



# From Source to Sea

Protecting Our Oceans through  
Partnership and Investments



The following information document<sup>1</sup> highlights the role which the Global Environment Facility (GEF) International Waters (IW) focal area has had over the years in assisting countries in implementing actions towards meeting the objectives of the Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities. This synergetic partnership has enabled countries to make the necessary investments in order to address key challenges related land-based sources of pollution and marine degradation.

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1. This document builds upon the previous information document “The role of the Global Environment Facility’s International Waters focal area in: Helping build the necessary institutional and management capacity for country led efforts to implement the GPA” prepared in advance of the IGR3 in Manila in 2012

# Our Oceans, Pollution Problems and the Global Programme of Action

The marine environment supplies the planet with key services such as climate regulation, storm protection, food security, nutrients cycling etc. All these services underpin the livelihoods of millions in a wide diversity of sectors from tourism to fisheries. Over 60% of the world's total gross national product comes from areas within 100 kilometers of the coastline. The estimated value of ecosystems services from our oceans stands at approximately US\$2.5 trillion<sup>2</sup> annually, making the oceans the world's seventh largest economy. Yet regardless of their enormous ecological and economic importance, oceans continue to suffer from advanced degradation as a consequence of human activities and of marine pollution; an increasingly significant problem. Overall, the impacts from overfishing, coastal hypoxia and eutrophication, invasive aquatic species, coastal habitat loss and ocean acidification cost the global economy at least US\$350 billion to US\$940 billion every year.<sup>3</sup>



Marine pollution results from the entry into the oceans of harmful, or potentially harmful chemicals, particles, industrial, agricultural and residential waste, noise, plastic debris or invasive organisms. With a growing population, set to reach nine billion by 2050, land-based sources of pollution and related impacts will continue to significantly compromise the integrity of the marine environment unless urgent global action is taken to reduce the influx of pollutants and efforts made to sustainably manage and protect oceans and coastal ecosystems.

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2. Hoegh-Guldberg, O. Reviving the Ocean Economy: the case for action - 2015 [Internet]. Gland, Switzerland: WWF International; 2015 [cited 2015 April 7]. 60 p. Available from: <https://www.worldwildlife.org/publications/reviving-the-oceans-economy-the-case-for-action-2015>.

3. Hudson, A. Catalysing ocean finance: Transforming markets to restore and protect the global ocean. Expert group meeting on oceans, seas and sustainable development: Implementation and follow-up to Rio+20 18-19 April 2013 [Internet]. [cited 2015 April 20]. Available from: <https://sustainabledevelopment.un.org/content/documents/1752Catalysing%20Ocean%20Finance%20-%20UN%20Expert%20Group%20Mtg%20Oceans%2018-19%20April%202013.pdf>.

Since 1950, 8.3 billion tonnes  
of plastic produced and  
6.3 billion tonnes of plastic  
waste produced



Only 9% of plastic  
is recycled



Globally 2 million tonnes of sewage  
agricultural and industrial waste  
enters waterways daily





Oceans and Coasts are the very basis of much of the world's economy. 350 million jobs around the world are linked to the oceans. They cover nearly three-quarters of our planet, and hold 97% of the planet's water



Known dead zones in the world's oceans have increased from 10 in 1960 to 405 in 2008 (comprised of 169 identified hypoxic areas, 233 areas of concern and 13 systems in recovery)

Over 500 coastal areas are impacted by eutrophication caused by excess nutrients worldwide



## The Global Programme of Action

The Global Programme of Action, adopted in 1995, is a voluntary, action-oriented, intergovernmental programme coordinated through UN Environment, to prevent the degradation of the marine environment from land-based activities. It is the only global intergovernmental mechanism that explicitly addresses the linkages between freshwater, coastal and marine environments.

To date, over 109 governments and the European Commission declared “their commitment to protect and preserve the marine environment from the impacts of land-based activities”, through the Washington Declaration.

Progress in implementing the GPA was first reviewed in Montreal, Canada in 2001, and then in Beijing, China in 2006. In the light of progress achieved by 2006, governments at the Beijing Intergovernmental Review agreed that during the period from 2007-2011 they would devote additional effort, finance and support to address

The GPA is a source of conceptual and practical guidance for governments to manage land-based activities. It promotes the formulation of National Plans of Action for the protection of the marine environment from land-based activities, coupled with infrastructure investments.

point and non-point source nutrients and marine litter as well as municipal, industrial, and agricultural wastewater, as major source categories – all of which are increasing and directly affecting human health, well-being and the environment, including marine ecosystems and their associated watersheds.

At the Beijing meeting, governments also agreed that over the same period they would focus on mainstreaming the implementation of the GPA in national development planning, including through the application of ecosystem approaches and valuation of the socio-economic costs and benefits of the goods and services that coasts and oceans provide.

As embodied in the Manila Declaration during the third Intergovernmental Review in Manila (2012), countries agreed to tackle nutrient pollution, marine litter and wastewater through three different partnership platforms under the GPA. Pursuant to this directive the Global Programme of Action Coordination Office leant support to the establishment and strengthening of these three global multi-stakeholder partnerships. The Global Programme of Action Coordination Office hosted by the UN Environment also serves as the Secretariat for these partnerships, the Global Partnership on Nutrient Management (GPNM), the Global Partnership on Marine Litter (GPML) and the Global Wastewater Initiative (GW2I).



## **Global Partnership on Nutrient Management (GPNM)**

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The excess of nutrients; nitrogen and phosphorus compounds that enter coastal and marine ecosystems through the air, surface water and groundwater cause detrimental effects across several environmental areas impacting Water quality, Air quality, the Greenhouse gas balance, Ecosystems and Soil quality; the 'WAGES' of poor nutrient management.

To address the WAGES of poor nutrient management holistically, the GPNM platform provides a global multi-sectoral international partnership that catalyzes strategic advocacy through its activities and promotes effective nutrient management to achieve the twin goals of food security (through increased productivity) and conservation of natural resources and the environment.

## **Global Wastewater Initiative (GW2I)**

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The issue of untreated wastewater has gained global momentum because of the concerning impact it has on biological diversity of aquatic ecosystems, human health, dead zones impacting the food chain and increasing the emissions of methane and nitrous oxide. It is disrupting the fundamental integrity of our life support systems on which a wide range of sectors from urban development to food production and industry depends.

The GW2I promotes good wastewater management practices and works towards considering wastewater as a valuable resource rather than a waste product.

It also serves as a global multi-stakeholder platform comprised of UN agencies, international organizations, governments, scientists, private sectors and other major groups and stakeholders to provide the foundations for partnerships to initiate comprehensive, effective and sustained programmes addressing wastewater management.

## **Global Partnership on Marine Litter (GPML)**

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Plastic debris in the marine environment is becoming of increasing concern as more is known about the adverse ecosystem, human health and economic impacts. These impacts are estimated to cost the world approximately US\$8 billion dollars per year. The ubiquity of plastics throughout the marine and coastal environment – whether on beaches, on the ocean surface, in the water column, on the seafloor or in biota – is a symptom of our failure to reduce and properly manage the amounts of plastics that we have produced.

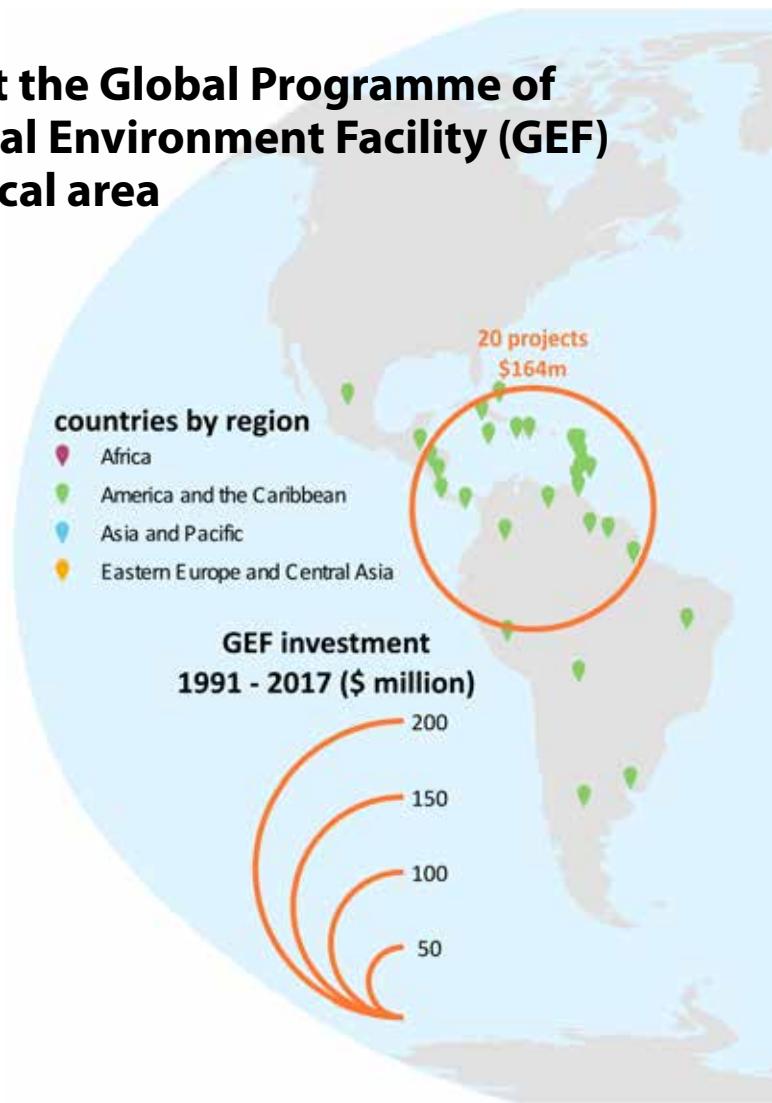
This economic, environmental, human health and aesthetic problem is posing a complex and multi-dimensional challenge. To address this challenge, the GPML not only acts as an international cooperation and coordinating mechanism that brings together governments, NGOs, academia and the private sector to collaborate in finding solutions to the problem of marine litter and microplastics but it also identifies gaps and emerging issues and creates the required awareness to bring about behavioral change and making a significant contribution to the 2030 agenda for Sustainable Development in particular SDG 14.1 “by 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution”.

# Assisting Countries Implement the Global Programme of Action (GPA) through the Global Environment Facility (GEF) and its International Waters focal area

The GEF was established in the early 1990s as the steward of the planet's global common resources and to help tackle its most pressing environmental problems. Since its establishment, the GEF has supported partnerships with over 183 countries, international institutions, civil society organizations, and private sector entities providing approximately \$17.9 billion in grants and mobilizing an additional \$93.2 billion in co-financing for more than 4,500 projects across the globe. To date, its International Waters Focal Area has invested over \$1.9 billion in grants leveraging \$12.6 billion in co-financing supporting 350 projects managing transboundary water bodies.

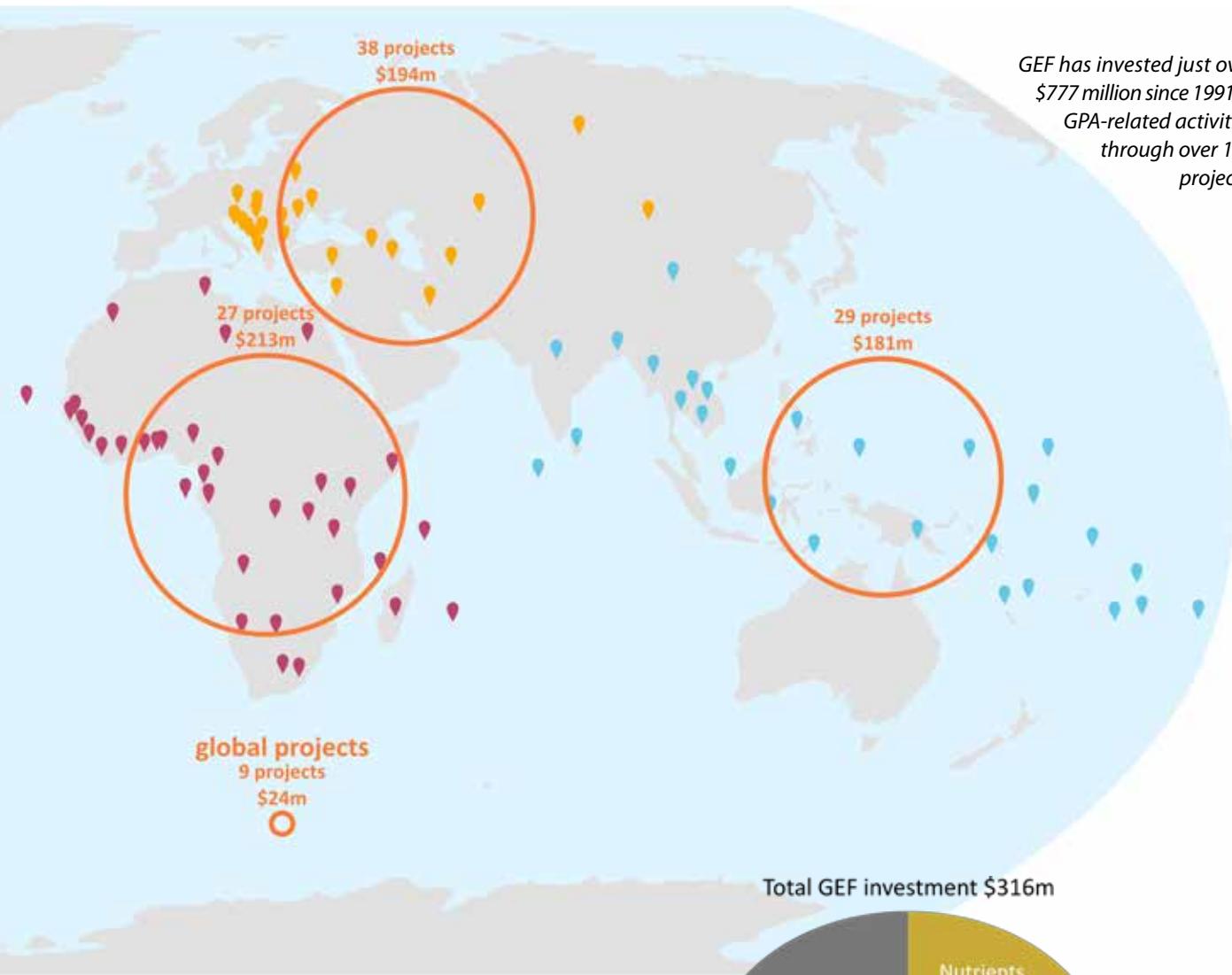
Specifically, the GEF has been assisting countries in addressing land-based sources of marine pollution. Incidentally, the first GEF replenishment in 1995 coincided with the initiation GPA's work as a non-binding multilateral environmental agreement, aiming at helping countries, through an ecosystem-based approach, to prevent the degradation of the marine environment from land-based activities.

Through GEF funded projects under the broad framework of regional water body based Strategic Action Programmes (SAPs), countries have been promoting Integrated Coastal Zone Management (ICZM) initiatives as a vehicle to implement National Plans of Action (NPAs) to address marine pollution, including reformulation of coastal policies

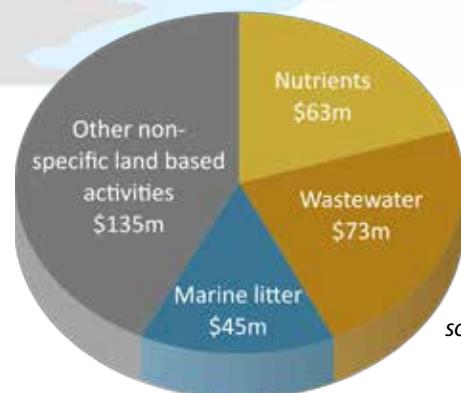


and coastal development strategies. The GPA therefore provides an excellent conceptual framework to integrate coastal and watershed management initiatives. Participatory formulation from the ground up in strategy development and implementation has been a hallmark of these plans which form a robust base for Global Environment Facility (GEF) International Waters (IW) investments.

*GEF has invested just over \$777 million since 1991 in GPA-related activities through over 120 projects.*



**Total GEF investment \$316m**



*Active GEF Investment per source sector of the GPA since 2012.*

The GEF has been well-recognised as a key partner in advancing GPA implementation as exemplified by the enabling support it has provided through numerous initiatives globally to strengthen the adoption of land-based sources of marine pollution protocols and related regional cooperation frameworks of Regional Seas Programmes and large marine ecosystem management programmes.

## The Synergetic Benefits of GEF Funded Projects That Meet The GPA Mandate

The following are a few key projects that highlight the strategic importance of integrated source to sea management approaches used to address land-based pollution from nutrient runoff, wastewater discharges and plastic waste.

### Nutrient pollution control

## GEF-Global Nutrient Cycle (GNC) Project

The GEF funded project “ Global foundations for reducing nutrient enrichment and oxygen depletion from land-based pollution, in support of Global Nutrient Cycle (GNC)”, which is implemented by United Nations Environment Programme (UN Environment) has contributed significantly in amplifying the influence of the GPNM. This project has enabled the expansion of partner membership and increased awareness and advocacy at several regional and international events through partner representation. Regional Platforms of the GPNM for Asia and the Caribbean have been established, with convening of stakeholder meetings and engagement of 25 countries between the Asia and the Caribbean regions. The governance of these platforms is being linked to the Regional Seas Programmes.

A global database has been developed with documentation on nutrient loading and occurrence of harmful algal blooms, hypoxia, and effects on fish landings, fish abundance, and composition of fish populations. A policy and technical solutions Tool Box for sustainable nutrient management has been developed to assist decision making by policy and technical professionals as well as practitioners in the fields of agriculture, water and wastewater resource management and general environmental resource management.

On-site application of science and modelling tools in decision-making were tested in Manila Bay and Laguna de Bay in the Philippines, and Chilika Lake in Odisha State in eastern India. Work in Manila Bay focused on strengthening the information and decision support system related to



good watershed management practices around scenario modelling on nutrient pollution. Ecosystem Health Report Cards have been developed for Chilika Lake and Laguna de Bay that incorporate critical influencing factors including nutrient influx, in assessment of the overall state of environment. These Report Cards provide innovative means of clearly communicating the issues to stakeholders and serve as a point of reference for investment in appropriate participatory actions toward realizing improved environmental health based on the score rating in subsequent assessments.

The project also successfully strengthened the foundations for governments and other stakeholders to initiate comprehensive, effective and sustained programmes to address nutrient over-enrichment and oxygen depletion from land-based pollution of coastal waters in large marine ecosystems.

For more information, <http://www.nutrientchallenge.org/gef-global-nutrient-cycling-gnc-project>

## Nutrient pollution control

# Targeted Research for Improving Understanding of the Global Nitrogen Cycle towards the Establishment of an International Nutrient Management System – INMS

The Towards an International Nutrient Management System (Towards INMS) project, implemented by UN Environment, is a strategic investment with high relevance to GEF partnership. Feeding into the work of the GPA, as well as its GPNM partnership, the Towards INMS will play a pivotal role gathering and synthesizing evidence that can support international policy development across both point and diffuse sources of nitrogen. Importantly, the work of Towards INMS project will contribute towards future scenario building and help the GEF partnership, along with other key players, prioritize strategic entry-points and achieve increased impact. The “Towards INMS” project comes at a critical time where the importance

of building the ‘gravity of common cause’ across the nitrogen cycle is ever more evident and it recognizes that the present lack of a coherent approach across the nitrogen cycle contributes substantially to these barriers. The project will address the hypothesis that joined up management of the nitrogen cycle will offer many co-benefits that strengthen the case for action for cleaner water, cleaner air, reduced greenhouse gas emissions, better soil and biodiversity protection, while at the same time helping to meet food and energy goals. At the heart of INMS are 7 demonstration regions, where the INMS concept is being tested in transnational contexts.

INMS will continue to engage with scientists and stakeholders developing common understanding and a set of solutions for the nitrogen issue. By 2022, INMS will deliver:

- A global assessment of the threats and benefits of human alteration of the nitrogen cycle and the opportunities for improvement.
- A forward look of what may happen if the problem is ignored.
- A guidance on joining up mitigation and adaptation options and strategies, linked to circular and green economy thinking.
- A platform for better cooperation across science and policy helping to overcome the barriers.

For more information on the project, please visit [www.inms.international](http://www.inms.international)



Modified from the European Nitrogen Assessment (2011)

# Agricultural Pollution Control – World Bank – GEF Strategic Partnership for Nutrient Reduction in the Danube River and Black Sea, Romania

In 2001, the GEF and the World Bank launched an Investment Fund for Nutrient Reduction in the Black Sea/Danube. The aim of this program was to provide a focused regional framework for country-level investments, while helping jump-start and further accelerate investments in key sectors. It therefore assisted in reducing nutrient pollution, that resulted in significant dead zones, in the Danube River and Black Sea. The program accelerated investments in municipal wastewater management, agricultural runoff, industrial pollution, policy and legal reforms, and capacity building as countries in the region have continued their transition towards market economies. The program consisted of a number of projects including two GEF – UNDP regional projects that created a shared vision for sustainable governance and developed investment frameworks. These projects aimed at preventing ecosystem deterioration, and secure economic improvement and growth in the Danube River Basin.

Another “child” project example under the strategic partnership - Agricultural Pollution Control Project in the Romanian Calarasi region –assisted the country in meeting high international drinking standards on drinking water, particularly the EU Nitrate Directive. The project achieved the following results;

- Non-point pollution control devices and best practices, particularly on-farm and communal platforms to control pollution from manure resulted in improved health and livelihood of 26,700 farmers (or a total of 10,540 households).

- Over a period of 2.5 years, the project resulted in a 28% drop in levels of nitrate in drinking water, further reducing the risk of blue baby syndrome due to acute nitrate poisoning.
- The project successfully demonstrated innovations that were later up-scaled at a national level in another 86 nutrient vulnerable zones.
- Romania’s adoption of a number of regulations and agreements designed to reduce emissions that can be harmful to both human health and the ecosystem.
- Approximately 30,000 small farms in about 100 communes are benefiting from equipment, training, and updated infrastructure to help reduce discharges of nitrates to the environment and improve the health and livelihoods of people around the country.
- Dissemination of knowledge and tools to farmers to help prevent nitrates from contaminating Romania’s soil and water supplies.

The successful implementation of this project in the Romanian Calarasi region provides a good example of the fund’s success, with best practices having been implemented across the country and leveraging considerable financial support.

For more information, please visit <https://iwlearn.net/iw-projects/1159>, <http://projects.worldbank.org/P093775/romania-integrated-nutrient-pollution-control-project?lang=en&tab=overview>

## Nutrient pollution control

# Mediterranean Sea Programme (MedProgramme): Enhancing Environmental Security

The most recent effort by the GEF/UN Environment/ European Bank for Reconstruction and Development (EBRD) in the Mediterranean Sea represents a comprehensive, powerful response to environmental and social challenges. Its objective is to strategically direct the efforts of key partners across the region to kick-start the implementation

of agreed upon transboundary priority actions, hereunder point and non-point sources of nutrients along with harmful chemicals and wastes (POPs and Mercury). The GEF investment of \$42 M will leverage \$708 M and is the culmination of two decades of support to the region. The programme is scheduled to start in 2019.



# Caribbean Regional Fund for Wastewater Management (CREW)

The GEF funded Caribbean Regional Fund for Wastewater Management (CREW) project (2011-2017), co-implemented by the InterAmerican Development Bank (IDB) and the United Nations Environment Programme (UN Environment), provided support to 13 countries of the Wider Caribbean Region (WCR) in areas ranging from training to the development of innovative sustainable financing mechanisms and solutions for improving wastewater management.

Some of the achievements included:

- The Land-Based Sources LBS of Marine Pollution Protocol being ratified by Jamaica, Costa Rica and Honduras;
- Over 37,000 people (8,400 households) with access to improved wastewater treatment;
- Reduction of 2,100 kg of BOD/day; 406 kg of nitrogen/day; 85 kg of phosphorus/day entering the environment;
- 12 new wastewater treatment plants to be completed with co-financing from the IDB;
- National Wastewater Revolving Funds worth US \$5m and US \$3m respectively established in Belize and Guyana;
- Credit Enhancement Facility worth US \$3m established in Jamaica.

The use of economic valuation tools and analysis for the wastewater sector now provides additional justification of the need for expanding wastewater infrastructure and to help identify the most cost-effective management solutions.

The project improved awareness among the general public, media personnel, technical experts and politicians. Governments now have improved national policies, legislation and regulations for wastewater management. Most importantly, there is increased recognition that in order to maximize on blue economy opportunities, managing marine pollution especially caused by untreated sewage is a key priority.

New and strengthened partnerships between UN Environment and IDB, the Secretariat to the Cartagena Convention, Caribbean Development Bank, water and wastewater utilities, wastewater associations, the media, academic and research institutes and communities formed a solid basis for future cooperation. To continue the journey towards operationalizing future cooperation and testing decentralized solutions to water and wastewater management in rural and peri-urban communities, the GEF, once again provided its support by approving the CREW+ Project.

This new phase of the project will develop strategies on how to maximize on opportunities for re-use of treated wastewater as a resource. It will also ensure that both urban and rural communities have access to centralized and decentralized solutions that are both appropriate and sustainable. And in this phase, there will be activities providing solutions in select watersheds and freshwater basins to ensure greater water security for vulnerable rural communities. The interventions in both these water systems will promote a Source to Sea approach and the proposed activities will increase the resilience of local communities to the impacts of droughts and, more generally, the impacts of climate change and climate variability in the water sector.

For more information, please visit <http://www.gefcrew.org>



# Integrated Water Resource Management, IWRM Pacific

The project was a remarkable initiative promoting Integrated Water Resource Management (IWRM) principles across small island developing states in the Pacific by improving water resource and wastewater management also incorporating water use efficiency (WUE) in order to balance overuse and conflicting uses of scarce freshwater resources. It also contributed to the development of an IWRM and WUE regional indicator framework and advanced national policy, legislative, and institutional water reforms.

The following are key policy and stress reduction impacts as a result of the project execution.

In the region...

- Water and Sanitation Committees have been established by two Sub-regional Heads of State forums: The Micronesian Chief Executives Summit and the Melanesian Spearhead Group
- National Inter-Ministerial Water Committees have been established in 13 Pacific Island Countries (Cook Islands, Fiji, Federated States of Micronesia (FSM), Kiribati, Niue, Palau, Republic of Marshall Islands (RMI), Tonga, Samoa, Solomons, Vanuatu and Tuvalu) .

In Tuvalu... Reduction in sewage pollution across Funafuti

The demonstration project "Integrated Sustainable Wastewater Management (EcoSan) for Tuvalu" installed compost toilets in 40 households that help remove sewage pollution from entering groundwater and subsequently into coastal waters.



- This represents a 5% reduction in pollution into the groundwater.
- The installations have also resulted in 30% reduction of water use and improved sanitation for about 280 people.
- The project has also successfully shared sanitation solutions with other Pacific countries.
- Development of a National IWRM Policy and Indicator Framework; reduction in sewage pollution across Funafuti and a reduction in freshwater use for sanitation uses.

For more information on the results of this project, visit <http://www.pacific-iwrn.org/>

## Addressing Marine Plastics – A Systemic Approach

On land, current plastic consumption and production is driven by unconcerned cheap plastic use-dispose behavior. Clearly, this wasteful linear economy cannot be sustained. A massive shift away from linearity toward a circular reduce-reuse-recycle-based high-value plastic system is crucial to ecosystem and human survival.



The United Nations Environment Programme (UN Environment) in collaboration with Ellen MacArthur Foundation (EMF), Ocean Conservancy (OC), and GRID-Arendal, with the catalytic assistance of the Global Environment Facility (GEF), are working together to pilot key interventions and to build on these a strategic roadmap for marine plastics through a medium sized project. Project Component One, led by the EMF is catalyzing a systemic change towards a circular economy for plastics – a New Plastics Economy. Work is ongoing towards the development of a global coalition of leading businesses and governments united behind a world-leading set of commitments towards realizing their common vision of a New Plastics Economy.

In addition, several pioneer projects are ongoing and selected innovations are supported to accelerate their route-to-market scale-up. Component Two, under the leadership of Ocean Conservancy, focuses on mobilizing investment, science, governments and civil society in implementing effective waste management to address current waste streams. In collaboration with Closed Loop Partners, OC launched Closed Loop Ocean to fund waste infrastructure solutions in Southeast Asia, with an initial call for funding proofs of concept in Indonesia. The UN Environment Programme Economy and Ecosystems Divisions, leads the development of a strategic framework for marine plastics for Component Three. It examines and identifies strategic intervention points in moving linear and wasteful plastic economies to circular systems within the broader rubric of sustainable consumption and production that is essential to curbing plastic flows to the ocean.

## Reducing Releases of Polybrominated Diphenyl Ethers (PBDEs) and UPOPs Originating from Unsound Waste Management and Recycling Practices as well as the Manufacturing of Plastics in Indonesia

This project, implemented by the United Nations Development Programme (UNDP), is the first GEF investment looking at reducing harmful chemicals leaching from plastics into the environment by adopting a life-cycle management approach of plastics. The activities will be focused on reducing the use of PBDEs in Indonesia's plastics manufacturing sector and move towards diverting

plastics from becoming waste by creating a sustainable raw material chain for the recycling industry. Indonesian plastics companies will receive technical assistance to change the manufacturing of plastics to eliminate the use of brominated flame retardants. Such transformation will hopefully impact other manufacturing sectors in Indonesia and directly reduces emissions for both recycling and disposal operations.





## The GPA/GEF partnership: looking forward

In the context of the GEF2020 vision, the GEF-7 programming architecture aims at reversing the trends causing the tipping point of the planetary boundaries by tackling the drivers of environmental degradation, promoting greater sectoral and thematic integration, and contributing to systems change in key areas that impact the GEF mission.

The GEF-6 experience will be harnessed in GEF-7, where a set of carefully identified Impact Programs (IPs) and Focal Area Investments will contribute to transforming key economic systems while better promoting the delivery of Multilateral Environmental Agreements goals beyond a single convention.

The synergetic relationship between the GPA and the GEF in protecting the marine and coastal environment will continue to capitalize on projects funded under the GEF-7 International Waters focal area both under its Blue Economy objective including its circular economy focus as well as under the Water Security objective focusing on environmental security and source to sea. The focal area is also dedicated to support countries to address impacts from land-based sources of pollution identified through the TDA/SAP process<sup>4</sup> through innovative investments.

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4. The TDA/SAP process consists of a Transboundary Diagnostic Analysis as a scientific analysis identifying shared threats in a given transboundary ecosystem. This process leads naturally into the formulation of the Strategic Action Program, which is a politically endorsed document that identifies the interventions needed to address the agreed threats in the region.





For more info on GEF funded projects, connect to IW:LEARN at  
**<https://iwlearn.net>**

For more info on the GPA, connect to  
**<https://www.unep.org/gpa>**