sustain marine life. Deoxygenation in addition to increasing water temperature and ocean acidification from climate change causes coral bleaching and mortality of corals and other associated fauna (Altieri, 2017).

In addition to the marine and aquatic flora and fauna, the region has a rich terrestrial biodiversity. Approximately 60% of the world's terrestrial life is found in the region. In 2010, 23 % of the terrestrial area of Latin America and the Caribbean has been designated as protected areas. Belize has designated more than one third its land as protected areas (36.7%) (UNEP-WCMC, 2016). While the rate of deforestation has decreased with increased efforts for conservation, the region still continues to experience deforestation altering habitats. Recently, the Caribbean islands have received an unprecedented amount of *Sargassum* seaweed influx to their beaches. Although the cause is yet to be determined, some have suggested that this phenomenon may be due to increased nutrient inflow from accelerated deforestation and agricultural run-off from major rivers (Wynne, 2017). This shows that deforestation could have implications on the marine environment.

Deforestation affects the water cycle but also the level of nutrient run off to the aquatic and marine environment. Mangrove forests and wetlands provide natural purification service of nutrients including

nitrogen and phosphorus. Due to anthropogenic activities such as coastal development and agricultural growth (Thomas, 2017), however, the region has been losing mangrove forests. Wetlands are among the most degraded ecosystems in Latin America and the Caribbean (UNEP, 2010).

Climate change affects water and wastewater management in the WCR. The Intergovernmental Panel on Climate Change (IPCC) indicated that climate change has direct consequences including increased average air and ocean temperature, sea-level rise, change in precipitation patterns and extreme weather events (IPCC, 2007). Small islands developing states (SIDS) are known to be particularly vulnerable to the impact of climate change. Saline intrusion of ground water from sea-level rise and increased frequency of drought events have significant implications on water supply in many small islands. Water infrastructure will also need to adapt to increased intensity of hurricanes and flooding. Water and wastewater management in the WCR, therefore, needs to be resilient to climate change. Climate change needs to be mainstreamed in the water sector policies and management practices in the participating countries. These policies and activities need to be formulated in consideration of disproportional impacts of climate change on women and children.

2.2 Problem Analysis

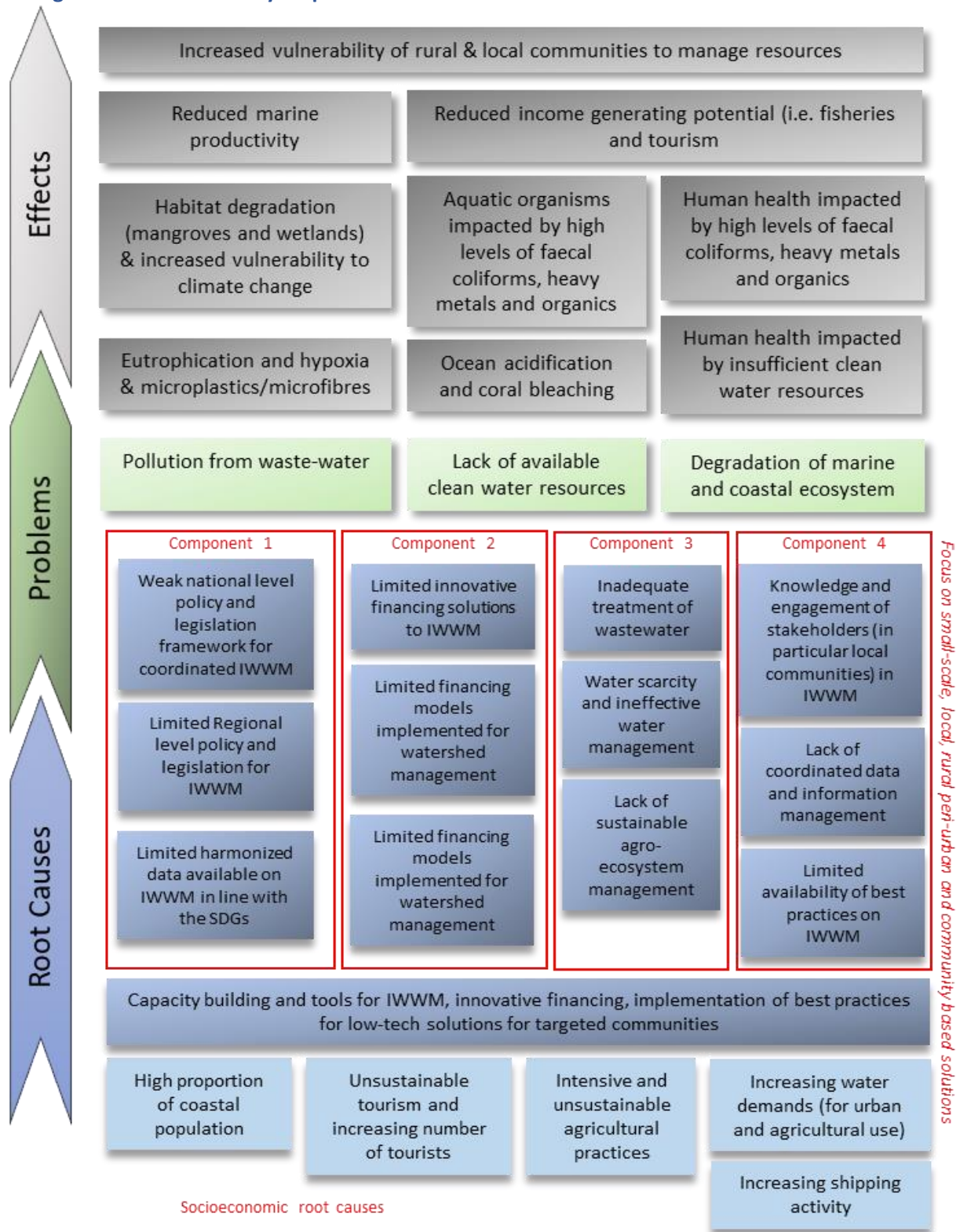
Water use has been increasing worldwide by about 1% per year since the 1980s. The global cost–benefit studies have demonstrated that water, sanitation and hygiene (WASH) services provide good social and economic returns when compared with their costs, with a global average benefit–cost ratio of 5.5 for improved sanitation and 2.0 for improved drinking water. (WWAP/UNESCO, 2019) as summarized in Figure 3.1.

Figure 2.2 presents a simplified problem tree of causes, problems and effects with regards to wastewater, water resources and coastal habitat degradation in the WCR. There have been several projects that have focussed on improving wastewater and water resource management in the Caribbean (see Section 1.3), including the GEF “Testing a Prototype Caribbean Regional Fund for Wastewater Management (CReW)” project (2011-2017).² The CReW Final Evaluation in particular noted that any future wastewater projects should support small-scale, local, rural, peri-urban, and community-based technological solutions for integrated water and wastewater management. Previous interventions have tended to focus on large-scale centralized treatment facilities, which require large-scale investment. However, it is the rural communities that are often lagging behind urban regions in terms of wastewater treatment and water resource management. Recent reports confirm that Latin America and the Caribbean has large economic disparities between urban and rural communities, and that access to wastewater treatment service is lagging behind in rural areas.

2

<http://www.gefcrew.org/index.php/about-gef-crew>

Figure 2.2 Problem Analysis: problem tree



2.2.1 Problems

The degradation of the WCR environment caused by the **discharge of untreated or partially treated wastewater** is a serious concern for those countries whose livelihoods depend heavily on their natural marine resources. Numerous scientific studies, including UN Environment/GPA's 2006 report on the State of the Marine Environment ([UNEP/GPA, 2006](#)), singled out untreated wastewater entering the world's oceans and seas as the most serious problem contributing to marine pollution. UN Environment/GPA estimates that as much as 85 percent of wastewater entering the Caribbean Sea is currently untreated. In 2015, 65% of the population of Latin America and the Caribbean had access to safely managed drinking water services, but only 22% to safely managed sanitation services. In the same year, 96% used at least a basic water service and 86% at least a basic sanitation service ([WWAP/UNESCO, 2019](#)). In the WCA, an estimated 12 km³ of domestic wastewater were generated in 2015, of which only 40% reached treatment plants and 60% was disposed directly to coastal waters in untreated form. Despite significant progress in sanitation coverage in recent years, most of the countries are still plagued by insufficient and poorly functioning wastewater treatment infrastructure. Discharges of untreated or inadequately treated domestic wastewater are important sources of bacterial loads and nutrients to coastal waters in the region. Domestic wastewater also introduces freshwater and a range of potentially harmful chemicals and other substances. Although sewage is biodegradable, in many cases the large quantities being discharged exceed the carrying capacity of the receiving waters, which reduces water quality. The 2019 State of Convention Area Report (SOCAR) report ([UNEP CEP, 2019](#)) found elevated levels of nutrients i.e. dissolved inorganic nitrogen (DIN) and Dissolved Inorganic Phosphorus (DIP) and human fecal pollution (*Enterococcus faecalis*) in many locations. In addition, microplastics are present in wastewater and may become more dangerous by adsorbing harmful agents, such as pharmaceuticals and pathogenic organisms ([Prata, 2018](#)).

With regards to **water resources and availability** in the WCR, increasing population and demands has caused some of the Caribbean islands to be water-scarce in the context of available water per capita. There are some 25 million people without access to a basic water service and 222 million without safely managed drinking water services. For sanitation, the situation is far worse: almost 89 million people in the region are without a basic sanitation service, and 495 million without safely managed services. There are large differences between countries, but also within countries, as gaps in water and sanitation coverage between the administrative regions within several countries exceed 20 or even 30% ([WWAP/UNESCO, 2019](#)). For example, Barbados is using nearly 100 per cent of its available water resources, Saint Lucia has a water supply deficit of approximately 35 per cent, Nevis (Saint Kitts and Nevis) is at 40 per cent, Trinidad (Trinidad and Tobago) has had a deficit since 2000, Jamaica was projected to experience deficits in areas of important economic activity by 2015, Antigua and Barbuda rely on desalination to meet demands for water, and in Dominica, Grenada, and Saint Vincent and the Grenadines, demand can exceed supply during the dry season due to reduction in stream flows (UNEP, 2016b).

The part of the population that does not have access even to basic water and sanitation services has to adopt alternative solutions (such as, for water supply: individual wells, illegal connections to the water network, water vendors, or taking water directly from rivers, lakes and other water bodies; and for sanitation: latrines and open defecation). Several of these options are expensive per unit of supply and/or do not necessarily guarantee that the water is safe for drinking. Therefore, these 'solutions' are associated with significant health risks, and in the case of sanitation, are one of the principal sources of water pollution ([WWAP/UNESCO, 2019](#)). In many other countries that may not be considered water-scarce by population or geography (or a combination thereof), inadequacies in the water supply systems

render communities' water-scarce, where water reliability both in terms of quantity and quality fall below acceptable service standards. In many of these cases municipal water supply systems are antiquated and inadequate to satisfy the demands of the communities and users they are now required to serve. According to the GEO-6 Regional Assessment for Latin America and the Caribbean, to fully achieve the SDGs and the human right to water and sanitation, it is necessary to change current consumption and production patterns across all sectors, reducing water loss, updating technologies and conserving ecosystem services (UNEP, 2016b).

Box 1.1. Key messages about the state of biodiversity in the Latin America and Caribbean region (UNEP-WCMC, 2016)

- Declines in species abundance and high risks of species extinctions continue.
- Rates of habitat loss in Latin America and the Caribbean have slowed but remain high.
- Certain pressures associated with rapid economic growth and social inequities are impacting the region's natural resources.
- Agricultural expansion and intensification to increase both livestock, arable and commodities production continue.
- The region is undergoing major infrastructure development of dams and roads.
- The impacts on biodiversity of high concentrations of population in urban areas are particularly significant within the region.
- Country economies within the region are very highly dependent on natural resources.
- Resource extraction for minerals and hydrocarbons has, in some cases, led to locally devastating direct and indirect impacts on biodiversity such as vegetation removal, water and soil pollution and contamination.
- Transboundary and local air pollution is now recognized as an environmental factor in human health in the region.
- Climate change induced impacts on coral reefs and montane habitats within the region are now being observed.

The WCR has a diverse and unique **marine and coastal biodiversity**, which is under threat of degradation (**Box 1.1**). Along the coast of Belize is the second longest barrier reef in the world, and the longest one in the northern hemisphere. The number of endemic species is high when compared to the total number of species. Because the nations in this region depend heavily on the health and the beauty of the natural world to generate income, the conservation of the region's biological diversity is not only linked to social, cultural, and political conditions, but also to the economic realities of the region. Coral reefs, sea-grass meadows and mangroves are among the best-known marine and coastal ecosystems in the Wider Caribbean region and large contributors to the biodiversity of the region, which are at risk of

degradation.³ The SPAW Protocol of the Cartagena Convention lists the species of marine and coastal flora strictly protected under the Convention⁴.

2.2.2 Impacts/Effects

There are numerous environmental and socioeconomic impacts caused by discharge of untreated domestic wastewater, poor water resources management and degradation of terrestrial, coastal and marine habitats. Nutrient enrichment of rivers, groundwater and the coastal and marine environment as a result of partially or untreated effluent discharge causes eutrophication, which stimulates algal blooms and causes red tides along coastlines. Polluted beaches and waters and declining coral reef quality and quantity (a 1.5% per cent area loss annually was observed from 1977 to 2001) impacts tourist arrivals, resulting in a loss of income for Caribbean nations. The Updated Caribbean Sea Ecosystem Assessment (CARSEA, 2014) stated that 70% of the Caribbean's coral reefs are threatened and pollution is one of the primary causes. Coral reefs are nurseries for many species of fish and shellfish, and the loss of coral reef habitat strongly impacts the fisheries industries in many countries in the region. In addition, coral reefs also serve an important function as protective barriers, protecting mangroves, sea grass beds and inland areas against storm surges and rising seas. The Caribbean Sea Ecosystem Assessment (CARSEA, 2014) study found that "the Caribbean is the region in the world most dependent on tourism for jobs and income," while "fishing is also a significant source of both income and subsistence." Yet both of these sectors are directly threatened by environmental degradation due to wastewater discharge. Also, antiquated and inadequate municipal water supply systems combined with limited investments in the water sector on account of challenging economic circumstances means that the water supply can be highly erratic, thereby placing affected communities at high risk for disease outbreaks. The situation is often made worse by impacts of severe drought or catastrophic storms when the already-stressed systems are taxed further. This vulnerability has been well-documented in many countries in the region based on data obtained on outbreaks of water-borne diseases such as gastroenteritis, typhoid fever, dysentery, Hepatitis A, parasites particularly following extreme weather events. Also, wastewater is an important source of microplastics and microfibres to the marine environment for example from cosmetics, hygiene products, washing clothes (around 35% of microplastics in the oceans are thought to be fibres from synthetic textiles), as well as from industrial activities (Prata, 2018).

2.2.3 Causes/Root causes

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<http://www.cep.unep.org/issues/biodiversity.html>

4 http://www.car-spaw-rac.org/IMG/pdf/annexes_of_spaw_protocol_revised_cop9_cayenne_13_march_2017.pdf

Policy, institutional, legal and regulatory frameworks for integrating water and wastewater management including the prevention, reduction and control of pollution from land-based sources of activities in the Wider Caribbean Region remain weak. Even for those countries with sufficient laws and regulations for pollution control including wastewater discharges and pollution of surface, ground and marine waters, there is limited enforcement. Regulatory actions need to be applied and enforced through multiple agencies dealing with water and wastewater management as well as pollution prevention and control using appropriate guidelines, standards and codes of practice. To support enforcement efforts, national monitoring programmes need to be developed and/or strengthened. Lessons from projects such as the Caribbean Regional Fund for Wastewater Management (CReW) have demonstrated that improved national institutional, policy, legislative and regulatory frameworks can stimulate greater investment particularly by the private sector in water and wastewater management. While more countries in the WCR have demonstrated political commitment through the ratification of the LBS Protocol on pollution, greater focus is now required on implementation and meeting the Protocol's obligations.

According to a regional gap analysis conducted by the CReW project in 2010, **38 per cent of the countries in the WCR were listed as having weak policy and legislative frameworks** which contributes to inadequate wastewater management. While 23 per cent of countries surveyed including Colombia, Cuba and the Dominican Republic reported the existence of a comprehensive national policy framework for wastewater management, less than 10 per cent had adopted legislation or regulations that focused on wastewater management. Despite the existence of integrated water and wastewater management plans in a few Caribbean countries, there remains a lack of coordination among various legislative instruments for water and wastewater management. Legislation is often outdated and does not reflect modern realities. Weaknesses in enforcement are as a result of lack of human capacity, inadequate surveillance and monitoring laws, and low levels of compliance with standards.

There is a **substantial funding gap between the investment needs for wastewater management** and the current allocation of funding by Caribbean governments at urban and rural levels. Lack of adequate resources has led to unequal access to, and poor quality of, services with priority for improving wastewater collection and treatment being in the larger urban areas. The IDB concluded at World Water Week in 2015 that, in order to achieve universal coverage over the next fifteen years, the region must develop innovative mechanisms to attract capital, ensure the sustainability of small-scale services, expand the treatment of wastewater in a sustainable manner, and improve institutional organization and governance in the sector. They estimated that while the Latin American and the Caribbean (LAC) invests US 4 billion per year at present, over the next fifteen years US 107 billion will be needed.

In the WCR, **wastewater management is typically assigned low priority in the national budgets**. Governments have not found sustainable mechanisms for providing the funding needed for capital investments in wastewater and a holistic approach has not been taken to water and wastewater management. Traditionally, Caribbean utilities have accessed funds to finance capital expenditure from:

- i. internally generated funds (e.g. tariffs for wastewater);
- ii. government financing;
- iii. bilateral funding grants and concessionary loans; and
- iv. multilateral financial institutions, for example, CDB, World Bank and IDB.

If there is to be a quantum leap in the funding for water supply and sewerage projects, other sources of financing must be explored, such as:

- i. commercial banks;
- ii. direct equity investment (foreign and/or local);
- iii. capital markets [fixed income investments (bonds) and equity investments (securities);

- iv. multilateral, bilateral, private and climate Funds; and
- v. payments for environmental services.

Although most participating countries have access to **funding for wastewater infrastructure** from development banks, they generally do not have the organizational readiness and adaptive capacity to effectively use the available funding opportunities. On the other hand, the costs of wastewater investments often cannot be covered with tariffs charged to customers of the wastewater utilities, in particular from rural communities. Implementation of full cost recovery for new wastewater systems may lead to an increase of as much as 100 per cent of the existing tariffs, which is often perceived as socially unacceptable by most Governments. Even without such levels of investments, many Caribbean countries have not put in place a tariff structure, along with other complementary funding mechanisms (such as dedicated subsidies) to adequately cover the cost of developing, operating and maintaining even the existing wastewater management services. An exception is Jamaica, which has adopted wastewater tariffs to cover operation and maintenance costs in its wastewater facilities, as well as capital investments or debt repayments mechanisms for long-term loans. This was one of the success stories for the CReW project and could be replicated in other countries in the region, if there is political willingness.

Institutional organization and governance in the sector is weak. Wastewater and Sanitation services are provided largely by public authorities. Costs for investments, operations and maintenance often outstrip their capacities, as do present and future requirements for serving uncovered sections of the population especially in rural areas and the protection of source water supplies - surface and groundwater. This has led to inefficient service management and helped to perpetuate low private sector participation and financial instability. Most national utilities in the region operate inefficiently, with the percentage of non-revenue water in some countries being over 50 per cent. On average, well performing utilities have a non-revenue water percentage at or below 25 per cent. Amongst the CReW participating countries, only Belize Water Services Limited shows a relatively efficient level of non-revenue water, at 27 per cent. Improving efficiency would reduce the required resources for the water sector and make additional resources available to invest in wastewater projects. It would also enable a more integrated approach to water resources management including management of domestic wastewater.

Data and information collection to inform decision making is minimal, outdated, often not published or used in national planning processes. Sustained water quality monitoring programmes as well as more comprehensive information management systems are lacking. The operational assessments conducted under the CReW Project indicate a lack of baseline assessments which makes it extremely difficult to design and implement appropriate monitoring programmes and information management systems. Participants at the 11th High Level Forum of Caribbean Ministers responsible for Water in 2015 (most notably the Assistant Secretary-General of Human and Social Development of CARICOM) urged the Caribbean ministers to explore the need to support greater capacity building in data management in their respective countries.

A need to deepen support to the WCR after the successful implementation of the GEF-funded CReW. The 6-year implementation by IDB and UN Environment of the CReW project in 13 countries contributed to sustainable financing for the wastewater sector in selected countries, and supported policy and legislative reforms as well as regional dialogue and knowledge exchange in the WCR. In response to the active engagement of the participating countries and its stakeholders, and at their request for furthering its objectives and coverage (extended now to a total of 18 countries, including Mexico and Colombia), the IDB-UN Environment partnership is proposing a 3-year program focused more on decentralized-rural

wastewater treatment technologies, water source protection and sustainable watershed management practices, strengthened governance mechanisms, and improved knowledge management and advocacy, with a focus on innovative and low-cost solutions to support, rural, peri-urban and local communities, to integrate best-practices to support water-food-energy nexus and socioeconomic challenges and implement key SDG targets.

2.3 Situation Analysis (Baseline)

2.3.1 Baseline analysis - National actions

Some of the main national baseline interventions regarding water and wastewater resource management by country are summarized below. The national packages ([Appendices 13 to 30](#)) provide further information on the national baseline.

Barbados

Barbados is an island in the Lesser Antilles in the West Indies. It has a total land-area of 432km² and a maritime area of 183,436 km². Approximately 286,000 people live on the island. Barbados' physical characteristics are its lowlands or gently sloping, terraced plains, separated by rolling hills that generally parallel the coasts. 86% of the island's surface consists of 24-30m thick coralline limestone. Due to the permeable nature of the coralline karstic limestone, there are no perennial rivers which can be used for water supply. Thus, Barbados relies largely on groundwater. Given increasing demand for drinking water, desalination plants have been established. Still, Barbados is one of the 20 most water scarce countries in the world and the country faces challenges of growing demand driven by economic growth and expansion of tourism.

Barbados has 2 municipal wastewater treatment plants: the Bridgetown Sewage Treatment System and the South Coast Sewage Treatment System. In other areas, pit latrine and septic tanks have been used. In hotels and resorts, package wastewater treatment plants have been used with some reuse of wastewater for irrigating lawns and garden plants. However, wastewater treatment is not considered as a priority and maintenance is not sufficient. Recently the South Coast Sewage treatment system had leakage problems and the Prime Minister recognized the issue as a national crisis⁵. It is assumed that debris entering into sewer lines caused damages to filtering pipes, but capacity and maintenance of this treatment facility are also problems. With this crisis, increasing attention has been paid to wastewater management in the country.

Barbados will start implementing a major project funded by the Green Climate Fund (GCF) entitled “**Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados)**” with US\$ 45.2 million. Under the project, a Climate Change Adaptation Master Plan will be developed, and a Revolving

5 See

<http://www.caribbean360.com/news/sewage-problems-on-barbados-south-coast-deemed-a-national-crisis>

Adaptation Fund Facility will be established. The project will focus on potable water and distribution networks will be rehabilitated. In addition, under its Rainwater Harvesting Programme, rainwater harvesting systems will be installed.

Belize

Belize is a 22,800 km² country on the eastern coast of Central America, facing the Caribbean Sea. The country has around 382,000 inhabitants and the majority of the population is in rural areas. It has the lowest population density (**Table 2.1**) in Central America and the only country that uses English as the official language in Central America. Belize has rich terrestrial and marine biodiversity and forms an integral part of the Mesoamerican Biological Corridor. To become the leaders of sustainable development in the region, the Government of Belize has developed a “National Environmental Strategy” and set a target to reduce untreated wastewater entering the environment by 50% by 2024. Currently, three cities in Belize (Belize City, San Pedro Town and Belmopan City) have centralized wastewater collection and treatment services. In rural areas, village water boards (VWBs) provide water services. Pit latrine and septic tanks are the most common sanitation infrastructure in rural areas (UNDP, 2011). However, most of the septic tanks are reported to be dysfunctional due to insufficient maintenance and desludging. The following are identified as bottlenecks for the improvement of sanitation in the rural areas (UNDP, 2011): poor households are unlikely to buy materials for implementation of sanitation projects; lack of transparent system to determine which household can qualify for the assistance; communities are not empowered to seek support for the construction of sanitation facilities at the community level and communities are not empowered to conduct maintenance, and proper monitoring of the systems are not conducted regularly.

Belize is currently implementing the Marine Conservation and Climate Adaptation project funded by the World Bank. The project is currently conducting analysis of spatial and temporal data of human use of coastal and marine resources in order to monitor compliance with development guidelines of the Integrated Coastal Zone Management Plan. Data have been compiled to produce maps for Caye Caulker, San Pedro and Belize City⁶.

Columbia

Colombia is a State situated in the northwest of South America. In the 20th century, it has experienced rapid urbanization and currently more than 80% of its 49, 465,000 inhabitants live in urban areas. Additionally, it is projected that in the future that growth will be accompanied by an important urbanization process, generating great challenges to manage the increases in the demand of water for

6 See

<http://documents.worldbank.org/curated/en/883351546888331369/pdf/Disclosable-Version-of-the-ISR-BZ-Marine-Conservation-and-Climate-Adaptation-P131408-Sequence-No-08.pdf>

human consumption, agriculture and energy in the country. In the case of water service, in the information contained in the CONPES 3918 - Strategy for the implementation of the Sustainable Development Goals (SDG) in Colombia, the coverage for the year 2017 was 97.4% in urban areas, and 73.2% for rural areas. Regarding the public sewerage service, for the same year, coverage was 92.4% in urban areas, and 70.1% in rural areas. Although Colombia is a country that does not show problems of water supply in aggregate, the pressure generated by large agglomerations and their location can change this trend. Currently, 68% of the total population of the city system is located in areas with a high-water scarcity index. By 2030 27% of the population of the City System would be at high risk of total stock-outs.

Costa Rica

Costa Rica is a country in Central America, neighbouring with Panama and Nicaragua. Of its 5 million inhabitants, 3 million people live in the Capital San Jose with the rest in the surrounding metropolitan areas. The National Wastewater Sanitation Policy (PNSAR) envisages the challenge of increasing sanitation coverage in rural areas by defining appropriate solutions, "(...). *The main challenge of this Policy is to go beyond considering that a septic tank with drainage is a safe management system, given that it seeks to increase sewer coverage in urban areas and define appropriate solutions in rural areas (...). Additionally, the Directorate of Protection for the Human Environment is responsible for implementing the SANEBAR program – founded in 1975 and seeking to provide domestic wastewater disposal systems to families in rural areas of the country – which consists of a sanitary module that includes a shower, toilet and lavatory; a septic tank and drainage, and a grease trap and drainage for soapy water. Furthermore, health promotion actions and capacity building in the installation, use and maintenance of the systems are carried out. (...)*"

Cuba

Cuba is a State located in the northern Caribbean, comprising of the island of Cuba as well as Isla de la Juventud and several minor archipelagos. The main island, the island of Cuba, is the largest island in the Caribbean. Culturally, Cuba is considered to be part of Latin America rather than Caribbean and Spanish is the official language of the country. The 2007-2010 National Environmental Strategy (EAN) for the first time identified the lack of water as one of the main environmental problems of Cuba, even though since 1959 Cuba's hydraulic development had elevated the capacity of reservoir to more than 9 600 million of cubic meters (CITMA 2007). The combination of natural and anthropic factors affecting Cuba's water resources, as well as the worsening of its impact due to climate change, show that water is a determining factor in the Cuban sustainability model. When analyzing the sustainability of water resources in Cuba, excessive consumption of water in the goods and services productive sector is found to be another of the major impacts caused by human activity. First, little or almost nothing has been studied about the volume of water required to produce a unit of production or service by an entity or productive branch, without which it is impossible to make efficiency comparisons to international standards. As seen, the country presents several problems related to water management. First, natural factors, followed by the inefficient use of the resource, next saline intrusion in the coastal aquifers and, finally, contaminations of anthropic origin. In Cuba, all these elements along with some sustainability indicators of water resources use and management lead to the conclusion that water resources management in the country is not sustainable.

Dominican Republic

Dominican Republic is a country located in the island of Hispaniola of the Greater Antilles archipelago. The eastern five-eighths of the island is Dominican Republic and the rest of the island is the nation of Haiti.

Grenada

Grenada is located in the southern end of the Grenadines island chain in the Caribbean. The island State of Grenada (344 km²) is of volcanic origin and consists of Grenada (pop 107,000+), and six smaller islands including Carriacou and Petit Martinique. The islands are volcanic, and the interior is mountainous. Several small rivers provide water to the inhabitants. Grenada relies heavily upon surface water and rainwater catchment for its water supply. Climate change is aggravating water scarcity problems with increasing average temperatures, more erratic rainfall, more frequent heavy rainfall events, and saltwater intrusion in groundwater due to sea level rise. In Grenada, most of sewage is treated through septic systems or collected and pumped out to the ocean without any treatment. That situation exists in the capital city of Georgetown where the primary treated wastewater is pumped through an outfall line into the main harbor. Sewage treatment plants exist in the south of the island in the Grand Anse, St. Georges and Grenville areas but not all households are connected to the system (ECLAC, 2007). In rural areas, 60.3% of the population has access to safe excreta and sewage disposal and sanitation services; 88.3% of urban households do. Septic tanks are used in 54.4% of households; 36.3% rely on pit latrines; 5.4% flushing toilets; and 0.7% have no access at all (PAHO, 2007).

Several other environmental projects are underway in Grenada, including the Climate-Resilient Water Sector in Grenada (G-CREWS) project approved in 2018 is a six (6) year project tasked with creating a climate resilient water sector in Grenada through increased freshwater availability and demand reduction measures. A total project budget of \$48m is heavily financed by the Green Climate Fund (\$40.3m)⁷. Others include: the JCCCP from Japan spawning seven (7) pilot projects; the PPCR through the IDB for \$25m to reduce nationwide vulnerability to natural hazards and climate change impacts; the GEF “Ridge to Reef” Approach (\$18.5m) to protect biodiversity from environmental threats; the Water Supply Expansion and Sewerage Improvement Project funded through the CBD by the UK Dept. for International Cooperation (£707,070).

Guatemala

Guatemala is the most densely populated country in Central America. Approximately 17, 245,000 people live in 108,889 km². About half of the population is living in rural areas and 40% of the population is indigenous people. While the economy has been improving, Guatemala still suffers from poverty and high criminal rate. The indigenous population are disproportionately affected by poverty in the country.

Guyana

Guyana is a country located in the northern South America. It is an English-speaking country and culturally considered to be a Caribbean nation rather than a Latin American country. Guyana is a water rich country known as the “land of many waters”. Around 90% of the population live within 16 to 64km of the coastal areas, which is 10% of the national territory. The rest of the area are sparsely inhabited and has rainforests, sand belts, lowlands and savanna. Key issues in the water and sanitation sector in Guyana are untreated and poorly treated sewage due to a lack of wastewater treatment facilities, a low

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<https://www.greenclimate.fund/projects/fp059>

level of cost recovery and low levels of access⁸. Sewers only exist in the capital, Georgetown. Regions 7, 8 and 9 in the Hinterland show the highest share of population with no access to sanitation, each with more than 15 percent of the population without access. Almost all the people (98 percent) in Guyana use some form of improved sanitation facility. Amerindians, reflecting the geography, lie outside this norm with 88 percent using basic sanitation. Improved sanitation facilities include: flush toilets connected to sewage systems, septic tanks or pit latrines, ventilated improved pit latrines and pit latrines with slabs, and composting toilets (MICS, 2006). Pit latrines account for 52 percent of Guyana's population use of waste disposal while 43 percent use flush toilets with connection to a sewage system or septic tank. Only 2 percent use pour flush latrine and less than one percent use ventilated improved pits. The use of flush toilets increases drastically with education and wealth respectively. In terms of the former, only 19 percent of those with no education use flush toilet while over 76 percent of those with upper secondary or post-secondary education use the same. Current sewage disposal practices appear to cause faecal contamination of surface water and unconfined groundwater sources. Pollution of surface and ground water also has serious impacts on fisheries resources in coastal and marine waters, which then enters the food chain for the human population. Water quality is also affected by discharge of waste from distilleries and surface runoff (pesticides). Agricultural runoff which ultimately enters the coastal zone may contribute potentially significant pollutants in the form of increased biochemical oxygen demand (BOD) and nutrient enrichment. Such pollution may have serious impacts on aquatic and marine life and any contamination of drinking water from this runoff would impact human health. Untreated industrial effluents discharged into nearby canals and rivers will affect the quality of these waters if not rapidly dissolved.

Honduras

Honduras is a Central American country bordering with Nicaragua, El Salvador and Guatemala. Its economy depends largely on agriculture. Despite of economic growth, Honduras has been suffering from poverty. The people in Honduras has been suffering from insecurity as the homicide rate is 56.5/100,000 people, one of the highest homicide rates in the world.

Jamaica

Jamaica is an island country situated in the Caribbean Sea, south to Cuba. Jamaica is the third most populous anglophone country after Canada and the United States and has the population of 2,899,000. In the Kingston Metropolitan Area (KMA), 51.4% of households are connected to a sewer system while in other urban towns 12.2% are connected (see [Appendix 23](#)). Although several wastewater treatment facilities exist in KMA, most of the facilities do not operate satisfactorily due to inadequate maintenance and outdated treatment regimes. As a result, a significant amount of untreated wastewater is reported to be discharged into the Kingston Harbour⁹. The National Water Commission is the primary provider of wastewater or sewage services in Jamaica and collects wastewater from over 700,000 persons across the island. There are presently 306 wastewater treatment plants in Jamaica: 76 are owned by the National Water Commission and the rest is owned by other entities. However, of the 76 plants owned by

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<http://www.gefcrew.org/index.php/participating-countries/guyana>

⁹ GEF CReW (2014) Review of the Access to, Availability of, and Organizational Readiness for Uptake of Funding for the Wastewater Sector in Selected Participating Countries

the National Water Commission, 5 have been taken out of operation. Major urban centres in Kingston and St. Andrew, St. James and St. Catherine account for approximately 90 % of the wastewater handled by the National Water commission. There are a variety of technologies utilized within the National Water commission network, namely contact stabilization, oxidation ditch, aerated lagoons and stabilization ponds. The main type of technology used is oxidation ditch, followed by contact stabilization and oxidation ponds. The Soapberry Treatment Plant is a unique treatment facility as this is the only wastewater treatment plant in English-speaking Caribbean that has tertiary treatment. In rural areas, sewerage is not generally provided except in small housing development. The inhabitants in rural areas, therefore, use septic tanks, pit latrines and other types of sanitation facilities. Most widely used facility is pit latrines and 68% of rural households use basic sanitation. In total, 9% of rural households are connected to a sewer system. Given the low population density, centralized drinking water supply systems are not cost-efficient. Lower income in rural areas also makes it difficult to financially sustain treatment facilities. As a result, only 45% of rural inhabitants have piped drinking water. The rest of the population get water from standpipes (24%) and rainwater tanks (23%). While drinking water service is better than the sewage service, further investment is needed to improve access to potable water in rural areas.

Mexico

Mexico is a country located in the southernmost part of the continent of North America, covering almost 2,000,000km². Its population is around 120million and it is the most populous Spanish-speaking country in the world. Mexico is a member of the Organisation for Economic Co-operation and Development (OECD) and it is considered as an upper-middle income country.

Panama

Panama is a Central American country located at the southern end of the region, bordering with Colombia to the south. Panamanian economy has been supported by the fees from the Panama Canal although commerce and financial sectors as well as tourism are also growing. The National Water Safety Plan 2015-2050¹⁰ notes that 94.5% of the population has some type of sanitation system (private or communal use), provided either by sanitary sewer, latrine or septic tank. However, the coverage remains a challenge for the country given that more than 10% of the population in rural areas lack this service, and among the population without sanitation, about 31% uses latrines. According to the report prepared for the 8th World Water Forum, it is important for Panama to ensure water sustainability that considers strengthening governance of water resources.

St. Kitts and Nevis

The Federation of St. Kitts and Nevis (SKN) consists of two islands located in the Eastern Caribbean with a total land area of 269 sq. km. (St. Kitts is 176 sq. km, and Nevis is 93 sq. km.). The islands are volcanic, and the peaks are covered by tropical rainforests. The total population of the two islands is 47,195 people. The climate of SKN is tropical marine, influenced by steady northeast trade winds and tropical oceanic cyclonic movements. Mean annual rainfall ranges from about 40 inches in the coastal areas to about 150 inches in the central mountain ranges. Rainfall is unevenly distributed during the year, with a reliable wet period from August to September and driest months January – April. It is one of the smallest countries in terms of area and population in the Western hemisphere. SKN does not have a specific policy for water or wastewater management. However, the National Environmental Action Plan of 1994 and the National Environmental Management Strategy of 2005 set policies related to environmental management in the country.

10 High Level Water Safety Committee 2016. National Water Safety Plan 2015-2050: for Everyone. Panama, Republic of Panama. 168 pages. November 2016.

SKN is transitioning rapidly towards a more service-oriented economy. This rapid growth comes with sustainable development challenges, in particular the construction of hotels and other infrastructure in potentially fragile areas or areas of important biological diversity, as well as an increase in uses of energy and water, increased pollution, and the potential degradation of coastal areas from unsustainable tourism practices. On Nevis, the operations of privately-owned quarries, are a major contributor to siltation in terrestrial and coastal waters. Coordination between the various agencies with responsibility for environmental management is generally weak, and there is very little private sector participation in the implementation of best practices. Technical capacity for enforcing current regulations and practices in St. Kitts and Nevis is low, and voluntary standards are proving insufficient to support sustainable development. The GSKN is in the final stage of the receipt of electronic maps that have been done for the country. This initiative will provide updated information on the state of play of the current land use and will aid to inform the land use maps specific to environmental pressures that will be developed under this proposal. This activity will be undertaken in close coordination with the GEF-supported regional project Integrating Water, Land and Ecosystem Management in Caribbean Small Island Developing States (IWECO).

The treatment of commercial and domestic wastewater is limited in SKN since there is no central sewage system. According to the Caribbean Development Bank (2007), 91.5% of the population has access to improved sanitation facilities. 84.7% of the population used septic tanks while 1.0% used latrines. There are still around 8.5% of the population that does not have access to improved sanitation, posing the risk of water contamination and the spread of water-borne diseases. In most cases, the grey water from houses is discharged directly to the ocean. This leads to pollution in the marine environment. In addition, it has been documented that floodwaters can be contaminated by septic tank and wastewater treatment plant overflows, resulting in diseases transmission. Thus, inappropriate management of wastewater is leading to both health and environmental impacts in St. Kitts and Nevis. In the capital city of St. Kitts, Basseterre, wastewater management has become a significant concern as residential development near the Basseterre Valley, the main source of drinking water, has been increasing. There is a need to improve design, operation and maintenance of septic tanks but it has also been proposed to develop a centralized wastewater treatment system in Basseterre. A project proposal has been prepared by CCCCC to attract investment for the project.

Saint Lucia

Saint Lucia is an island in the Lesser Antilles with superficies of 617 km². Its interior is dominated by high peaks and rain forests and from the mountains, many rivers flow into the Caribbean. Saint Lucia's economy traditionally relied on agriculture such as bananas but now the service sector accounts more than 80% of its GDP. Recently in 2018, the Government has completed the Sectoral Adaptation Strategies and Action Plans for the water sector as part of the National Adaptation Plan. The Strategy sets an overarching goal *to drive the implementation of effective adaptation actions across all sectors and at all levels of society for safeguarding Saint Lucia's water resources and services under a changing climate*. The Strategy is accompanied by a sectoral strategy for the water sector and the sectoral strategy points out the need for support the development of the Wastewater Master Plan (WMP) and Guidelines. In addition, the sectoral strategy lists possible project concepts for the improvement of wastewater management in the country.

Currently, only around 7% of the population (Castries and Gros Islet districts) has access to one of the two public sewer system. Castries Sewage System is only a collection system with only primary treatment. This has resulted in the discharge of sewage water directly into the Castries Harbour. Around

90% of households as well as most hotels and farms rely on on-site sanitation facilities, such as toilets with septic tanks, which are serviced predominantly by private companies, or pit latrines. It has been reported that in Saint Lucia, there are some communities that still do not have effective wastewater facilities and raw sewage water is directly released into water courses¹¹. Improvement of wastewater management services is needed.

In addition to the Japan-Caribbean Climate Change Partnership project under which the Sectoral Adaptation Strategies and Action Plans are being developed, Saint Lucia is taking part in the Caribbean Regional Track of the Pilot Programme for Climate Resilience (PPCR) project. Under PPCR, Saint Lucia will implement rainwater harvesting installations. It should be noted that the “Integrating Watershed and Coastal Area Management (IWCAM) in the Small Island Developing States of the Caribbean” project also implemented rainwater harvesting systems in Saint Lucia.

St. Vincent and the Grenadines

St. Vincent and the Grenadines is an island country in the Lesser Antilles chain at the southern end of the eastern border of the Caribbean Sea. There are 32 islands and cays that make up the country. The main island is St. Vincent and has an area of 344 km². Nine islands are inhabited and in total around 110,000 people live in the country. Approximately half of the population are living in rural areas. The 2 main income-generating activities are tourism and agriculture. The central capital city, Kingstown area and small areas in Arnos Vale are connected to the sewage treatment plant, which was constructed in the 1970s. In other areas, the septic tank is the main sanitation facility used in the country. Both domestic households and commercial sites use septic tanks for collection and soak-away systems for effluent disposal. However, lack of adequate toilet facilities is still a challenge for poor communities.

The 2 major areas of focus in the Country as related to sewage treatment: 1. the area of central Kingstown and its surrounding environs, and 2. the South Coast area which is extremely densely populated with several hotels and beaches. The Kingstown area has wastewater generated from several restaurants and other food establishments but the majority originates from the discharge of domestic sewage. Industrial waste is not a major concern. Another densely populated area is on the South Coast, separated from the capital Kingstown by the highlands of Cane Garden. It has a number of beaches bounded by hotels. Many of these hotels attempt to have some form of septic tank and soak away system but it is problematic due to the proximity to the coastline and resultant high-water table level. Instances arise whereby sewage from seepage discharges straight to sea and, in all cases, sullage (grey water) from kitchens and bathrooms is discharged straight to sea through stormwater drains. The result is an extremely heavily stressed environment in this area. Practically all corals have died and bathing water standards are of critical concern. During the dry seasons, water demand exceeds supply in St. Vincent and the Grenadines. As such Wastewater reuse has been practiced but without any established

¹¹ CPI (2017) Anaerobic Digestion Economic Feasibility Study: Generating energy from waste, sewage and sargassum seaweed in the OECS

criteria and/or regulations. It has been reported that 39 per cent of the resorts in the Grenadines use treated wastewater.

St. Vincent and the Grenadines is currently participating in J-CCCP and PPCR projects. Under the J-CCCP project, three pilot projects totalling US\$300,000 are being implemented focusing on water harvesting and irrigation systems, converting waste into energy and building capacities for sustainable agriculture. The GEF-IWEco project is a five-year regional project that builds upon the work of previous initiatives, to address water, land and biodiversity resource management as well as climate change. Fresh and coastal water resources management, sustainable land management and sustainable forest management which are all challenges to Caribbean SIDS will be addressed while improving social and ecological resilience to the impacts of climate change. The Project will also target the reduction of direct discharges of pig effluent into the environment through the employment of dry manure techniques.

Suriname

Suriname is a Dutch-speaking smallest sovereign state in Latin America facing the Atlantic Ocean. Although it is located in Latin America, Suriname is culturally considered as a Caribbean country. Suriname has around 568,000 inhabitants and most of the population live in the northern coastal areas. The southern part consists of tropical rainforests and savannah and it is sparsely inhabited. Suriname lacks a comprehensive water law. Several instruments govern water resources in the country but these instruments are outdated and fragmented. The Government has recognized this gap and a number of draft instruments have been prepared including the one on the super-visioning of drinking water quality. According to Del Prado (2013), older drafts of water legislation has been reviewed by experts in October 2013. Yet, the water legislation has not been adopted as of January 2019. Similarly, many draft acts have not been entered into force.

Trinidad and Tobago

Trinidad and Tobago is a twin island state located in the southern end of the Caribbean Sea, 11km away from the coast of Venezuela. The petroleum industry is the main economic-driver of the country and unlike most of the neighbouring island States in the Caribbean, its economy is predominantly industrial. Compared with other countries in the Region, Trinidad and Tobago has an average environmental status as reflected in its ranking on the Environmental Performance Index (EPI). These indicators reflect the state of the country's environmental health and ecosystem vitality and cover high-priority environmental policy issues, including air quality, forests, fisheries, and climate and energy, among others. In 2014, Trinidad and Tobago's ranking on the EPI was 79th out of 178 countries – near the middle of all WCR countries. However, the country's performance with respect to water and sanitation was similar to its average score, with a comparative ranking of 76th in the world. Trinidad and Tobago's poor wastewater management practices – from industrial, agricultural, municipal and community sources – have a negative impact on the quality of the country's water resources, human health and terrestrial and aquatic ecosystems (GEF CREW, 2017c).

Sewage pollution in Trinidad and Tobago is from both point and non-point sources. The former is caused mainly by inadequately treated effluent from sewage treatment plants, the latter from a wide range of agricultural, animal husbandry, and urban land use activities. Sewage is routinely found in river water samples taken in any of the developed areas. A study conducted in 2004-2005 revealed the presence, in all of the rivers monitored, of bacteria at levels exceeding environmental limits for domestic, agricultural, and recreational purposes. According to the WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, 92 per cent of persons in Trinidad and Tobago had an improved sanitation facility in 2015. WASA operates and maintains 36 wastewater treatment plants including four in urban centers of Port of Spain, San Fernando, Arima and Scarborough. The Housing

Development Corporation (HDC) also owns 22 plants with WASA working closely with HDC to take over these wastewater facilities. As a result, 20 per cent of the population is served by central sewage treatment plants operated by WASA with 10 per cent being served by small privately-owned plants, 64 per cent by on-site septic systems and 6 per cent by pit latrines. Of special concern are the approximately 150 small private package wastewater treatment plants, or “orphan plants”. Most of these facilities are not maintained and have been abandoned by their developers before takeover by WASA. This has resulted in untreated effluent being discharged into drains and water courses posing public health and environmental risks.

Sewage pollution is a major concern for most of southwest Tobago, in particular the area from Scarborough to Crown Point. The Scarborough central sewerage treatment facility which was designed to handle all of the sewage generated in that town operates at only one-fifth of its capacity because of the failure of domestic consumers to connect to the system. Treatment plants attached to the Milford Court and Buccoo Housing Estates do not function efficiently, and the effluent from these has been identified as being major contributors to the pollution of the Bon Accord Lagoon/Buccoo Reef complex (CReW 2010). Sewerage outfalls from hotels in the southwest of Tobago have been found to threaten coral reefs and have also contributed to the degradation of the Buccoo Reef system.

Trinidad is a signatory or a party to various regional and international conventions that impact the national, regional or global environments, including the Basel and Cartagena Conventions and the LBS Protocol ratified in 2003. There is an Environmental Management Authority tasked with enforcement of the associated Act including national environmental discharge standards (The Water Pollution Rules), Source Registration and Environmental Clearance (CEC) Certificates among other mandates.

2.3.2 Baseline analysis – Regional overview

Access to sanitation: According to WHO/UNICEF JMP, 85% of the population in the 18 countries participating in the project has access to basic sanitation in 2015. While on average 88% of urban populations in these countries have basic sanitation, 77% of rural population have access to those facilities. Open defecation is still practiced in these countries. Rural areas have higher population practicing open defecation compared to urban areas. On average, 39% of the urban population are connected to sewer while only 8% of rural population are connected ([Table 2.3](#)). The table shows disparity in access to wastewater treatment services between urban and rural populations in the region. Despite relatively high availability of basic sanitation facilities in the WCR, it has been estimated that as much as 85% of wastewater entering in the Caribbean Sea is untreated ([UNEP/GPA, 2006](#)). Direct disposal of domestic wastewater through submarine outfalls is a common practice in the region. Some small islands are karstic and due to the nature, wastewater is released to the marine environment with limited assimilation even when sanitation facilities such as septic tanks are used ([UNEP CEP, 2019](#)).

Policy and legislative frameworks: While some countries have a comprehensive framework for wastewater management such as Colombia, Cuba and Dominican Republic, 38% of the countries have been reported to have weak policy and legislative frameworks ([UNEP CEP, 2010a](#)). For example, the absence of effective land use policies has resulted in degradation of watersheds in several Caribbean countries ([Fletcher, 2018](#)). Overall water governance in the region has been characterised as “fragmented”. Sectoral fragmentation across ministries and between different governance scales such as national and municipal governments are considered to be a key obstacle in the Latin American countries ([Akhmouch, 2012](#)) as well as in the Caribbean islands (PAHO, 2018). Different ministries are responsible for part of water and wastewater management ranging from the ministry of the environment, to agriculture, health, fisheries, industry, finance, rural development, infrastructure, and housing.

While efforts have been made to coordinate water policies across sectors and governance levels, obstacles still remain for effective coordination. These include: lack of common database and monitoring system, lack of clarity in roles and responsibilities, political rivalries between ministries, lack of political will at the national level, and difficulties in implementing national decisions at the local level ([Akhmouch, 2012](#)). In some Caribbean island States, a challenge exists in that ministries other than the ministry of finance have authorities in allocating funds to the public utility ([Fletcher, 2018](#)).

CRew assessed the importance of enabling institutional, policy, legislative, regulatory and governance environment for effective wastewater management ([CRew, 2017](#)) including gaps and best practices, and finalized a range of policy toolkits and templates, and review of LBS implementation:

- GEF CRew Regional Wastewater Management Policy Template and Toolkit ([GEF CRew, 2015b](#))
- GEF CRew Regional Guidelines for Developing, Planning and/or Updating National Wastewater Management Plans ([GEF CRew, 2015c](#))
- Assessment Report for Selected Countries regarding the LBS Protocol ([UNEP CEP, 2013](#))
- LBS Protocol Difficulties and Challenges (Central American participating countries) ([UNEP CEP, 2014](#))

Table 2.3: Sanitation in 18 participating countries in the CReW+ project in 2015 (WHO-UNICEF, 2017)

SANITATION	NATIONAL (%)						RURAL (%)						URBAN (%)					
COUNTRY, AREA OR TERRITORY	At least basic	Limited (shared)	Unimproved	Open defecation	Annual rate of change in basic	Annual rate of change in open defecation	At least basic	Limited (shared)	Unimproved	Open defecation	Annual rate of change in basic	Annual rate of change in open defecation	At least basic	Limited (shared)	Unimproved	Open defecation	Annual rate of change in basic	Annual rate of change in open defecation
Barbados	96	2	1	1	0.57	0.01	-	-	-	-	-	-	-	-	-	-	-	-
Belize	87	9	3	1	0.31	-0.21	84	10	4	2	0.36	-0.37	91	7	1	1	0.29	-0.03
Colombia	84	9	3	4	0.58	-0.37	72	5	9	14	1.43	-1.05	88	9	1	1	0.18	-0.06
Costa Rica	97	1	2	0	0.20	-0.04	94	1	4	0	0.28	-0.05	98	1	1	0	0.07	-0.03
Cuba	91	5	4	0	0.11	-0.10	88	6	5	1	0.55	-0.26	92	5	4	0	-0.04	-0.04
Dominican Republic	83	12	2	3	0.22	-0.10	74	15	4	8	0.23	-0.09	85	11	2	2	0.00	0.00
Grenada	78	5	13	4	-1.06	0.24	-	-	-	-	-	-	-	-	-	-	-	-
Guatemala	67	9	18	6	0.54	-0.57	53	7	30	10	0.67	-0.82	81	10	8	1	0.13	-0.17
Guyana	86	9	4	1	0.52	-0.05	85	10	4	1	0.64	-0.04	89	8	2	0	0.22	-0.05
Honduras	80	9	5	7	1.19	-0.87	75	6	6	13	1.69	-1.38	84	11	3	2	0.48	-0.10
Jamaica	85	13	1	1	0.11	-0.01	87	11	0	1	0.23	-0.04	84	15	1	1	0.01	0.02
Mexico	89	7	2	2	0.86	-0.59	81	8	6	6	2.02	-1.54	91	7	1	1	0.42	-0.24
Panama	77	7	12	3	0.85	-0.28	59	6	26	9	0.96	-0.49	86	8	6	0	0.66	-0.11
Saint Kitts and Nevis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Saint Lucia	91	8	0	1	0.81	-0.67	92	8	0	0	0.80	-0.76	86	9	0	4	0.73	-0.34
Saint Vincent and the Grenadines	87	3	6	3	1.09	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Suriname	79	10	5	6	-0.11	-0.08	61	11	10	18	-0.14	-0.30	88	9	2	0	-0.09	0.02
Trinidad and Tobago	92	7	0	0	0.11	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Average	85	7	5	3	0	0	77	8	8	6	1	-1	88	9	2	1	0	0

Enforcement: Gap exist in the effective enforcement and accountability of existing policies in the WCR. Even integrated water policy frameworks exist, inadequate monitoring and reporting on water policy performance hinder implementation (Akhmouch, 2012). Several issues have been identified including: lack of long-term financial plans in sector policies; absence of measurable targets for water and sanitation sector; outdated policy including tariff regimes; limited engagement of stakeholders; lack of transparency; financial planning does not include costs for improved services and operational efficiency; and limited supervision over the utility (Fletcher, 2018).

Monitoring and data management: Baseline data on water and wastewater management in the region are not well established. There is no overall regional water resource database although efforts have been made to collect water quality data as part of the preparation of the State of the Convention Area Report (SOCAR) being prepared by the Caribbean Environment Programme/Secretariat to the Cartagena Convention (UNEP CEP, 2019), which includes a number of indicators in relation to wastewater and sewage. Some countries have advanced water database such as in Colombia, but others do not have national water information system. In some countries, multiple ministries are involved in water quality monitoring such as the ministries of environment and health, and this complicates integrated data management at the national level. The lack of information is an important obstacle for integrate water and wastewater management.

In terms of progress towards the SDGs, the most critical areas for which serious data gaps currently exist include SDG 11 (Cities and Communities), SDG 6 (Water), and SDG 14 (Oceans) (UNEP, 2019). For many countries, the costs incurred to establish and maintain effective data infrastructures are often not congruent with the limited budget available to central and local governments. This lack of resources poses important limitations in the capacity of countries to monitor and report on the implementation of the environmental dimension of Agenda 2030. Feasible solutions to mitigate or limit the existing gaps in frequency and spatial coverage of data are currently being explored in the region, including use of non-conventional data (e.g. crowd sourced data (citizen science) and remote sensing) though legal aspects and capacities for their use are still important barriers for their full exploitation. The region has benefitted from the presence of a significant number of Space Agencies and related internationally-recognised Earth observation programmes. The assimilation of these capacities within the usual data production workflows must be considered to ensure systematic and sustained monitoring of the environment (e.g. land use changes, forest cover, water management, etc.). Given the increase in population and the demand for raw materials for consumption and exports, data indicates that current and future growth in the region is likely to be at the expense of environmental services (e.g. water supply, climate regulation, and support for agriculture) and natural resources (e.g. minerals, marine resources, and genetic resources). In conclusion there is a need to continue to support efforts towards its entering into force and implementation at the national level, including the development and availability of environmental information (e.g. integrated PRTRs that include reporting on energy and water consumption and pollutant releases from production and consumption of products). Additionally, the existent synergies between MEAs and the SDGs are not fully mapped and exploited at the national level as their contributions to the 2030 Agenda are usually not identified and coordinated with its implementation.

Technologies: Septic tanks with soakaways and pit-latrines are most commonly used sanitation facilities in rural and peri-urban areas of the WCR. Although these sanitation facilities are available, they are often old and dysfunctional (UNEP CEP, 2010a). A few countries even lack design standards for such septic tanks and pit-latrines. Numerous mechanical wastewater technologies such as extended aeration/Activated sludge, oxidation ditches, pond systems, rotating biological contactors, sequencing batch reactors, dissolved air floatation and trickling filters are also used throughout the Caribbean. Trinidad and Tobago even has an Imhoff Tank system. They have been used in the region but there is a lack of funding as well as sufficient training in operation and maintenance. As a result, many facilities

are obsolete and lack maintenance for effective operation (UNEP CEP, 2010b). While some decentralized small-scale technologies have been used in the region, such as baffled tanks, up-flow filters, constructed wetlands (World Bank, 2008) and rainwater harvesting (GWP, 2018), access to information on available innovative small-scale technologies is limited in the region¹². It may be interesting that basic decentralized technology has been around for decades. Developing nations have tried the more developed mechanical treatment plant solutions but the failure rate is high and public health and degradation of the environment is threatened. Simpler, non-mechanized solutions are being developed as a result of the need and successes are being realized globally as a result. The Caribbean is no different. Innovative decentralized solutions are under serious consideration and applications are increasing from simple bio-gas generators to reduce or even eliminate LPG purchases to use of processed sewage sludge as organic fertilizers to reduce or eliminate costly chemical fertilizers. **Box 2.1** summarized the main gaps identified during CReW.

Box 2.1. Main gaps in relation to Wastewater Management Technologies (UNEP CEP, 2010a)

- Old technologies and infrastructure;
- Lack of infrastructure coverage;
- Insufficient number of treatment plants;
- Low levels of skilled personnel in the wastewater management sector including weak operational skills and process understanding;
- Low levels of maintenance of sewage treatment plants and absence of preventative maintenance;
- Lack of training in operation and maintenance of current and imported technologies;
- Financial constraints to implementing new technologies;
- Reliance on imported technologies that are sometimes difficult to maintain;
- Lack of adequate regulations and approval procedures;
- Limited inspection procedures and programmes;
- Poor financial resources allocations in the sector;
- Absence of operation and maintenance manuals;
- Limited operational support and service contracts;
- Inadequate process monitoring and inadequate laboratory facilities;
- Inappropriate selection of technologies; and
- Unavailability of spare parts.

Databases and clearinghouse mechanisms: There are a number of clearinghouses and websites linked to information and databases in the Caribbean. With the support of GEF, the CReW project regional and

12 Caribbean Water and Wastewater Association workshop in Jamaica in October 2018

national reports, assessments, lessons learned etc. are available online¹³. The CLME+ project (GEF ID 5542) has a knowledge hub¹⁴ including the Caribbean marine atlas for ICZM and CLME+¹⁵ and CaribNode information system and GIS¹⁶. The Integrating Watershed and Coastal Area Management (IWCAM) project developed an IWCAM Atlas Report, including maps (GEF IWCAM, 2012) as well as a GEF-IWCAM Capacity Assessment of Geographic Information Systems Capabilities of the Caribbean (GEF IWCAM, 2007). This is complimented by the CEP clearing houses and databases¹⁷. UN ECLAC has developed a number of information systems related to economic and social development in the Latin American and Caribbean region. These systems are available for governments and institutions of the region through direct request to the corresponding divisions¹⁸. Under the Sustainable Development Goals indicators database¹⁹ a few national data hubs have also been created including Mexico²⁰, which includes publicly available data for a number of SDG targets including SDG 6 and 14.

13

<http://www.gefcrew.org/index.php/publications>

14 <https://clmeplus.org/>

15

<https://www.caribbeanmarineatlases.net/>

16 <http://www.caribnode.org/>

17 <http://cep.unep.org/clearing-house-and-databases>

18

<https://www.cepal.org/en/datos-y-estadisticas>

19 <https://unstats-undesa.opendata.arcgis.com/>

20

<http://www.agenda2030.mx/#/home>

Financial mechanisms: In most countries of the WCR, sanitation is given lower priority as compared to the provisioning of potable water. Consequently, financial sustainability of wastewater management is a major limiting factor in the WCR (UNEP CEP, 2010a). Most of the time, public wastewater treatment service is financed by subsidies and household tariffs. These tariffs are often collected together with bills for water service provisioning (IDB, 2016), and the lack of financial plans in sectoral policies is a common challenge in the Caribbean States (Fletcher, 2018). Funding mismatch with administrative responsibilities across ministries also poses challenge for effective implementation of water policies in the region (Akhmouch, 2012). As compared to centralized wastewater treatment service in urban areas, most of rural areas in the WCR have decentralized sanitation facilities. As such, sanitation infrastructure is predominantly determined at the household level and financial limitation is the major barrier for households to improve their infrastructure. In the past few years, however, non-governmental organisations (NGOs) and financial institutions have improved access to credits for sanitation infrastructure. In addition, governments have provided subsidies to help improve sanitation in rural areas (Akhmouch, 2012). This allowed population that previously did not have access to sanitation to install improved sanitation.

Private sector engagement: The private sector engagement has been primarily through construction and rehabilitation of infrastructure or through concession of wastewater collection and treatment services in urban areas. Yet, opportunities exist for the private sector to engage in wastewater collection and treatment in peri-urban and rural areas. These areas rely on decentralized sanitation and some technologies such as septic tanks require removal of sludge and subsequent treatment (Akhmouch, 2012).

Reuse of wastewater and sludge: Wastewater and sludge have been increasingly recognized as resources in the region (Fletcher, 2018). There are several examples of wastewater reuse for agricultural purposes as well as for irrigation of gardens and golf-courses. There are several farms and hotels with golf courses in the Caribbean that reuse their own wastewater for irrigation. With regards to the beneficial use of sludge, there is a growing popularity for the generation of bio-gas utilizing waste sludge as a result of foreign investment, training and supply of relatively inexpensive, small, easy to install and operate bio-gas plants, especially on farms with animal husbandry. Use of the methane generated has reduced the volume of LPG purchased. The resultant manure after digestion is being used as organic fertilizer thereby reducing the chemical fertilizer bill to the farmers.

Public awareness: In general, awareness on environmental issues is low in the WCR (UNEP CEP, 2010a). This leads to limited public concern on water and wastewater issue and lack of public engagement in policy formulation as well as monitoring and enforcement (Akhmouch, 2012). The Caribbean Regional Fund for Wastewater Management Project (CReW) funded by the GEF showed that the link between wastewater and human health needs to be highlighted to attract public attention and based on a Knowledge, Practices and Attitudes (KAP) Survey of regional media (GEF CReW, 2014) agreed on a preliminary list of key mechanisms (Box 2.2). Long-term investment in environmental education targeting the issue of adequate sanitation is needed to raise awareness and stakeholder engagement. For example, there is a lack of awareness on the recommended frequency of desludging septic tanks, which if followed would result in less short-term failures. The CReW project also demonstrated the importance of using Ministerial Fora such as the Annual High Level Meeting of Water Ministers convened through the CWWA, CARICOM and GWP C.

Box 2.2. CReW KAP regional media recommended actions

- Hosting additional media sensitization workshops;
- Undertaking media briefings on a regular basis possibly through the use of online frameworks (e.g. Go-to-Meeting);
- Organize field trips to give first-hand information on the importance of conservation, wastewater management as well as best practices etc.
- Development of press kits to include a portfolio of fact sheets as well as general information on wastewater management and case studies. Press kits also should include information related to the activities being undertaken under the Project as well as other wastewater/environmental activities;
- Creating an annual awards competition that recognizes journalistic efforts for the best reports, features and photographs related to wastewater management and environmental conservation. Consideration will be given to expanding existing environmental journalism awards to focus on wastewater management.
- Development of radio discussions, and radio spots conveying specific conservation messages to be used on popular radio talk shows
- Production of a special documentary film for screening on television, in schools, community centres, expos and other public gatherings, in offices etc.

Capacity development: Capacity gaps exist in expertise as well as human resources. Some countries do not have sufficient number of personnel given resource constraints. Knowledge and expertise on operation, maintenance (UNEP CEP, 2010a) as well as on new technologies such as spatial technologies and recycling of wastewater (Akhmouch, 2012) need to be further improved. The CREW project identified some of the capacity building needs (GEF CReW, 2015a):

- **Capacity building in policy development** – In many countries there is no overarching environmental policy and as such there are no sub-policies at the national level for the management of wastewater or strategies to effectively advance initiatives that focus on wastewater as a resource. There is also need in some cases to overhaul outdated water sector and sanitation policies.
- **Capacity building in drafting of wastewater management regulations** – There are low levels of capacity of experts to adequately draft legal instructions in a timely manner; there is need in some jurisdictions for sewage effluent standards.
- **Capacity building in wastewater management** – Capacity needs to be built as it relates to new and innovative approaches to wastewater management, including creating and advancing initiatives to increase the safe reuse of wastewater in key industries such as the tourism, agricultural, mining and manufacturing sectors, which can be linked to inclusion in environmental management systems as well as to increasing operational efficiencies generally and advancing the notion of the triple bottom line. The use of wastewater in the agricultural sector also will require a mindset change in some countries to using waste for agricultural production both on the part of farmers and consumers. Therefore, there will be requirements for undertaking a range of communications and public awareness activities. Key areas of focus would include: the linkages between treated wastewater (as an organic fertilizer) and the contribution to human health as opposed to the linkages between human health and the use of chemicals which are contributing to the increasing levels of cancers; and minimum residue levels (MRLs); and how use of wastewater in agriculture also can have the benefits of increasing international competitiveness of the sector.
- **Building general understanding wastewater issues** – Capacity building is necessary for stakeholders in general to not only increase their knowledge about wastewater issues and practices but also to change attitudes related to how wastewater is viewed. Persons are not

sufficiently aware of the linkages between sewage, poor sanitation and health impacts such as diarrhoeal diseases, malnutrition, vector diseases, human capital, etc. Additionally, communities are also generally unaware of the range of decentralized natural treatment systems (e.g. ecological sanitation, constructed wetlands, sand filters) that could be accepted as options for domestic wastewater treatment.

- **Improving data collection and management** – There are limited facilities (and in some countries no facilities) for data collection where analysis, revision and expansion of information can be effectively conducted; additionally, the quality of data analysis is poor and there is a lack of or limited periodic assessment of short-term and long-term data-collection and research needs for wastewater management. Increased focus also needs to be placed on sharing the data among relevant government agencies and research institutions.
- **Increasing professional certification** – Increasing the number of professionals, including public health officers, who are effectively certified as wastewater operators within the public sector is required in most jurisdictions. There is also need to provide opportunities to increase specialized training in wastewater management areas (with the support of regional organizations such as CWWA and CAWASA), including technical knowledge but also operating and maintenance procedures for newer technologies.
- **Building capacity to better understand the linkages between climate change and wastewater management** – It is important to increase understanding of climate change impacts on wastewater management, which will also have implications for other sectors such as health, agriculture, tourism and disaster management.
- **Increasing enforcement** – Increased training and resources are needed to create an adequate cadre of enforcement officers in most if not all countries to enforce wastewater laws and regulations. This will become even more important when new, needed legislation is developed.

Relevant regional projects in the Wider Caribbean Region

GEF-funded projects

Under the **CReW Project** (<http://www.gefcrew.org/>), funded by the GEF and implemented by the Inter-American Development Bank (IDB) and UN Environment, capacity building support was provided for policy, institutional and legal reforms in the wastewater sector and to promote greater awareness and knowledge about wastewater management among the general public and decision makers. This project will build on those interventions made in Barbados, Belize, Costa Rica, Guatemala, Guyana, Honduras, Jamaica, Panama, Saint Lucia, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago. Six additional countries that were not part of the previous CReW project (Colombia, Cuba, Dominican Republic, Grenada, Mexico, St. Kitts and Nevis) will join the CReW+ project (**Table 2.4**).

Table 2.4 Comparison of the participating countries of the CReW and CReW+ projects

Country	CReW	CReW+
Antigua and Barbuda	x	-
Barbados	x	x
Belize	x	x
Colombia	-	x
Costa Rica	x	x
Cuba	-	x
Dominican Republic	-	x
Grenada	-	x
Guatemala	x	x
Guyana	x	x

Country	CRew	CRew+
Honduras	x	x
Jamaica	x	x
Mexico	-	x
Panama	x	x
St. Kitts and Nevis	-	x
Saint Lucia	x	x
St. Vincent and the Grenadines	x	x
Suriname	x	x
Trinidad and Tobago	x	x

Under the CRew project, baseline policy assessments were conducted in six countries in the WCR: Belize, Jamaica, Costa Rica, Guatemala, Honduras, and Panama. To support the development of integrated wastewater management policies, the Regional Wastewater Management Policy Template and Toolkit and the Regional Guidelines for Developing, Planning and/or Updating National Wastewater Management Plans were prepared. The present CRew+ project will use these guidelines developed by the previous project to support the development of integrated policy which enable further investment in innovative wastewater technologies for use at national and local community levels.

To promote sustainable financing for environmentally sound and cost-effective wastewater management solutions, four financing mechanisms were established under the GEF CRew project: the Belize Wastewater Revolving Fund (BWRf); the Guyana Wastewater Revolving Fund (GWRf); the Jamaica Credit Enhancement Facility (JCEF) and the Trinidad and Tobago Wastewater Revolving Fund (TTWRF):

- **In Belize**, the Belmopan Sewer System Upgrade and Expansion project was selected as the first project to benefit from the BWRf. In 2014, the construction of three facultative lagoons was retroactively financed by the Revolving Fund. The cost was US\$739,333.33, and the repayment was completed in September 2016. In 2015, the CRew signed the financing agreement for the Belmopan Sewer System Expansion Phase 1 with a cost of US\$813,333.33; the construction was completed in April 2016 and the repayment to the fund started in January 2017 and will be complete in October 2021. Finally, in 2016, the CRew signed the financing agreement for the Belmopan Sewer System Expansion Phase 2 with an estimated cost of US\$3,807,260; the construction was completed in September 2017, and the repayment to the fund started in May 2017 and will be complete in June 2022.
- **In Guyana**, the US\$3 million GWRf supports improvements in wastewater management through both public and private sector channels. In October 2015, after a long seek period of a first-generation project, an agreement for a US\$300,000 project was signed, but as per today private companies have suffered difficulties to obtain a commercial bank guarantee to comply with the Guyana Wastewater Revolving Fund loan disbursement conditions. Due to the unsuccessful efforts to find a private or public sector partner in time to activate the Guyana Wastewater Revolving Fund (GWRf), a Business Plan for the Guyana Wastewater Revolving Fund was developed, which will facilitate a guideline in the short, medium and long term to activate the revolving fund. In the other hand, the Project Management Unit is exploring the possibility to develop a proposal with the Guyana Water Incorporated to install a constructed wetlands wastewater treatment facility.
- **In Jamaica**, the Jamaica Credit Enhancement Facility (JCEF) was established. The JCEF was a US\$3 million guarantee fund that has been placed in a reserve account and pledged to local commercial banks as collateral for acquiring financing to carry out wastewater projects. The

CRew funds were placed in a reserve account to provide secondary assurance to a commercial lender. In August 2015, the loan agreement between the NWC and NCB was signed and stipulated a US\$12 million loan over a 12-year term. Tranche A repayment began on June 2015 whilst Tranche B began March 30, 2016. The Loan is to be repaid by June 30, 2022. With this financing, the NWC has entered into 3 construction contracts already. The first construction contract, which includes the design and build of two wastewater treatment plants, was completed in January 2017. And the others two contracts, which are the design and build of 3 Wastewater Conveyance Systems and the design and build of 3 Pond Systems, were completed in August 2017.

- **In Trinidad and Tobago**, the US\$2 million TTWRF was established to improve coverage and performance in the wastewater sector. In November 2014, The National Wastewater Revolving Fund of Trinidad and Tobago (NWRFTT) was established, and the first project was the rehabilitation of the 15-year old Scarborough Wastewater Treatment Plant in south-western Tobago. However, before entering into an agreement between the NWRFTT and the Water and Sewerage Authority (WASA) for the first generation project, the Government of the Republic Trinidad and Tobago (GORTT) agreed to change the Executing Agency of this operation from the Ministry of Finance (MOF) to the Ministry of Public Utilities (MPU), in addition, the MPU is currently working on the mechanism for the operation of the Revolving Fund. The IDB agreed that the final agreement between WASA and the NWRFTT does not need to wait for the new execution agency to be in place, as a result, the design and built contract for the rehabilitation of the Scarborough Wastewater Treatment Plant begun in September 2016 and was completed by September 2017.

The **Integrating Watershed and Coastal Area Management (IWCAM) in the Small Island Developing States of the Caribbean** project²¹ was implemented from 2005 to 2012 in Antigua and Barbuda, The Bahamas, Barbados, Cuba, Grenada, Dominica, Dominican Republic, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago. The project was jointly implemented by UN Environment and UNDP with a view to strengthen the commitment and capacity of the participating countries to implement an integrated approach to the management of watersheds and coastal areas, with a long-term goal of enhancement of the capacity of the countries to plan and manage their aquatic re-sources and ecosystems on a sustainable basis. The project established the foundation for IWCAM approaches in the countries through piloting and demonstration activities. Roadmaps for IWRM were developed for Antigua and Barbuda, Barbados and Saint Lucia to support uptake of IWRM. In St. Vincent and Grenadines, four community-based IWRM projects were implemented with engagement of communities. An innovative Wastewater Wetland Filtration System and the Rain Water Harvest system developed in Saint Lucia. The CRew+ project will build on the experience from IWCAM project by using the IWRM roadmaps and by incorporating lessons learnt from these pilot projects under IWCAM project.

Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWeco)²² is a full-size GEF-funded project being implemented by UN Environment. CARPHA; Secretariat to the Cartagena Convention/CEP; LBS Regional Activity Centres–IMA and CIMAB are the executing agencies of the project. The objective of the project is to conserve the Caribbean ecosystems for sustainable livelihood of the population through improved fresh and coastal water resources

²¹ <http://www.cep.unep.org/iwcam>

22 <http://cep.unep.org/gef-iweco-1/gef-iweco>

management, sustainable land management and sustainable forest management that also seek to enhance resilience of socio-ecological systems to the impacts of climate change. This project follows the previous IWCAM project and the following countries are participating: Antigua and Barbuda, Barbados, Cuba, Dominican Republic, Grenada, Jamaica, St. Kitts and Nevis and Saint Lucia, St. Vincent & the Grenadines, which include national sub-projects are being implemented in eight countries:

- Antigua and Barbuda: Targeting land degradation and effective land management through the development of Innovative Financing methodologies in Antigua and Barbuda
- Cuba: Conservation and sustainability of biodiversity in Cuba from the integrated watershed and coastal area management approach
- Dominican Republic: Integrated management of the biodiversity, freshwater and land resources of the Higüamo River watershed and its associated coastal zone, including mitigating climate change impacts
- Jamaica: Biodiversity Mainstreaming in Coastal Landscapes within the Negril Environmental Protection Area of Jamaica
- St. Kitts & Nevis: Addressing Impacts of Acute Land Degradation in the College Street Ghaut in St Kitts and Quarries and Sand Mining Hotspots on Nevis
- Saint Lucia: Addressing problems of land degradation and ecosystem degradation in the upper reaches of the Soufriere Watershed in Saint Lucia
- St. Vincent & the Grenadines: Addressing Land Degradation in the Georgetown Watershed, Saint Vincent
- Trinidad & Tobago: Reduce and reverse land degradation at selected quarry site(s) around Valencia by an integrated water, land and ecosystems management approach, Trinidad

Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems (CMLE+) project funded by GEF aims to promote the implementation of the Strategic Action Programme for the CLME+ region by facilitating ecosystem-based management and ecosystem approach to fisheries for the sustainable and climate resilient provision of goods and services from shared living marine resources. The project is fostering partnership among regional and international organisations working in the fields of environment and fisheries in the WCR. These regional organisations include: UN Environment Caribbean Environment Programme; Western Central Atlantic Fisheries Commission of the UN Food and Agriculture Organisation (FAO-WECAFC); Intergovernmental Oceanographic Commission (IOC/IOCARIBE) of UNESCO; Caribbean Community (CARICOM) Secretariat; Caribbean Regional Fisheries Mechanism (CRFM); Central American Commission for Environment and Development (CCAD); Organisation of the Central American Fisheries and Aquaculture Sector (OSPESCA); and the Commission of the Organisation of Eastern Caribbean States (OECS). Under the project, State of the Marine Ecosystems and associated Economies in the CLME+ region (SOME) is being prepared. The report is expected to provide a snapshot of the status of the marine environment and associated economies for the CLME+ region and support the Status of Convention Area Report being prepared under the Cartagena Convention. Other relevant outputs of this project that complement CREW+ include the development of a regional nutrient reduction strategy, action plan and investment plan, a habitat restoration strategy, action plan and investment plan and pollution and habitat research strategies.

Water Funds A Conservation Climate Resilient Model for Stressed Watersheds in Latin America and the Caribbean is a medium-size project funded by the GEF. The project is implemented by IDB and executed by the Nature Conservancy (TNC) to improve water security and protect watershed biodiversity in 5 countries (Argentina, Brazil, Chile, Colombia and Guatemala). Under the project, 5 Water Fund mechanisms are being developed in order to connect water users in urban areas with communities in upper watershed. The project has three components: water fund design and

monitoring; technical assistance; and training, knowledge and capacity building. Under the component on training, Water Tariff Financial Sustainability Tool is being developed to generate watershed conservation funding from water tariffs. CReW+ project may be able to draw experiences from this project and replicate the Water Fund model for watershed conservation in other countries that are not part of this Water Funds project. Furthermore, the long-term Financial Sustainability Planning Tool being developed under this project may also be used in formulating financial sustainability plans under Component 2 of the CReW+ project.

Implementation of the Strategic Action Programme to Ensure Integrated and Sustainable Management of the Transboundary Water Resources of the Amazon River Basin Considering Climate Variability and Change project is a full-size project funded by the GEF. This project is pending CEO approval and will be implemented by UN Environment and executed by the Amazon Cooperation Treaty Organization (ACTO) as well as the 8 participating countries (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela). The project will support the participating countries in implementing the Strategic Action Programme for the Amazon River Basin, promoting Integrated Water Resources Management (IWRM) and source-to-sea approaches, to improve ecological, social and economic benefits and, enabling the countries to meet their relevant SDG and convention targets in the Amazon basin. Colombia, Guyana and Suriname participate in both CReW+ project and this Amazon River Basin project and as such, synergies will be sought with regard to watershed management.

Integrated Management of Water Resources of the Mira-Mataje and Carchi-Guaitara, Colombia Ecuador Binational Basins is a full-size project funded by the GEF to be implemented by UNDP and executed by the Ministry of Environment and Sustainable Development of Colombia (MADS) and the National Water Secretariat of Ecuador. The project aims to promote IWRM in the Mira Mataje and Carchi Guaitara river basins shared by Colombia and Ecuador by strengthening the institutional and managerial capacities at the regional, local and community levels for achieving environmental and socio-economic benefits. Under the project, Transboundary Diagnostic Analysis (TDA) will be conducted in the Mira-Mathe and Carchi-Guaitara basin. Based on the TDA, SAP will be developed. The project will have capacity development activities to promote IWRM and will have four small-scale innovative interventions on IRWM as well as two pre-feasibility studies for investment in the basin. As **Colombia** is participating in the CReW+ project and this project, exchange of information will be needed to join forces in promoting IWRM and integrated wastewater management at the national level.

Developing Organizational Capacity for Ecosystem Stewardship and Livelihoods in Caribbean Small-Scale Fisheries (StewardFish) is a medium-size project being implemented by FAO since 2017. Seven countries member to the Caribbean Regional Fisheries Mechanisms (Antigua and Barbuda, Barbados, Belize, Guyana, Jamaica, Saint Lucia, St. Vincent and the Grenadines) participate in the project. The project aims to empower fisher-folks throughout fisheries value chains, and to upkeep their engagement in resource management, decision-making and sustainable livelihoods, with strengthened institutional support at all levels. Under Component 2 of the project, ecosystem approach to fisheries is being promoted with focus on pollution reduction for the protection of healthy habitats. StewardFish project may support national activities in **Barbados, Belize, Guyana, Jamaica, St. Vincent and the Grenadines** by engaging local fisherfolks.

Non-GEF-funded projects and initiatives

IDB's Water and Sanitation Division is currently executing more than 30 projects which support regional actions to address wastewater management (technical and financing mechanisms). Other Divisions of the Bank, such as the Climate Change and Sustainability Division, are also supporting initiatives linked to the CReW+ objectives. For example, in Jamaica, climate change effects are being addressed through a project to explore coral reef sustainability and resilience in an effort to research and address the damaging impacts of mainly nutrients from sewage and fertilizers, changes to water

quality driven by construction, housing, hotels, agriculture and climate change upon coral reefs. A very relevant new IDB operation involving integrated water and wastewater management in the region is the Water Security Program within the Water and Sanitation Framework in Panama. The program aims at improving the sanitary conditions of the population served by IDAAN through a financially sustainable long-term service, as well as at improving the country's and the operator's capacity to protect its valuable water resources. **Table 2.5** provides some of the IDB relevant water and sanitation projects in the Caribbean.

Table 2.5 IDB current relevant water and sanitation projects in the Caribbean

Country	Project Title	Description
Costa Rica	Support to the Instituto Costarricense de Acueductos y Alcantarillados (AyA) in the implementation of the Potable Water and Sanitation Program	The aim of the program is to improve the environmental conditions and promote the health of the Costa Rican population. The program aims to expand and rehabilitate the potable water and sanitation systems in rural and peri-urban areas of high poverty in the country, contribute to the decontamination of the rivers of the San José Metropolitan area, and ensure the sustainability of the systems in the long term within a framework that promotes the organized participation of communities
Dominican Republic	Urban-rural water-sanitation integration project in the province of Santiago	The main objective is to increase the access of the people of the province of Santiago to a better water and sanitation services, crucial to improve the health indicators in the province.
Honduras	Basic infrastructure (potable water, sanitation, energy) in the Bay Islands, in support of sustainable tourism	The objective of the TC is to generate the technical, economic, socio-environmental information necessary for the preparation of the Water and Sanitation Investment Program for the Bay Islands (HO-L1196) -with the purpose of improving the quality and expanding the coverage of basic services, reducing environmental pollution in the reef and promoting environmental sustainability, advancement of appropriate technologies, and the adoption of management and business models that guarantee reliable and long lasting services.
Mexico	Program for the sustainability of drinking water and sanitation services in rural communities	The objective of the Program is established in the Operating Rules of PROAGUA in its rural section and derived from the granting of financing by the IDB to the Mexican Government
Suriname	Support to SWM Institutional and Operational Strengthening	The objective of this Technical Cooperation (TC) is therefore the development of an Strengthening Action Plan (AP) for the improvement of SWM operations performance and the strengthening of its groundwater management capacities and risk pollution control
Trinidad and Tobago	Water Supply Improvement Program	The objective of program is to provide a strategy whereby WASA will be able to achieve its policy of ensuring the sufficiency and security of water supplies to its customers, i.e. the people of Trinidad and Tobago: (i) Improvement in the quality of service to customers; (ii) Production of consistently high quality water free from discoloration and

Country	Project Title	Description
		bacteria; (iii) A 24 hours/7 days a week supply to at least 60 per cent of the households in Trinidad and Tobago.

Caribbean Regional Track of the Pilot Programme for Climate Resilience (PPCR) is a project funded by IDB and executed by the University of West Indies. The project aims to i) improve geospatial data management in the region and to ii) pilot and upscale climate-resilient initiatives in six countries in the region (Jamaica, Haiti, Saint Lucia, Grenada, Dominica, and Saint Vincent and the Grenadines). With Component 1 to 3 of the project, national and regional climate data management will be strengthened. Downscaled climate models for the Caribbean will be prepared to support decision-making and adaptation planning. Under Component 4 of the project, projects in different fields will be financed including health, marine, agriculture, and water. Activity in the water sector will be co-implemented by CARPHA and will implement Rain Water Harvesting (RWH) systems in **Grenada, Haiti, Jamaica, and Saint Lucia**. To enable sustainability, policy work and capacity building activities will also be conducted.

The Nexus Regional Dialogue Platform is a global inter-sectoral platform supported by the European Commission and the German Society for International Cooperation (GIZ), which aims to sustainably strengthen the political processes needed at the regional and national levels to meet the increasing demand for water, energy and food. In Latin America and the Caribbean region, the platform works with the Economic Commission for Latin America and the Caribbean (ECLAC) to develop policies and action plans and bring the nexus issues at a political level. Based on a regional study examining priority issues in the regional, a regional Nexus Action Plan will be prepared. Subsequently national activities will be conducted in **Peru and Costa Rica**²³.

Japan-Caribbean Climate Change Partnership (J-CCCP) envisages to strengthen the capacity of countries in the Caribbean to invest in climate change mitigation and adaptation technologies, as prioritised in their Nationally Appropriate Mitigation Actions (NAMAs) and National Adaptation Plans (NAPs). The project is financed by the Government of Japan and is implemented by UNDP in Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, and Suriname. The project has three components. Component 1 focuses on supporting policy environment including preparation of sector-based action plans. Component 2 focuses on technology transfer for low-carbon climate resilient development. Under this component, technologies related to drinking water, agriculture and energy will be tested. So far water harvesting, micro-dams and water saving incentives have been tested by the project²⁴. Component 3 focuses on knowledge network on climate change in the Caribbean. Activities will be conducted to improve awareness on climate change risks and adaptation measures in targeted countries.

23 See <https://www.nexus-dialogue-programme.eu/regional-dialogues/latin-america/>

24 See <https://www.adaptation-undp.org/projects/japan-caribbean-climate-change-partnership>

The Global Water Partnership – Caribbean (GWP-C) whose main goal is to operationalize Integrated Water Resources Management (IWRM) in the region. Of particular relevance is the **Water Climate and Development Programme (WACDEP)** which has developed a database of regional IWRM projects, as mandated by the joint work programme of the CARICOM Consortium on Water. The GWP-C and the Caribbean Community Climate Change Centre (CCCCC) launched in 2016 the Regional Framework for Investment in Water Security and Climate Resilient Development, a collaborative framework for action to reduce carbon emissions and increase climate resilience in the water and wastewater sector. The Framework identifies needs and climate resilience programmes and projects along six thematic areas. The Framework underwent an extensive process of consultations with CARICOM institutions, development partners and national stakeholders, and is seeking concrete investments and capacity building programs to move to implementation. CReW+ (Components 1, 2, 3, and 5) aligns clearly with the Framework, particularly in the Framework's thematic areas involving water re-use and augmentation, and resilient and healthy water resources systems. IDB is mobilizing 2017 technical cooperation resources in support of the Framework and both UN Environment through its recently approved Freshwater Strategy and the IDB will be ensuring complementarity between CReW+ and these existing frameworks.

Capacity Building Related to Multilateral Environmental Agreements in ACP Countries – Phase III (ACP MEAs 3). The total amount of the five-year EDF contribution for the Cartagena Convention consists of EUR 2 000 000 aiming to deliver Component Objective 2 – Better management of coasts and oceans and effective implementation of the related regional seas conventions. The three following Outputs are expected to be delivered under the project as part of the Cartagena Convention Secretariat:

- Output 2.1: Strengthened Governance Frameworks for the Cartagena Convention and its three Protocols;
- Output 2.2: Regionally representative networks of Marine Protected Areas developed and
- Output 2.3: Measures for reducing the influx of waste (plastics and other forms of human and industrial liquid and solid waste) entering the marine environment.

The main activities to deliver under Output 2.2: include (SPAW): (a) development of scientifically sound guidelines for analysis of connectivity and representability of marine protected areas; (b) identification of possible candidate areas for protection for regional networks; and (c) activities to support management capacity of the marine protected areas and other area-based management measures. The main activities for Output 2.3 are the following (LBS): (a) application of market-based economic and financial instruments (such as private sector financing) and policy interventions; and (b) development of feasibility studies for pollution reduction strategies for Caribbean SIDS.

Other projects and initiatives include:

- **The Caribbean Cooperation in Health 4** (WHO/PAHO/CARICOM) which has among its priorities safe, resilient, healthy environments to mitigate climate change, and the collection and management of data and evidence for decision-making and accountability.
- **The Caribbean Aqua-Terrestrial Solutions (CATS) Programme**, which supports adaptive measures in agriculture, forestry and water and wastewater management in seven of the OECS SIDS that have endorsed CReW+ and funded by the German Government.
- The Spanish Agency for International Development Cooperation (AECID) through the **Water and Sanitation Cooperation Fund (FCAS)** with a portfolio of 1,276 million Euros in Grant funding (which includes other donors) is mainly working to expand coverage of potable water and sanitation in Latin America and the Caribbean, and supports efforts by the governments of the region to achieve the SDGs.

- **The Caribbean Regional Oceanscape Project**, which aims to preserve and strengthen resilience of coastal and marine resources, and implement regional policies to stimulate blue growth. The Caribbean Regional Oceanscape project is funded by the World Bank together with GEF and it will be implemented through the Organization of Eastern Caribbean States (OECS) Commission.

2.3.3 Key global initiatives

The Global Nutrient Challenge (<http://www.nutrientchallenge.org/>) and the Global Partnership on Nutrient Management (GPNM) is a global partnership of governments, scientists, policy makers, private sector, NGOs and international organisations. The Partnership recognised the need for strategic advocacy and co-operation at the global level in order to communicate and trigger productive discussion not only on the complexity of the nutrient challenge but also the opportunities for cost effective policy and investment interventions by countries. The GPNM has developed a global nutrient management toolbox to demonstrate policy and technological options, which offer such potential solutions to decision makers and practitioners alike (<http://www.nutrientchallenge.org/gpnm-toolbox>). GPNM is also engaged in a number of projects including:

- **The GEF-Global Nutrient Cycling (GNC)** designed “to provide the foundations (including partnerships, information, tools and policy mechanisms) for governments and other stakeholders to initiate comprehensive, effective and sustained programmes addressing nutrient over-enrichment and oxygen depletion from land-based pollution of coastal waters in Large Marine Ecosystems”;
- **The GEF-International Nitrogen Management System (INMS)** project is a GEF project that will bring together the science community, the private sector and civil society to gather and synthesize evidence that can support international policy development to improve global nitrogen management. It is executed through the UK’s Natural Environment Research Council (NERC), and its’ Centre for Ecology & Hydrology (CEH), on behalf of the International Nitrogen Initiative (INI) - <http://www.inms.international>;

There are several tools and case studies for Ecohydrology and nature-based solutions for water and wastewater management. The UNESCO-IHP Ecohydrology web-platform (<http://ecohydrology-ihp.org>) with tools and demonstrations for the optimization of ecosystem services for society along with enhancement of resilience of river basins to climatic and anthropogenic stress in order to reverse degradation of water resources and stop further decline in biodiversity. The World Bank Natural Hazards – Nature-based Solutions platform (<https://naturebasedsolutions.org>) is a hub for projects, investments, guidance and studies making use of nature to reduce the risks associated with natural hazards. The concept of “nature-based solutions,” “ecosystem-based adaptation,” “eco-DRR” or “green infrastructure” has emerged as a good alternative or complement to traditional approaches. These “green” nature-based solutions can also synergize with grey infrastructure. The resulting hybrid solution, for example, a removable seawall and a growing mangrove forest, can draw on the strengths of both green and grey elements to become more effective. In cities, too, nature-based solutions can alleviate flooding from heavy rains and create better microclimates. Green spaces like urban wetlands or green roofs – typical “hybrid” solutions – can store water and release it slowly back into rivers and drainage systems, but also give the water more time to sink into the ground, reducing what needs to be drained. The WB recently published a report on such combined solutions, including for water resource management and their benefits including a number of case studies (Browder, 2019).

In addition, there are a number of global water/wastewater and SDG related databases which include:

- The **WHO/UNICEF Joint Monitoring Programme (JMP)** is the custodian of global data on Water Supply, Sanitation and Hygiene (WASH) - <https://washdata.org/data> with the progress on drinking water, sanitation and hygiene published in 2017 (WHO and UNICEF, 2017);

- **AQUASTAT** is the FAO global information system on water resources and agricultural water management. It collects, analyses and provides free access to over 180 variables and indicators by country from 1960 (<http://www.fao.org/nr/water/aquastat/wastewater/index.stm>);
- UN Environment, Google, the European Commission and partners launched in 2019 a data platform to track the world's water bodies—and countries' progress in achieving the Sustainable Development Goals (SDG 6.6) - <https://www.sdg661.app/home> also available at <https://unstats.un.org/sdgs/indicators/database/>;
- The **Sustainable Development Goals indicators database**²⁵ provides transparency on the data used for global reporting. The database contains data on the global Sustainable Development Goal indicators used in the Sustainable Development Goals Report 2017 and includes country-level data as well as regional and global aggregates. A few national data hubs have also been created including Mexico, although no data has yet been reported for SDG14.²⁶
- **IISD data portal on indicators for the Sustainable Development Goals (SDGs).** ²⁷ This portal, provides visualizations of the indicators that countries are choosing to report on for the SDGs: a bottom-up view of national indicator reporting, based on the top-down indicators selected by the United Nations (UN). The indicator data is compiled, as it becomes available, based on reviews of countries' voluntary reports to the UN High-Level Political Forum. The data will be updated periodically as more countries submit these reports.

25 <https://unstats-undesa.opendata.arcgis.com/>

26 <http://hubmexico-ods-inegi.opendata.arcgis.com/>

27 <https://sustainable-development-goals.iisd.org/country-data>

2.4 Stakeholder mapping and analysis

2.4.1 Governance partners

International organisations

UN Environment Caribbean Sub-Regional Office and Latin America and the Caribbean Regional Office support liaising with the participating countries. The Regional Office organises the Forum of Ministers of Environment of Latin America and the Caribbean and provides a high-level regional platform to raise political attention to integrated water and wastewater management.

The Global Programme of Action for the Protection of Marine Environment from Land-based Activities (GPA) is the only global intergovernmental mechanism to address marine pollution from land-based activities. At the Third Intergovernmental Meeting held in Manila, the Philippines, participating countries of the GPA decided to focus on three source categories: wastewater, nutrients and marine litter. Based on the decision, the Global Wastewater Initiative (GW2I) was established in 2013. The GW2I is a global multiple stakeholder platform comprised of international and regional organizations, governments, scientists, private sectors and major groups and stakeholders to provide the foundations for partnerships to initiate comprehensive, effective and sustained programmes addressing wastewater management. The GPA and GW2I will provide global platforms to share lessons learnt with other stakeholders and catalyse uptake of new solutions tested by the project within and beyond the WCR. The GPA works closely with UN Water, which coordinates the efforts of UN entities and international organizations working on water and sanitation issues. UN Water and the Integrated Monitoring Initiative for SDG 6 brings together the custodian agencies for all SDG 6 indicators and coordinate activities. The GPA and GW2I, in close collaboration with the UN Environment's Fresh water Ecosystem unit and GEMS/water, will provide guidance so that support for national data management under this project will be in line with the efforts by UN Water and the Integrated Monitoring Initiative. Regional Platforms to support these Global Partnerships on Wastewater coordinated by the CWWA and on Nutrients coordinated through CEP will contribute to implementation of CREW+.

The Food and Agriculture Organization of the United Nations (FAO) brings to the project expertise in water resource management especially wastewater reuse in agriculture. In 2006, FAO, WHO and UN Environment developed the Guidelines for the Safe Use of Wastewater, Excreta and Greywater ([World Health Organization, 2006](#)). This guideline has been used for various country projects to support safe wastewater reuse in agriculture. In 2017, FAO published a report compiling the current status of wastewater reuse in Latin America and the Caribbean. Currently, FAO is implementing the Hunger Free Latin America and the Caribbean Initiative Support Project. The project supports the implementation of activities under the Hunger Free Latin America and the Caribbean Initiative²⁸, which aims to create conditions for the permanent eradication of hunger by the year 2025. For awareness raising and social mobilization, it works with the Parliamentary Front Against Hunger, which is a network of

28 See <http://www.ialcsh.org>

parliamentarian committed to hunger eradication²⁹. FAO is preparing a medium-size project in Cuba funded by GEF. The project entitled “Enhancing Cuba’s Institutional and Technical Capacities in the Agriculture and Land-use Sectors for Enhanced Transparency under the Paris Agreement” aims to strengthen institutional and technical capacities of the agriculture and land-use sectors to respond to the enhanced transparency requirements of the Paris Agreement³⁰. In Mexico, a full-size project “Securing the Future of Global Agriculture in the Face of Climate Change by Conserving the Genetic Diversity of the Traditional Agro-ecosystems of Mexico”, which aims to develop policies and mechanisms that support agro-biodiversity conservation, sustainable use and resilience is being implemented³¹. For the Caribbean States, recently in 2018, FAO and the Government of Mexico have launched a project to mobilize green funds in order to improve resilience of agriculture and food system in the 14 CARICOM States through 27 projects. It is expected that 10 of the projects will be presented to the Green Climate Fund, 12 to the Global Environment Facility and 5 to various European mechanisms³².

The UN Economic Commission for Latin America and the Caribbean (ECLAC / CEPAL) is the regional economic commission for Latin America and the Caribbean established by the UN Economic and Social Council. ECLAC coordinates regional social and economic development and has developed databases on

29 See

<http://parlamentarioscontraelhambre.org>

30 See

<https://www.thegef.org/project/enhancing-cubas-institutional-and-technical-capacities-agriculture-and-land-use-sectors>

31 See

<https://www.thegef.org/project/securing-future-global-agriculture-face-climate-change-conserving-genetic-diversity>

32 See

<http://www.fao.org/americas/notifications/ver/en/c/1141019/>

socioeconomic data³³. ECLAC is mandated to provide assistance for countries to implement Sustainable Development Goals and relevant activities are planned for the biannual 2018-2019. In relation to water, the following activities are planned: studies on the progress achieved in the area of integrated water resources management in the countries of the region, with specific reference to Sustainable Development Goal 6; study on the public policy instruments to improve the management of the nexus between water and other sectors, such as energy and agriculture, in countries of the region; and Newsletter of the Network for Cooperation in Integrated Water Resource Management for Sustainable Development in Latin America and the Caribbean.

Regional organisations

The **Caribbean Environment Programme** will be the executing partner of the project. The Caribbean Environment Programme has been supporting the implementation of the Cartagena Convention and its LBS protocol through the Assessment and Monitoring of Environmental Pollution (AMEP) programme. It has a wealth of knowledge on the prevention and reduction of pollution from land-based activities. Two Regional Activity Centres provide technical support: The **Centre of Engineering and Environmental Management of Coasts and Bays** in Cuba and The **Institute of Marine Affairs** in Trinidad and Tobago. CEP, which also serves as the Secretariat to the Cartagena Convention and its Protocols is a partner executing agency for several GEF and non-GEF projects, the host for the Caribbean Marine Litter Node and Nutrients Platform and through its intergovernmental meetings of technical experts and senior policy makers can facilitate dialogue and consensus at a transboundary level.

The **Organisation of Eastern Caribbean States (OECS)** supports its member states in realizing policy objectives and strategic targets articulated within the St. George's Declaration of Principles for Environmental Sustainability and has collaborative partnerships with regional and international partners and donors in meeting this development agenda. Among the 18 participating countries in this project, Grenada, St. Vincent and the Grenadines, Saint Lucia and St. Kitts and Nevis are members of OECS. Previously, OECS has prepared a model water policy and model legislation and these serve as a basis to revise and update current water policies. The OECS also has the Building Code, which provides guidelines for ensuring adequate building standards in member states. Section 8 deals with sewage and wastewater disposal. Currently the code is being updated through participation of stakeholders including the public and the private sectors. Building on the model water policy and the building code, this project will support the development of water and wastewater policies for the OECS member countries. Currently, OECS is implementing the IWECO project in Antigua and Barbuda together with the Government of Antigua and Barbuda. Another project of particular relevance to this project is the OECS Project for Island Resilience³⁴. The project seeks to combat climate change issues in the nine participating OECS member states through Sustainable Land Management. Grenada, St. Vincent and the Grenadines, Saint Lucia and St. Kitts and Nevis all participate in this project. In Grenada, the project supports the provisioning of safe potable drinking water in schools, hospitals, and senior citizens' homes. In St. Vincent and the Grenadines, the project supports the Implementation of an Integrated Watershed Management Plan, which aims to restore and maintain natural forest cover and watershed stability for the Upper Cumberland and Perseverance Watershed regions. In Saint Lucia and St. Kitts and

33 See

<https://www.cepal.org/en/datos-y-estadisticas>

34 See <http://ilandresilience.org>

Nevis, the project supports integrated watershed and coastal management. In Saint Lucia, the project seeks to create a model watershed in an urban/semi-urban area that supports sustainable land management and encompasses the ridge-to-reef concept in the Bois d'Orange watershed. On the other hand, in St. Kitts and Nevis, it seeks to rehabilitate and reduce the effects of climate change and human induced degradation on the environment at the New River and Coconut Walk area.

The Caribbean Community Secretariat (CARICOM) as the political organ of the Caribbean Community, has a role in bringing regional policy positions to the attention of Heads of Government and other Ministerial bodies. CARICOM has 15 member-states and 5 associated members. Of the 18 participating countries, 10 countries are CARICOM member states: Barbados, Belize, Grenada, Guyana, Jamaica, Saint Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago. In 2008, the Council for Trade and Economic Development (COTED) endorsed the formation of a CARICOM Consortium of Water Institutions and a Common Water Framework. However, this initiative has not made significant progress (Fletcher, 2018). From 2014 to 2018, the CARICOM Secretariat implemented the Coastal Protection for Climate Change Adaptation in the Small Island States in the Caribbean³⁵ with the support from the German Ministry for Economic Cooperation and Development. This project supported the implementation of adaptation measures in Saint Lucia, Grenada, St. Vincent and the Grenadines and Jamaica. Several supporting technical agencies of CARICOM involved in water and wastewater management are expected to support project implementation including CCCCCs, CARPHA, CIMH and CDEMA.

The Organization of American States (OAS) is a regional organisation which aims to promote peace and justice in the region. Thirty-five countries have ratified the OAS Charter, which serves as the foundation of the organisation. All 18 participating countries of the project are members to the OAS. The OAS Secretariat's Department of Sustainable Development runs the programme on Integrated Water Resource Management. The OAS serves as the depository of the Inter-American Water Resource Network³⁶, which is a network of all networks in the region participated by diverse range of stakeholders from 34 countries. Since 1993, Water Dialogues have been organised to facilitate knowledge sharing among water professional in the region. The next Dialogue is planned for 2019. OAS also has national and regional projects and programmes. From 2014 to 2018, OAS implemented the Sustainable Development of the Trifinio-Honduras Region Programme in Guatemala, El-Salvador and

35 See

<https://www.caribbeanclimate.bz/2014-2018-coastal-protection-for-climate-change-adaptation-in-the-small-island-states-in-the-caribbean-kfw/>

36 See

<http://www.iwrn.org/EN/index-en.html>

Honduras. The project aimed to develop mechanisms that support sustainable development in the trans-boundary ecosystem through community participation.

The Central American Integration System (SICA) is the institutional framework for regional integration in Central America. Eight countries are members to SICA (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Dominican Republic) while 9 regional countries including Mexico and Colombia and 17 extra-regional countries participate as observers. The Central American Commission for Environment and Development (CCAD) under SICA sets agenda on environmental issues in Central America. The Council of Ministers is the CCAD's highest decision-making body composed of representatives of environmental authorities from the member countries. This political forum presents an opportunity for the CReW+ project to draw political attention to project activities in Central America. CCAD together with the World Wildlife Fund (WWF) is currently implementing the Integrated Trans-boundary Ridges-to-Reef Management of the Mesoamerican Reef Project³⁷ to enhance capacities for integrated management and governance of freshwater, coastal, and marine resource in Belize, Honduras, Guatemala and Mexico.

The Pan American Health Organization (PAHO) is the specialized health agency of the Inter-American System and also serves as Regional Office for the Americas of the World Health Organization (WHO). All 18 participating countries are member to PAHO. PAHO provides technical cooperation to member states to deal with communicable and non-communicable diseases, to strengthen health systems, and to respond to emergencies and disasters. PAHO also assists member states with the improvement of drinking water supplies, enhancement of adequate sanitation and reduction of disease risk associated with poor environmental practices and pollution particularly related to poor sanitation. PAHO implements various projects in partnership with donors to support member countries. In the Caribbean region, PAHO is implementing the project "Caribbean Disaster Risk Management Programme – Health Sector" funded by the Government of Canada³⁸. The project aims to increase health professionals' capacity to prepare for disasters.

Table 2.5: Overview of the CReW+ participating countries' memberships to regional organisations

37 See

<https://www.thegef.org/project/integrated-transboundary-ridges-reef-management-mesoamerican-reef>

38 See

<https://w05.international.gc.ca/projectbrowser-banqueprojets/project-projet/details/A032615005>

Country	CEP	OECS	CARICOM	OAS	SICA	PAHO
Barbados	+		+	+		+
Belize	+		+	+	+	+
Colombia	+			+		+
Costa Rica	+			+	+	+
Cuba	+			+		+
Dominican Republic	+			+	+	+
Grenada	+	+	+	+		+
Guatemala	+			+	+	+
Guyana	+		+	+		+
Honduras	+			+	+	+
Jamaica	+		+	+		+
Mexico	+			+		+
Panama	+			+	+	+
St. Kitts and Nevis	+	+	+	+		+
Saint Lucia	+	+	+	+		+
St. Vincent and the Grenadines	+	+	+	+		+
Suriname	+		+	+		+
Trinidad and Tobago	+		+	+		+

National governments

At the national level, national governments will be the main stakeholders for the project. The ministries involved in water management including the ministries of environment, agriculture, health, finance, tourism, community development, education and finance will be engaged. For national projects, local governments will also be involved. Water and wastewater utilities that provide drinking water or wastewater treatment service will also be a major stakeholder in the project. The roles of the national stakeholders were analyzed and contained in the national packages as contained in [Appendices 13 to 30](#).

Technical partners

Some of the key technical organizations/institutions in the region include:

- **US Environmental Protection Agency (US EPA)** implements the environmental law by developing and enforcing regulations. US EPA has been engaged in the Caribbean Environment Programme as a contracting party to the Cartagena Convention. The US through its EPA has been charring the technical comity for the preparation of the Status of the Convention Area Report.
- **The United Nations University (UNU)** will provide technical advice to strengthen capacities at both the country project implementation level and the regional level especially with regards to monitoring and data management in relation to SDGs.
- **The Caribbean Public Health Agency (CARPHA)** is the regional public health agency for the Caribbean. Among the 18 countries, 10 countries are members to CARPHA (Barbados, Belize, Grenada, Guyana, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago).
- **Global Water Operators Partnership (WOP) and regional WOPs – CariWOP and WOP-LAC** shares expertise, experiences, models, lessons learned in operating water and wastewater utilities.

- **Inter-American Association of Water and Sanitation Engineering (AIDIS)** creates awareness on environmental, health and sanitary problems. AIDIS works with government agencies to monitor implementation of water and sanitation plans and shares information on professional development and research opportunities
- **Global Water Partnership- Caribbean (GWP-C)** is a network of water-related organizations in public, private and NGO sectors in the Caribbean. Its Water Climate and Development Programme (WACDEP) aims to promote water security and climate resilience in Caribbean states. The **GWP-C Journalists Network on Integrated Water Resources Management (IWRM)** is a body of journalists from the Caribbean region which builds awareness on IWRM and water related issues.
- **Global Water Partnership- Central America (GWP-CA)** is a network of water-related organizations in public, private and NGO sectors in Central America. GWP-CA conducts training and public awareness activities.
- **The Regional Network for Water and Sanitation in Central America (RRASCA)** and its national networks promotes sharing of experiences in water and WW management. Conducts training.
- **Inter-American Institute for Cooperation in Agriculture (IICA)** provides technical assistance for agricultural development and rural development.
- **The Caribbean Community Climate Change Centre (CCCCC)** is the lead CARICOM agency with responsibility for advancement of the CARICOM Regional Framework for Achieving Development Resilient to Climate Change and its Implementation Plan for the Caribbean.
- **The Caribbean Institute of Meteorology and Hydrology (CIMH)** is a training and research organisation which aims to improve the meteorological and hydrological services and to assist in promoting the awareness of the benefits of these services for the economic well-being of the Caribbean region.
- **The Caribbean Agricultural Research and Development Institute (CARDI)** is an autonomous Institute funded by CARICOM Member Countries. CARDI provides research and development service to the agricultural sector of member countries.

2.4.2 Public awareness and training partners

Some of the key public awareness and training organizations/institutions in the region include:

- **University of Technology, Jamaica (UTech)** is a technical university located in the Greater Kingston Metropolitan region, Jamaica. UTech supported training activities under the previous CRew and will continue to do so in this project in order to institutionalize the training programme.
- **Caribbean Water and Wastewater Association (CWWA)** promotes education and training in water supply, WW and solid waste disposal for water and WW professionals and general awareness raising among the general public. Promotes and shares research and development in supply, WW and solid waste disposal. CWWA hosts the largest annual regional conference in water, wastewater and solid waste.
- **The Caribbean Water & Sewerage Association (CAWASA)** is a Regional organization of water utilities that provides operator certification, staff training, regional conferences and management support services.
- **The Centre for Resource Management and Environment Studies (CERMES) of the University of the West Indies** located in Barbados has a strong focus on tropical island environmental management. The Centre offers a graduate programme in natural resource management as well as research degree.

- **Water.org** works with network of certified, in-country partners to provide communities in Africa, Asia, Latin America and the Caribbean access to safe water and sanitation. Currently, Water.org has been working in Honduras to construct community water systems and to improve hygiene and health education.
- **Millennium Water Alliance** is a conscious of NGOs working in international development, which aims to improve access to clean water and sanitation as well as hygiene education and services. Millennium Water Alliance has ongoing projects in Guatemala, Mexico, and Honduras³⁹.
- **Water for People** brings together local entrepreneurs, civil society, governments, and communities to establish creative, collaborative solutions that allow people to build and maintain their own reliable safe water systems. In Guatemala, Water for People are working with local governments and communities in Santa Cruz del Chique, San Bartolomé Jocotenango, San Antonio Ilotenango, and San Andrés Sajabajá. In Honduras, Water for People work in Chinda, San Antonio de Cortés and El Negrito.

2.4.3 Media partners

Some of the key media related organizations/institutions in the region include:

- The **GWP-C Journalists Network on Integrated Water Resources Management (IWRM)** is a network of journalists in the Caribbean region aiming to build awareness on IWRM and water related issues in their country or region.
- **Caribbean Environmental Reporters Network** provide networking and capacity building among journalists for responsible coverage on environment and development issues. The organization works closely with The Caribbean Institute of Mass Communication (CARIMAC).
- **LatinClima** is a community of communication professionals for Latin America and the Caribbean including radio, printed and digital materials, and television. The network has a focus on climate change communication, but it has been working on water and sanitation⁴⁰.

39

<https://mwawater.org/programs/latin-america-news/>

40 See <http://latinclima.org/agua-dulce>

- **Red de Periodistas por el Desarrollo Sostenible**⁴¹ is a network of journalists established by the Colombia Chapter of the World Business Council for Sustainable Development⁴². Through the network, the journalists can have Access to information, official sources of information as well as training.
- **National media associations** set standards for press coverage, reward good journalism and provide professional networks. Such national associations include: **The Press Association of Jamaica** and **Fórum de Periodistas** in Panama⁴³.

2.4.4 Partners for resource mobilization

Some of the key resource mobilization organizations/institutions in the region include:

- The **Caribbean Development Bank (CDB)** will participate as a project partner to bring technical and financial assistance working in close partnership with the IDB. CDB will work in countries where IDB does not have a strong presence, especially in small island States in the region.
- The **GEF Small Grants Programme (GEF-SGP)** provides small-scale financial grants and technical support to projects that conserve and restore the environment while enhancing people's well-being and livelihoods. GEF-SGP will provide financing to test and replicate innovative new water and wastewater management technologies in rural areas. GEF-SGP is currently working with the GEF-IWECO projects to support small-scale interventions in the Caribbean region.
- **Development Bank of Latin America (CAF)** is a development bank supporting Latin America countries. Among the 18 countries of this project, CAF members are: Barbados, Colombia, Costa Rica, Dominican Republic, Jamaica, Panama, and Trinidad and Tobago. CAF promotes a sustainable development model through credit operations, non-reimbursable resources, and support in the technical and financial structuring of projects in the public and private sectors of Latin America. CAF supports projects related to potable water and sanitation, watershed management, agriculture development and irrigation. In July 2018, CAF approved a US\$76-

41 See

<http://www.comunicacionsostenible.co/site/>

42 In Spanish: Capítulo colombiano del Consejo Empresarial Mundial para el Desarrollo Sostenible

43 See

<http://www.forumdeperiodistas.org>

million loan for **Colombia** to improve public water supply and sewerage in Buenaventura⁴⁴. The loan will support both rural and urban population in Buenaventura and expected to benefit 400,000 residents. CAF also granted US\$300 million loan to Colombia's Comprehensive Rural Development Support Program. CAF has been issuing "Green Bonds" to support high-impact social and environmental projects in partnership with BNP Paribas.

- Other potential funding mechanisms include: **Water and Sanitation Cooperation Fund**⁴⁵ funded by the Spanish Cooperation to help countries in Latin America and the Caribbean expand water and sanitation services and support their efforts to reach the Millennium Development Goals for the sector; and **Japan Water Forum fund**⁴⁶ which supports grass-roots organizations to address water-related issues in developing countries

2.4.5 Private sector

Some of the key resource mobilization organizations/institutions in the region include:

- **The Caribbean Tourism Organization (CTO)** is the Caribbean's tourism development agency. The CTO has the Ministerial Council which is composed of Ministers and Commissioners of Tourism. CTO conducts training to strengthen skills and expertise of professionals working in the sector, through cooperation with the public and private entities.
- **The Caribbean Hotel and Tourism Association (CHTA)** is a Federation of Associations, encompassing 32 national hotel associations from around the Caribbean region. National associations of the CREW+ participating countries include: the Barbados Hotel & Tourism Association; Belize Hotel Association; Asociación Nacional de Hoteles y Restaurantes de la

44 See

<https://www.caf.com/en/currently/news/2018/07/76-million-to-improve-water-supply-and-sewerage-in-colombia/?parent=13755>

45 See

<http://www.cooperacionespañola.es/en/water-and-sanitation-cooperation-fund-fcas>

46 See

http://www.waterforum.jp/all/grass_roots_projects/jwf?tag=en,rep_en

República Dominicana; Grenada Hotel & Tourism Association; Tourism and Hospitality Association of Guyana; Jamaica Hotel & Tourist Association; St. Kitts & Nevis Hotel & Tourism Association; Saint Lucia Hotel & Tourism Association; St. Vincent & The Grenadines Hotel & Tourism Association; Suriname Hospitality and Tourism Association; Trinidad Hotels, Restaurant & Tourism Association; and Tobago Hotel and Tourism Association. CHTA hosts the **Caribbean Alliance for Sustainable Tourism (CAST)** and provide resources related to sustainable tourism to the hotel and tourism sector in the Caribbean.

- **Caribbean Farmers Network (CaFAN)** is a regional network of Farmers' Associations and Non-Governmental Organisations (NGOs) in the Caribbean. CaFAN's principal objectives are to enhance knowledge and skills of farmers in the region, exchange information, improve advocacy on issues related to agriculture and to collectively raise resources for its members.
- **Commercial banks** of the participating countries will be engaged especially in Component 2 to support financial sustainability of national interventions. In the three countries where revolving funds have been established (Belize, Guyana and Trinidad and Tobago), commercial banks will be further engaged to leverage funding to support national projects.

2.4.6 Local communities

Local communities will be the main stakeholder in the national-level interventions under Component 2 and Component 3 of the project. These community members include farmers and their associations, tourism operators, local chambers of commerce, local governments and councils, NOGs, youth and women's groups as well as local residents. Further details of different national stakeholders to be involved in national interventions are contained in [Appendices 13 to 30](#).

2.4.7 Indigenous peoples and vulnerable communities

In Latin America and the Caribbean, indigenous communities are disproportionately affected by poverty. Access to potable water and sanitation service in rural indigenous communities are lower compared to urban non-indigenous populations. This project, thus, strives to proactively engage disadvantaged indigenous communities as beneficiaries. In Panama, the Kuna People will be involved in its national intervention activity under Component 3. The intervention will assure that the indigenous community's perspectives are incorporated from the design of the project to implementation in order to ensure long-term sustainability of the project activities through community's ownership. For communication activities, this project will assure that indigenous community's rights and their special concerns are represented and communicated to the project's stakeholders. Where necessary and possible, communication materials will be translated into indigenous languages such as in Guatemala to reach these communities.

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1 Project rationale, policy conformity and expected global environmental benefits

The discharge of partially and untreated domestic wastewater and ineffective water resource management are a central challenge in the WCR. The project will demonstrate the integration of the strategic objectives of the GEF International Waters (IW), Land Degradation (LD) and Biodiversity (BD) focal areas within a natural resources and watershed management framework, building upon past initiatives and in close coordination with other regional and national projects and initiatives. The project is focussed on addressing critical policy, legislation and capacity gaps to ensure long term and sustainable management of water and wastewater, and is focussed on the compilation and implementation of innovative solutions for ensure sustainable financing and implementation of small-scale, local, rural, peri-urban and community-based solutions. CReW+ will stimulate and assist countries and communities mainly in rural and peri-urban areas to identify and implement innovative technological solutions based on their specific needs and which are both replicable and sustainable in the long-term. The incorporation of additional LD and BD funds from STAR allocations from one country confirms the cross-cutting influence of water and wastewater management to the other focal areas of GEF such as LD. Improving water and wastewater management through integrated approaches contributes directly to other socio-economic concerns such as human health and job creation. The project will also address a number of key SDG Goals and Targets, and will ensure socioeconomic benefits at the community and national level.

It should be noted that those countries that participated also in the previous CReW (see [Table 2.4](#)), which successfully adopted revised wastewater related policy and institutional reforms will be further supported in terms of implementing national interventions in CReW+. The lessons learned from the development of the financing mechanisms under CReW will be further explored, replicated and/or upscaled through CReW+. Also, CReW+ compliments the IWEco project, which however does not include Belize, Columbia, Costa Rica, Guatemala, Guyana, Honduras, Mexico, Panama and Suriname.

The implementation of CReW+ will aim to:

- **Support regional and national actions to reduce nutrient pollution, improve marine and coastal ecosystems, and reduce health and environmental risks** in the Wider Caribbean Region with multiple benefits to ecosystem, socio-economic activities, and assist with the compliance with the LBS Protocol of the Cartagena Convention as well as achieving the SDGs in particular SDG 6 and 14.
- **Reduce pressures on natural terrestrial and marine resources from competing land uses** in the wider landscape including through the reuse of sludge as a soil enhancer and fertilizer, as well as other opportunities to maximize water and wastewater reuse opportunities not detrimental to environmental and human health. This will lead to increased water water/food/energy/ecosystem security.
- **Address water security through the incorporation of freshwater protection as well as the reuse of wastewater** (water source protection, pollution prevention, increased efficiencies in water use, etc.), especially considering climate stressors such as increased temperatures and declining precipitation resulting in increased frequency and intensity of droughts in the region.
- **Implement small-scale, local, rural and peri-urban and community-based solutions**, such as: constructed wetlands for rural wastewater treatment; reuse of treated wastewater for agriculture; and the utilization of sludge from domestic wastewater as a natural fertilizer.

- **Provide resources and expert input to assess and strengthen the national policy, legislative and institutional frameworks** of participating countries to manage water and wastewater more effectively and in a more integrated manner. In so doing it will build upon the work of the CReW, IDB and UN Environment in the region.
- **Builds upon the experiences and lessons learnt in the CReW Project, country priorities and emerging issues concerning water, wastewater management and achievement of the Sustainable Development Goals.** With the added focus on improving watershed and freshwater basin management and water security, the project will expand on the core partnerships developed from CReW in particular with the private sector. CReW+ also involved wider participation from countries of the Wider Caribbean Region ensuring greater regional impact and transboundary cooperation.

The project is implemented by UN Environment and IDB, and therefore this project document, presents the rationale and vision of the project, presents specifically only the outputs and activities to be implemented by UN Environment.

3.1.1 Consistency with GEF focal area strategies

The project is consistent with the GEF 6 Focal Area Strategies for International Waters (IW). In addition, the IDB project document (elaborated in a separate project document) is also consistent with Land Degradation (LD) and Biodiversity (BD) with each focal area actions complementing one another as to promote a truly integrated approach to the management of natural resources.

GEF International Waters (IW) Strategy: The IW focal area helps countries jointly manage their transboundary surface water basins, groundwater basins, and coastal and marine systems to enable the sharing of benefits from their utilization, and is essential in support towards achievement of the SDGs. CReW+ will specifically contribute to the following IW objectives as outlined in [Table 3.1](#).

Table 3.1 Contribution of CReW+ to GEF IW Focal Areas objectives

Focal Area Objective	Focal Area Programs	Contribution of CReW+
IW 2: Catalyze investments to balance competing water uses in the management of transboundary surface and groundwater and enhance multi-state cooperation.	PROGRAM 3. Advance Conjunctive Management of Surface and Groundwater Resources	Improved governance of water and wastewater management and increased capacity to manage water resources and reduce impacts of climate change, building upon the Cartagena Convention and other key regional strategies: <ul style="list-style-type: none"> • National development strategies and plans incorporating multi-sectorial approaches to IWWM. • LBS Protocol amended – with criteria and/or standards for domestic wastewater • Assessment and recommendations on the advantage and impact of a new Strategy or Protocol on IWRM • Support towards the additional ratification of the LBS Protocol by participating countries • Capacity building to drive national and regional reforms for IWWM and, for reporting on relevant SDGs
	PROGRAM 4. Water/Food/Energy/Ecosystem Security Nexus	Increased water/food/energy/ecosystem security and sharing of benefits and strengthen effective and efficient water use and enhance delivery and sharing of environmental and socio-economic benefits in transboundary basins by balancing competing water uses across sectors and borders:

Focal Area Objective	Focal Area Programs	Contribution of CREW+
		<ul style="list-style-type: none"> • Innovative Water and Wastewater low tech solutions implemented at the rural and community level • Implementation of targeted actions for the prevention, reduction and control of point and non-point sources of pollution source through best land-use management practices and water source protection, water use efficiency and reuse strategies and action plans.
IW 3: Enhance multi-state cooperation & catalyze investments to foster sustainable fisheries, restore & protect coastal habitats, reduce pollution of coasts & LMEs	PROGRAM 5. Reduce Ocean Hypoxia	Reduction of nutrient pollution from wastewater through innovative policy, economic, and financial tools, public-private partnerships and targeted interventions
	PROGRAM 6. Prevent Loss & Degradation of Coastal Habitats	Reduction in the degradation of coastal habitats (in particular mangroves and wetlands) from the impacts of wastewater and inadequate water management with the integration of water and coastal management

In addition, through the actions implemented by IDB in Barbados (see IDB separate document for further details), the following Focal Areas will be addressed:

- LD-3 Program 4: Scaling-up Sustainable Land Management through Landscape Approach
- LD-4 Program 5: Mainstreaming SLM in Development
- BD-4 Managing the Human-Biodiversity Interface

3.1.2 Global environmental benefits

By promoting and supporting more integrated water and wastewater management in the WCR, the project will ensure that resources applied to water and wastewater management go further, i.e. the benefits are seen across several related sectors such as energy, agriculture, fisheries, and health while improving resilience of all of these sectors to climate change and variability. The environmental benefits obtained from implementing an integrated approach to water and wastewater management would be seen in the IW (as well as the LD and BD focal areas through IDB). The proposed project will also contribute to Aichi targets 8 (Reduce pollution), 10 (Minimize Reef loss), and 14 (Restore Ecosystems), as well as several SDG targets as further elaborated below.

The CREW+ project will contribute to the main global environmental benefits targeted by the IW focal area are related to transboundary concerns, including:

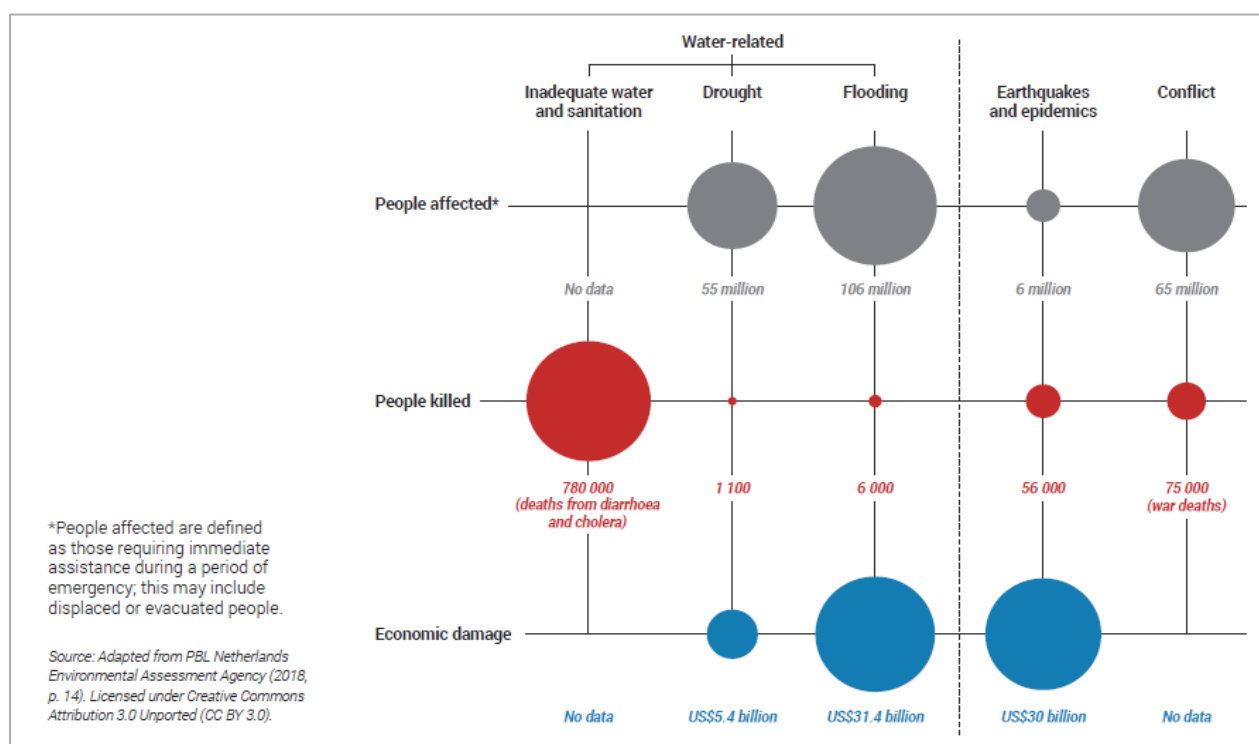
- (i) **Multi-state cooperation to reduce threats to international waters**, in particular through the strengthening of the cooperation with regards to water and waste water management, and corresponding institutional, policy and legislative reforms, strengthened national capacity and implementation of innovative solutions;
- (ii) **Reduced pollution load in international waters from nutrient enrichment and other land-based activities**, in the short term through the implementation of innovative water and wastewater low tech solutions implemented at selected hotspots, and ensuring future replicability and sustainability through support to countries to finance, and by leveraging resources for investments in land-based pollution reduction as well as through the removal of technical, institutional, policy, regulatory and financial barriers to such investments
- (iii) **Restored and sustained freshwater, coastal, and marine ecosystems goods and services**, including globally significant biodiversity, as well as maintained capacity of natural systems to sequester carbon, as a result of investments and policy/legislative reforms.

- (iv) **Increased water security, and improved access and availability of safe and adequate water supplies** resulting from improved watershed management practices, increased climate resilience/adaptation capacity (in particular to rising temperatures, declining precipitation, and increased frequency and severity of droughts);
- (v) **Reduced vulnerability to climate variability and climate-related risks**, and increased ecosystem resilience resulting from integrated water and wastewater management, as well as reduced GHG emissions.
- (vi) **Improved well-being of people whose livelihoods depend on coastal and marine ecosystems** functioning to sustain their productive activities (fisheries, tourism, etc.);
- (vii) **Conservation of globally significant biodiversity**, throughout the region through improved wastewater and water management and reduced impacts to marine and coastal habitats and biodiversity, and in particular the implementation of measures in Barbados (LD and BD funded and implemented by IDB).
- (viii) **Reduce pressures on natural resources from competing land uses** in the wider landscape including through the reuse of sludge as a soil enhancer and fertilizer; and increase opportunities to maximize reuse that is not detrimental to environmental and human health, and that promotes the water/food/energy nexus.

3.1.3 Socioeconomic benefits

As mentioned approximately 245 million people live in the 18 countries participating in this project with the majority of the population living within 100-200 km of shoreline and the concentration of coastal population is expected to increase. Tourism and agriculture are two main sectors causing an increasing burden on water resources and wastewater. While the economy in the WCR is growing and the region has made significant improvements in human development, the benefits are not equally distributed. The region has high inequality and such disparity exists between urban and rural areas. In the rural areas, 46.2 % of the population in rural areas was affected by poverty in 2015 while in urban areas 23.8 % was living under the poverty line. Around 56% of workers are in vulnerable employment in rural areas as compared to 27% in urban areas (ILO, 2015). It should be noted that a large population of indigenous communities and the youth live in rural areas. Poverty affects 46% of the indigenous population, which is twice as much as non-indigenous population (World Bank, 2015). Youth unemployment rate continues to rise in the region and 19.5% of the youth was unemployed in 2017 (ILO, 2017). Water use has been increasing worldwide by about 1% per year since the 1980s. The global cost–benefit studies have demonstrated that water, sanitation and hygiene (WASH) services provide good social and economic returns when compared with their costs, with a global average benefit–cost ratio of 5.5 for improved sanitation and 2.0 for improved drinking water. (WWAP/UNESCO, 2019) as summarized in **Figure 3.1**

Figure 3.1 Average annual impact from inadequate drinking water and sanitation services, water-related disasters, epidemics and earthquakes, and conflicts



As such CREW+ is expected to contribute to a number of socioeconomic benefits including:

- Increased access to water resources and wastewater management in rural/peri-urban communities, resulting in reduce risk from inadequate drinking water and sanitation services;
- Will contribute to ensuring that tourism is not negatively impacted due to pollution from wastewater and degradation of coastal ecosystems;
- Develop tailor-made financing options for urban, peri-urban and rural IWWM, including 8 financing action plans and business models to address IWWM including reuse and public–private mechanisms, payment options and recommendations to implement payment for ecosystem services developed in 3 critical watersheds;
- Through implementation of low-cost and innovative solutions to IWWM (Component 3), and corresponding capacity building and awareness raising, ensure that rural/peri-urban communities are able to fund and manage water resources and wastewater, and also ensuring that:
 - Increase of 17,000 cubic meters per day of wastewater treated;
 - Benefit 20,000 households from wastewater treatment; and
 - Reduction of approximately 3,000 kilograms of BOD per day; 700 kilograms of nitrogen per day; and 100 kilograms of phosphorus per day.

3.2 Project goal and objective

The objective of CREW+ is to “To implement innovative technical small-scale solutions in the Wider Caribbean Region using an integrated water and wastewater management approach building on sustainable financing mechanisms piloted through the Caribbean Regional Fund for Wastewater Management.” By building on the frameworks and lessons of earlier projects (including CREW), CREW+

will implement small-scale, local, rural, peri-urban, and community-based technological solutions for integrated water and wastewater management. The project aims to implement solutions for the improved management of wastewater that can be up-scaled and replicated so as to significantly reduce the negative impact of domestic wastewater on the environment and people of the Wider Caribbean Region and to similarly implement appropriate solutions at selected watersheds and freshwater basins to ensure greater water security for vulnerable rural communities. This will be achieved through targeted water resources conservation measures, wastewater and water re-use, improved land use practices and greater water use efficiency. These interventions will increase resilience of local communities to the impacts of droughts and more generally to the impacts of climate change and climate variability on the water sector.

3.3 Project components and expected results

CREW+ consists of four main components, each with specific outcomes and outputs as elaborated in the Results Framework ([Appendix 3](#)) following the Theory of Change logic and the problem tree analysis (see [Figure 2.3](#)):

Component 1:	Institutional, policy, legislative and regulatory reforms for Integrated Water and Wastewater Management (IWWM).
Component 2:	Sustainable and tailor-made financing options for urban, peri-urban and rural IWWM.
Component 3:	Provision of innovative small-scale, local, rural, peri-urban and community-based solutions for IWWM.
Component 4.	Knowledge Management and Advocacy on the importance of IWWM order to achieve the Sustainable Development Goals.

[Figure 3.1](#) illustrates the project design based on the Theory of Change logic translating the problem tree and objective tree analyses to desired outputs and outcomes that will result in desired change at the impact level towards meeting the project goal. [Table 3.2](#) summarizes the projects components, outcomes and outputs.

Figure 3.1. CREW+ Theory of Change

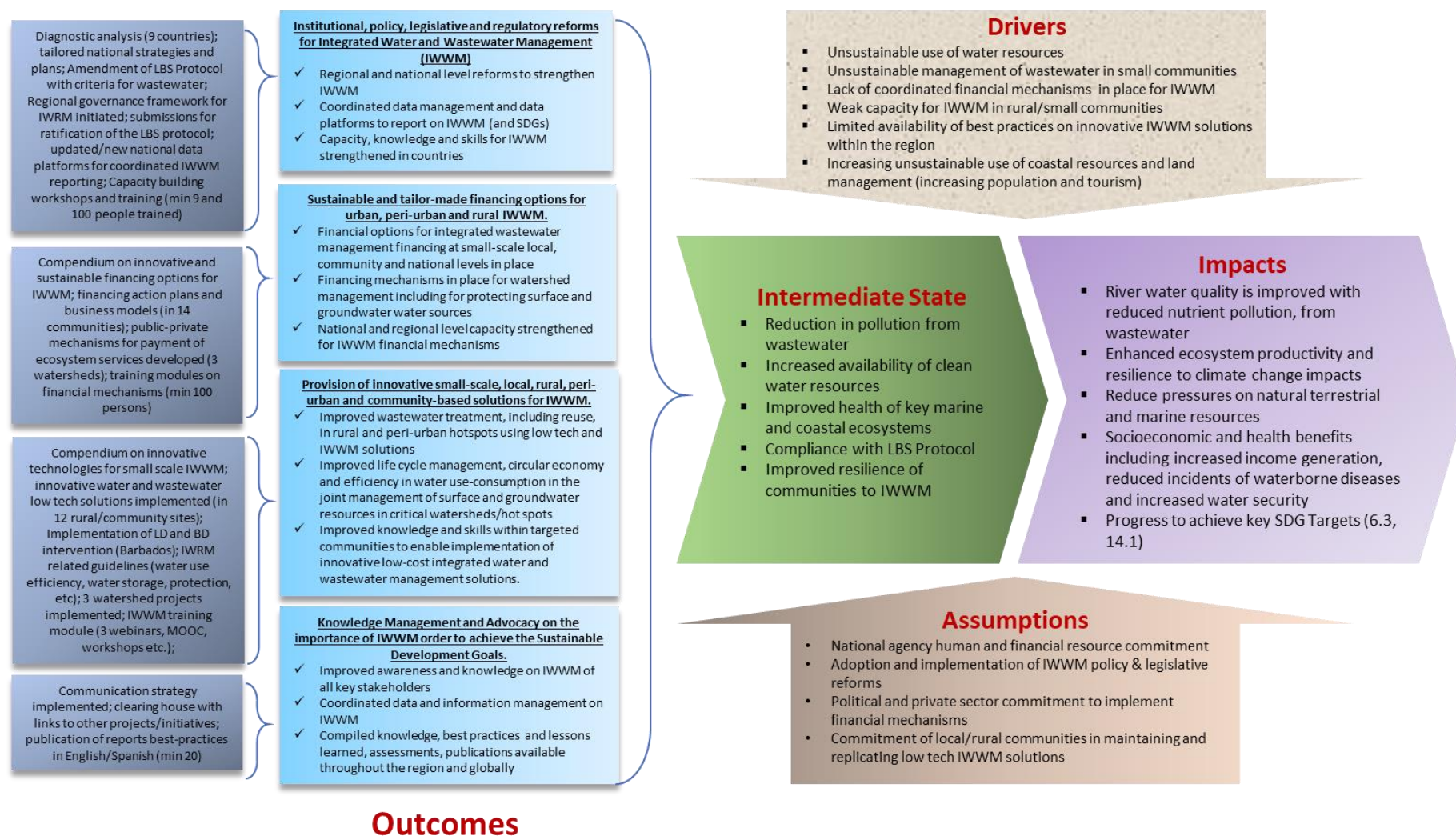


Table 3.2 CReW+ Outcomes and outputs (for both UN Environment and IDB projects)

Project Outcomes	Project Outputs	Implementing Agency
<i>Component 1 Institutional, policy, legislative and regulatory reforms for Integrated Water and Wastewater Management (IWWM).</i>		
Outcome 1.1. Consolidated improved and reformed institutional, policy and legislative frameworks for IWWM.	Output 1.1.1 Diagnostic analysis of existing policy framework, legislations, guidelines and standards in support of IWWM, recommendations for reforms and development of national IWWM plans.	Joint IDB & UN-E
	Output 1.1.2 Recommendations for amendments to the LBS Protocol to facilitate increased reuse of domestic wastewater including adoption of new criteria or standards for domestic wastewater discharges.	UN-E
	Output 1.1.3 Review, analysis and report for developing a new strategy or protocol on the management of freshwater resources within the framework of the Cartagena Convention.	Joint IDB & UN-E
	Output 1.1.4 Country specific Cabinet/Parliament submissions prepared for formal ratification of the LBS Protocol.	UN-E
Outcome 1.2. Enhanced regional and national coordination, information exchange, science-based decisions, and reporting on relevant SDGs and MEAs, resulting from the use of national and regional platforms/databases for IWWM by national and regional institutions.	Output 1.2.1. New or updated national platforms/databases, supported by a regional platform for IWWM developed.	UN-E
Outcome 1.3. Improved knowledge and skills to enable the monitoring of national reform processes for IWWM, and for reporting on relevant SDGs and MEAs.	Output 1.3.1. Capacity building workshops to drive national and regional reforms for IWWM and, for reporting on relevant SDGs	Joint IDB & UN-E
<i>Component 2: Sustainable and tailor-made financing options for urban, peri-urban and rural IWWM.</i>		
Outcome 2.1. Improved understanding of different financing options and greater readiness for integrated wastewater management financing at small-scale local, community and national levels.	Output 2.1.1. Compendium of recommendations on sustainable financing options considering micro credit, tariffing and other innovative mechanisms developed in consultation with relevant stakeholders, based on a review of existing financing mechanisms for IWWM at small, local, community or national levels, depending upon country context.	IDB
	Output 2.1.2. A series of community/rural specific financing action plans and business models to address IWWM including the safe reuse.	IDB
Outcome 2.2. Watershed management - Increased and sustainable financing for Integrated watershed management including for protecting surface and groundwater water sources.	Output 2.2.1. Compendium of innovative incentive options and recommendations on financing mechanisms for water conservation, pollution prevention, and water and the safe wastewater reuse.	IDB
	Output 2.2.2. Public-private mechanisms, payment options and recommendations on approaches to implement payment for ecosystem services developed.	IDB

Project Outcomes	Project Outputs	Implementing Agency
Outcome 2.3. Improved knowledge and skills for successful design, establishment and management of appropriate financial mechanisms in selected countries.	Output 2.3.1. Training modules for selected persons and agencies in the design, strategic planning, establishment and management of the financial mechanisms.	IDB
Component 3: Provision of innovative small-scale, local, rural, peri-urban and community-based solutions for IWWM.		
Outcome 3.1. Improved wastewater treatment, including reuse, in rural and peri-urban hotspots using low tech and IWWM solutions.	Output 3.1.1. Compendium of innovative technologies adapted to small-scale situations, supported by technical assistance, made available to all participating countries.	IDB
	Output 3.1.2. Rural and community level Integrated and Innovative Water and Wastewater low tech solutions implemented.	Joint IDB & UN-E
	Output 3.1.2 (b) Barbados Intervention in Barbados re: Star Allocation from Barbados (Land degradation and Biodiversity).	IDB
Outcome 3.2. Improved life cycle management, circular economy and efficiency in water use-consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots.	Output 3.2.1. Integrated guidelines and implementation plan consistent with IWRM with a focus on water source protection and use efficiency, land use protection and food, energy and ecosystems nexus trade-offs.	UN-E
	Output 3.2.2. Demonstration projects implemented focusing on: (1) Prevention, Reduction and Control of point and non-point sources of pollution source through best land management practices and (2) Development and Implementation of water source protection, water use efficiency and reuse strategies and action plans.	Joint IDB & UN-E
Outcome 3.3. Improved knowledge and skills within targeted communities to enable implementation of innovative low-cost integrated water and wastewater management solutions.	Output 3.3.1. Training on innovative low-cost integrated water and wastewater management such as through webinars, MOOC, training programmes with the participation of civil society.	Joint IDB & UN-E
Component 4. Knowledge Management and Advocacy on the importance of IWWM order to achieve the Sustainable Development Goals.		
Outcome 4.1. Improved awareness and understanding of the advantages of implementing integrated approaches within targeted communities to enable implementation of low-tech and integrated water and wastewater management solutions.	Output 4.1.1. A communications strategy developed and implemented, including information and dissemination of products related to IWWM and watershed management.	Joint IDB & UN-E
	Output 4.1.2. Updated CReW clearinghouse mechanism on financial options, small- and large-scale wastewater treatment technologies, and wastewater and water management policies and practices developed.	Joint IDB & UN-E
Outcome 4.2. Improved access to an information exchange mechanism, including knowledge of experiences and lessons learnt, as well as improved information sharing	Output 4.2.1 Documented best practices, lessons and experiences from all Components.	Joint IDB & UN-E
	Output 4.2.2. Operational information exchange mechanism for GEF and non-GEF projects established.	UN-E

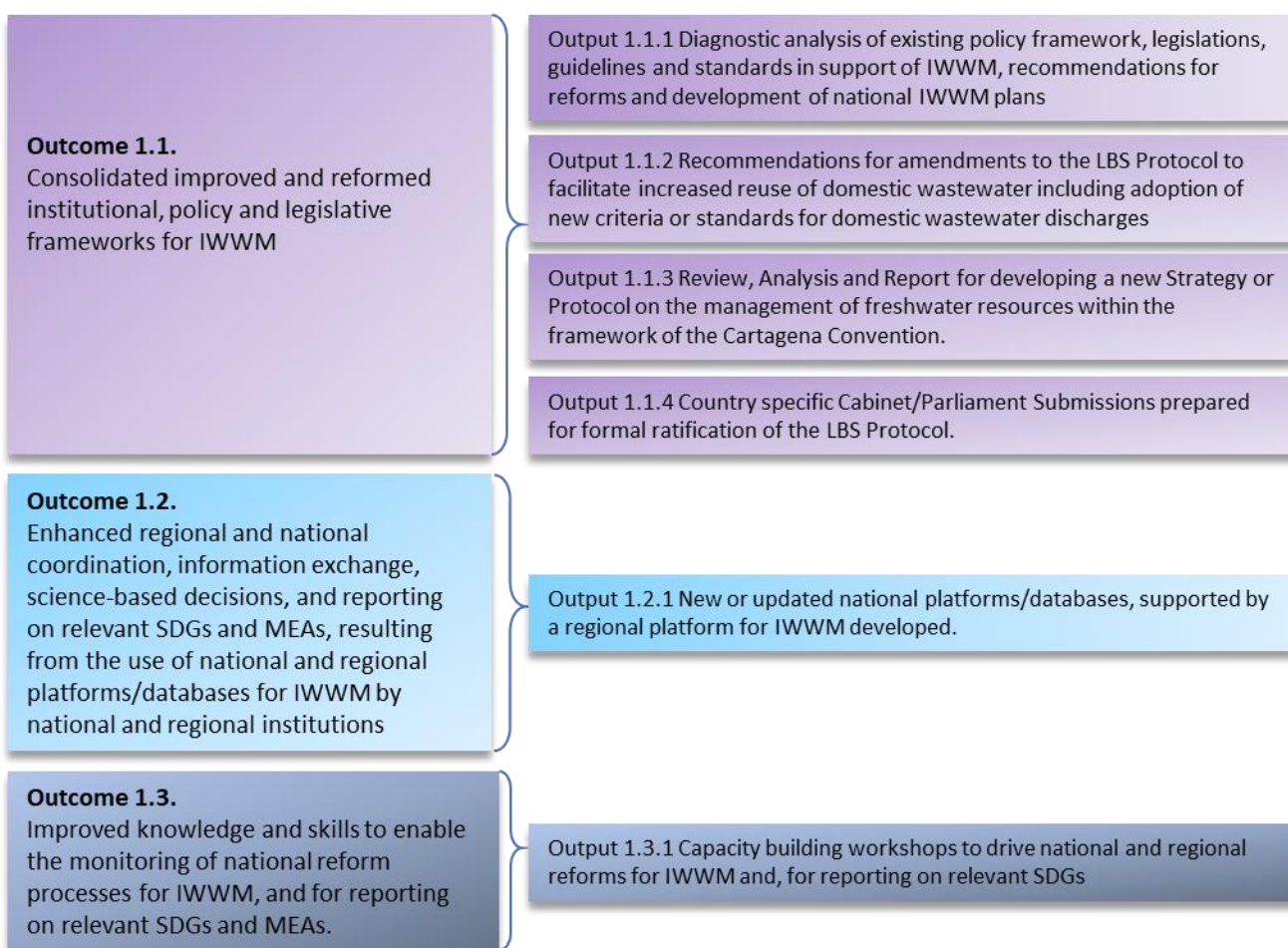
Project Outcomes	Project Outputs	Implementing Agency
capability with GEF and the wider, local and national communities amongst all 18 participating countries.		

3.3.1 Component 1 Institutional, policy, legislative and regulatory reforms for Integrated Water and Wastewater Management (IWWM).

Rationale of the Component: This component provides capacity building support for the further development and strengthening of national legal, regulatory, policy and institutional frameworks. This will enable countries to better design and implement broader and more integrated national and community-based solutions for water and wastewater management. It will also facilitate more harmonized regional approaches in meeting agreed regional and global water and wastewater related goals and targets. This support will be critical for countries to develop, upscale and/or sustain their national innovative financial mechanisms for water and wastewater management. The importance of enhancing the national enabling environment to ensure the long-term viability of financing mechanisms will not only focus on the water and wastewater sectors but will build synergies with related sectors such as tourism, health, agriculture and energy.

Under the “circular economy of water” the economic and environmental benefits of wastewater management and safe reuse go hand-in-hand with the protection and efficient management of existing water stocks in watersheds and freshwater basins. The work done under this component will enable more effective implementation of existing water and wastewater management plans, assist in the development of new national/municipal/ local integrated land use, water and wastewater management plans and facilitate their longer-term sustainability. Critical to these reforms will be support to more participatory processes involving national and regional consultations among key stakeholders in order to produce a set of country-specific and harmonized regional recommendations. This will be especially critical to the possible development of a new Protocol on the management of freshwater resources within the framework of the Cartagena Convention. Such a protocol could form a framework for a harmonized approach to the protection of watersheds, freshwater basins, surface water and ground water resources and will improve transboundary cooperation on water and pollution related issues.

This component will be both crosscutting and multi-sectoral in nature and seek to better understand, communicate and enhance the linkages between economic sectors. This will ensure that all participating countries are better able to implement more effective and integrated water and wastewater management approaches. This component will assist countries in greater application and use of regional appropriate criteria and standards in areas such as wastewater treatment and safe reuse based on experiences in other regions and from other GEF projects. It will also establish complementarity with legal and regulatory instruments for water source protection, including norms and standards addressing land use conservation (for surface and sub-surface water protection), efficient use of water, and water quality, among others.



This component will contribute several specific reform activities including:

- i. Conducting targeted and institutionalized training through technical assistance and technology transfer including:- professional exchanges and certification of water and wastewater operators; operation and maintenance of water and wastewater treatment plants; training manuals and support for social entrepreneurship, institutional capacity and financial assessments; partnership with training institutions to enable further development and enhancement; and institutionalization and/or up scaling of national and as appropriate regional training programmes, including online and face to face courses, and programs to strengthen national and regional laboratory capacity to enhance evidence-based decision making.
- ii. Strengthening national legal, regulatory and enforcement frameworks for integrated water & wastewater management, including adherence to new criteria and standards for water protection, water use and reuse.
- iii. Incorporating Strategic Environmental and Regulatory Impact Assessments (SEAs & REAs) which will assist in ensuring greater compliance with new water and wastewater related policies, legislation and regulations while identifying opportunities for voluntary compliance especially by the private sector through appropriate policy and economic incentives and disincentives, codes of practice and others.
- iv. Supporting the possible development of a new Protocol on Freshwater within the framework of the Cartagena Convention while continuing to facilitate more effective implementation of existing obligations under the Convention and in particular the LBS Protocol. Activities will assist governments in meeting other relevant regional and global targets such as the Sustainable Development Goals. Countries which have not yet ratified will be provided targeted support to

overcome existing political, technical and capacity barriers to ratification and subsequent implementation of the LBS Protocol.

- v. Establishing frameworks for greater engagement of private sector at both national and regional levels targeting in particular the tourism industry and water and wastewater utilities. This will include establishing codes of practice for industries and providing support for developing business cases/models to facilitate greater private sector involvement in innovative sanitation solutions, watershed and freshwater basin protection, treated wastewater reuse etc.
- vi. Establishing national and regional data and information management systems including systems for data collection, analysis, interpretation, sharing and data maintenance. Existing national and regional systems for water and wastewater management will be rationalized including integration, consolidation, harmonizing of methods (system for sharing and maintaining data). Issues of data quality and quantity, gaps, and response mechanisms including new guidelines, regulations will be identified and implemented.
- vii. Engaging High Level Political, Industry, Civil Society and Technical support to ensure commitment through education, awareness raising, attitude and behavioural change and knowledge management processes. This will support longer term sustainability of all reforms implemented. This will also entail use of existing national and regional decision-making mechanisms and identification of appropriate national and regional champions.

Outcome 1.1. Consolidated improved and reformed institutional, policy and legislative frameworks for IWWM.

Output 1.1.1: Diagnostic analysis of existing policy frameworks, legislation, guidelines and standards in support of IWWM, recommendations for reforms and development of national IWWM plans.

This output will be implemented by IDB and UN-Environment. It will specifically focus on recommendations for reforming institutions, policies, legislation and regulations in support of Integrated Water and Wastewater Management (IWWM) for at least 9 countries (jointly with IDB), with at least 9 national development strategies and plans incorporating multi-sectorial approaches to IWWM, of which 4 countries will be supported by UN Environment. This will build upon work undertaken in the first CReW and IWCAM and complement the IWEco projects.

At the Regional level this will include an updated regional review and bibliography of IWWM related governance and legislation, and diagnostic analysis and recommendations and implementation of actions towards strengthened IWWM for the following:

- (i) Support to further implementation of tools and guidelines on wastewater management (developed under CReW);
- (ii) Strengthening the adherence to new criteria and standards for water protection, water use and reuse;
- (iii) Strengthening enforcement mechanisms and capacity for IWWM;
- (iv) Development of a mechanism to engage with private sector stakeholders to ensure their commitment to the actions necessary for the effective management of water and wastewater;
- (v) Ensuring integration of IWWM with climate change, energy, blue economy and ecosystem management aspects;
- (vi) Ensuring a sustainable regional coordinating mechanism for the water sector,
- (vii) Coordination with UN ECLAC and national teams responsible for reporting of relevant SDG targets to contribute to the high-level political forum (HLPF) and Voluntary National Reports (VNR). The 2018 HLPF is planned for 9-18 July 2019 and within the WCR, Guatemala, Guyana

and Saint Lucia will present their VNR reports. Costa Rica, Honduras and Trinidad and Tobago will prepare VNR reports for the 2020 HLPF.⁴⁷

- (viii) Strengthening coherence and synergies at the national level between the national water sector plans and all other sectoral or national development plans or public sector investment programmes;
- (ix) Advancing gender mainstreaming within policy and capacity building (in support of all the components)
- (x) Strengthening surface and groundwater modelling to estimate water resources from different sources; and
- (xi) Reduction in the sources of pollution of water sources, through enactment, where necessary, and enforcement of legislation and rigorous public education

At the National level (see [Appendices 13 to 30](#)), this will include tailored support to six countries to revise and implement IWWM policy and legislation reforms and their enforcement (to be further refined in the Inception phase of the project) as summarized below. Priority will be focussed on ensuring policies and legislation for IWWM is in place, and mechanisms for enforcement, tools and best practices for IWWM, pollution reduction and ecosystem/habitat management, the adoption of standards in line with the LBS Protocol, and mechanisms for coordination between ministries and other stakeholders and the national teams responsible for reporting on the SDGs are in place.

Country/Region	Activity/Target ⁴⁸
Regional	Updated regional review of IWWM related governance and legislation and diagnostic analysis and recommendations towards strengthened IWWM. To include targeted regional analysis (i.e. the mapping the major point sources of sewage discharges) <i>To include consultancies and regional meetings. Supported through the Regional CARICOM and OECS Framework building on the Water Consortium, Decisions of Water Ministers at CWWA, and advancing the regional policy agenda for Water and Wastewater Resources Management.</i>
Cuba	To support the implementation of the 2017 Terrestrial Water Law and the 2012 Water Policy, activities will focus on strengthening the municipal and provincial Councils of hydrographic basins towards integrated watershed and coastal management. <i>See National Package (Appendix 17)</i>
Grenada	(i) Review the National Water Policy drafted to ensure it includes Wastewater Management; (ii) Establish a platform/framework to ensure coherence and synergies among the key Government Ministries and other entities; (iii) Review legislation and build capacity for enforcement; (iv) Develop and adopt effluent standards. In particular there is a

47

<https://sustainabledevelopment.un.org/hlpf>

48 Further revisions to activities may be conducted during the inception phase of the project, as appropriate.

Country/Region	Activity/Target48
	specific concern regarding pollution of Grande Anse Bay, the major recreational beach in Grenada both for locals and international tourists. <i>See National Package (Appendix 19)</i>
Guyana	(i) Based on the Analysis of Water Law of Guyana and a Strategic Approach for the Harmonization of Norms, analyze water policy and legislation with a focus on wastewater management and provide specific recommendations for improvement; (ii) Provide inputs to the development of Water Policy to ensure wastewater management is integrated in the policy and serves as a policy for integrated wastewater management; (iii) Support the re-establishment of the National Water Council; (iv) Develop policy and legislation to promote water saving measures as proposed within the Climate Resilience Strategy and Action Plan for Guyana such as safe wastewater reuse (v) Strengthen communication to stakeholders and public <i>See National Package (Appendix 21)</i>
St. Kitts and Nevis	(i) Conduct diagnostics of current legal and policy frameworks in relation to water building on previous studies such as Julien (2000) and provide specific recommendations for revisions (in coordination with the GEF IWECO project); (i) Develop an integrated water and wastewater management plan in consideration of climate change. (iii) Develop effluent standards in line with the limits set under the LBS Protocol
Saint Lucia	In line with Project Concept 1 as outlined in the Saint Lucia's Portfolio of Project Concept Notes for the Water Sector 2018-2028, support the development of the Wastewater Master Plan (WMP) and Guidelines for on-site and small wastewater facilities, and greywater management for all sectors such as hotels, small communities and restaurants. The Guidelines should provide: a) information for the design, construction, operation and maintenance of facilities, b) information for retrofitting systems for water saving, and c) contact information for the technical support unit and related services (e.g. technical support unit at the Ministry of Health and Wellness (MoH), sanitary engineers, masons, vacuum tankers). Guidelines for ports and marinas to implement adequate careening activities. These guidelines should include: a) technology description, b) design and costs, and c) operation and maintenance requirements. These guidelines may also consider solutions for car-wash areas and gas stations.
St Vincent & the Grenadines	(i) Develop an integrated legislation on wastewater management including wastewater reuse, design standards for sewage treatment plants, on-lot systems and wastewater infrastructure. Also included would be Regulations for discharge into the environment; (ii) Revitalize the National Environmental Advisory Board, appropriately compensate Board members and strengthen its function. There is a recommendation for the NEAB to take a more active role in designing, developing and coordinating the implementation of projects related to the environment; (iii) Establish the National Water Commission as envisaged in the National Economic Development Plan 2013-2025 so that the Commission can spearhead integrated water resource management in the country including wastewater management.

IDB will support additional countries towards the development of tailored national development strategies or regulatory/policy documents including Belize, Costa Rica, Dominican Republic, Guatemala, Honduras, Jamaica, Mexico, Panama, Suriname, Trinidad and Tobago.

Output 1.1.2: Recommendations for amendments to the LBS Protocol to facilitate increased reuse of domestic wastewater including adoption of new criteria or standards for domestic wastewater discharges.

This output will be implemented by UN-Environment. The Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) to the Cartagena Convention was adopted in 1999 and entered into force in 2010.⁴⁹ Annex III of the LBS Protocol sets standards for the discharge into Class I and Class II waters but it does not set specific criteria or standards for the reuse of domestic wastewater by the Contracting Parties. This will require the development of draft criteria and standards coordinated with Cartagena Convention experts and focal points before presentation to the Cartagena Convention Contracting Parties for adoption.

Country/Region	Activity/Target
Regional	<p>Report on criteria or standards for domestic wastewater and prepare a draft amendment to the LBS Protocol for consideration by the Contracting Parties.</p> <p>LBS Protocol amended (or in the process of) with criteria or standards for domestic wastewater.</p> <p><i>To include consultancy and support to CEP STAC and/or intersessional meetings of an expert working group - LBS RACs, members of our Monitoring and Assessment Working Group</i></p>

Output 1.1.3: Review, analysis and report for developing a new Strategy or Protocol on the management of freshwater resources within the framework of the Cartagena Convention.

This output will be implemented by UN-Environment. There is a recognized need for a regional policy framework to support coordination of freshwater resources in the Caribbean. The aim of this activity is to assess the feasibility of the development of a new Protocol or strategy on the management of freshwater resources under the Cartagena Convention. It will also address the advantages of either a Protocol or Strategy, and consider integration of freshwater and coastal zone (ICZM) management building upon experiences also from other regions. A series of policy/governance IWRM needs, recommendations and plan for development for a future Protocol or Strategy will be drafted and discussed with experts and focal point of the Cartagena Convention at specific regional forum and meetings.

Country/Region	Activity/Target
Regional	<p>Policy/governance needs in the region for IWRM assessed.</p> <p>Analysis on possible options (such as ICZM) and recommendations on the advantage and impact of a Strategy or Protocol on IWRM</p> <p><i>To include consultancies, national consultative meetings and regional expert workshops</i></p>

Output 1.1.4: Country specific Cabinet/Parliament submissions prepared for formal ratification of the LBS Protocol.

49 <http://cep.unep.org/cartagena-convention/lbs-protocol/protocol-concerning-pollution-from-land-based-sources-and-activities>

This output will be implemented by UN-Environment. Among the 18 countries participating in the project, 8 countries have not ratified or acceded the LBS Protocol (Barbados, Colombia, Cuba, Guatemala, Mexico, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname). The countries which have ratified the LBS Protocol have done so through submission of instruments of ratification or accession, deposited with the Government of the Republic of Colombia, which functions as Depositary for the Cartagena Convention. In order to support the national process of LBS ratification, specific submissions will be prepared for these eight countries with the support of national experts and discussed at the Caribbean Environment Program (CEP) technical experts' meetings.

Country/Region	Activity/Target
Regional and national	<p>Specific submissions prepared for the ratification of the LBS Protocol for 8 countries (Barbados⁵⁰, Colombia, Cuba, Guatemala, Mexico, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname).</p> <p>Minimum 4 more ratifications of the LBS Protocol (or in the final process of ratification)</p> <p><i>To be supported through consultancies and regional meetings with national experts</i></p>

Outcome 1.2: Enhanced regional and national coordination, information exchange, science-based decisions, and reporting on relevant SDGs and MEAs, resulting from the use of national and regional platforms/databases for IWWM by national and regional institutions.

Output 1.2.1. New or updated national platforms/databases, supported by a regional platform for IWWM developed.

This output will be implemented by UN-Environment. Good quality available data is the essential foundation for integrated water resource and pollution management. Unfortunately, there is limited baseline data on water and wastewater management in the region, and few countries have complete national databases (i.e. Columbia). In terms of progress towards the SDGs, the most critical areas for which serious data gaps currently exist include SDG 11 (Cities and Communities), SDG 6 (Water), and SDG 14 (Oceans) (UNEP, 2019). This is further complicated by the involvement of multiple ministries involved in water resource and quality monitoring. There are limited facilities (and in some countries no facilities) for data collection where analysis, revision and expansion of information can be effectively conducted; additionally, the quality of data analysis is poor and there is a lack of or limited periodic assessment of short-term and long-term data-collection and research needs for wastewater management. Increased focus also needs to be placed on sharing the data among relevant government agencies and research institutions. The Caribbean Environment Program in 2017-2018, compiled national data on pollution and wastewater for the purposes of its 2018 State of Convention Area Report (SOCAR). The Caribbean Platforms and Nodes for Nutrients, Marine Litter and Wastewater Management established with the support of the UN Environment GPA form a framework for this collaboration.

Based on the identified gaps in data, further steps will be taken for ensuring national and regional coordination of water resource and pollution data, and to support at least six countries in strengthening monitoring and data management for water management and pollution, also contributing to the

50 To be supported through activities in Output 3.1.2 (b) Barbados

reporting of the SDG's, in particular SDG 6.3 and 14.1. Several SDG data portals are under development, some at the national level, regional level (such as through Regional Commissions). Therefore, recommendations will also be prepared on the most effective regional mechanism for the coordination of the national databases, ensuring no duplication with existing platforms and also ensuring alignment with all global reporting obligations, in particular the SDGs. This will complement activities under IWEco to develop and apply national and regional water, land and biodiversity (including sustainable forest management) indicators to assess the effectiveness of water, land (including ICZM) and ecosystems management in the participating Caribbean SIDS. Support to countries would include the following (as appropriate for each country, based on demand and dependent on agreed sustainability and reporting criteria):

- Agreement on common core indicators for reporting to SDG 6.3 and 14.2 (building up work in the IWEco project), in line the indicators of the Regional Seas (UNEP, 2016c), SOCAR's agreed indicators and in cooperation with multilateral agreements (MEAs) and the UN SDG 6 Synthesis Report 2018 on Water and Sanitation;
- Ensure national institutions responsible for monitoring have laboratory certification, participate in regular quality assurance exercises, and have a funding mechanism for ensure sustainability of monitoring;
- Ensure coordination between ministries and departments for data exchange, including signing data sharing agreements as appropriate and ensuring data is made available; and
- Contribute to development and/or enhancement of national IWWM database for internal monitoring and external reporting to the Cartagena Convention and relevant MEAs and SDGs in terms of infrastructure, equipment, capacity etc.

Country/Region	Activity/Target51
Regional	<p>Alignment of national databases with a strengthened regional platform for reporting on IWWM to the Cartagena Convention, and related MEAs and SDGs, building upon existing regional data platforms and CEP data and information management.</p> <p>Ensure coordination with UN ECLAC, CARICOM, OECS, CCAD and other regional organizations engaged in regional water and wastewater data management and platforms.</p> <p>Ensure lessons learned exchanged from those countries with more established data management platforms (i.e. Mexico, Costa Rica, Columbia, Jamaica etc.).</p> <p>Targeted support to additional countries with regards to quality assured monitoring and reporting to CEP and the SDGs</p>
Costa Rica	<p>Is advanced in its development of an information system for IWRM with free access and a geospatial access platform, this system is called "SINIGIRH". However, to ensure the sustainable long-term financing of the monitoring and information system, the CReW+ project will investigate, design the network and develop a financing and institutional model for the sustainable operation of this network and that can start from the available economic resources of the canons that the country has, contribution of co-operators as well as a model of public-private partnerships.</p> <p><i>See National Package (Appendix 16)</i></p>

51 Further revisions to activities may be conducted during the inception phase of the project, as appropriate.

Country/Region	Activity/Target51
Grenada	In 2009, the Government launched a National Water Information System (NWIS). Project to update the Grenada National Water Information System and include data on wastewater management. <i>See National Package (Appendix 19)</i>
Jamaica	Jamaica has developed a Management Information System (MIS) to integrate the major related systems, including the billing, tariff collection and general ledger systems. The project will support the integration of wastewater effluent quality monitoring data in the existing Jamaica Water Resources Authority Water Information System. <i>See National Package (Appendix 23).</i>
Saint Lucia	Develop a national database for IWWM and relevant SDGs (especially SDG 6) <i>See National Package (Appendix 2727)</i>
St Vincent and the Grenadines	Support towards the development of an IWWM data platform in line with SDG 6 and 14, and SOCAR indicators for future reporting <i>See National Package (Appendix 28).</i>
Trinidad and Tobago	Support the development of an electronic water resources information management system based on the existing WASA's database as strategized in the National Integrated Water Resources Management Policy (2017) <i>See National Package (Appendix 30).</i>

Outcome 1.3. Improved knowledge and skills to enable the monitoring of national reform processes for IWWM, and for reporting on relevant SDGs and MEAs.

Output 1.3.1 Capacity building workshops to drive national and regional reforms for IWWM and, for reporting on relevant SDGs.

This output will be implemented by IDB and UN-Environment and will provide capacity building and training support relevant to all activities and outputs under Component 1 with regards to institutional, policy, legislative and regulatory reforms for IWWM.

Additional capacity building is essential to support countries towards the long term and sustainable implementation and enforcement of IWWM policy and legislation reforms, in line with regional commitments and the SDGs. CReW identified the main gaps and needs in terms of capacity building in relation to IWWM (GEF CReW, 2015a) and (GEF CReW, 2017) in particular the need to support countries in drafting policy reforms, implementing and increasing knowledge in best practices for wastewater management, improving data management, monitoring and reporting of IWWM (in line with SDGs), best practices in enforcement, and integrating climate change and circular economy aspects into IWWM policy and legislation. Other limitations in technical capacity (e.g. in developing project proposals, operating and maintaining treatment systems, and monitoring and analyzing wastewater discharges and impacts) constrain progress in effectively managing wastewater (UNEP CEP, 2010a). There will be a particular focus on supporting countries in the implementation of existing policies, tools and guidelines (such as those developed under CReW and by CEP) and making specific updates to existing national legislation and regulations relating to water and wastewater management. Also stressed was the need for better coordination between ministries and key stakeholders. In addition to regional trainings and workshops, training material will be developed to encourage “training of trainers” and virtual training throughout the region in collaboration with regional technical agencies and academic institutions building on partnerships established with CDB, CAWASA, U Tech, UWI, University of Monterrey.

Country/Region	Activity/Target52
Regional	<p>Capacity building workshops (minimum 4) held for staff in national agencies to drive national and regional reforms for IWWM and reporting on relevant SDGs including:</p> <ul style="list-style-type: none">• Policy/legislation reforms (policy development; drafting new legislation, regulations and standards; preparation of guidelines; criteria for improving enforcement; development of sustainable financing mechanisms at multiple scales; and amendments to existing legislation and regulations;• Monitoring and Data (Data collection; Wastewater Quality Testing; Integrate water quality data into national/regional databases; Training in laboratory practices and procedures and facilitating reporting.• Available tools for supporting countries in monitoring and reporting of IWWM and relevant SDG targets (i.e. UNU-INWEH SDG-PSS tool, as well as others to be defined)

52 Further revisions to activities may be conducted during the inception phase of the project, as appropriate.

Country/Region	Activity/Target52
	<ul style="list-style-type: none"> • Policies development: in climate change; for rethinking treated wastewater as a resource including for drought relief; to restore water quality in polluted aquifers and wells. • Coordination/data management for SDG reporting (relevant to IWWM) • Effective water/wastewater utility management • Ensure broader engagement of training throughout the region through various tools (such as training of trainers, virtual training etc.) • Training to strengthen gender-equitable access to ecosystem services, safe and adequate water, sanitation, food security and other benefits, in line with the GEF Policy on Gender Equality (GEF Secretariat, 2017) • Regional workshops and trainings in cooperation with partners (such as CWWA, CDB, World Bank, UNESCO, CAWASA, CARPHA, RAC IMA and CIMAB, GWP Caribbean and Central America, IDB, UN Environment GPA, UWI, UTECH, Monterrey Institute etc.)

UN Environment will coordinate a minimum of 4 regional training workshops in addition to providing targeted national capacity-building support and this will be complemented by IDB which will implement additional 5 capacity building workshops for national and regional reforms as outlined in their separate project documentation. Additional training through partners will be identified in the inception phase of the project and will be provided on a demand-basis once consistent with overall project objectives.

3.3.2 Component 2: Sustainable and tailor-made financing options for urban, peri-urban and rural Integrated Water and Wastewater Management (IWWM).

All activities will be implemented by IDB with activities detailed in a separate IDB project document.

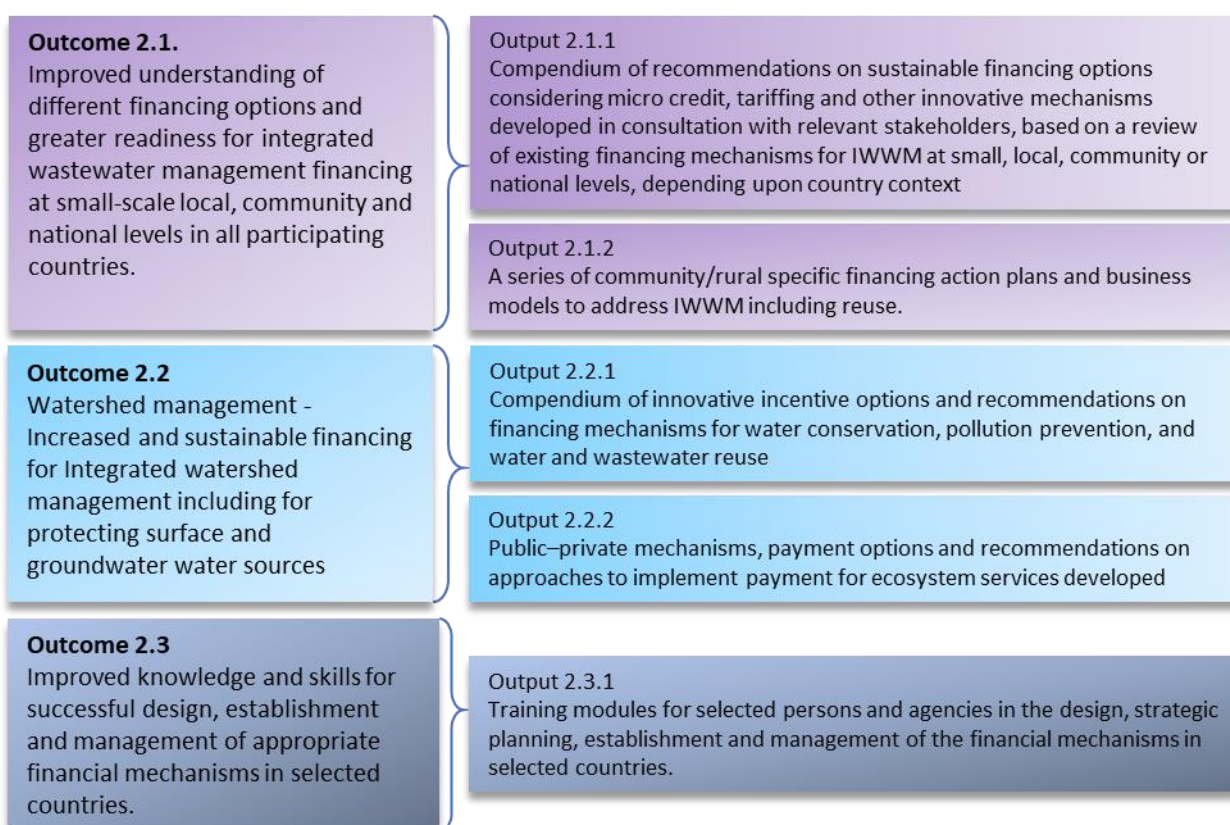
Rationale of the Component: This component will focus upon the country's readiness for future establishment and development of sustainable financing mechanisms for wastewater management. Diagnostics conducted in all participating countries will lead to customized documentation and recommendations regarding existing financing mechanisms for IWWM at local, national and regional levels, and make recommendations regarding the most appropriate sustainable financing mechanisms for IWWM at local, national and regional levels, depending upon their context, circumstances and size.

Activities will focus on developing financial action plans and business models at national/local/community/rural levels to enable more effective IWWM approaches and long-term sustainability of the mechanisms established. It will provide analysis and recommendations on available financing models and mechanisms, including revenue streams, payment for ecosystem goods and services, taxes, tariffs, polluter fees, Blue Bonds and Debt Swaps for Environment and the appropriateness of these models for application at community, local, national and regional levels. Consideration will also be given to developing a wider funding base to support on-going and future integrated water and wastewater investment and freshwater source protection in watersheds and freshwater basins. This will include development of strategic partnerships with the private sector, including and beyond traditional funders, development of local and national resource mobilization strategies, soliciting pledges and offers of financing, support for new proposal development, financial and economic research, donor mapping, outreach and advocacy, and new partnership frameworks. Training will be provided to selected target groups and agencies in the design, establishment and management of the various financial mechanisms developed.

Component 2 will also work in consultation with different stakeholders at rural level to provide appropriate innovative approaches to address IWWM with particular emphasis upon what is needed to

ensure sustainability. This includes incorporating Payment for Environmental Services schemes that will transfer resources for water source conservation. Additional activities will include: technical studies of different innovative financial solutions; professional exchanges and certification; manuals for various needs including operations and maintenance; advocacy and support for social entrepreneurship; national and regional level workshops on various topics, e.g. social entrepreneurship, watershed protection, treated water reuse and the water cycle (developed, assessed, enhanced, up-scaled and institutionalized towards better sustainability).

This Component will also complement the Regional Nutrients Reduction Investment Plans and Habitat Restoration Investment Plans under development by the Secretariat of the Cartagena Convention (CEP) as part of the UNDP GEF CLME+ Project and this support the implementation of the CLME+ Strategic Action Programme (SAP).



3.3.3 Component 3: Provision of innovative small-scale, local, rural, peri-urban and community-based solutions for IWWM.

Rationale of the Component: This component will provide for improved wastewater treatment (including the safe reuse) in selected rural and peri-urban hotspots using innovative IWWM solutions and interventions seeking complementarity between IWWM solutions and water protection and water management practices at a watershed level.

This component will provide information and advice to all participating countries on a range of innovative technologies appropriate for small-scale solutions, supported by technical assistance to address smaller-scale, local and community-based projects, meeting the needs of rural or small urban communities. As innovations in wastewater treatment and reuse are being developed throughout the program, there is growing concern about how scarce water resources are being protected in order to

guarantee the livelihood of populations and economic activity in a given watershed. Therefore, this component will support activities for improved freshwater source protection and efficient use of water in selected rural and peri-urban hotspots.

Specific interventions could include recycling and wastewater management through micro, small and medium enterprises. Public consultations with local stakeholders will be facilitated to enable local input and increase sustainability of solutions. Diagnostics in the participating countries will result in specific recommendations regarding appropriate technical options for application in specific contexts to address IWWM, including prevention and reuse. The technical solutions recommended at the local and community level will be evaluated, and at least 50% of the interventions will involve low-cost innovative technologies that have proven to be effective in treatment and reuse, and with low operational and maintenance costs. Innovative and community-based solutions for the application of both technology and funding will be sought (e.g. community/rural specific financing action plans), such as constructed wetlands to treat wastewater from groups of dwellings.



Emphasis will be placed on technology that provides low cost and low operation and maintenance solutions, in order to enable sustainability of the interventions. Potential for replication and upscaling would be considerations/criteria in the selection of technology, and appropriate and feasible funding disbursement methods will be considered, e.g. the possibility of using existing entities. Local programmes to introduce skills training to enable community participation and maintenance of solutions will be undertaken. Training will also be provided to improve operational and maintenance

capacities, procurement, tendering and contractual processes. Replication plans will be developed and implemented. Experiences from local interventions will be documented for information sharing at the national and regional levels. Partnerships with existing programmes and projects will provide opportunities for useful interventions particularly those which are compatible with their initiatives.

In order to support improved protection of watersheds, freshwater basins including surface and groundwater resources, support will be provided to land conservation and other land uses that are compatible with water source protection; increased efficiencies in water end use (remains end use consumption); iii) allocation of treated effluents to various activities in accordance to water quality parameters required by different consumptive types; iv) Creation of a system of incentives for water conservation and reuse; and v) Implementation of pollution prevention, reduction and control measures so as to ensure greater water security and safety.

The GEF Small Grants Programme (GEF-SGP) will contribute to the development of community-based livelihood initiatives related to wastewater management (Output 3.1.2) and integrated water management (Output 3.2.2). GEF Small Grants Programme (SGP), launched in 1992, has supported more than 18,000 grant projects with an investment of over US\$478 million grants around the world, which has in turn leveraged US\$622 million in co-financing. It has accumulated considerable community-based environmental management experiences, and promoted sustainable environmental management at community level. In the context of regional management of the shared water body of the Caribbean, SGP's special niche lies in its community-based approach to piloting and demonstration - experiences which can contribute inputs from the ground level to the regional governance framework and process. The partnership between CREW+ and SGP can optimize the complementary roles these programmes can play, and contribute to achieving greater impacts for the management of the Caribbean.

Outcome 3.1 Improved wastewater treatment, including reuse, in rural and peri-urban hotspots using low tech and IWWM solutions.

Output 3.1.1 Compendium of innovative technologies adapted to small-scale situations, supported by technical assistance, made available to all participating countries.

This output (implemented by IDB as detailed in their project document) will develop a compendium of case studies of good practices/innovative technologies with recommendations in English and Spanish on innovative technologies tested in the region.

Output 3.1.2. Rural and community level Integrated and Innovative Water and Wastewater low tech solutions implemented.

This output will be implemented by IDB and UN-Environment. One of the major conclusions of the previous CREW project was the need to focus more on supporting IWWM at the rural and community level through integrated and Innovative Water and Wastewater low tech solutions. Septic tanks and pit-latrines are most commonly used sanitation facilities in rural areas of the WCR. Although these sanitation facilities are available, they are often old and dysfunctional (UNEP CEP, 2010a). Numerous wastewater technologies have been used in the region but there is a lack of funding as well as sufficient training in operation and maintenance. As a result, many facilities are obsolete and lack maintenance for effective operation (UNEP CEP, 2010a). While some decentralized small-scale technologies have been used in the region, such as constructed wetland (World Bank, 2008) and rainwater harvesting

(GWP, 2018), access to information on available innovative small-scale technologies is limited in the region⁵³.

Furthermore, wastewater treatment is considered by many water utility managers and stakeholders as a low priority. In most cases, provision of a reliable and safe potable water supply ranks first, with the second priority being the collection of sewage by means of covered sewerage systems, and wastewater treatment being the least important. Most countries in the region have failed to take a long-term, integrated approach to wastewater management and few have made adequate budgetary provisions for and investments in sewerage infrastructure, policy reform and public education. Thus, countries often engage in “opportunistic capital planning” based on the availability of funding from donors or governments, and not on best value and net economic benefit (see [Box 2.1](#)).

The target is to implement a minimum of 12 interventions in rural and peri-urban hotspots using low tech and IWWM solutions (see National Packages, [Appendices 13 to 30](#)) between UN Environment and IDB. IDB has identified 7 sites (in Belize, Colombia, Costa Rica, Dominican Republic, Honduras, Mexico, Suriname) and UN Environment 8 sites as elaborated in the table below. Other project components related to sustainable financing, policy and legislative reforms and more institutionalized training and capacity building are expected to support these interventions to ensure sustainability while establishing a framework for both replication and upscaling through larger national interventions.

As offered through IW:LEARN 4, this project will make use of the UNESCO Water and Gender methodology looking at mainstreaming gender in wastewater management and IWRM. A community needs assessment with gender audits will focus on economic livelihoods and environmental services. This will also feed into the design and implementation of the national interventions and interventions implemented through the SGP facility accessible through the regional CREW+ project to provide equal access for women and men as well as disadvantaged groups. Gender mainstreaming will be further developed also for each of the national actions during the Inception phase of the project along with gender specific indicators based on relevant reports ([Seager, 2015](#)).

Country/Region	Activity/Target ⁵⁴
Regional	Targeted support to countries in project development for securing additional donor and private sector funding Exchange of best-practices and experiences throughout the region through site visits, professional exchanges and inter-country cooperation

s53 Caribbean Water and Wastewater Association workshop in Jamaica in October 2018

54 Further revisions to activities may be conducted during the inception phase of the project, as appropriate.

Country/Region	Activity/Target54
	<p>Targeted regional assessments in support of State of Environment and SDG reporting (i.e. analysis of wastewater discharges etc.)</p> <p>Support through Small Grants Programme (to be elaborated during Inception Phase)</p> <p>A community needs assessment with gender audits to feed into the design and implementation of the national interventions and interventions implemented through the SGP facility</p>
Costa Rica	Constructed wetland project for the treatment of wastewater from the ASADA Río Blanco and ASADA Quebrada Honda.
Cuba	Consolidation of the sanitation of the municipality of Rodas, Cienfuegos and evaluation of eutrophication indexes of the receiving water bodies in correspondence with the SDGs and the National Water Policy
Guyana	George Town wastewater system. The intervention will include retrofitting to include the incorporation of at least one Biodigester (BD) unit for harvesting the energy possible from the wastewater. The biodigester will serve the sewer line(s) not connected to a wastewater treatment system. A maintenance manual will be developed for the overall wastewater system and strict adherence to this insisted (this will be aligned with output 1.1.1). Special emphasis will be placed on sustaining at least the upgraded section.
Jamaica	To (i) Implement intervention in Soapberry, with a focus on sugar cane plantation, small farmers and Water and Wastewater reuse; (ii) To complement and create synergies with IW ECO's project on ecological rehabilitation in the Negril area (a high national priority); (iii) Support a wastewater reuse program for Soapberry treatment plant and (iv) Support adoption of rain water harvesting solutions"
Panama	Design and build of an innovative green solution for wastewater treatment. (Pilot project of an ecological wastewater treatment plant, such as an artificial wetland). This Technical Assistance Project is a direct contribution to the implementation of the National Policy on Potable Water and Sanitation 2017-2030 of the Republic of Panama, as well as going hand in hand with the goals of the National Water Security Plan (PNSH).
Saint Lucia	(i) an inventory, description and mapping of all existing systems, establishing design guidelines and permitting for new construction and retro-fitting of existing systems; (ii) Piloting low cost individual climate resilient sanitation systems in coastal areas seeks to identify and select technologies to be imported and piloted. These systems can not only be used for clusters of households, but to be able to retrofit the current infrastructure in situations where septic tanks are currently inadequate like schools, health centres, large office buildings, etc. This can include the introduction of reduced flow devices and appliances; (iii) Alternative: Pig Farm's wastewater and manure management: Piloting solutions to reduce water pollution under a changing climate seeks to develop and test technologies for the safe treatment of pig farm wastewater and manure to prevent coastal, surface and groundwater contamination. Low cost technologies are available for effective waste management, resulting in reuse water, sale and use of treated manure and recovery of biogas as a source of energy.
St. Vincent and the Grenadines	(i) Implement enhancement work on Wastewater Treatment System at Belle Isles Prison Facility such as water reuse. In February 2019 their first bio-gas methane generator for cooking gas was installed by the inmates and equipment supplier. Other green initiatives such as manure/sludge utilization are planned for the institution; (ii) A detailed updated study with recommendations on the condition of the Kingstown sewerage collection system. Include the purchase and training on sewer CCTV to identify the priority areas of concern along the system; (iii) Develop and implement a National Awareness raising programme on wastewater management. Co-organize a national wastewater forum covered nationally by the media where politicians, senior environmental/technical staff in associated Ministries, NGO's, Private companies in the industry, Regional and International wastewater experts to share lessons learned.

Country/Region	Activity/Target ⁵⁴
Trinidad and Tobago	Improving water supply and wastewater management in the Tobago East Catchment (i) 6 stakeholder engagements; 15 trained Water Warriors; monthly water quality data collected by community; (ii) Implement 5 water reuse projects e.g. reuse of water for watering plants; (iii) Completed intakes; increased water supply to community (iv) A biological wastewater treatment system to improve the quality of wastewater entering the sea

Output 3.1.2 (b) Intervention in Barbados re: Star Allocation from Barbados (Land degradation and Biodiversity)

This output will be fully implemented by IDB with Land Degradation and Biodiversity GEF funding as detailed in their project document and also elaborated in the Barbados National Package ([Appendix 13](#)).

Outcome 3.2. Improved life cycle management, circular economy and efficiency in water use-consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots.

Output 3.2.1. Integrated guidelines and implementation plan consistent with IWRM with a focus on water source protection and use efficiency, land use protection and food, energy and ecosystems nexus trade-offs.

This output will be implemented by UN-Environment and will compliment Output 3.3.1 on training and capacity building. There are a number of key guidelines previously developed in relation to IWRM such as the Regional Wastewater Management Policy Template and Toolkit (GEF CREW, 2015b), and the Regional Guidelines for Developing, Planning and/or Updating National Wastewater Management Plans (UNEP CEP, 2015), as well as the IWRM Roadmaps for several countries. In order to ensure full implementation, and also considering other relevant aspects such as integration of IWRM, climate change impacts, ecosystem management and circular economy, microplastics there is a need to integrate these guidelines with a more structured developed action plan for implementation, with clear activities, budget and timeline, to be discussed and agreed with WCR experts and CEP focal points. Such guidelines would facilitate update and implementation of the water sector policy adopted by the OECS and other relevant policies currently under development at the regional level. (CARICOM and CCAD). These guidelines will be tested and revised as part of the national interventions in Output 3.2.2.

Country/Region	Activity/Target
Regional	<p>Compiled guidelines/implementation plan for IWRM building upon previous guidelines drafted to address:</p> <ul style="list-style-type: none"> • Establish appropriate incentives that encourage water use efficiency • Improve water storage infrastructure, both for untreated and treated water at the national level, municipal level and encouraging investments in increased water storage at the domestic and commercial levels • Monitoring of the volume of water conserved through forest conservation through the Payment for Environmental Services • Creation of Protected Areas • Improved life cycle management, circular economy and efficiency in water use-consumption

Output 3.2.2. Demonstration projects implemented focusing on: (1) Prevention, reduction and control of point and non-point sources of pollution source through best land-use management practices and (2) Development and implementation of water source protection, water use efficiency and reuse strategies and action plans.

This output will be implemented by IDB and UN-Environment. Water availability in the WCR is increasingly under threat and in order to achieve the SDGs and the human right to water and sanitation it is necessary to change current consumption and production patterns across all sectors, reducing water loss, updating technologies and conserving ecosystem services, to improve life cycle management, circular economy and efficiency in water use-consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots. The majority of people without access to water supply and sanitation services belong to low-income groups and live in rural and peri-urban areas. The importance of water for productive activities and the availability of funds from foreign assistance, international financial institutions and increased national budgets, have driven many governments to develop ambitious plans to expand infrastructure, often forgetting basic requirements: demand management and efficient use of water (UNEP, 2016b).

Country/Region	Activity/Target
Regional	Targeted support to countries in project development for securing additional donor and private sector funding. Exchange of best-practices and experiences throughout the region through site visits, professional exchanges and inter-country cooperation Support through Small Grants Programme (to be elaborated during Inception Phase)
Guyana	Strengthening water security and operational performance within a critical water resource zones of Guyana. 1) Improving operational performance of Linden water supply system through the reduction of Non-Revenue Water (NRW) and other unaccounted-for water; 2) Mainstreaming water resource management at a municipal level; 3) Strengthening municipal capacity for watershed management within the Linden municipality to serve as a replica model for Guyana; 4) Implementation of the Dakoura Creek Watershed Management Plan
Grenada	1) Richmond Hill watershed activities to include activities on the prison farm. The prison has the largest pig farm on the island and a large (variety of) crop farm. The treated wastewater can be used to wash down the pig pens, recaptured and used for agricultural purposes. Any extra treated wastewater from the prison can be reused directly on the crop farm. Some designs have been completed and may only need to be reviewed for full implementation. 2) Implementation of Greater Grenville Local Area Plan. Mobilize resources, Identify drainage problem areas, pumping station and prospective on-site retention locations and assess need for new drainage systems; Establish development standards for culverts; Undertake a review and updated engineering study for central sewer services in the Town of Grenville; and encourage Ministry of Health and Environment to provide education on new septic field treatment and maintenance options.

In addition to the above, IDB will implement in Guatemala a project to strengthen technical capacities in the integrated management of micro-watersheds (small hydrographic unit)

Outcome 3.3 Improved knowledge and skills within targeted communities to enable implementation of innovative low-cost integrated water and wastewater management solutions.

Output 3.3.1. Training on innovative low-cost integrated water and wastewater management such as through webinars, MOOC, training programmes with the participation of civil society.

This output will be implemented by IDB and UN-Environment and will provide capacity building and training support relevant to all activities and outputs under Component 3 with regards to the provision of innovative small-scale, local, rural, peri-urban and community-based solutions for IWWM. In particular gaps have been identified related to capacity building in relation to innovative approaches and best-practices to wastewater management, including creating and advancing initiatives to increase the safe reuse of wastewater in key industries such as the tourism, agricultural, mining and manufacturing sectors, which can be linked to inclusion in environmental management systems as well as to increasing operational efficiencies generally. The focus of training will be on innovative and community-based solutions, technology that provides low cost and low operation and maintenance solutions, training to improve operational and maintenance capacities, procurement, tendering and contractual processes. In conjunction with activities under Component 4, training will also aim to enhance knowledge amongst rural and local communities and key stakeholders on the socioeconomic, health and environmental impacts of wastewater and poor water resource management, available nature-based solutions and decentralized natural treatment systems (e.g. ecological sanitation, constructed wetlands, sand filters), and improved life cycle management, circular economy and efficiency in water use-consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots.

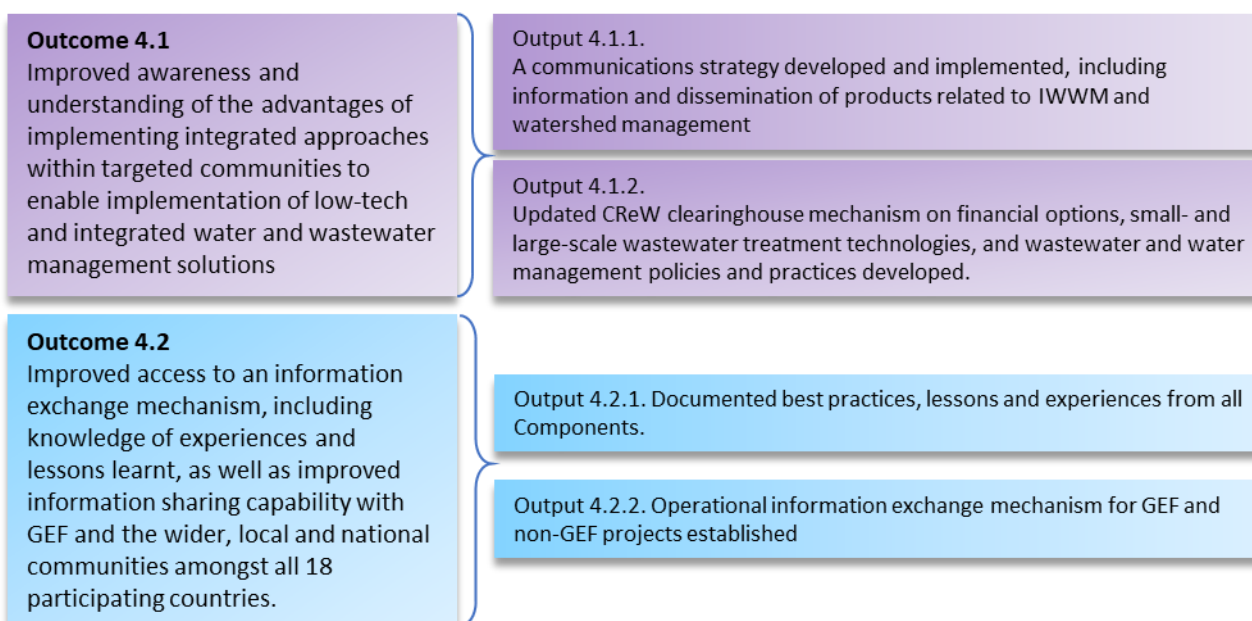
Country/Region	Activity/Target
Regional	<ul style="list-style-type: none"> • MOOCs in integrated water and wastewater management/technical solutions, building upon existing MOOCs (such as UN Environment's MOOC on Nutrients and Wastewater); • Training on best practices and financial benefits of safe water reuse; • Webinar in application of low-level technologies (fit for purpose), and training on monitoring and enforcement. • Training Programme in IWWM and IWRM plans development and best practices and implementation • Training Programme in operation and maintenance for low-cost integrated water and wastewater management solutions • Training Programme in procurement, tendering and contractual processes • Capacity building for wastewater treatment plants operators based on the User Manual of Activated Sludge Treatment Plants • Operator training and certification • Training of plumbers and inspectors, and establishing a facility to encourage self-policing • Training/Awareness raising (in conjunction with Component 4) relationship of IWWM with pollution (including microplastics), health, climate change, and on nature-based solutions, circular economy, climate change and the Water, Energy and Food Nexus Dialogue <p>Regional workshops, trainings and virtual training in cooperation with partners (such as CWWA, CDB, World Bank, UNESCO, CAWASA, CARPHA, RAC IMA and CIMAB, GWP Caribbean and Central America, IDB, UN Environment GPA, UWI, UTECH, Monterrey Institute etc.)</p>

3.3.4 Component 4: Knowledge Management and Advocacy on the importance of Integrated Water and Wastewater Management (IWWM) in order to achieve the Sustainable Development Goals.

Component 4 will document the lessons learnt, experiences and good practices, and will assist in managing project outputs so that they are accessible publicly. It will also provide communications support to internal and external partners, stakeholders and the wider public on all components and activities of the project. Interventions at national and community levels will be preceded by stakeholder identification and assessment. These early consultations will follow best practices in stakeholder management and participation. This is especially important where innovative technologies are being considered to for implementation in local communities, and where prevailing attitudes and cultural perspectives are critical. Effective engagement will contribute to success and long-term sustainability of the solutions implemented.

Knowledge, Attitudes and Practices Surveys (KAPS) for key target audiences will be conducted early on to enable design and implementation of a comprehensive communications strategy in support of CReW+ objectives. Emphasis will be placed on watershed protection, water use efficiency, reuse of treated water, land-use planning and pollution prevention, reduction and control. The communications strategy will have both internal and external audiences, with a Community of Practice established at the beginning of project implementation (perhaps as early as in project inception phase) to promote internal communications and to facilitate learning and exchange amongst project partners. This component will support partnerships development and strengthening at local, national and regional levels to increase impact of the project. Training materials will be made available online and via different media for use by a wider audience and beneficiaries. It will also be developed to enable application through a “training of the trainer” approach. This would ensure a multiplier effect increasing overall exposure and awareness. Evaluation would be via questionnaires sent after training to capture any follow-up training conducted by participants. This component will also provide training in support of Components 1, 2, and 3.

The documentation and sharing of experience, lessons learnt and best practices from all components with inputs from internal and external stakeholders will be a major focus. The approach will be informed and assisted by the IDB Knowledge Division expertise (especially in terms of project management experience and lessons) as well as GEF IW: Learn tools (e.g. the GEF Practitioners Guide to Mainstream Knowledge Management into Project Design). This component will also be responsible for updating of the CReW Clearing House Mechanism, which will include all project outputs as well as the regional IWWM database to be developed under Component 1.



Outcome 4.1. Improved awareness and understanding of the advantages of implementing integrated approaches within targeted communities to enable implementation of low-tech and integrated water and wastewater management solutions.

Output 4.1.1. A communications strategy developed and implemented, including information and dissemination of products related to IWWM and watershed management.

This output will be implemented by IDB and UN-Environment to develop and implement a communication, replication and public awareness strategy for IWWM in the WCR. It will build upon the web-site and knowledge products (case studies, experience notes, video's, newsletters etc.), communication and awareness raising conducted during CReW (<http://www.gefcrow.org>) and the lessons learned and recommendations of the KAP for regional media (see **Box 2.2**) and will be designed to coordinate and complement knowledge products and training of IDB's knowledge portal (<https://www.iadb.org/en>), and in close cooperation with key regional and national organizations and initiatives, and in coordination with UN ECLAC and other organizations engaged in the monitoring and reporting of the relevant SDG's as well as global initiatives such as the GPA, the Global Nutrient Challenge (<http://www.nutrientchallenge.org/>) and the Global Partnership on Nutrient Management (GPNM), WHO and UNICEF, World Bank etc. Support will be provided to countries for the replication of best-practices and the scale-up of activities.

Country/Region	Activity/Target
Regional	<p>Preparation and implementation of a communication, replication and public awareness strategy, including information and dissemination of products related to IWWM and watershed management, including:</p> <ul style="list-style-type: none"> • Information for key target groups in all participating countries, as well as a comprehensive inventories of wastewater infrastructure, reuse, water availability and water footprint (national, subnational and watershed levels); • Knowledge, Attitudes and Practices (KAP) surveys for key target audiences (building upon past KAP surveys from CREW); • Community of Practice (COP) for IWWM; • Gender analyses to ascertain derived benefits from project implementation by stakeholders. Promoting women in IWRM related education and management. • Minimum 10 regional reports (guidelines and assessments) on IWWM broadly decimated (in English and Spanish), 5 scientific publications and 5 short-films, animations and interviews; • Quarterly newsletters published online (in English and Spanish) • Training material from all capacity building activities, as well as online "training of trainers" for IWWM best practices and implementation; • Recommendations and actions for the further replication/scale-up of IWWM implementation using low-cost and innovative best-practices in rural and local communities, including funding mechanisms, donor funding availability and support to proposal development; <p><i>See output 4.2.1 for publication of best practices and lessons learnt</i></p>
National	<ul style="list-style-type: none"> • Identification of key institutions and mapping of key target groups for IWWM; • National reports on status of IWWM implementation and major point sources of sewage discharges; databases, monitoring and indicators for IWWM and SDG reporting, and stakeholder coordination mechanisms; • Feasibility studies and project concepts for the replication and scale-up of best practices in IWWM (supported through output 3.1.2 and 3.2.2)

Country/Region	Activity/Target
	<ul style="list-style-type: none"> • News articles/media/television presentations on CReW+ activities and achievements at national level • “Champions” from local/rural community supported to present best practices and success stories in IWWM (to include Woman Champions in the water sector) <p><i>See output 4.2.1 for publication of best practices and lessons learnt</i></p>

Output 4.1.2. Updated CReW clearinghouse mechanism on financial options, small- and large-scale wastewater treatment technologies, and wastewater and water management policies and practices developed.

This output will be implemented by UN-Environment. An up-to-date analysis will be undertaken of all IWWM regional and national databases, information portals at the regional and national level will be undertaken with partners and governments, in order to design a long term and sustainable clearinghouse mechanism (avoiding duplication and building upon CReW, CEP, IADB and other existing mechanisms) and will link to and enhance the GEF IWECO and GIZ CATS and SDG knowledge management systems. The clearinghouse will provide a resource base for all information on IWWM implementation at the regional and national level and a regional extension of the GPAs Global Wastewater Initiative⁵⁵.

Country/Region	Activity/Target
Regional	Clearing house mechanism established for WCR, in partnership with regional organizations and all key stakeholders and the GPA as a resource base for all data, information, best-practices and guidelines on IWWM and relevant SDGs

Outcome 4.2. Improved access to an information exchange mechanism, including knowledge of experiences and lessons learnt, as well as improved information sharing capability with GEF and the wider, local and national communities amongst all 18 participating countries.

Output 4.2.1. Documented best practices, lessons and experiences from all Components.

This output will be implemented by IDB and UN-Environment. As part of the CReW+ Communication strategy developed in Output 4.1.1, a fully listing of knowledge and communication products will be identified at the regional and national level, including best-practices, lessons learned and experiences from all components in particular related to best practices in innovative and low-cost innovative technologies, experiences in policy and legislation reforms and enforcement for IWWM, how to ensure

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<https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-wastewater-initiative>

long-term monitoring of IWWM in line with MEAs, agreed indicators of the Cartagena Convention and in line with the SDGs.

Country/Region	Activity/Target
Regional	<p>Minimum 10 regional level best practices and lessons learned available online and broadly decimated (in English and Spanish) provisionally including:</p> <ul style="list-style-type: none"> • Policy and legislation reforms and stakeholder coordination for IWWM • An integrated approach to the monitoring and reporting of IWWM and the SDGs • Integrated and Innovative Water and Wastewater low tech solutions • Improved life cycle management, circular economy and efficiency in water use- consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots; • Capacity building for IWWM implementation • Addressing the gaps to support rural and local communities to adequately manage wastewater
National	<p>Best-practices and lessons learned prepared for all participating countries in particular in relation to national activities for policy and legislation reforms and data management (Comp 1) and innovative and low-cost technologies for IWWM (Comp 3)</p>

IDB will in addition coordinate a number of regional and national best practices and lessons learned for activities under its implementation.

Output 4.2.2. Operational information exchange mechanism for GEF and non-GEF projects established.

This output will be implemented by UN-Environment and will focus on ensuring the communication products of CReW+, as outlined in Component 4, are made widely available at the national, regional and global level, through the project web-portal (<http://www.gefcrew.org>), the IW:LEARN and LME:LEARN (<https://iwlearn.net/>) and other GEF Knowledge management systems. The project will actively engage in the exchange of knowledge and experiences with other relevant GEF IW projects and will participate and present experiences in the IW Conferences. It will also utilize the relevant GEF LME:LEARN toolkits⁵⁶, and implement the recommendations of the LME:LEARN Data and Information Management Guidelines (GEF LME:LEARN, 2018).

Country/Region	Activity/Target
Regional	<p>The project web portal (http://www.gefcrew.org) and associated regional databases online, updated and linked to IW-Learn and other GEF Knowledge management systems</p> <p>Technologies, best-practices, and all documents updated on the clearing house mechanism (min 5 updates/month)</p> <p>Implementation of IW:LEARN data and information plan</p> <p>Active engagement with GEF IW: LEARN (1% of project resources) including participation in IW conferences.</p>

3.4 Intervention logic and key assumptions

56 <https://iwlearn.net/manuals>

The proposed project builds on lessons learnt from the predecessor project the GEF-CReW project that implemented an innovative approach to financing wastewater projects supported by capacity building activities on communications, policy, legislation and institutional strengthening. This project, will build upon the experiences, lessons learned and address key gaps and recommendations, not just from the CReW final reports and experiences notes, the terminal evaluation, but also recent reports on the key issues related to wastewater management in the WCR region (and the SDGs). CReW+ addresses the need to further support countries in addressing critical policy, legislation and capacity gaps to ensure long term and sustainable management of water and wastewater, and is focussed on the compilation and implementation of innovative solutions for ensure sustainable financing and implementation of small-scale, local, rural, peri-urban and community-based solutions. The project will stimulate and assist countries and communities mainly in rural and peri-urban areas to identify and implement innovative technological solutions based on their specific needs and which are both replicable and sustainable in the long-term. Improving water and wastewater management through integrated approaches contributes directly to other socio-economic concerns such as human health and job creation. The project will also address a number of key SDG Goals and targets, and will ensure socioeconomic benefits at the community and national level.

The potential risks to the project implementation are described in section 3.5 below; the key assumptions for this intervention are:

- There is close coordination amongst the regional and national stakeholders in the approach for project implementation;
- The project partners and regional stakeholders remain committed to project implementation, provide the necessary time and human resources and ensure harmonization of CReW+ into their regional strategic planning (as appropriate);
- Governments are committed to the adoption and implementation of IWWM reforms, and to the long-term provision of affordable water and sanitation to peri-urban and rural communities;
- There is the political and private sector commitment to implement financial mechanisms;
- There is the commitment of local/rural communities in maintaining and replicating low tech IWWM solutions;
- Governments and partners will continue commitment and investments in database/monitoring systems established by the project and that stakeholders recognize and value the benefits of monitoring systems and will contribute towards maintenance of such systems;
- The project is supported by project partners and actively engaged with the media to ensure visibility of the project results, increased awareness concerning IWWM and dissemination of project reports, guidance, best practices and other knowledge products (training material, video's etc);
- Information captured from the project is achieved in a manner that lends to easy translation to many audiences and that countries actively use and promote best practices through regulatory avenues and practice codes at the national level. The beneficiaries and other stakeholders are assumed to become involved in sharing and advancing improved practices;
- Project co-financing is secured during implementation;
- There will be technical and administrative oversight, commitment and resource allocation by the co-executing agencies to facilitate successful project implementation.

3.5 Risk analysis and risk management measures

Table 3.1 below presents the main risks of the project and mitigation strategy.

Table 3.1 Risks and Risk Management Strategy

Risk Statement	Risk Level	Risk Mitigation Strategy
Governance structure	Low	Steering Committee and/or other project bodies meet periodically and provide effective direction/inputs; Implementing and Executing Agencies will facilitate synergies and reduce overlap and duplication with other GEF and non-GEF Projects
Stakeholder involvement. Domestic wastewater management is not a priority shared by all stakeholders in the region	Low	By enabling the private sector and civil society organizations through demonstrating the benefits of improving wastewater management
Limited political will of participating governments to push the implementation of the necessary pollution reduction measures at both national and local levels.	Medium	Encouraging leadership by National Agencies and working from project inception in finding champions at local community, national and regional levels
Negative impact of governmental changes in one or more countries. Often a political change at government level leads to changes of technical leadership and discontinuation in an on-going project or process.	Low/Medium	Involving the Government, opposition parties, constituency representatives, municipalities, other agencies and sectors when developing legislation and policies, and during national and local community consultations thus ensuring a multi-sectorial approach to the process
Social, cultural and economic factors	Medium	Social or economic issues or changes pose challenges to project implementation but mitigation strategies have been developed including use of partners who have already established a relationship with key stakeholders.
Cultural resistance to accept new wastewater management measures.	Medium	Communicate information to the general public on new wastewater measures in a way that is sensitive to local cultures and demonstrates direct benefits for the implementation of these new measures.
Hazard and climatic events, especially hurricanes are threats to the project. For example, hurricanes could delay project start up, impact on construction of facilities especially when located in low lying or coastal areas.	Medium	This is a regional project which will involve activities located in various geographical areas; therefore, threats are not concentrated i.e. Any climatic event that may happen in the region will affect a low number of participating countries. Appropriate disaster-preparedness measures will be implemented for local project sites and efforts will be made to ensure that proposed solutions are as resilient as possible.

3.6 Consistency with Regional and National Priorities

3.6.1 Relevance to UN Environment, SDGs and Global Agreements and targets

Relevance to the UN Environment's Medium-Term Strategy and the Programme of Work

This project will contribute to the overall achievement of the **UN Environment's Medium-Term Strategy 2018-2021**, especially to the priority area "Chemicals, Waste and Air Quality" with the overarching objective of "Sound management of chemicals and waste and improved air quality enables a healthier environment and better health for all". To achieve this overarching objective set in line with the Agenda 2030, the current Medium-Term Strategy aims to assist Member States in developing or implementing policies and legal, institutional and fiscal strategies and mechanisms for waste prevention

and sound management within the frameworks of relevant Multilateral Environmental Agreements (MEAs) and the Strategic Approach to International Chemicals Management (SAICM). By supporting participating countries in implementing or taking steps to ratify the LBS Protocol of the Cartagena Convention, this project will advance the objective set by the Medium-Term Strategy 2018-2021. To support the achievement of the Medium-Term Strategy 2018-2021, two biannual Programmes of work (PoWs) have been set. The project will contribute to both the Programme of Work (2018-2019) and the Programme of Work (2020-2021), especially to sub-programme 5: Chemicals, Waste and Air Quality, Expected Outcome (b) Policies and legal and institutional and fiscal strategies and mechanisms for waste prevention and sound management developed or implemented in countries within the framework of relevant multilateral environmental agreements. In line with the Expected Outcome (b) and its indicator (i), this project will support the implementation of sound management of wastewater, in accordance with the LBS Protocol of the Cartagena Convention. In addition, the project will aim to enhance cooperation with the private sector to achieve increased number of private companies that used UN Environment's guidance in implementing policies and good practices for sound wastewater management, in line with indicator (ii). Private utility companies as well as private wastewater treatment operators will be engaged in the project.

This project will leverage comparative advantage of the UN Environment, which provides the Secretariat service to the **Cartagena Convention**. The LBS Protocol of the Cartagena Convention is the only regional legal instrument supporting sound wastewater management and this regional intergovernmental framework is a strong advantage for UN Environment's engagement in this project. UN Environment's global knowledge network on wastewater management as well as sustainable management of ecosystems is also a significant advantage. This project will be able to draw upon the experience and good practices of wastewater management from other regions through the UN Environment Regional Seas Programme, the **Global Programme of Action for the Protection of Marine Environment from Land-based Activities (GPA)** and the Global Wastewater Initiative under the GPA. Historically, the Regional Seas programmes have served as a key regional implementation mechanism of the GPA. Nine Regional Seas programmes have adopted LBS Protocols with the support from the GPA. Access to knowledge and experiences particularly from these 8 other regions that have LBS Protocols is a significant advantage of UN Environment in supporting countries in implementing the LBS Protocol of the Cartagena Convention.

Furthermore, UN Environment is well positioned to bring up the project to the attention of decision-makers. The UN Environment's Forum of Ministers of Environment of Latin America and the Caribbean is the high-level regional political forum on environmental issues. In addition to the intergovernmental mechanism of the Cartagena Convention, this high-level political forum gives the project possibilities of drawing political attention to wastewater management, which is rarely considered as a priority by governments.

While UN Environment historically has its strength in policy and legislative work, the Caribbean Environment Programme has long experience in national technical interventions in the participating countries of the project, especially in the small islands. Previously, for example, the Caribbean Environment Programme executed the Integrating Watershed and Coastal Area Management in the Small Island Development States (SIDS) of the Caribbean (GEF-IWCAM project) and has experiences with national interventions. The presence of UN Environment's regional office for Latin America and the Caribbean in Panama, and the sub-regional office for the Caribbean in Jamaica is also an advantage as these offices have strong relationship with the national governments involved in this project. UN Environment is, however, unable to provide investment for wastewater technologies or treatment facilities to improve wastewater management since it is not mandated to do so. Thus, the project will be implemented in partnership with the Inter-American Development Bank (IDB), which has strong comparative advantage in financing wastewater treatment facilities in the region. IDB has highly

technical knowledge on wastewater treatment technologies as well as experiences in working with national governments, especially the Ministries of Finance in the region. The project will thus benefit from the comparative advantage of the two implementing agencies.

Relevance to the Agenda 2030 for Sustainable Development and its Sustainable Development Goals

This project will contribute to **the Agenda 2030 for Sustainable Development and its Sustainable Development Goals** (SDGs) especially **Target 6.3**: “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally”. The project will promote wastewater treatment in order to reduce environmental as well as human health impacts.

Other relevant targets under Goal 6 include:

- a. **6.2**: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
- b. **6.4** By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- c. **6.5**: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- d. **6.6**: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
- e. **6.A**: By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- f. **6.B**: Support and strengthen the participation of local communities in improving water and sanitation management

This project will aim to take an integrated approach in managing water including wastewater with a focus on watershed management and community-level intervention in line with **6.5**, **6.6** and **6.B**. The project will build on the experiences especially the national roadmaps for integrated water resource management developed under the IWCAM project and will harness synergies with the IW-ECO project for integrated water resource management including wastewater. This project will focus on community-level interventions and will improve access to sanitation particularly in rural areas as envisaged in Target **6.2**. Capacity building will also be provided to the participating countries in line with Target **6.A**. The capacity building will cover different aspects of integrated wastewater management including the preparation of policies, operation and maintenance of wastewater treatment facilities, and communication on wastewater.

As the SDGs need to be implemented in an integral manner, other SDGs are also relevant to this project including the following:

- **1.4**: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

- **2.4:** By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
- **3.9:** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
- **12.4:** By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
- **12.5:** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
- **13.2** Integrate climate change measures into national policies, strategies and planning
- **13.B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
- **14.1:** By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
- **14.2** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
- **14.5:** By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
- **15.1** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- **15.5:** Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
- **17.1** Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection
- **17.7** Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed
- **17.8** Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology
- **17.16** Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries
- **17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships
- **17.18** By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

This project will reframe wastewater and sludge as a resource rather than waste using the concept of circular economy in line with Target **12.4 and 12.5**. Such wastewater reuse would include use for irrigation, supporting sustainable food production (**2.4**). By reducing wastewater directly released to water bodies and then to the ocean, the project will reduce human health impacts (3.9) as well as environmental impacts in the marine and coastal environment including coastal mangrove forests and their associated biodiversity (**14.1, 14.5 and 15.5**). By targeting rural communities, this project will aim to improve access to sanitation along with sustainable financial plans (**1.4**). These local interventions will be made in an inclusive manner assuring the participation of women, youth and local communities in line with **13.B**. National interventions especially in the small island developing states will pay close attention to national climate change policies and action plans to improve wastewater management.

Relevance to global agenda and Multilateral Environmental Agreements

The project is also relevant to other global agenda such as the SIDS Accelerated Modalities of Action (S.A.M.O.A Pathway) and the MEAs including the Convention of Biological Diversity (CBD) and the UN Framework Convention for Climate Change (UNFCCC). Below linkages with these global agenda and MEAs are reviewed (**Table 3.3**).

Table 3.3 Ratification Status of relevant Multilateral Environmental Agreements⁵⁷

Country	CBD	Ramsar	UNFCCC	Basel	UNCLOS	MARPOL IV	London Convention	Ballast water
Barbados	X	X	X (P)	X	X	X	X	X
Belize	X	X	X (P)	X	X	X		
Colombia	X	X	X (P)	X		X		
Costa Rica	X	X	X (P)	X	X		X	
Cuba	X	X	X (P)	X	X		X	
Dominican Republic	X	X	X(P)	X	X	X	X	
Grenada	X	X	X(P)		X			X
Guatemala	X	X	X(P)	X	X	X	X	
Guyana	X		X(P)	X	X	X		
Honduras	X	X	X(P)	X	X	X	X	X
Jamaica	X	X	X(P)	X	X	X	X	X
Mexico	X	X	X(P)	X	X		X	X
Panama	X	X	X(P)	X	X	X	X	X

57 P: ratification of the Paris Agreement; X: ratified or acceded; -: not ratified or acceded

Country	CBD	Ramsar	UNFCCC	Basel	UNCLOS	MARPOL IV	London Convention	Ballast water
St. Kitts and Nevis	X		X(P)	X	X	X		X
Saint Lucia	X	X	X(P)	X	X	X	X	X
St. Vincent and the Grenadines	X		X(P)	X	X	X	X	
Suriname	X	X	X (-)	X	X	X	X	X
Trinidad and Tobago	X	X	X(P)	X	X	X	X	X

Through Paragraph 64 of **the SIDS Accelerated Modality of Action [SAMOA] Pathway**, UN Member States recognize that “small island developing States face numerous challenges with respect to freshwater resources, including pollution, the overexploitation of surface, ground and coastal waters, saline intrusion, drought and water scarcity, soil erosion, water and wastewater treatment and the lack of access to sanitation and hygiene. Furthermore, changes in rainfall patterns related to climate change have regionally varying and potentially significant impacts on water supply”. Further to this, they decided to facilitate the expansion of wastewater treatment, recycling and reuse in the context of the sustainable and efficient use of water resources through Paragraph 65 (c). Thus, the project is in line with this commitment to support small island developing States with regard to water and sanitation.

The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) was adopted in 2015 with a view to significantly reducing disaster risk and loss of life. Paragraph 33 (c) of the Sendai Framework recognises that it is important to promote the new and existing water infrastructure for disaster risk reduction at the national level. At the regional level, the role of international organisations in raising awareness of water-related disaster risks was highlighted. This project, therefore, aims to raise awareness on the linkage of water management with climate change-induced disaster risks.

Addis Ababa Action Agenda of the Third International Conference on Financing for Development was adopted in 2015. The agenda serves as the foundation for financing sustainable development. The Agenda recognizes that Investing in sustainable and resilient infrastructure, including transport, energy, water and sanitation for all, is a pre-requisite for achieving sustainable development. The Agenda further encourages the capacity development of local authorities as well as the participation of local communities in improving drinking water provisioning and sanitation management. This project responds to this call by conducting local interventions to improve water and wastewater management through community engagement with particular focus to rural areas.

Our Ocean, Our Future: Call for Action formulated at the UN Ocean Conference was adopted in June 2017 through GA Resolution 71/312. It demonstrates political commitments to protect and sustainably manage the ocean, recognizing the critical status of the marine environment. Through Paragraph 13 (g), accelerated action to prevent and significantly address marine pollution including from wastewater was called upon. This project responds to this call, by providing innovative technologies and financing mechanisms to enhance integrated wastewater management.

The Convention on Biological Diversity: All 18 participating countries in the project has developed their national biodiversity strategies and action plans (NBSAPs). Most of the countries have updated their NBSAPs to incorporate the Strategic Plan for Biodiversity 2011-2020 including the Aichi Biodiversity Targets. In addition, in 2006, CCAD developed the **Regional Strategy for the Conservation and Sustainable Use of Biodiversity in Central America** (Original title in Spanish: Estrategia Regional para la

conservación y uso sostenible de la biodiversidad en mesoamérica) as a regional biodiversity strategy. This project will contribute to the NBSAPs as well as the regional strategy especially Expected Objective 2, which aims to develop initiatives for the protection, rehabilitation and sustainable use of ecosystems, by improving watershed management. It should be noted that these regional and national strategies may be further revised during the course of the project as the Post-2020 Global Biodiversity Framework is expected to be adopted in 2020.

The Ramsar Convention on Wetlands: Fifteen countries participating in this project have ratified the Ramsar Convention except Guyana, St Kitts and Nevis, and St. Vincent and the Grenadines. Of the five Regional Ramsar Initiatives in Latin America and the Caribbean region, the Initiative for the Conservation of Mangroves and Coral Reefs and the Initiative for Caribbean Wetlands are most relevant to the participating countries. This project will support the Work Plan 2018 of the Initiative for the Conservation of Mangroves and Coral Reefs, particularly its Objective 2 “Achieve effective management of mangroves, corals and associated wetlands through integrated management of water basins and coastal zones incorporating means for climate change mitigation and adaptation”⁵⁸. Under the Initiative for Caribbean Wetlands, a regional strategy was developed to support the implementation of the Ramsar Convention by the Caribbean States. During the biannual 2016-2017, the Initiative has produced a map of regional and national actors, and developed communication materials such as a broacher and a video.

UN Framework Convention on Climate Change (UNFCCC): All eighteen countries have ratified or acceded the Convention and seventeen countries have ratified the Paris Agreement except Suriname, which has signed the Agreement. All seventeen countries party to the Paris Agreement have prepared their National Determined Contributions pursuant to the Agreement. Colombia and Saint Lucia have also prepared their National Adaptation Strategies. Both National Adaptation Strategies consider water resource management and the Saint Lucian strategy elaborates a sectoral adaptation strategy for the water sector, highlighting priority projects for water and sanitation. This project will contribute to the overall objective of the Convention to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system by building resilience and adaptive capacity at the local, national and regional levels through the implementation of integrated water and wastewater management.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention): The Basel Convention aims to protect human health and the environment against the adverse effects of hazardous wastes. Under the Convention, regional and sub-regional centres for training and technologies transfer have been established to support the implementation of the Convention. In Latin America and the Caribbean, there are three centres: the Regional Centre for the Caribbean in Trinidad and Tobago; Basel Convention Regional Centre for the South American Region in Argentina; and Basel Convention Coordinating Centre for Training and Technology Transfer for Latin America and Caribbean Region in Uruguay. Among 18 participating countries, all countries except Grenada have ratified the Basel Convention.

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https://www.ramsar.org/sites/default/files/documents/library/rri_mangroves_and_reefs_2017-18.pdf

The UN Convention on the Law of the Sea (UNCLOS): UNCLOS provides the overall governance framework for the oceans and seas. Part XII of the Convention deals with the Protection and Preservation of the Marine Environment. Article 194 specifically talks about marine pollution and the Parties are expected to take measures to prevent, reduce and control pollution. Under this overarching framework, the Cartagena Convention and its LBS Protocol provide specific measures on land-based pollution including domestic sewage.

The International Convention for the Prevention of Pollution from Ships (MARPOL): MARPOL sets the international legal framework for the prevention of pollution of the marine environment by ships from operational or accidental causes. Annex IV deals with the Prevention of Pollution by Sewage from Ships. Although this project does not directly deal with wastewater management of ships, this convention is relevant to the health of marine and coastal environment. Annex IV prohibits the discharge of sewage into the sea unless the ship has an approved sewage treatment plant in operation or when the ship discharged disinfected sewage using an approved system at a distance of 3 nautical miles from the nearest land. Ships are required to discharge sewage that is not comminute or disinfected at a distance of more than 12 nautical miles from the nearest land. Participating countries of the project, except Costa Rica, Cuba, Grenada and Mexico, have ratified this Annex.

Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention): The London Convention promotes the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. The London Protocol of the Convention list sewage sludge as one of eight wastes that may be considered for dumping at sea following stringent assessment and licensing processes. It has been reported that dumping of sewage sludge has seen a global decline over the years⁵⁹.

International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention): The Ballast Water Convention has entered into force in 2017. The Convention aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Ships are required to have a ship-specific ballast water management plan. Although this project does not deal with ballast water management, implementation of this convention is an important contributor for the health of the marine environment in the WCR.

UN Convention to Combat Desertification and Land Degradation (UNCCD). Every CREW+ participating country is a party to UNCCD and National Action Programmes (NAPs) have been formulated by Barbados, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Panama and Saint Kitts and Nevis. Several Sub-Regional Programmes (SRAPs) have also been launched and further implemented including, Dominican Republic and Colombia.

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<http://www.imo.org/en/MediaCentre/HotTopics/Documents/IMO-244%20London%20Protocol%20Why%20is%20it%20needed.pdf>

- **3.6.2 Relevance to Regional Priorities**

The Cartagena Convention and the LBS Protocol

The **Caribbean Environment Programme (CEP)** is one of the seven Regional Seas programmes administered by UN Environment. Based on the Caribbean Action Plan (1981) outlining regional environmental challenges, the **Cartagena Convention**⁶⁰ was adopted in 1983. The Convention is a framework agreement for the protection and development of the marine environment of the WCR. It provides legal basis for regional cooperation and coordinated national actions in the WCR. As of December 2018, 26 countries have ratified or acceded the Cartagena Convention.

The Convention is supplemented by three Protocols; (i) the Protocol Concerning Co-operation in Combating Oil Spills (1983); (ii) the Protocol Concerning Specially Protected Areas and Wildlife (SPA) (1990); and (iii) the Protocol Concerning Pollution from Land-Based Sources and Activities (LBS) (1999). The Oil Spills Protocol was adopted in 1983 together with the Cartagena Convention and all the countries that ratified the Cartagena Convention have ratified the Protocol.

Of particular relevance to this project is the **LBS Protocol**. Eleven countries participating in this project has ratified or acceded the LBS Protocol while the other seven countries have not ratified the Protocol. The seven countries are at various stages for the ratification of the Protocol and requires tailor-made support to facilitate ratification (**Table 3.4**).

Table 3.4 Ratification Status of the Cartagena Convention and its Protocols

Country	Cartagena Convention	Oil Spill Protocol	SPA Protocol	LBS Protocol
Barbados	28-May-85	28-May-85	14-Oct-02	
Belize	22-Sep-99	22-Sep-99	4-Jan-08	4-Feb-08
Colombia	3-Mar-88	3-Mar-88	5-Jan-98	
Costa Rica	1-Aug-91	1-Aug-91		26-May-16
Cuba	15-Sep-88	15-Sep-88		4-Aug-98
Dominican Republic	24-Nov-98	24-Nov-98	24-Nov-98	6-Sep-12
Grenada	17-Aug-87		5-Mar-12	5-Mar-12
Guatemala	18-Dec-89	18-Dec-89		
Guyana	14-Jul-10	14-Jul-10	14-Jul-10	14-Jul-10

60 CEP (1983) Text of the Cartagena Convention. Available at:

<http://www.cep.unep.org/cartagena-convention/text-of-the-cartagena-convention>

Country	Cartagena Convention	Oil Spill Protocol	SPAW Protocol	LBS Protocol
Honduras	13-Oct-18	13-Oct-18	13-Oct-18	13-Oct-18
Jamaica	1-Apr-87	1-Apr-87		5-Nov-15
Mexico	11-Apr-85	11-Apr-85		
Panama	6-Nov-87	6-Nov-87	27-Sep-96	9-Jul-03
St. Kitts and Nevis	15-Jun-99	15-Jun-99		
Saint Lucia	30-Nov-84	30-Nov-84	18-May-00	30-Jan-08
St. Vincent and the Grenadines	11-Jul-90	11-Jul-90	26-Jul-91	
Suriname				
Trinidad and Tobago	24-Jan-86	24-Jan-86	10-Aug-99	28-Mar-03

The Protocol includes regional effluent limitations for domestic wastewater (sewage) and requires the development of plans to address agricultural non-point sources of pollution⁶¹. Annex III of the Protocol establishes specific regional effluent limitations for domestic wastewater with the indication of timeframe for action by the Parties ([Table 3.4](#); [Table 3.5](#)).

The effluent limitations are differentiated between Class I and Class II waters. Class I waters means waters are those in the convention area that have inherent or unique environmental characteristics or that have fragile biological or ecological characteristics and sensitive to the impacts of domestic wastewater. Class II waters are all the other waters in the Convention area that are not classified as Class I water.

Table 3.4: Timeline for the implementation of effluent standard for domestic wastewater per effluent source as defined in Annex III of the LBS Protocol of the Cartagena Convention

Category	Effective Date of Obligation ⁶²	Effluent Sources
1	0	All new domestic wastewater system

61 CEP (2018) Available at:
<http://www.cep.unep.org/cartagena-convention/lbs-protocol/protocol-concerning-pollution-from-land-based-sources-and-activities>

62 In years after entry into force for the Contracting Party

2	10	Existing domestic wastewater systems other than community wastewater systems
3	10*	Communities with 10,000 - 50,000 inhabitants
4	15	Communities with more than 50,000 inhabitants already possessing wastewater collection systems
5	20	Communities with more than 50,000 inhabitants not possessing wastewater collection systems
6	20	All other communities except those relying exclusively on household systems
<i>*Contracting Parties which decide to give higher priority to categories 4 and 5 may extend their obligations pursuant to category 3 to twenty (20) years (time frame established in category 6).</i>		

Table 3.5: Effluent limitations as set by Annex III of the LBS Protocol of the Cartagena Convention

Parameter	Class 1 Waters	Class 2 Waters
Total Suspended Solids *	30	150 mg/l
Biochemical Oxygen Demand (BOD5)	30	150 mg/l
Ph	5-10	5-10 pH units
Faecal Coliform (Parties may meet effluent limitations either for faecal coliform or for E. coli (freshwater) and enterococci (saline water).)	Faecal coliform: 200 mpn/100ml E. coli: 126 organisms/100ml Enterococci: 35 org./100ml	Not applicable
Fats, Oil and Grease	15	50 mg/l
Floatables	Not visible	Not visible

Other regional and sub-regional policies and strategies relevant to wastewater management in the WCR

There are a number of other relevant regional policies and strategies which include:

- **The OECS model water policy** provides a model policy and legislation for OECS member states to revise and update their existing instruments related to water management.
- **The draft OECS Building Code and Building Guidelines** seeks through introduction of building standards, to prevent or mitigate damage of extreme natural events. Codes are based on the Caribbean Uniform Building Code (CUBiC) and other regional codes.
- **The Regional Environmental Strategy Framework** (Estrategia Regional Ambiental Marco) 2015-2020 was approved by the CCAD Ministers in 2014. The Strategy aims to integrate SICA subsystems and national actions towards sustainable management of the ecosystems in the region. One of the main strategic focuses include comprehensive management of water resources.
- **Regional Strategic Action Plan for Governance and Building Climate Resilience in the Water Sector in the Caribbean** presents five pillars of action to build resilience of the water sector: (i) water sector governance, (ii) climate- informed decision support, (iii) climate-resilient water

resources management, (iv) climate- resilient water service provision, and (v) capacity building and public sensitization to build climate resilience.

- **The CLME+ SAP (2015-2025)** was developed under the UNDP/GEF CLME Project (2009-2014). The CLME+ sets priority strategies and actions required to improve the transboundary governance and management of shared living marine resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems region (CLME+ region).
- **The SAP for the Integrated Management of Water Resources of the Amazon Basin** was adopted in 2016 by Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela. The SAP serves as a guiding instrument for regional cooperation for the water resource management in the Amazon Basin.

3.6.3. Relevant national development strategies

In the majority of the countries, effective implementation of the strategies and plans under the frameworks of the Conventions require realignment and reform of the national policy, legislative and institutional arrangements. These strategies and plans need to be mainstreamed into national development frameworks. Such frameworks typically include national development strategies, land use and land development policies, plans and associated regulations, water supply/management laws, forestry and wildlife laws and laws concerning pollution, public and environmental health. In the majority of the countries the enabling environment does not facilitate integrated management approaches as advocated under the convention obligations. These are important barriers that persist, that the project will seek to address.

Table 3.6 presents the overview of relevant national policies and strategies (which are further detailed in the National Packages, **Appendices 13 to 30**). Many countries have already started developing overall national development strategy in line with the Agenda 2030 for Sustainable Development. For water management, some countries have national integrated water management policy or strategies while others have climate change adaptation strategies which incorporate specific strategies for the water sector. Even in countries that do not have a sector-specific policy for water management, general environmental policy and/or strategies exist. However, in most cases, water policy or climate change action for the water sector focuses primarily on drinking water and integration of wastewater management has been lacking. Nevertheless, progress has been made such as by Jamaica to develop the Wastewater Management Policy and by Colombia to develop the Strategic Vision 2018-2030: Water and Basic Sanitation Plan (El Plan Director de Agua y Saneamiento Básico – Visión Estratégica 2018-2030). For those countries that have not developed policies for wastewater management, further elaboration of integrated wastewater management policies within existing policies or as an additional policy is desirable. Further details of national policies and strategies for each country are available in National Packages (**Appendices 13 to 30**).

Table 3.6 Relevant national strategies and policies

Country	Relevant Strategies / Policies
Barbados	<ul style="list-style-type: none"> • National Strategic Plan 2005-2025 • National Water Conservation Plan • Draft Policy Framework for Water Resources Development and Management
Belize	<ul style="list-style-type: none"> • Horizon 2030: National Development Framework for Belize 2010-2030 • National Integrated Water Resources Management Policy
Colombia	<ul style="list-style-type: none"> • El Plan Director de Agua y Saneamiento Básico – Visión Estratégica 2018-2030
Costa Rica	<ul style="list-style-type: none"> • La Política Nacional de Saneamiento en Aguas Residuales (PNSAR)

	<ul style="list-style-type: none"> • La Política Hídrica Nacional • Plan Nacional de Gestión Integrada de los Recursos Hídricos de Costa Rica • El Plan Nacional de Desarrollo (PND) y los Objetivos del Desarrollo Sostenible
Cuba	<ul style="list-style-type: none"> • Tarea Vida: Plan de Estado para el enfrentamiento al cambio climático • Política Nacional del Agua en Cuba
Dominican Republic	<ul style="list-style-type: none"> • La propuesta de Estrategia Nacional de Saneamiento (ENS)
Grenada	<ul style="list-style-type: none"> • Grenada National Sustainable Development Plan 2030 • National Water Policy • National Climate Change Adaptation Plan (NAP) For Grenada, Carriacou And Petite Martinique (2017-2021) • Grenada—Blue Growth Coastal Master Plan
Guatemala	<ul style="list-style-type: none"> • La Política Nacional del Agua de Guatemala y su Estrategia (PNAGE)
Guyana	<ul style="list-style-type: none"> • The Climate Resilience Strategy and Action Plan for Guyana • National Integrated Water Resources Management Policy • The Framework of the Guyana Green State Development Strategy and Financing Mechanisms
Honduras	<ul style="list-style-type: none"> • Ley Marco del Sector Agua y Saneamiento (GdH, 2003)
Jamaica	<ul style="list-style-type: none"> • The Vision 2030 Jamaica – National Development Plan • The National Sanitation Policy • The Jamaica Water Sector Policy • The Water Resources Development Master Plan • The Wastewater Management Policy
Mexico	<ul style="list-style-type: none"> • Programa Nacional Hídrico 2014 – 2018 • Norma Oficial Mexicana PROY-NOM-001-SEMARNAT-2017
Panama	<ul style="list-style-type: none"> • Plan Nacional de Seguridad Hídrica 2015-205
St. Kitts and Nevis	<ul style="list-style-type: none"> • Medium Term Economic Management Strategy 2018-2020 • National Environmental Action Plan • National Environmental Management Strategy (NEMS)
Saint Lucia	<ul style="list-style-type: none"> • Saint Lucia's National Adaptation Plan (NAP) 2018–2028 • Saint Lucia National Policy on Wastewater Management
St. Vincent and the Grenadines	<ul style="list-style-type: none"> • The National Economic and Development Plan 2013-2025 • National Environmental Management Strategy (NEMS) 2004- 2006 • Draft National Physical Development Plan (NPDP)
Suriname	<ul style="list-style-type: none"> • The Development Plan 2017-2021 • The Suriname Water Supply Master Plan • The National Climate Change Action Plan (NCCPSAP - 2015) • The National Biodiversity Strategy (NBS)
Trinidad and Tobago	<ul style="list-style-type: none"> • Vision 2030: The National Development Strategy of Trinidad and Tobago 2016-2030 • National Integrated Water Resources Management Policy

3.7 Incremental cost reasoning

Incremental Cost Reasoning. As outlined in Section 2.2, recent reports present the need for improved wastewater and water resource management in the Caribbean and in particular in rural and peri-urban areas (WWAP/UNESCO, 2019). It is estimated that 25 million people without access to a basic water service and 222 million without safely managed drinking water services. For sanitation, the situation is far worse: almost 89 million people in the region are without a basic sanitation service, and 495 million without safely managed services. In terms of achieving the SDGs, whether driven by the demands of a growing population, fuelled by economic factors within or outside of the region, or facilitated by the absence of effective governance structures, it is generally accepted that patterns of production and consumption within the region are currently unsustainable. This trade-off between human progress and environmental health is no longer sustainable and needs to be addressed with urgency if the region is to secure sustainable development and the well-being of its population (UNEP, 2019). In general its economies continue to be strongly based on primary products and natural resources, accounting for almost 50 per cent of the region's exports, and given the increase in population and the demand for raw materials for consumption and exports, data indicates that current and future growth in the region is likely to be at the expense of environmental services (e.g. water supply, climate regulation, and support for agriculture) and natural resources (e.g. minerals, marine resources, and genetic resources). Agriculture, industries and households demand more water resources than ever before as population growth, the global economy expands and extreme climatic events become more frequent (UNEP, 2019). Areas where the SDGs will likely not be achieved without increased attention are national capacity development to generate and use environmental data (SDG targets 17.18 and 17.19); many of the targets related to water (SDG 6); reducing air pollution mortality (SDG target 3.9); promoting disaster risk reduction (SDG target 1.5); education for sustainable development (SDG target 4.7); many of the targets related to oceans, land and biodiversity (SDG 14 and 15), in particular land degradation is a challenge (SDG target 15.3); and infrastructure-related CO2 emissions (SDG target 9.4).

Therefore, under the **current business as usual scenario**, insufficient and poorly functioning wastewater treatment infrastructure, particularly in peri-urban and rural areas, the discharge of untreated wastewater will increase resulting in marine pollution, as already indicated by the recent 2019 SOCAR report (UNEP CEP, 2019), with agriculture the main sector, but also from the domestic and commercial sector resulting in elevated nutrients, bacterial levels but also potentially microplastics, heavy metals, pharmaceuticals, personal care products, endocrine disrupting compounds and even illicit drugs, particularly in water bodies close to metropolitan areas. Also, regarding innovative and low-cost measures for wastewater and water resource management, the number of people without access to a basic water service, safely managed drinking water services and sanitation will increase which will impact human well-being, health and livelihoods. Tourism, agriculture and fisheries sectors will be impacted, and habits will be under increasing at risk (such as mangroves and coral reefs). Finally, under the current scenario, an opportunity will be missed, to view wastewater as a resource and through the design and implementation of a circular economy reuse wastewater for fertilizers, clean water, biofuels etc.

The GEF Increment. The project will address critical policy, legislation and capacity gaps to ensure long term and sustainable management of water and wastewater, and the compilation and implementation of innovative solutions for ensure sustainable financing and implementation of small-scale, local, rural, peri-urban and community-based solutions. It will stimulate and assist countries and communities mainly in rural and peri-urban areas to identify and implement innovative technological solutions based on their specific needs and which are both replicable and sustainable in the long-term. The project builds upon the results and regional and national-level partnerships established in CREW, and the is closely coordinated with the work in the region of the Caribbean Environment Programme (CEP) to advance the fulfilment of countries obligations under the Cartagena Convention and its Protocols for the and IDB's current portfolio of investment on wastewater and water. The GEF grant of US\$ 15,402,656 for this project will cover the incremental costs needed against a solid base funding of

US\$148,112,617 provided through co-financing contribution from IDB, UN Environment and their partners. The proposed activities are supported by the participating countries and they are providing contributions that are also essential to assist with the mainstreaming of the approaches developed into national policies to promote and sustain the pilot interventions and to enable the capacity strengthening supported by the GEF Grant to be sustained. In addition, several regional agencies including CARPHA, CAWASA, CWWA and TNC will be supporting the project through in-kind co-financing.

3.8 Innovation, Sustainability and replication

The CREW+ is expected to demonstrate innovative technical, training and financial solutions for enhancing and expanding wastewater treatment capacity and safeguarding freshwater resources in the Caribbean. This will be achieved through: Financial Mechanisms (mainly through business models, financial mechanisms for different economic sectors and at different scales, by exploring approaches such as integrated cost recovery, by promoting one-water as a resource, and by promoting multipurpose facilities and the water-energy-food-climate nexus); Funding options (mainly through innovative means to obtain funds from alternative sources such as property taxes, environmental taxes, payment for ecosystem foods and services, and taxes on tourism, and not just through tariffs and government subsidies); Training (through more online training at a national level, MOOCs and more formal programmes for certification and accreditation); and Technical Solutions coupled with the potential value of waste water in the technologies being implemented, upscaling and replication of technology, seeking to achieve sustainable closed cycle projects (one water). Natural treatment processes will be prioritized, using innovative technologies with low levels of investment and low operational and maintenance costs for removal of pollutants and reuse of treated effluents. Examples are constructed wetlands, reed beds, sand filters, stabilization ponds, treatment and anaerobic sludge blanket digestion systems. Reuse technologies such as composting, agricultural irrigation, methane production during anaerobic processes and grey water reutilization will be incorporated in the solutions appropriately. Proposed measures for protecting watersheds and freshwater basins including surface and ground water resources will consider community level land-use planning which promotes long-term sustainability and reduced vulnerability to Climate Change.

Sustainability and the potential for scaling up will be encouraged through: the development of inventories of financing options; rural/community specific financing action plans; country specific business models; the institutionalization of business plans at local and national levels, and plans for upscaling/ replicating to guarantee continuity; use of payment for ecosystem benefits (PES) and payments for improved property value resulting from wastewater treatment and/or protection of watersheds and freshwater basins; and development of a regional database for Integrated Water and Wastewater Management, including the protection of water sources and increased efficiencies in water use.

Two fundamental aspects of this scaling-up approach are: improvement of the enabling environment through policy, legislative action, institutional engagement and greater investments; and the identification and deployment of technological options (mostly decentralized) that offer the most potential for replicability and sustainability. The Caribbean Platforms for Wastewater and Nutrients Management whose development was catalysed by the GEF CREW Project in collaboration with the UN Environment Global Programme of Action will further assist in replication and scaling up within the Wider Caribbean Region. The Cartagena Convention Secretariat and the proposed Regional Policy Coordination Mechanism to be developed in support of the CLME+ SAP will also assist in ensuring longer-term sustainability and upscaling.

3.9 Knowledge Management

The distillation of lessons learned and best practices from the Project experience will be fundamental and will produce several information and briefing materials or products. These would include periodic briefing papers, case studies and experience notes – following IW: LEARN and IDB Knowledge Division formats. Based upon what was done in CReW, the following will be done: distillation of lessons learned and best practices from project experiences during implementation; preparation of periodic briefing papers, case studies and experience notes – following IW: LEARN and IDB Knowledge Division formats, capturing key learning from all Components; and longer, more holistic case studies.

An online community of practice to include National Focal Points (NFPs) and persons from Executing and Partner Agencies will be established early in project implementation or even during the project preparation phase. The CReW+ intends to evaluate lessons learnt from the development of this tool and to use an improved mechanism from inception of the new CReW+ project. Regional meetings will include facilitated knowledge sharing sessions.

Communications and outreach materials will generally promote integrated water and wastewater management with emphasis on protection of freshwater at source (surface and ground water supplies), improved land used practices for protecting watersheds and freshwater basins, and changing attitudes and perceptions about the use of treated wastewater. The project website will be populated with all project documents, including the knowledge documents. Arrange of media (audio-visual, broadcast, social and printed) will be used to disseminate information on project activities as well as to educate on integrated water resources management and the environmental, health and economic benefits of improving wastewater management. A quarterly newsletter and regular bulletins will also be used to share information, including lessons learnt, on project activities including through various social media platforms. Project materials will be prepared in both English and Spanish to ensure good exchange of information as well as feedback. CReW+ will participate fully with the GEF IW: LEARN and share experiences and lessons with the IW portfolio. Where appropriate the project will ensure that the relevant projects in the LD and C&W portfolios also benefit on the national actions that could lead to further global benefits.

3.10 Public awareness, communications and mainstreaming strategy

It has been well-documented that a major problem in the Caribbean is poor attitudes and low levels of awareness of wastewater and water management issues, and in particular low-cost and innovative technologies that are available for management and safe reuse of wastewater. The project will build upon the public awareness and communication activities of CEP and the previous CReW which included the development of a web-site, newsletters, media-tool kit, video's, press releases, social media, as well as the Community of Practice (CoP). CReW+ through its Component 4 on knowledge management will develop and implement a communication strategy that will in particular focus on raising public awareness through regional activities (newsletters, videos, best practices, publications in English and Spanish) as well as national activities (best practices publications, news articles/media/television presentations and the engagement of "champions" from local/rural community supported).

A Public Awareness/Public Education (PA/PE) Strategy will be developed at the Inception Phase of the project, in close cooperation with all project partners, stakeholders and national focal points. The project will make advances in using social media and on-the-ground use of smartphone and other web-based applications especially where it comes to recording and documenting knowledge and experiences in fun and interesting ways. Citizen science approaches will feature prominently, particularly with students and community members as they learn through direct observation and doing. The project will use popular theatre, social and other special and mass events, particularly around environmentally-themed days, featuring local entertainment and sporting personalities (with marketing and promotional alliances with the private sector), to help package and spread messages of relevance

to the project and issues of common concern within the scope of environmental management. Messages will reinforce the need for coping strategies through good environmental management practices to implement the SDGs

The project outputs will be propagated through the various knowledge networks from the national through to the regional levels, drawing on the CReW+ web-based clearinghouse mechanisms that will be established for the project and the CEP clearinghouse administered by the Secretariat to the Cartagena Convention. The project will also feed resources through GEF's IW-LEARN platform.

3.11 Environmental and social safeguards

It is not anticipated that the actions and programs likely to arise from this activity will result in significant environmental and socio-economic impacts to the extent that safeguards to address these issues will be required. On project inception the national interventions under the CReW project will be subject to environmental and socio-economic feasibility assessments in line with GEF's policy on environmental and social safeguards (GEF, 2015), to ensure that the interventions will not further compromise pristine ecosystems or those that are already under stress from human influence. Deriving from the GEF Policy, the environmental and social assessment will need to account for potential risks of the project (direct, and as relevant, indirect, cumulative, and associated impacts), impacts on physical, biological, socioeconomic, and physical cultural resources, compliance with national and international agreements, suitability and applicability of the investments, consideration of mitigative measures to address any adverse impacts and engagement of affected stakeholders. In respect of river basins and natural habitats the precautionary principle should be adopted in absence of full knowledge of potential impacts, confining investments where there has already been human land modification, avoidance of habitat degradation and other forms of land degradation, incorporation of mitigation plans, foster enhancement of ecosystems services and promotion of stakeholder engagement in the decision-making/implementation process.

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

Implementing agencies: UN Environment and IDB

Principles governing the relations between UN Environment and IDB as the implementing agencies for the Project:

- The UN Environment and the IDB will have the responsibility for implementing and monitoring their respective project activities
- Each agency will be responsible for its own costs. The Agency Fees will be distributed between UN Environment and IDB proportionally to the amounts of their respective components as presented in the CEO document.

IDB and UN Environment as GEF agencies, will be responsible for overall project supervision to ensure consistency with GEF, IDB and UN Environment policies and procedures, and will provide guidance on linkages with other IDB, UN Environment and GEF-funded projects and activities. Comprehensive project management will be achieved through a range of co-ordination, supervisory and advisory bodies, at the regional and national levels including:

At the regional level:

- Inter-Agency Co-ordination Group (IACG)
- Steering Committee (SC)
- Project Coordination Group (PCG)
- CAR/RCU (Secretariat to the Cartagena Convention) as Executing Agency of UN Environment led activities, and the German Corporation for International Cooperation (GIZ) on behalf of IDB

At the national level:

- National Focal Point (NFP);
- National Project Steering Committee (NPSC)
- National Executing Agencies (NEA) with their National/Community Management Units (NMU)

The **IACG** will be formed between the IDB and UN Environment to monitor project implementation, review progress and propose corrective measures as appropriate. It will act as a progress review mechanism and interaction platform to ensure coordination of national and regional activities. The IACG will have quarterly meetings (virtual or in person) and will advise and respond to the SC Project Steering Committee meetings as appropriate.

The Steering Committee (SC) will meet annually to monitor progress in project execution, to provide strategic and policy guidance, and to review and approve annual work plans and budgets. The SC will be composed of participating countries' representatives (NFPs), and additional national experts from the NMU as appropriate. Selected regional entities that are representative of the Wider Caribbean Region countries and the sanitation sector engaged in the project such as the Caribbean Water and Wastewater Association (CWWA), the Caribbean Public Health Agency (CARPHA), the Caribbean Water and Sewage Association (CAWASA), the Global Waters Operators Partnership (WOP) and regional WOPs (CariWOP and WOP-LAC), and the International Water Association (IWA) and Global Water Partnership-Caribbean (GWP-C) will also be invited to participate in the Steering Committee as observers as appropriate, along with other global and regional organizations to be decided. The SC will endorse annual operation plans and budgets, technical and financial reports, and will assist in providing project oversight. If required, the SC may establish advisory groups for any identified need (i.e. technical advisory group). The IDB and UN Environment would co-chair the first meeting. Thereafter,

the chair will be undertaken on a rotational basis among participating countries. The PCG will serve as the secretariat of the SC.

The Project Co-ordination Group (PCG) will be established in order to carry out the day-to-day management of the CREW+ project. The PCG will coordinate execution of the Project under the oversight of UN Environment and IDB, and will be composed of a Project Coordinator, Technical, Communications and Financial Specialists and 2 Administrative Assistants. The PCG will draw from the combined expertise of the IDB's water sector specialists and UN Environment. The PCG will be established in the IDB Office in Panama. The PCG will be responsible for:

- Coordinating day-to-day project activities,
- Ensuring project quality assurance and quality control (QA/QC),
- Ensuring the timely execution of the project components and activities,
- Consolidating project reports, including technical, environmental and financial progress,
- Project communications to the public, including website and media,
- Communications/coordination with the IDB and UN Environment, Executing Agencies (for the pilots and CAR/RCU) and the GEF.
- Coordination of monitoring and evaluation (M&E) requirements. The PCG will compile and submit periodic reports and supporting documentation to UN Environment and IDB in line with the M&E plan and following both agencies internal requirements as outlined in the agency specific Cooperation Agreement.
- Facilitating the work of the mid-term and terminal evaluation.

The key staff within the PCG will include:

- **The Project Coordinator (PC)**, will be responsible for the overall performance of the project and production of the outputs/products, reporting directly to the Inter-agency Coordination Group and the Project Steering Committee. The PC will (i) oversee the preparation of all required reports and other outputs and ensure their timely delivery; (ii) provide day-to-day direction for the PCG, participating entities and individuals, and contractors, (iii) liaise between the PCG and the national teams (NPF, NEA and NMU), and (iii) act as the public liaison of the project. The PC will coordinate all technical activities undertaken at the national level by each of the National Management Unit (NMU -see below), at the regional level by CAR/RCU and GIZ and project teams/consultants as necessary and appropriate for the implementation of the CREW+ activities. The PC will support the preparation and dissemination of technical documentation, and will prepare and distribute media releases to appropriate outlets throughout the project area. It is anticipated that the media releases will coincide with the initiation of the project, the completion of various work elements, and the exit phase. PC shall have primary responsibility for ensuring "visibility" of the project within the region, and within the GEF. *The PC is covered by IDB's budget allocation (with a recruitment process involving both IDB and UN Environment).*
- **The Technical Specialist** will be the project technical advisor. In this role, the technical specialist will (i) assist the PC with technical evaluation and documentation and in identifying appropriate specialists to serve as consultants and task teams for the execution of the project components, (ii) review technical and scientific submissions and reports from contractors, the NMUs and CAR/RCU, (iii) liaise with the NMUs on the development and implementation of the projects in accordance with the provisions of the GEF and IDB policies and (iv) support overall monitoring and evaluation of all national/community interventions. *The Technical Specialist is covered by IDB's budget allocation (with a recruitment process involving both IDB and UN Environment).*
- **The Financial Specialist** assist the PC with contractual and financial management aspects of the project. The Financial Specialist will prepare quarterly financial reports and submit periodic requests for funds/payments as may be required according to the M&E plan and the service agreement. The specialist will ensure outputs/products are submitted prior to the issuance of payments/payment vouchers, and provide general project financial oversight. *The Financial*

Specialist is covered by IDB's budget allocation (with a recruitment process involving both IDB and UN Environment).

- **Two Administration Assistants** (one for IDB and one for UN Environment) will support the smooth administration of the project, in line with administration procedures of IDB and UN Environment, and support the Financial Specialist. They will maintain records of the project and project activities to facilitate reporting and assisting with the smooth operation of the PCG. The assistants shall maintain the project files, coordinate mailings and dissemination of materials to the Steering Committee, and maintain records of the Steering Committee recommendations with respect to project management, organize travel and support all aspects of meeting organization and contract development.
- **The Communications Specialist (CS)** will be responsible under the PC for the implementation of activities under Component 4 and will assist in promoting and improving public understanding of the CREW+ project. Specific responsibilities include: (i) improve internal and external communications of the CREW; (ii) assist in the development of comprehensive outreach plans for the Project's ongoing activities; (iii) outreach to the media and web content development; (iv) dissemination in the media of the CREW+'s best practices; (v) advise the PC on strategic communications for the Project; and (vi) review, edit and/or write communication materials for the PC. The Communication Specialist reports directly to the PC and assists all other staff as required. *The Communication Specialist is covered by UN Environments budget allocation (with a recruitment process involving both IDB and UN Environment).*

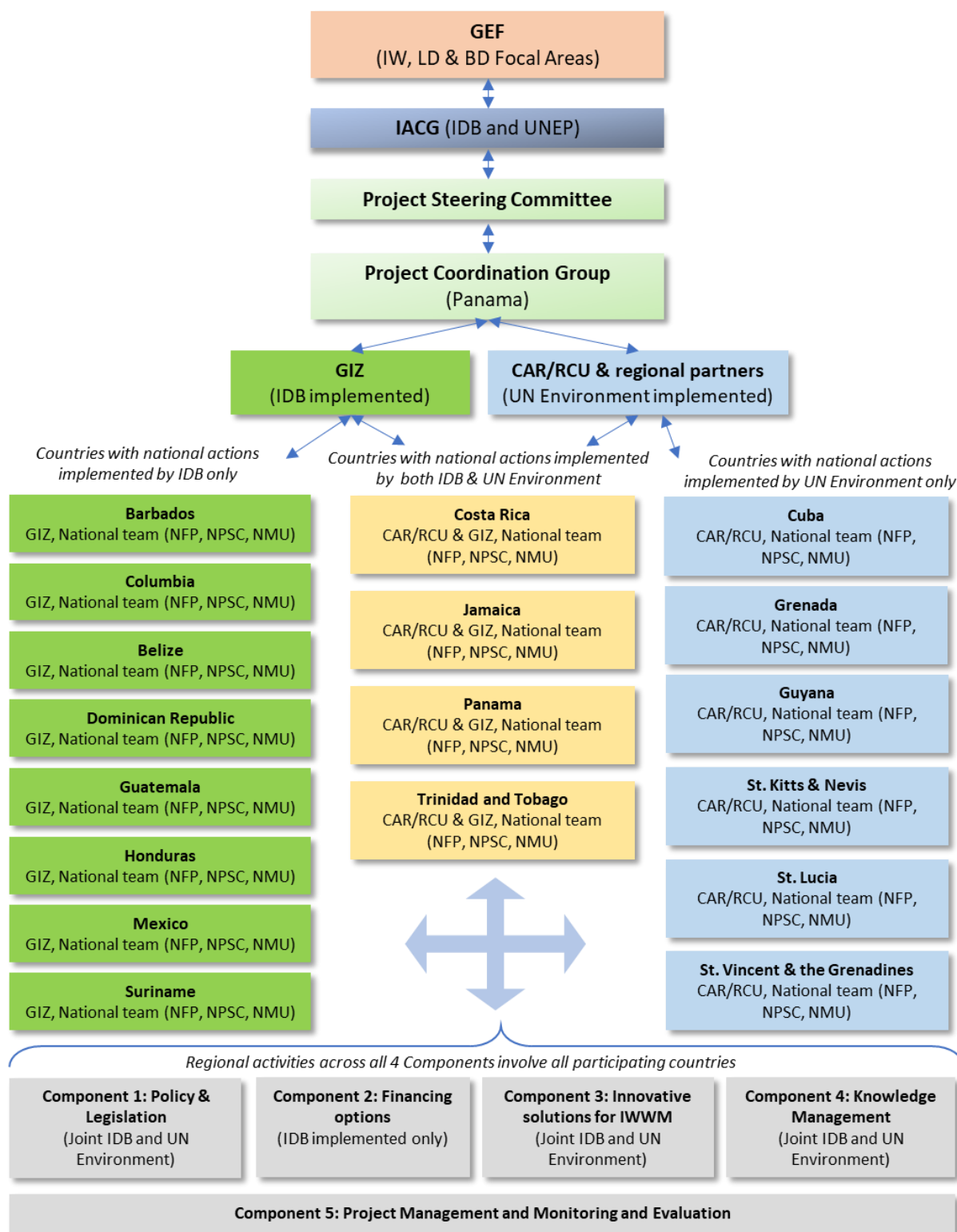
Arrangement for secondments to IDB will be made by UN Environment so that UN Environment-recruited staff members (i.e. the Communication Specialist and Administration Assistant) will have access to administrative services by IDB. Recruitment will be conducted for all project members as both UN Environment and IDB do not currently have available personnel that can dedicate 100% of their staff time to this project. PCU staff may be supplemented by nationally-seconded personnel. The staffing of the PCG and terms of reference for individual members are contained in [Appendix 8](#) of this project document.

Latin America and the Caribbean Regional Office and **Caribbean sub-regional office** will assist the PCU and the executive agencies with political liaising with the 18 participating countries. Especially, they will bring the project activities and outcomes to the attention of high-level decision makers such as through the UN Environment's Forum of Ministers of Environment in Latin America and the Caribbean as well as through representing the organization in regional high-level forum such as SICA.

National Interventions: At the national level, project implementation arrangements may vary but the general structure applies as follows (refer to the national sub-project documentation). Each participating country will designate a **National Focal Point (NFP)** for the project and will further foster the establishment as relevant **National Project Steering Committee (NPSC)**. This NFP should not be taken to be the GEF National Focal Point (or the GEF Operational Focal Point), but rather the technical focal point within the line agency that has been designated with responsibility for the execution of the project. Regarding the NPSC, where similar national intersectoral bodies are functional (with remits for environmental management and perhaps climate change) these mechanisms should be used rather than establishing a new entity. For each project country a **National/Community Management Units (NMU)** will be formed. This committee will comprise of the direct technical contributors and project beneficiaries, representing both state and non-state organizations. The NFP will act as the Chair of the national Project Steering Committee (NPSC) thereby establishing the NFP as the key focal point for interactions with the Project Co-ordination Unit. For the day-to-day administration of the national project a National Project Manager may in addition be recruited, along with at least a technical officer and an administrative officer. An outreach and communications officer may be considered but this will depend on the complexity of the national project and national budgetary provisions made available;

further, the role of the outreach/ communications officer may be combined within the terms of reference of the project manager or the technical officer. This information is elaborated in the National Sub-project Documents.

Figure 4.1 CReW+ regional and national level organization*



*Co-execution of regional and national level activities to be further detailed at Inception Phase.

SECTION 5: STAKEHOLDER PARTICIPATION

Section 2.5 provide a thorough mapping of regional and national stakeholders. The project will be implemented in eighteen countries, from larger mainland states to SIDS. Activities to be implemented in each country will further determine the particular stakeholders to be consulted, and are elaborated in the National Packages (**Appendices 13 to 30**). While actions to improve the policy, legislation and institutional environments will, for example, target decision-makers within ministries, utilities and relevant sectors, those aimed at improving local communities through innovative watershed protection and wastewater treatment will target existing community-based organizations and groups.

National stakeholders are elaborated in the National Packages, and further details of their involvement in national activities will be elaborated in the Inception Phase of the project. This includes national government agencies, private sector, research institutions, NGOs and local communities, that together will be part of the National Project Steering Committee (NPSC).

Stakeholders can be divided according to their role in the project's activities (see **Figure 5.1**) and some of the main stakeholders are indicated in **Table 5.1**, to be further elaborated during the Inception Phase of the Project with additional partners if appropriate. Some of the **main partnerships at the regional level**, and their indicative role in the project are summarized in **Tables 5.2**.

Figure 5.1 The various roles of stakeholders

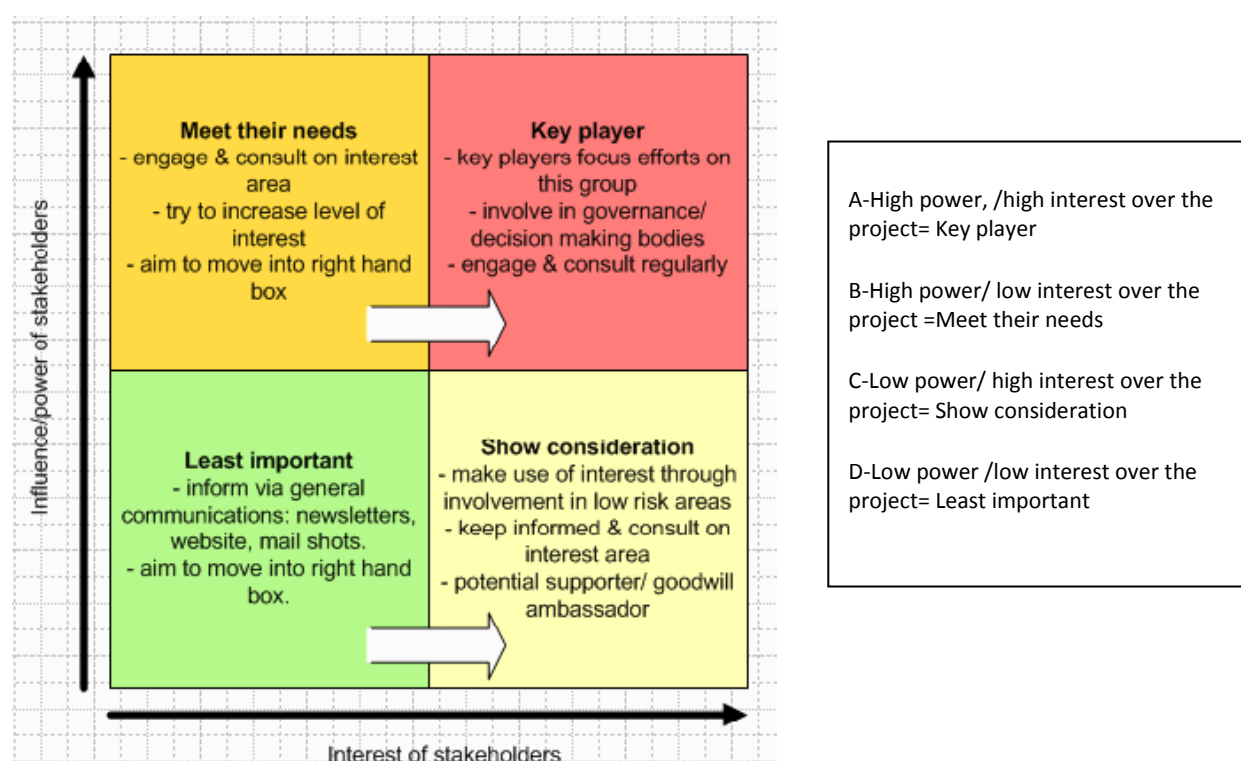


Table 5.2 Key stakeholders for CREW+

Category of Stakeholder Role	Main stakeholders
A-High power, /high interest over the project= Key player	<ul style="list-style-type: none"> Organization of Eastern Caribbean States (OECS); The Organization of American States (OAS); The Pan American Health Organization (PAHO); National governments, Water and wastewater utilities;

Category of Stakeholder Role	Main stakeholders
	<ul style="list-style-type: none"> Local communities; US Environmental Protection Agency (US EPA) UNU; The Caribbean Public Health Agency (CARPHA); Regional Network for Water and Sanitation in Central America (RRASCA); The United Nations University (UNU); The Caribbean Water & Sewerage Association (CAWASA); Caribbean Water and Wastewater Association (CWWA); Convention of Biological Diversity (CBD); GEF Small Grants Programme (GEF-SGP); Commercial banks.
B-High power/ low interest over the project =Meet their needs	<ul style="list-style-type: none"> Central American Integration System (SICA); Caribbean Community (CARICOM); Development Bank of Latin America (CAF); The Caribbean Tourism Organization (CTO); The Caribbean Hotel and Tourism Association (CHTA).
C-Low power/ high interest over the project= Show consideration	<ul style="list-style-type: none"> GPA and GW2I; UN Environment Regional Office; The Food and Agriculture Organization of the United Nations (FAO); The UN Economic Commission for Latin America and the Caribbean (ECLAC / CEPAL); UN Water; Global Water Operators Partnership (WOP) and regional WOPs – CariWOP and WOP-LAC AIDIS; The Centre for Resource Management and Environment Studies (CERMES) of the University of the West Indies; Water.org; Millennium Water Alliance; Water for People; GWP-C and GWP-CA; GWP-C Journalists Network on Integrated Water Resources Management (IWRM); Caribbean Environmental Reporters Network; LatinClima; Red de Periodistas por el Desarrollo Sostenible; Caribbean Farmers Network (CaFAN).
D-Low power /low interest over the project= Least important	<ul style="list-style-type: none"> Inter-American Institute for Cooperation in Agriculture (IICA); Caribbean Community Climate Change Centre; The Caribbean Institute of Meteorology and Hydrology (CIMH); The Caribbean Agricultural Research and Development Institute (CARDI); Water and Sanitation Cooperation Fund / Japan Water Forum Fund.

Table 5.1 Key partnerships for CREW+

• Partner	• Expertise	• Strength	• Agreed roles/responsibilities in project implementation
• Implementing Agency (IA)/ Executing Agency (EA) partnership			
• United Nations Environment Programme	• GEF Implementing Agency and leading global environmental authority that promotes the coherent implementation of the environmental dimension of the SDGs	• Implementation of GEF projects, hosts Secretariat to the Cartagena Convention CEP in Jamaica, Regional Office for Latin America and the Caribbean in Panama, Sub-Regional Office for the Caribbean in Jamaica and national offices in Mexico and Colombia	• Implementing Agency and Co-Executing Agency (Secretariat to the Cartagena Convention - Car/RCU). Oversight by Car/RCU of the national project interventions
• Inter-American Development Bank (IDB)	• Financing, large-scale investment projects on infrastructure	• Bring in large-scale loans to member countries; Long-term experiences of financing investment projects especially for the continental Latin American countries	• Implementing Agency, and lead Component 2 of the project to develop financial plans to allow financial sustainability of national interventions
• GIZ	• Service provider in the field of international cooperation for sustainable development and international education work	• Significant experience in working in the WCR on IWWM project execution	• Lead executing agency for IDB implemented activities
• Secretariat to the Cartagena Convention (Car/RCU)	• Regional Seas program (CEP) and Secretariat to the Cartagena Convention	• Supports the 25 United Nations Member States in the Wider Caribbean Region that have ratified the Cartagena Convention and its Protocols and executes numerous regional projects and actions regarding IWWM. Hosts the Caribbean Platform for Nutrients Management	• Lead executing agency for CREW+ (UN Environment implemented activities). Ensures results of CREW+ are fully support the obligations of the Cartagena Convention and Protocols, the CLME+ SAP and are widely disseminated through its web-sites and official technical and political meetings
• Global and Regional co-executing partners			
• Caribbean Water and Wastewater Association (CWWA)	• Education and training to water and wastewater professionals in the Caribbean	• Has a strong professional network of professionals working in water and wastewater management in the	• Provide training and assists with public awareness-raising activities

• Partner	• Expertise	• Strength	• Agreed roles/responsibilities in project implementation
		Caribbean. Experiences in professional training for the industry. Hosts the Caribbean Node for Wastewater Management	
• The Caribbean Water & Sewerage Association (CAWASA)	• Operational training for water utilities in the region	• Issues operator certification to utilities	• Conduct regional training and issue certification to water utilities and operators
• U.S. Environmental Protection Agency (US EPA)	• International cooperation to support environmental programme	• Long-term engagement in the Cartagena Convention and its LBS Protocol.	• Coordinate and link the activities under the project with the process for the State of the Convention Areas Report (SOCAR)
• The Caribbean Public Health Agency (CARPHA)	• Implement a ridge-to- reef approach for pollution prevention	• Experience with regional projects. Currently co-executing the IWECO project with the Cartagena Convention Secretariat and presents an opportunity for synergies with the project.	• Cooperate in conducting training on monitoring, lab capacity development and information management
• The Pan American Health Organization (PAHO-WHO)	• Technical cooperation to prevent and respond to diseases, including water-borne diseases	• Long history in assisting countries in the region with the improvement of health systems and related policies	• Provide technical inputs and assistance to countries to set appropriate regional and national discharge standards

The project will collaborate with the GEF funded IWEco project to ensure synergies on Water Resources and Wastewater Management, and with GEF IWEco, World Bank/GEF Caribbean Regional Oceanscape Project (CROP) project and UNDP/GEF CLME+ projects to promote joint capacity building and knowledge exchange, building on partnerships and networks already established in the Wider Caribbean.

Gender Mainstreaming

Gender mainstreaming is a cross-cutting element related to all stakeholder participation and involvement in the project which seeks to promote gender equality and empowerment of women throughout the implementation of activities under the CReW+ project. The project will promote gender equality and empowerment of women throughout the project execution phase. Based on the GEF-6

Core Gender Indicators listed in the Gender Equality Action Plan⁶³. Emphasis will be placed on advancing gender mainstreaming within policy and capacity building in support of all the components. Gender audits and targeted analyses to ascertain derived benefits by stakeholders will be conducted, along with training that will strengthen gender-equitable access to ecosystem services, safe and adequate water, sanitation, food security and other benefits derived from project implementation. Support will be given to the countries to improve the enabling environment so as to facilitate the implementation of policy and the legislative provisions that are not only responsive to the needs of private sector and natural resource user groups, but are gender-sensitive and maximize opportunity for positive socio-economic growth and development amongst special interest groups at risk. CREW+ will also work closely with CARICOM to integrate the strategy on gender currently in the process of development, and will ensure alignment with the GEF Policy on Gender (GEF Secretariat, 2017). It is envisaged that gender mainstreaming will be an integral part of the project and process towards the achievement of equity in social development. In recognition of the relevance of gender to national development, most governments have indeed established national machineries for the advancement of women and gender equality, however, despite the espoused commitments there are still many areas of inequalities that remain problematic. The promotion of gender equality continues to be relegated to a lower level of national priority. The findings from the mainstreaming of gender emanating from this project will contribute greatly to understanding the gender components of human development, the kernel of any effective environmental development strategy.

The Project will further elaborate a detailed gender action plan during the inception phase. This builds on the multiple project outputs, sub-outputs and activities that include gender-specific elements. In addition, the project will ensure that all meetings, workshops, twinning exchanges and capacity-building activities have gender-balanced and gender-sensitive participation, promote gender sensitive policies and actions, and record sex disaggregated data of participants.

In this context, the project will complete:

- Gender analysis completed during the project inception phase, including for the national actions;
- Incorporation of gender dimensions into the national policy frameworks, regional cooperation mechanisms and initiatives (Component 1).
- Gender dimension and women's empowerment in national intervention projects on IWWM will be ensured through the development of a "Gender Aware Beneficiary Assessment (GABA)" that will provide valuable data on the gender dimensions of the procedural and operational limitations that beneficiaries experience in accessing potable water and sanitation. Gender will be further built-in the design of interventions to ensure that there is meaningful inclusion of women and men, particularly in the areas where community governance bodies will be strengthened. It becomes paramount that women are represented and their voice and participation be encouraged and documented in a systematic manner. Community-based interventions will place the focus on beneficiaries as active players in their development, evidenced by the bottom up, participatory approach taken towards the development and proposed implementation of the proposed solutions (Component 3).

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https://www.thegef.org/sites/default/files/publications/GEF_Gender_Equality_CRA_Io-res_0.pdf

- Gender mainstreaming in communication, public participation etc (Component 4). “Champions” from local/rural community supported to present best practices and success stories in IWWM (to include Woman Champions in the water sector);
- Special support for women's associations that will contribute to give sustainability to the project.

SECTION 6: MONITORING AND EVALUATION PLAN

The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in [Appendix 3](#) includes Specific, Measurable, Achievable, Relevant and Time-bound (SMART) for each expected outcome as well as mid-term and end-of-project targets. These indicators will be the main tools for assessing project implementation progress and whether project results are being achieved. Other M&E related costs are also presented in the Costed M&E Plan and are fully integrated in the overall project budget.

Following the inception phase, the PCG will prepare a detailed M&E plan to be presented to the first meeting of the Project Steering Committee (SC). The SC will be responsible for proposing any necessary amendments to the M&E plan during project implementation. Indicators and their means of verification may also be fine-tuned by the SC. Day-to-day project monitoring is the responsibility of the PCG but other project partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Coordinator to inform the IACG of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion. The Project Steering Committee will receive periodic reports on progress and will make recommendations to the PCG and IACG concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UN Environment, IDB and GEF policies and procedures is the responsibility to the Task Managers in UN Environment-GEF and IDB. The Task Managers will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

Project supervision will take an adaptive management approach. The Project Coordinator will develop a project supervision plan at the inception of the project which will be communicated to the project partners during the first meeting of the SC. The Project Coordinator will also be responsible for initial screening of the financial and administrative reports from the core partners prior to their submission. Progress vis-à-vis the delivery of agreed project outputs will be assessed by the SC at least annually. Project risks and assumptions will be regularly reviewed both by project partners and the PCG. Risk assessment and rating is an integral part of the annual Project Implementation Review (PIR), preparation of which will be the responsibility of the Project Coordinator. The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR and the PSC shall clear the PIR prior to its final submission. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

A mid-term review will be conducted by the Task Manager in consultation with the Project Coordinator and the outcomes reported to the Project Steering Committee. The purpose of the mid-term review is to identify corrective measures and/or changes to the intended work plan of the CREW+. The MTE will focus on the following: (i) level of progress in attaining the project objectives stated in the Results Matrix; (ii) level of acceptance of procedures developed under the project; and (iii) degree of effectiveness of the internal and the IDB's and UN Environment's monitoring and supervision system. An independent terminal evaluation will take place at the end of project implementation. IDB will be responsible for the coordination of both review and final evaluation. An independent terminal evaluation will take place at the end of project implementation. IDB will manage the terminal evaluation process and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation.

The project's target contributions to the GEF 6 Core indicators is highlighted in **Annex E** of the CEO Endorsement document. These will be updated at mid-term and at the end of the project and will be

made available to the GEF Secretariat along with the project PIR report. As mentioned above the mid-term review and terminal evaluation will verify the information of the target contributions.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1 Overall project budget

A summary of the CREW+ budget per Component, Outcome and output for both UN Environment and IDB implemented actions is provided in [Table 7.1](#) and the detailed budget by project component and UN Environment budget line is provided in [Appendix 1](#).

Table 7.1 CREW+ budget per Component, Outcome and output

Project Components, Outcomes/ and outputs	GEF Funding US\$			Co-financing US\$	Total US\$
	IDB	UN-E	Subtotal		
Component I Institutional, policy, legislative and regulatory reforms for Integrated Water and Wastewater Management (IWWM)	1,383,586	1,307,414	2,691,000	6,211,726	8,902,726
<i>Outcome 1.1</i> <i>Consolidated improved and reformed institutional, policy and legislative frameworks for IWWM.</i>	<i>1,218,586</i>	<i>935,414</i>	<i>2,154,000</i>	<i>4,972,151</i>	<i>7,126,151</i>
Output 1.1.1 Diagnostic analysis of existing policy framework, legislations, guidelines and standards in support of IWWM, recommendations for reforms and development of national IWWM plans.	1,218,586	655,414	1,874,000	4,325,817	6,199,817
Output 1.1.2 Recommendations for amendments to the LBS Protocol to facilitate increased reuse of domestic wastewater including adoption of new criteria or standards for domestic wastewater discharges.		130,000	130,000	300,083	430,083
Output 1.1.3 Review, analysis and report for developing a new Strategy or Protocol on the management of freshwater resources within the framework of the Cartagena Convention.		70,000	70,000	161,583	231,583
Output 1.1.4 Country specific Cabinet/Parliament submissions prepared for formal ratification of the LBS Protocol.		80,000	80,000	184,667	264,667
<i>Outcome 1.2</i> <i>Enhanced regional and national coordination, information exchange, science-based decisions, and reporting on relevant SDGs and MEAs, resulting from the use of national and regional platforms/databases for IWWM by national and regional institutions.</i>		<i>240,000</i>	<i>240,000</i>	<i>554,000</i>	<i>794,000</i>
Output 1.2.1 New or updated national platforms/databases, supported by a regional platform for IWWM developed.		240,000	240,000	554,000	794,000
<i>Outcome 1.3</i> <i>Improved knowledge and skills to enable the monitoring of national reform processes for IWWM, and for reporting on relevant SDGs and MEAs.</i>	<i>165,000</i>	<i>132,000</i>	<i>297,000</i>	<i>685,575</i>	<i>982,575</i>

Project Components, Outcomes/ and outputs	GEF Funding US\$			Co-financing US\$	Total US\$
	IDB	UN-E	Subtotal		
Output 1.3.1 Capacity building workshops to drive national and regional reforms for IWWM and, for reporting on relevant SDGs	165,000	132,000	297,000	685,575	982,575
Component II Sustainable and tailor-made financing options for urban, peri-urban and rural IWWM	1,825,000		1,825,000	14,137,400	15,962,400
<i>Outcome 2.1</i> <i>Improved understanding of different financing options and greater readiness for integrated wastewater management financing at small-scale local, community and national levels</i>	1,013,200		1,013,200	7,848,775	8,861,975
Output 2.1.1 Compendium of recommendations on sustainable financing options considering micro credit, tariffing and other innovative mechanisms developed in consultation with relevant stakeholders, based on a review of existing financing mechanisms for IWWM at small, local, community or national levels, depending upon country context	70,000		70,000	542,256	612,256
Output 2.1.2 A series of community/rural specific financing action plans and business models to address IWWM including reuse	943,200		943,200	7,306,518	8,249,718
<i>Outcome 2.2</i> <i>Watershed management - Increased and sustainable financing for Integrated watershed management including for protecting surface and groundwater water sources</i>	581,800		581,800	4,506,926	5,088,726
Output 2.2.1 Compendium of innovative incentive options and recommendations on financing mechanisms for water conservation, pollution prevention, and water and wastewater reuse	70,000		70,000	542,256	612,256
Output 2.2.2 Public-private mechanisms, payment options and recommendations on approaches to implement payment for ecosystem services developed	511,800		511,800	3,964,669	4,476,469
<i>Outcome 2.3</i> <i>Improved knowledge and skills for successful design, establishment and management of appropriate financial mechanisms</i>	230,000		230,000	1,781,700	2,011,700
Output 2.3.1 Training modules for selected persons and agencies in the design, strategic planning, establishment and management of the financial mechanisms	230,000		230,000	1,781,700	2,011,700
Component III Provision of innovative small-scale, local, rural, peri-urban and community-based solutions for IWWM	4,641,894	3,817,629	8,459,523	110,308,600	118,768,123
<i>Outcome 3.1</i> <i>Improved wastewater treatment, including reuse, in rural and peri-urban hotspots using low tech and IWWM solutions</i>	3,820,244	2,889,328	6,709,572	87,489,980	94,199,552

Project Components, Outcomes/ and outputs	GEF Funding US\$			Co-financing US\$	Total US\$
	IDB	UN-E	Subtotal		
Output 3.1.1 Compendium of innovative technologies adapted to small-scale situations, supported by technical assistance, made available to all participating countries	70,000		70,000	912,770	982,770
Output 3.1.2 Rural and community level Integrated and Innovative Water and Wastewater low tech solutions implemented	2,933,730	2,889,328	5,823,058	75,930,212	81,753,270
Output 3.1.3 Intervention in Barbados re: Star Allocation from Barbados (Land degradation and Biodiversity).	816,514		816,514	10,646,997	11,463,511
<i>Outcome 3.2 Improved life cycle management, circular economy and efficiency in water use-consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots.</i>	476,650	813,301	1,289,951	16,820,415	18,110,366
Output 3.2.1 Integrated guidelines and implementation plan consistent with IWRM with a focus on water source protection and use efficiency, land use protection and food, energy and ecosystems nexus trade-offs.		70,000	70,000	912,770	982,770
Output 3.2.2 Demonstration projects implemented focusing on: (1) Prevention, Reduction and Control of point and non-point sources of pollution source through best land management practices and (2) Development and Implementation of water source protection, water use efficiency and reuse strategies and action plans.	476,650	743,301	1,219,951	15,907,645	17,127,596
<i>Outcome 3.3 Improved knowledge and skills within targeted communities to enable implementation of innovative low-cost integrated water and wastewater management solutions.</i>	345,000	115,000	460,000	5,998,205	6,458,205
Output 3.3.1 Training on innovative low-cost integrated water and wastewater management such as through webinars, MOOC, training programmes with the participation of civil society.	345,000	115,000	460,000	5,998,205	6,458,205
Component IV Knowledge Management and Advocacy on the importance of IWWM order to achieve the Sustainable Development Goals	703,848	953,152	1,657,000	11,457,581	13,114,581
<i>Outcome 4.1 Improved awareness and understanding of the advantages of implementing integrated approaches within targeted communities to enable implementation of low-tech and integrated water and wastewater management solutions.</i>	180,345	659,966	840,311	5,810,459	6,650,770
Output 4.1.1 A communications strategy developed and implemented, including information and	180,345	574,966	755,311	5,222,714	5,978,025

Project Components, Outcomes/ and outputs	GEF Funding US\$			Co-financing US\$	Total US\$
	IDB	UN-E	Subtotal		
dissemination of products related to IWWM and watershed management.					
Output 4.1.2 Updated CReW clearinghouse mechanism on financial options, small- and large-scale wastewater treatment technologies, and wastewater and water management policies and practices developed.		85,000	85,000	587,746	672,746
<i>Outcome 4.2 Improved access to an information exchange mechanism, including knowledge of experiences and lessons learnt, as well as improved information sharing capability with GEF and the wider, local and national communities amongst all 18 participating countries.</i>	523,503	293,186	816,689	5,647,122	6,463,811
Output 4.2.1 Documented best practices, lessons and experiences from all Components.	523,503	139,159	662,662	4,582,078	5,244,740
Output 4.2.2 Operational information exchange mechanism for GEF and non-GEF projects established.		154,027	154,027	1,065,043	1,219,070
Component V Monitoring and evaluation	450,228	319,905	770,133	7,015,000	7,785,133
TOTAL	9,004,556	6,398,100	15,402,656	149,130,307	164,532,963

7.2 Project co-financing

A summary of the CReW co-financing for both UNEP Environment and IDB implemented actions is provided in [Table 7.2](#) and the detailed co-financing by source and UNEP Environment budget line is provided in [Appendix 2](#).

Table 7.2 CReW+ co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
GEF Agency	IDB	Loan	\$138,675,000
GEF Agency	IDB	Grant	\$708,000
GEF Agency	UN Environment	In-kind	\$7,860,807
Other	CWWA	In-kind	\$200,000
Private Sector	CAWASA	In-kind	\$100,000
Other	CARPHA	In-kind	\$130,000
Other	PAHO-WHO	Grant	\$162,000
Other	PAHO-WHO	In-kind	\$900,000
National	Saint Lucia	In-kind	\$394,500
Total Co-financing			\$149,130,307

7.3 Project cost-effectiveness

The project will adopt a cost-effectiveness approach where it seeks to contribute to and strengthen existing processes at both the national and regional levels building on the lesson learnt, the analysis, results, tools and web-platform from the GEF-CReW project and other relevant initiatives. The analysis of the baseline has demonstrated that significant work is being undertaken across the region and there are many opportunities for synergistic collaboration and cooperation. The formation of an expanded partnership with agencies that are already doing significant research, policy and awareness-raising work in the region will benefit project execution in that it will bring the collective knowledge and experiences of these agencies to bear without having to 're-create' the approaches and solutions from scratch. Further, the project intervention will emphasize cost effectiveness by: (i) capitalizing on the experience derived from other GEF initiatives that have similar execution schemes in LMEs worldwide; (ii) being in line with the IDB Water Initiatives⁶⁴; (iii) taking advantage of the fact that UN Environment serves as the Technical Secretariat of the Convention for the Protection and Development for the Marine Environment for the Wider Caribbean Region, which facilitates specific country-based activities, that at the same time enables a more efficient regional coordination and consensus building on transboundary issues of concern; (iv) promoting long-term shifts in investments and expenditure by private, public and international cooperation stakeholders, in favour of measures that will counteract the emerging trends towards the Caribbean Basin's environmental degradation, and thus prevent further negative impacts that are likely to be more costly to mitigate once they appear; (v) by contributing to relevant regional and sub-regional goals and targets including those under the UNDP CLME+ SAP and (vi) By contributing to the implementation of the relevant SDG targets and support countries in their obligations for global reporting of the SDGs.

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<https://www.iadb.org/en/sector/water-initiatives>

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APPENDICES

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Budget per Component - Summary Table - CReW+				
	Project Components/Activities/Tasks	GEF Funding	Co-Financing	Total Project Cost
Component 1	INSTITUTIONAL, POLICY, LEGISLATIVE AND REGULATORY REFORMS FOR INTEGRATED WATER AND WASTEWATER MANAGEMENT (IWWM).	1,307,414	6,211,726	7,519,140
Outcome 1.1. Consolidated improved and reformed institutional, policy and legislative frameworks for IWWM				
	1.1.1 Diagnostic analysis of existing policy framework, legislations, guidelines and standards in support of IWWM, recommendations for reforms and development of national IWWM plans	655,414	4,325,817	4,981,231
	1.1.2 Recommendations for amendments to the LBS Protocol to facilitate increased reuse of domestic wastewater including adoption of new criteria or standards for domestic wastewater discharges	130,000	300,083	430,083
	1.1.3 Review, Analysis and Report for developing a new Strategy or Protocol on the management of freshwater resources within the framework of the Cartagena Convention	70,000	161,583	231,583
	1.1.4 Country specific Cabinet/Parliament Submissions prepared for formal ratification of the LBS Protocol	80,000	184,667	264,667
Outcome 1.2 Enhanced regional and national coordination, information exchange, science-based decisions, and reporting on relevant SDGs and MEAs, resulting from the use of national and regional platforms/databases for IWWM by national and regional institutions				
	1.2.1 New or updated national platforms/databases, supported by a regional platform for IWWM developed	240,000	554,000	794,000
Outcome 1.3 Improved knowledge and skills to enable the monitoring of national reform processes for IWWM, and for reporting on relevant SDGs and MEAs				
	1.3.1 Capacity building workshops to drive national and regional reforms for IWWM and, for reporting on relevant SDGs	132,000	685,575	817,575
Component 2	SUSTAINABLE AND TAILOR-MADE FINANCING OPTIONS FOR URBAN, PERI-URBAN AND RURAL IWWM	IDB	14,137,400	14,137,400
Outcome 2.1 Improved understanding of different financing options and greater readiness for integrated wastewater management financing at small-scale local, community and national levels				
	2.1.2 Compendium of recommendations on sustainable financing options considering micro credit, tariffing and other innovative mechanisms developed in consultation with relevant stakeholders, based on a review of existing financing	IDB	542,256	542,256

	mechanisms for IWWM at small, local, community or national levels, depending upon country context			
	2.1.2 A series of community/rural specific financing action plans and business models to address IWWM including reuse	IDB	7,306,518	7,306,518
Outcome 2.2 Watershed management - Increased and sustainable financing for Integrated watershed management including for protecting surface and groundwater water sources				
	2.2.1 Compendium of innovative incentive options and recommendations on financing mechanisms for water conservation, pollution prevention, and water and wastewater reuse	IDB	542,256	542,256
	2.2.2 Public-private mechanisms, payment options and recommendations on approaches to implement payment for ecosystem services developed	IDB	3,964,669	3,964,669
Outcome 2.3 Improved knowledge and skills for successful design, establishment and management of appropriate financial mechanisms				
	2.3.1 Training modules for selected persons and agencies in the design, strategic planning, establishment and management of the financial mechanisms	IDB	1,781,700	1,781,700
Component 3	PROVISION OF INNOVATIVE SMALL-SCALE, LOCAL, RURAL, PERI-URBAN AND COMMUNITY-BASED SOLUTIONS FOR IWWM	3,817,630	110,308,600	114,126,230
Outcome 3.1 Improved wastewater treatment, including reuse, in rural and peri-urban hotspots using low tech and IWWM solutions				
	3.1.1 Compendium of innovative technologies adapted to small-scale situations, supported by technical assistance, made available to all participating countries	IDB	912,770	912,770
	3.1.2 Rural and community level Integrated and Innovative Water and Wastewater low tech solutions implemented	2,889,329	75,930,212	78,819,541
	3.1.3 Intervention in Barbados re: Star Allocation from Barbados (Land degradation and Biodiversity)	IDB	10,646,997	
Outcome 3.2 Improved life cycle management, circular economy and efficiency in water use-consumption promoting source protection and water reuse in the joint management of surface and groundwater resources in critical watersheds/hot spots				
	3.2.1. Integrated guidelines and implementation plan consistent with IWRM with a focus on water source protection and use efficiency, land use protection and food, energy and ecosystems nexus trade-offs	70,000	912,770	10,716,997

	3.2.2 Demonstration projects implemented focusing on: (1) Prevention, Reduction and Control of point and non-point sources of pollution source through best land management practices and (2) Development and Implementation of water source protection, water use efficiency and reuse strategies and action plans	743,301	15,907,645	16,650,946
Outcome 3.3 Improved knowledge and skills within targeted communities to enable implementation of innovative low-cost integrated water and wastewater management solutions				
	3.3.1 Training on innovative low-cost integrated water and wastewater management such as though webinars, MOOC, training programmes with the participation of civil society	115,000	5,998,205	6,113,205
Component 4	KNOWLEDGE MANAGEMENT AND ADVOCACY ON THE IMPORTANCE OF IWWM ORDER TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS	953,151	11,457,581	12,410,732
Outcome 4.1 Improved awareness and understanding of the advantages of implementing integrated approaches within targeted communities to enable implementation of low-tech and integrated water and wastewater management solutions				
	4.1.1 A communications strategy developed and implemented, including information and dissemination of products related to IWWM and watershed management	480,000	5,222,714	5,702,714
	4.1.2 Updated CReW clearinghouse mechanism on financial options, small- and large-scale wastewater treatment technologies, and wastewater and water management policies and practices developed	85,000	587,746	672,746
Outcome 4.2. Improved access to an information exchange mechanism, including knowledge of experiences and lessons learnt, as well as improved information sharing capability with GEF and the wider, local and national communities amongst all 18 participating countries				
	4.2.1 Documented best practices, lessons and experiences from all Components	234,124	4,582,078	4,816,202
	4.2.2 Operational information exchange mechanism for GEF and non-GEF projects established	154,027	1,065,043	1,219,070
Component 5	PROJECT MANAGEMENT AND MONITORING AND EVALUATION	319,905	7,015,000	7,334,905
	Project Management & Monitoring and Evaluation	319,905	7,015,000	7,334,905
	TOTAL PROJECT COST (\$)	6,398,100	149,130,307	141,391,007