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Third Meeting of the Contracting Parties (COP) to the  
Protocol Concerning Pollution from Land-Based  
Sources and Activities (LBS Protocol) in the Wider  
Caribbean Region

Cayenne, French Guiana, 15-17 March 2017

**REPORT ON RESEARCH POLLUTION PRIORITIES  
BY GCFI FOR CLME+ PROJECT**



## Workshop on Identifying Research Needs on LBS Pollution in Caribbean Region

The Gulf and Caribbean Fisheries Institute

9 November 2016

Grand Cayman, Cayman Islands

### Background to the Project

The Gulf of Caribbean Fisheries Institute (GCFI) is working together with the Caribbean Large Marine ecosystem + program to identify Science-Policy Gaps in the countries sharing the Caribbean and North Brazil Shelf Large Marine Ecosystems (the “CLME+ countries”). The goal of the entire project is to address the following three strategies:

1. Expand the knowledge base required for implementation of Ecosystem Approach of Key Fisheries including flying fish, spiny lobster, shrimp, and groundfish in the CLME+ region.
2. Expand the knowledge base to support habitat protection and restoration in the CLME+ region
3. Expand the knowledge base required for the efficient and cost-effective reduction of LBS pollution in the CLME+.

GCFI will be addressing these three priorities within a Technical Task Team (TTT) convened for each strategy, a workshop in each of the next three GCFI meetings focusing on one of the strategies (starting with this meeting), and through follow-up surveys and meetings. You will also note that each session at this GCFI will be having follow-up questions to the presenters. We hope to be able to collect information related to these strategies within those questions. This will give us a more holistic view of the strategy that we are addressing.

There are 4 goals that we hoped to accomplish in this workshop:

1. To identify and establish a Technical Task Team (TTT) to address the LBS pollution gap analysis

in the region.

2. Identify missing participants/organizations that should be engaged in this review but are not present.
3. To identify research needs as they relate to LBS pollution in each of the following focal areas:
  - **Governance:** This could include institutional, policy, legislative and regulatory on all aspects of Pollution. And on the effectiveness of these including enforcement and engagement of private sector.
  - **Pollution:** Types, Sources and Impacts on Economic Sectors, Human Health and the Coastal and Marine Ecosystems. This would include any Environmental variables which exacerbate polluting impacts.
  - **Communication:** Focusing on research needed to bridge the sciences involved in Pollution research and then communicating this to general public and decision makers.
  - **Monitoring:** Monitoring all aspects of pollution including social, economic, legislative, enforcement, climate change, and all other previous topics.
4. Prioritize the lists of gaps for each focal area

#### **Results:**

1. **To identify and establish a Technical Task Team (TTT) to address the LBS pollution gap analysis in the region.**
2. **Identify missing participants/organizations that should be engaged in this review but are not present.**
3. **To identify research needs as they relate to LBS pollution in each of the following focal areas:**

On November 9 2016, The Gulf of Caribbean Fisheries Institute organized a half-day workshop on the identification of areas of Research Needs on Land Based Sources of Pollution in the Caribbean Region. The workshop was conducted to review the issue of knowledge gaps and needs marine debris across four major categories: governance, monitoring, communication and pollution.

The experts surveyed for this workshop were comprised of marine science practitioners with extensive experience and knowledge of the coral reef conservation and management activities at the regional level and in their local jurisdiction. Participants were identified through The Gulf Caribbean Fisheries Institute Network. This network was used because it is representative of the diversity of stakeholders across the Caribbean and it includes marine managers from government, NGO, academic, scientific and community organizations working in the CLME+ region.

The participants identified a list of indicators in each one of the four areas. The indicators were selected

for practical guidance on preventing and mitigating significant adverse impacts of marine debris on marine and coastal biodiversity and habitats, based on their existing work experience.

### Indicators:

While identifying the types and amount of debris that are frequently found on the coast is an important first step, understanding the impacts of those items is critical if effective voluntary or regulatory measures are to be implemented to limit their impacts.

### Governance:

The workshop revealed that the governance of marine debris in the Caribbean region faces many challenges that, require integrated and comprehensive approaches. There is an urgent need to move toward properly defining concepts, policies, and roadmaps seeking practical solutions in order to reach positive changes. The various indicators presented at the workshop by the experts have pointed in this direction, ranging from integration of stable long-term policies across sectors, best practices for public and private partnerships, implementing new technologies, and implementing changes at a local and personal level.

Table 1. Indicators for Governance. 28 indicators or threats were recommended during the workshop.

Indicator	1	2	3	4	Total
Integration of policies across sectors	2	3	1	3	9
How to deal in geopolitical complexity for enhanced regional governance	6		1	1	8
Science: low end solutions, reliable, tailored to regional reality (SIDS)	2		3	1	6
Stable long-term policies		1	5		6
How to identify and achieve consensus on what is best available information (results from science and empirical field information)	1	2	2	1	6
Best Practices for public-private partnership engaging scientist form companies to enhance products		2	2	1	5
What are the main sources ( micro plastic, sewage) priorities for governance	3		1	1	5
How to engage non-contracting parties		1	1	2	4
Deficiencies in E/A processes	3			1	4
How to increase capacity "across borders" institutional		1		3	4
how to bottom -up/ better engage grassroots groups in governance	1	2		1	4
research incentives at different geopolitical levels to make contribution to positive change	2		1		3

Best practices for including fisher folks in governance processes	1	2			3
Transboundary	1		1	1	3
How to complete ( bottom-up; top-down; transversal) continuum enhance at all levels		3			3
Research on "byproducts" of processes ( life cycle)			2	1	3
Regional systems of marine laboratories ( AMLC)				2	2
Analysis of current legislation, how to Harmonize defining common languages/terminology across P-PP	1			1	2
Research of how to bring "interactive governance" into practice: CLME +RGF			2	2	2
Investment needs		1		1	2
We know source/problem; but: the solution	1				1
How to establish regional DB	1				1
Redefine "Waste"				1	1
What governance arrangement is needed:					0
Regional					0
LME					0
research in taxes, subsidies ( import, export, stressors)					0
	22	20	23	24	89

### Communication:

The workshop was conducted to identify knowledge gaps and needs on communication and to discuss the effectiveness of public awareness and education campaigns. Preventing waste from reaching the marine and coastal environment is the most effective way to address the problem of marine debris. Communication and awareness about marine debris at a the regional and global level through the engagement of various stakeholders, including multi-national industries, engaging industries in public education and outreach, and building partnerships with local governments was considered a necessary step for the consulted experts.

The workshop experts recommended four major indicators (described in order of importance):

- a) **Communication Targets:** Communication within an organization is essential. Knowing the target audience that you intend to communicate with is just as important. The experts considered that communication with policy makers and communication educators was highly important followed with communication with Millennials, the general public and scientist. Special interest groups (non-governmental non-profit-groups), and managers were no voted.

b) **Communication strategies:** The experts from the workshop identified the need of developing a communication strategy to standardize the way to interact with the public, partners and colleagues. Having all interested groups on the same page is essential to a highly efficient communication. The value of networking and hiring a specialist in communication was highly prioritized.

c) **Financial resources:** The allocation of financial resources to specific communication strategy is generally considered the most critical phase of the success of any communication project. Although considered highly important the expert group did not recommend any specific financial approaches to achieve success.

d) **Communication delivery:** Communication is the act of conveying information. Although considered highly important the expert group did not recommend on the delivery methods such as: Internet, television, radio, newspapers), promotion-only outlets (e.g., postal mail, billboards), and person-to-person contact. It is important to mention that conventional delivery methods are not necessarily effective approaches to reach Millennials.

Table 2. Indicators for Communication. 4 indicators or threats were recommended during the workshop.

<b>Indicator</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Total</b>
<b>Communication Targets</b>	8	3	3		14
Millennials	1	1		1	3
Public		1		1	2
special interest groups					0
managers					0
policy makers	3			1	4
scientists				1	1
communication educators	1	1	1	1	4
					<b>28</b>
<b>Communication strategies</b>	5	5	3	3	16
Value	1				1
networking map-local	1	2		1	4
Specialist in communication			3		3
sensitive information				1	1
					<b>25</b>
<b>Communication Delivery</b>	3	4	3	4	14
Methods					0
Opportunity					0
					<b>14</b>
<b>Financial resources</b>		5	9	7	<b>21</b>

<b>Total rank</b>	<b>23</b>	<b>22</b>	<b>22</b>	<b>21</b>	<b>88</b>
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## Monitoring

The expert panel recognized that the implementation of an effective marine debris control program in the Caribbean region is currently hampered by a lack of consistent monitoring and identification of sources of debris. The expert discussed and identified many gaps in knowledge, including the need for high-value data about the quantity and types of marine debris found on the Caribbean coastal areas. While extensive data ‘snapshots’ exist, to provide the full picture and to make informed comparisons over time, the data need to be accompanied by site-specific data collected using a rigorous protocol and established baselines. In addition, through monitoring, we can evaluate the effectiveness of educational outreach, pollution prevention, and policies put in place to reduce marine debris.

Table 3. Indicators for Monitoring 8 indicators or threats were recommended during the workshop.

<b>Indicator</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Total</b>
<b>Why Monitoring</b>					
Knowing the purpose of monitoring	5	3		2	10
Standardize the identification	1				1
Establish baselines				2	2
Define terms: Monitoring, survey, assessment		1		3	4
<b>How to monitor</b>					
Holistic approach to monitoring		3			3
Data standardization	2	3	2	1	8
Survey Design sampling					0
Holistic approach to monitor sources of pollution	1				1
Standardization			1		1
Sampling/survey design	1		2	1	4
Low-cost Technologies				1	1
Intercalibration				1	1
<b>When and where to monitor</b>					
Spatial Coverage of monitoring					0
Time-series monitoring, not only snapshots			1	1	2
Identify different objectives and timescales					0
Scale: broad to specific	1	2	1	1	5
Local to regional					0
<b>Access to information</b>					
Access of information		3	1	1	5

Database with public access to information	2	2	3	2	9
<b>Information transfer</b>					
Transfer information for ground management actions	2		4	1	7
Information dissemination	1			1	2
<b>Government and Public Capacity</b>					
Private sector investment and capabilities					0
Government funding	1	1	1	1	4
Citizen science			1	1	2
Social Perceptions		1			1
Perception of the public to problems	2	1			3
Accountability of regulation				1	1
Laboratory capacity			1		1
<b>Lack of information</b>					
Gaps in the analysis	2	2			4
Identifying the main problems		3			3
Identify priority risks				1	1
Unused data, lack of capacity to analyze data					0
Skills in Bioinformatics					0
Biochemical indicators					0
<b>What to monitor</b>					
Having correct indicators and common baselines	6				6
Link between variables and synergetic effects			1		1
nutrient monitoring and impacts			1		1
Impacts on Health and Income		1		1	2
Monitoring not only for science (impacts)		2		1	3
Monitoring not only for science (effectiveness)			1		1
<b>Other</b>					
No need for standardization					0
Situation change by location					0
Geographic info on pollution					0
	<b>27</b>	<b>28</b>	<b>21</b>	<b>24</b>	<b>100</b>

## Pollution



Marine debris sources are generally classified as either land-based or sea-based source of pollution, depending on how the debris enters the water. The major sea-based sources of marine debris are: shipping (merchant, public transport, pleasure, naval and research) and fishing (vessels, angling and fish farming) activities; offshore mining and extraction (vessels, and oil and gas platforms); authorized and unauthorized dumping at sea; abandoned, lost or otherwise discarded fishing gear; illegal, unreported and unregulated fishing activities; tsunamis; hurricanes and other natural disasters, and others.

The participants of the workshop identified considerable gaps in the knowledge of marine debris issues identified above. This were in terms of the sources origin, distribution and quantity of marine debris items, and their impacts on marine and coastal biodiversity and habitats. They all concluded that these gaps are limiting the ability to address the problem effectively at the local and regional level.

**Table 3. Indicators for Pollution 8 indicators or threats were recommended during the workshop.**

<b>Indicator</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Total</b>
Feasibility/ business cases for investment in pollution reduction/prevention	7	2	1	3	13
Quantifying economic impacts of pollution on society	3	10	3	2	18
Identifying sources of contamination from multiple stressors	8	3	2	3	16
impacts of pollutants on ability of ecosystems to sequester carbonate			1		1
Understanding sources of pollution	1	2	2	4	9
Developing pollution criteria standards	2	2	3	3	10
Research on policies to incentivize private sector	1	3	8	3	15
Research on impacts of emerging contaminants ( hormones, noise pollution)		2	4	6	12
	22	24	24	24	94

#### **4. Prioritize the lists of gaps for each focal area**

**Governance:** This could include institutional, policy, legislative and regulatory on all aspects of Pollution. And on the effectiveness of these including enforcement and engagement of private sector.

- Holistic approach in Governance arrangements (stakeholders and Government),
- Integrated approach to marine debris issues State, local and regional governments.
- Strength sustainability and funding of programs.
- Opportunities to simplify, integrate and align management arrangements

- Multi and bilateral governance structures should focus on emerging threats and reduce overlap or duplication.
- Socioeconomic evaluation of the impacts of marine debris on various coastal and maritime sectors should be conducted in order to provide a baseline data for better decision-making at national and regional levels.
- Implementing regional plans against marine litter
- Strengthening governmental and private sector compliance and enforcement

**Pollution:** Types, Sources and Impacts on Economic Sectors, Human Health and the Coastal and Marine Ecosystems. This would include any Environmental variables which exacerbate polluting impacts.

- Gaps in knowledge of marine debris in terms of the sources, distribution and quantity of marine debris items, and their impacts on marine and coastal biodiversity and habitats
- To understand and quantify the impact of sea-based debris on marine and coastal species, and identify potential hotspots of marine debris and their associated biodiversity impacts.

**Communication:** Focusing on research needed to bridge the sciences involved in Pollution research and then communicating this to general public and decision makers.

- Educate the industry, government, and the public on the concept of marine debris and the consequences of their choices
- Develop and implement an education campaign for citizens to support sustainable material use choices and new innovations (including practices)
- Develop and implement an education campaign to reduce the production on LBS of pollution
- Develop and implement an education campaign to increase recycling and proper disposal efforts

**Monitoring:** Monitoring all aspects of pollution including social, economic, legislative, enforcement, climate change, and all other previous topics.

- Standard monitoring programs that consistently describe the litter, their sources and quantities; information sharing around the Caribbean
- Establishment of a baseline for marine litter quantities in the Caribbean marine regions to monitor progress towards reduction target
- Filling knowledge gaps with a view to tackling sources or forms of marine litter of concern, such as microplastics in products.
- Develop mechanisms for data sharing

## Summary

The workshop participants identified that despite of the existing monitoring of marine debris at the local and regional level, many gaps exist, including the lack of a common action plan, targeted legislation, and funding. There are also gaps at the impact level information on the impacts on human health, the economy,

and environmental (ecological shift due to climate change and invasive species), need to be studied in order to understand the complexities of this problem.

The discussion noted that is fundamental to recognize that marine debris is not merely a local issue or a waste control issue. The overlapping of the indicators selected among the four themes discussed during the workshop indicated a consensus among the presenters in the following areas: a) that a framework to reduce the impact of the marine debris should include the following topics: problem identification, monitor and report standarization, stakeholder engagement, and identification of knowledge gaps, b) strengthening governance, development of institutional mechanisms, funding are needed and c) strong public awareness with strong involvement of the millennia's is necessary.

DRAFT

## Appendix 1 – List of Workshop Participants

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