GloFouling PARTNERSHIPS

GLOBAL PROJECT TASK FORCE **(GPTF)** 1ST MEETING

INCEPTION REPORT

gef

UNDP

IMO INTERNATIONAL MARITIME ORGANIZATION

Published[1] in 2019 by
GloFouling Partnerships Project Coordination Unit
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom

Printed in United Kingdom

Cover design by Luke Wijsveld

Photo credits[2]: © shutterstock, Templar52, Ashley Coutts and Adobe Stock (cover);

Please cite this document as: GloFouling Partnerships 2019. *Global Project Task Force (GPTF), First Meeting, IMO Headquarters London, 18-20 March 2019: Proceedings*. IMO London

GloFouling Partnerships project:
The GEF-UNDP-IMO GloFouling Partnerships is a six and a half year global project aimed at protecting biodiversity by tackling the transfer of harmful aquatic species through biofouling in some of the developing regions of the world. The project encourages the sharing and adoption of technologies and innovative solutions that can improve biofouling management across all maritime industries and the energy efficiency of ships.
www.glofouling.imo.org

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Acronyms

AF	Anti-Fouling
AFC	Anti-Fouling Convention
AFS	Anti-Fouling System
APR	Annual Project Report
BMP	Biofouling Management Plan
BRB	Biofouling Record Book
CP	Contact Point
CPPS	Permanent Commission for the South Pacific
CTA	Chief Technical Adviser
ERC	Evaluation Resource Centre
ExCom	Project Executive Committee
FI	Financial Institution
FSU	Floating Storage Unit
GEF	Global Environment Facility
GEF IW	Global Environment Facility International Waters
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GIA	Global Industry Alliance
GPTF	Global Project Task Force
IAS	Invasive aquatic species
IEO	Independent Evaluation Office
IFI	International Financial Institution
IMO	International Maritime Organization
IMO FS	International Maritime Organization Financial Services
IOC-UNESCO	Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization
ITCP	IMO's Integrated Technical Cooperation Programme
LA	Lead Agency
LDCs	Least Developed Countries
LPC	Lead Partnering Country
LPIR	Legal, Policy and Institutional Reform
M&E	Monitoring and Evaluation
MEPC	IMO's Marine Environment Protection Committee
MOU	Memorandum of Understanding
MTR	Mid-term Review
NBMS	National Biofouling Management Strategy and Action Plan
NFP	National Focal Point
NGO	Non-Governmental Organization
NPC	National Project Coordinator
NTF	National Task Force
OFP	Operational Focal Point
PC	Partnering Country

PCU	Project Coordination Unit for the GloFouling Partnerships
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PERSGA	Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden
PIR	Project Implementation Review
ProDoc	Project Document
Project CTA	Project Chief Technical Adviser
PTA	Project Technical Manager
RAC/REMPEITC-Carib	Regional Activity Centre/Regional Marine Pollution Emergency, Information and Training Centre - Wider Caribbean
RCO	Regional Coordinating Organization
R&D	Research and Development
RoP	Rules of Procedure
ROV	Remotely Operated Vehicle
RTF	Regional Task Force
SACEP	South Asia Co-operative Environment Programme
SAP	IMO's enterprise resource planning system
SDG	Sustainable Development Goal
SESP	UNDP's Social and Environmental Screening Procedure
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
TA	Technical Adviser
TDA	GEF transboundary diagnostic analyses
TE	Terminal Evaluation
ToR	Terms of Reference
TT	Tracking Tool
QPR	Quarterly Progress Report
UNCLOS	UN Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WOC	World Ocean Council

Opening Address

Delivered by Mr. Hiroyuki Yamada, Director, Marine Environment Division, IMO.

Ladies and gentlemen, distinguished participants,

On behalf of IMO, I am very pleased to welcome you to London for the first meeting of the GloFouling Partnerships Project.

Since this new project was announced by the Global Environment Facility, United Nations Development Programme and International Maritime Organization about one year ago, the tremendous commitments have been made by the Lead Partnering Countries, the Regional Coordinating Organizations and the Strategic Partners. It is evident now that this group of countries and organizations will contribute to the implementation of the Project and the achievement of its objectives.

The transfer of invasive aquatic species has been identified as one of the key global threats to our oceans. Invasive species can be the source of significant environmental and socioeconomic impacts, which will threaten livelihoods in coastal communities.

IMO made its efforts in addressing the transfer of invasive species through shipping. Over the last 20 years, IMO has made significant progress towards managing the role of ballast water as a vector for invasive species, and the 2004 Ballast Water Management Convention has now entered into force.

Biofouling, the accumulation of aquatic organisms on ships' hull and sea chests, have been considered as another vector for the transfer of invasive species, in addition to ships' ballast water. In 2011, MEPC adopted the Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species, so-called the Biofouling Guidelines.

It is our expectation that the GloFouling Project will drive actions to reduce the risk of biofouling by ships, in implementation of the biofouling Guidelines. Biofouling affects ships' operational efficiency. As a result, ship owners are demanding improved coatings and new technologies to reduce maintenance cost and time.

However, biofouling does not only affect shipping, but also other marine industries. It is for this reason that I am very pleased to extend my welcome to our colleagues from the Intergovernmental Oceanographic Commission of UNESCO. The IOC will be an executing partner and coordinate the approach to other key marine industries, such as aquaculture and ocean energy.

We must also not forget that partnerships with private sectors and technology developers are equally crucial for finding solutions to this environmental problem. In this regard, IMO has a good history of cooperation with the Global Industry Alliance, created under the GloBallast and GloMEEP Projects. As you will hear during this meeting, the GloFouling Project will create its own Global Industry Alliance, and will go one step further, by helping the World Ocean Council to replicate the same model with private sector companies from the aquaculture, ocean energy and other non-shipping industries. I am very pleased to see the WOC representative Mr. Paul Holthus here.

Last but certainly not least, I would like to thank UNDP and Mr. Andy Hudson for the continuous support and smooth cooperation between our organizations. Andy has been behind the enduring

partnership between UNDP and IMO that has been so successful in approaching complicated environmental problems, not only for invasive species but also for greenhouse gas emissions.

Ladies and gentlemen allow me to close this opening address by expressing my sincere appreciation to all the participants in the first Global Project Task Force Meeting. I would like to thank you for taking the lead globally in working with this challenging issue. I know that many of you have come from very far away for this meeting. But I believe that this cooperative spirit will make GloFouling another successful project, under GEF, UNDP and IMO.

I am sure that, by establishing a close and frank dialogue, we will be able to meet all the aims we have set for ourselves. I am confident that you will have a fruitful discussion over the three days.

Thank you very much.

Group photograph

Meeting Agenda

Venue: Committee Room 11-12-13, 2nd Floor, IMO Headquarters, 4 Albert Embankment, London.

Opening remarks (welcome messages)

1 Adoption of the Agenda

2 GPTF Terms of Reference and Rules of Procedure

3 Project overview and objectives of the meeting

4 Lead Partnering Country (LPC) status reports

5 Regional Coordinating Organization (RCO) status reports

6 Regulatory aspects: the IMO Biofouling Guidelines

7 Biofouling management in non-shipping industries

8 Lessons learned from other initiatives and research on biofouling management and invasive aquatic species

9 Project work plan, budget and monitoring and evaluation

10 Role of the private sector and industry leadership

11 Global Industry Alliance (GIA) for Marine Biosafety: establishment and GIA Fund

12 Regional implementation aspects

13 National implementation aspects

14 Review of forthcoming activities

15 Communication strategy and sustainability

16 Other business

Closing remarks

Briefing Papers and Submissions

Agenda Item 2: GPTF Terms of Reference and Rules of Procedure

Background

1 Best practices for implementation of global projects recommend the creation of a global advisory and coordination mechanism to guide the Project Coordination Unit (PCU) and participating countries in the implementation of programmed activities, and to provide a forum for consultation and communication between the various international parties involved or with a vital interest in the project. In this manner, a Global Project Task Force (GPTF) would have been formed. The Terms of Reference for the GPTF are as follows.

Terms of Reference of the GPTF

Role

2 The GPTF will be the highest advisory body of the Project. The GPTF will review the activities of the project and will provide advice to IMO and UNDP on the general directions to be followed. The GPTF will make its final recommendations to IMO and UNDP based on the principle of consensus. An organogram for the GloFouling Partnerships project explaining the functional relationships among the various stakeholders of the project is given further below.

Membership

3 Initial GPTF membership will include a representative from each of the Lead Partnering Countries (LPCs) and Regional Coordinating Organizations (RCOs) as well as one each from GEF/UNDP, the private sector, other donor partners, the NGO community and the IMO. Additional members can be added at the discretion of the IMO and UNDP on the advice of the GPTF. The PCU Project Technical Manager (PTA) will act as Secretary to the GPTF. The GPTF will be chaired jointly by IMO and UNDP.

4 A list of LPCs and RCOs is given below:

Lead Partnering Countries (LPCs)
Brazil
Ecuador
Fiji
Indonesia
Jordan
Madagascar
Mauritius
Mexico
Peru
Philippines
Sri Lanka
Tonga

Regional Coordinating Organizations (RCOs)
Permanent Commission for the South Pacific (CPPS)
Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)
Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden

(PERSGA)
Regional Activity Centre/Regional Marine Pollution Emergency, Information and Training Centre - Wider Caribbean (RAC/REMPEITC-Carib)
South Asia Co-operative Environment Programme (SACEP)
South Pacific Regional Environment Programme (SPREP)

Tasks

5 The GPTF will advise and assist the IMO and UNDP on the following tasks:

- Provide overall strategic policy and management direction to the project;
- Assist in identifying and allocating programme support for activities consistent with project objectives;
- Biennially review and assess the progress of the Project and its components;
- Biennially review and approve the work plan and comment on the budgets of the Project and its activities, and provide strategic direction on the work plan;
- Provide guidance to the PCU in coordinating and managing the programme of activities;
- Create mechanisms for interaction with the private sector (shipping, ports, non-shipping), NGOs and other stakeholders (e.g. public health); and
- Seek additional funding to support the outputs and activities of the project.

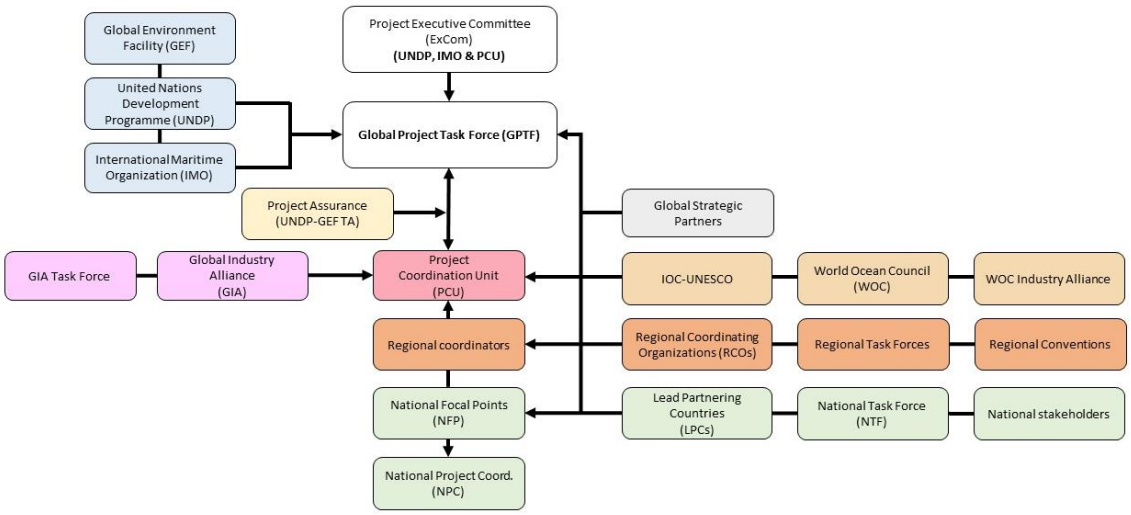
Meetings

6 The GPTF will meet on a biennial basis (e.g. 3 times, during 2019, 2021, 2023). These three meetings will be built around the three key operational events:

- Inception meeting: agreeing on a detailed work plan and preparation of an inception report;
- Mid-term meeting: providing implementation status and an external mid-term evaluation; and
- Final meeting: discussing achievements, lessons learned, next steps and sustainability.

7 As much as possible, the GPTF meetings will be held back to back with major Project events. During the project years 2020 and 2022, an Executive Committee, composed of UNDP/GEF, IMO and the PCU will convene to discuss project implementation, focusing on feedback from issues raised in the annual APR/PIR reports.

GloFouling Partnership – Organogram



Rules of Procedure of the GPTF

(Adopted by the 1st GPTF meeting)

Introduction

8 The purpose of these Rules of Procedure (ROP) is to provide a uniform basis for the Global Project Task Force (GPTF) of the GEF-UNDP-IMO GloFouling Partnerships (the Project) and its subsidiary bodies, to conduct their work in an efficient and effective manner having regard to the available resources of the Project.

9 The ROP are applicable to the work of the GPTF and any subsidiary bodies that it may establish. The Chairs of the GPTF and any subsidiary bodies should make all efforts to ensure strict compliance with the ROP.

10 The ROP and the appendices thereto was approved and adopted by the 1st Meeting of the GPTF and will be kept under review and updated as necessary by the GPTF in the light of experience gained in their application.

Role of the GPTF

11 The role of the GPTF is to provide strategic advice and guidance on the activities of the Project and ensure the achievement of its development objectives, as outlined in the Project Document, in a coordinated, efficient and cost-effective manner, and to provide a forum for regular and ongoing review and approval of the Project's Implementation Plan.

GPTF Tasks

12 The GPTF will advise and assist the IMO and UNDP on the following tasks:

- Provide overall strategic policy and management direction to the Project;
- Assist in identifying and allocating programme support for activities consistent with Project objectives;
- Biennially review and assess the progress of the programme and its components;
- Biennially review and approve the work plan and comment on the budgets of the Project and its activities, and provide strategic direction on the work plan;
- Provide guidance to the PCU in coordinating and managing the Project and its activities;

- Create mechanisms for interaction with the private sector (shipping, ports, non-shipping), NGOs and other stakeholders (e.g. public health); and
- Seek additional funding to support the outputs and activities of the Project.

Membership

13 Membership of the GPTF is open to:

a) the Global Environment Facility (GEF);
b) the United Nations Development Programme (UNDP);
c) the International Maritime Organization (IMO);
d) the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO);
e) the National Focal Point (NFP) or National Project Coordinator (NPC) or a nominated representative from each of the Lead Partnering Countries (LPCs);
f) the Project Focal Point from each of the Regional Coordinating Organizations (RCOs);
g) one representative from each donor Financial Institution (FI);
h) one representative from the World Ocean Council (WOC);
i) one representative from the Global Industry Alliance (GIA) for Marine Biosafety; and
j) the following Observers:
    - one representative from each Strategic Partner of the Project; and
    - any other party approved by a meeting of the GPTF in accordance with these ROP.

Observer Members

14 The GPTF may grant Observer status to any organization that is able to make a substantial contribution to the Project, including, but not restricted to, the Observers listed under membership above.

15 Decisions by the GPTF to grant Observer status to any organization shall be based on the following principles of purpose:

- for the purpose of enabling the GPTF to obtain information and/or expertise from an organization with special knowledge, experience and/or interest in any particular subject relating to the Project; and
- for the purpose of enabling an organization which represents a large group whose activities have a direct bearing on the Project, and vice-versa, to express their points of view to the GPTF.

16 Observer status may not be granted to an organization unless it undertakes to support and promote the activities of the Project. The granting of Observer status shall confer the following privileges on an organization:

- the right to receive all documents relating to GPTF meetings;
- the right to submit written statements on items of the agenda of GPTF meetings; and
- the right to attend GPTF meetings and to make representations at such meetings, in accordance with these ROP and the Chair's prerogative.

17 While, as a rule, the GPTF will make decisions based on the principle of consensus, including consensus of Observer members, in accordance with paragraphs 33 and 34, when voting is deemed necessary, the Observer members do not have voting rights.

18 All Observer members shall keep the GPTF fully informed of those aspects of their own activities which are likely to be of interest and relevance to the Project.

19 The GPTF shall review on a regular basis the list of Observer members and decide any necessary changes.

Chair & Secretariat

20 The GPTF will be chaired jointly by IMO and UNDP.

21 Any subsidiary groups which might be established shall elect from among their members a Chair and Vice-Chair.

22 The Project Technical Manager (PTA) of the Project Coordination Unit (PCU) based at the International Maritime Organization (IMO) shall act as the Secretary of the GPTF and any subsidiary groups which may be established. The PTA may delegate these functions to staff of the PCU and will be assisted in these functions by an IMO Officer back-stopping to the Project. In carrying out these functions, the PTA will have access to the resources and facilities of IMO.

23 It is the duty of the Project Secretariat to receive, process and circulate to Members all reports, resolutions, recommendations and other documents of the GPTF and its subsidiary bodies.

Meetings

24 Throughout the project, the GPTF will meet on a biennial basis (e.g. three times, in 2019, 2021 and 2023). These three meetings are built around the three key operational events:

- Inception meeting (2019): agreeing on a detailed work plan and preparation of an inception report
- Mid-term meeting (2021): providing implementation status, reviewing an external mid-term evaluation and confirming an Implementation Plan for the period 2021 2022
- Final meeting (2023): discussing achievements, lessons learned, next steps and sustainability.

25 As much as possible, the GPTF meetings will be held back to back with major Project events. During the project years 2020 and 2022, an Executive Committee, composed of UNDP/GEF, IMO and the PCU will convene to discuss project implementation, focusing on feedback from issues raised in the annual APR/PIR reports.

26 The PCU, acting on the direction of the Chair, shall notify Members at least two months in advance of the holding of a meeting.

Agenda

27 The provisional, annotated agenda and supporting documents for each meeting shall be prepared by the Secretary and shall normally be communicated to the Members at least two weeks before the opening of the meeting.

28 The first item on the provisional agenda for each meeting shall be the adoption of the agenda.

29 The provisional agenda for each meeting shall include:

a) any item proposed by a Member;
b) any item proposed by the Secretariat;

c) all items the inclusion of which has been requested by the GPTF at a previous meeting; and
d) any item of the agenda of a previous meeting, consideration of which has not been completed, unless otherwise decided by the GPTF.

30 In circumstances of urgency, the Secretary, with approval from the Chair, may include any item suitable for the agenda which may arise between the dispatch of the provisional agenda and the opening of the meeting, in a supplementary provisional agenda which the GPTF shall examine together with the provisional agenda.

Languages

31 The official language of the GPTF is English.

Decision-making and voting

32 In general, the GPTF will arrive at decisions by consensus of all Members, including Observers.

33 In exceptional situations where consensus may not be possible, the GPTF will arrive at decisions by voting. The GPTF should normally vote by show of hands. Each Member organization shall have one vote, except Observers, who shall not have the right of vote.

Subsidiary bodies

34 The GPTF may establish and dis-establish such subsidiary bodies as and when it considers necessary. Such subsidiary bodies shall follow these ROP so far as they are applicable.

35 The subsidiary bodies should, as necessary, operate under the instructions of, and report to, the GPTF.

Conduct of business

36 Twelve Members shall constitute a quorum.

37 The Chair shall declare the opening and closing of each meeting. The Chair shall direct the discussions and ensure observance of these ROP, accord the right to speak, put questions to the vote and announce decisions resulting from the vote.

Coordination and review of work plans

38 The GPTF should periodically examine the Project's Implementation Plan, establish priorities, allocate work to subsidiary bodies and review the allocation of meeting dates to each body and their future work plans and provisional agendas, taking into account any recommendations made by meetings of the GPTF and subsidiary bodies.

39 The GPTF Chair should, at the end of every two years, submit to the GPTF a joint plan covering the activities, priorities and meetings of the subsidiary bodies over the following two years.

40 The GPTF should:

- decide on items to be included in the work plans of their subsidiary bodies with clear and detailed instructions for the work to be undertaken;
- establish priorities and target dates or the number of sessions needed for the completion of the consideration of such items; and

- assign work on such new items to appropriate subsidiary bodies.

41 The following should apply when the GPTF is invited to consider proposals for the inclusion of new items in its Work Plan:

- specific indication of the action required;
- the need for the work proposed and its relation to the objectives of the Project;
- the scope and issues involved;
- the costs to the Project, the maritime industry, the legislative and administrative burdens involved and benefits which would accrue therefrom; and
- its degree of priority and a target completion date.

Preparation and introduction of documents and reports

42 For each meeting, the Secretariat shall prepare the following documents:

- the provisional, annotated agenda;
- official invitations to all Members; and
- the meeting report.

43 Documents should be prepared in single spacing and be as concise as possible to facilitate their timely processing. In order to enhance the clear understanding of documents, the following should be observed:

- all documents should include a brief summary prepared in accordance with the form given in appendix 1;
- substantive documents should conclude with a summary of the action the relevant body is invited to take; and
- information documents should conclude with a summary of the information contained therein.

44 All documents should be made available to GPTF Members by the Secretariat 4 weeks or more before a session and should be introduced in the plenary for the proper consideration of the matter concerned.

45 Reports of the GPTF and their subsidiary bodies should, in general, contain, under each section, only:

- a summary of key documents and listing of other documents submitted by GPTF Members and the Secretariat;
- a summary of views expressed, during consideration of an item, which may have influenced the decision taken by the reporting body (thus not allowing the reports to turn into summary records, Statements by delegations should be included therein only at their express request during the session); and
- a record of the decisions taken.

46 Whenever possible, each subsidiary body should indicate in its report the progress made towards the target completion date set by the GPTF(s) for each major item.

47 Chairs of subsidiary bodies should not introduce their reports to the GPTF, as these should be taken as read.

Observance of the Rules of Procedure

48 These ROP should be observed strictly. This will assist Members in preparing adequately for each meeting and enhance their participation in the debate and decision-making process during meetings. It will also avoid delegations experiencing difficulties when developing positions on subjects on the agenda of the GPTF or its subsidiary bodies. Members should ensure that their experts attending meetings of subsidiary bodies are adequately informed and instructed on any action necessary to give effect to decisions made by the GPTF.

STANDARD FORMAT FOR DOCUMENTS

The text of all the documents should be preceded by a brief summary prepared in the form, and containing the information, as set out hereunder.

SUMMARY	
Executive summary:	This description should be brief, outlining the proposed objective and if this is a new proposal/activity then it should include information on whether a proposal will have any financial implications for the Project budget.
Action to be taken:	A reference should be made to the paragraph of the document, which states the action to be taken by the GPTF, subsidiary body, etc.
Related documents:	Other Key documents should be listed to the extent they are known to the originator of the document.

Agenda Item 3: Project Overview and Objectives of the Meeting

Introduction

The Project Document (ProDoc) was developed by IMO and submitted in July 2018 for review by UNDP and GEF. The final version of the ProDoc was signed by GEF-UNDP and IMO in November 2018.

The ProDoc provides detailed information on the implementation of the Project, including a description of governance aspects, the results framework, the budget and a monitoring and evaluation plan. The ProDoc should be used as a reference by all partners throughout the implementation of the Project.

The Project Coordination Unit (PCU) will present the main aspects of the ProDoc, the contents of the results framework, work plan for the first biennium, budget and the monitoring and evaluation plan in Agenda items 3, 9 and 14.

Objectives of the meeting

Taking as a reference the contents of the ProDoc, the GPTF is expected to:

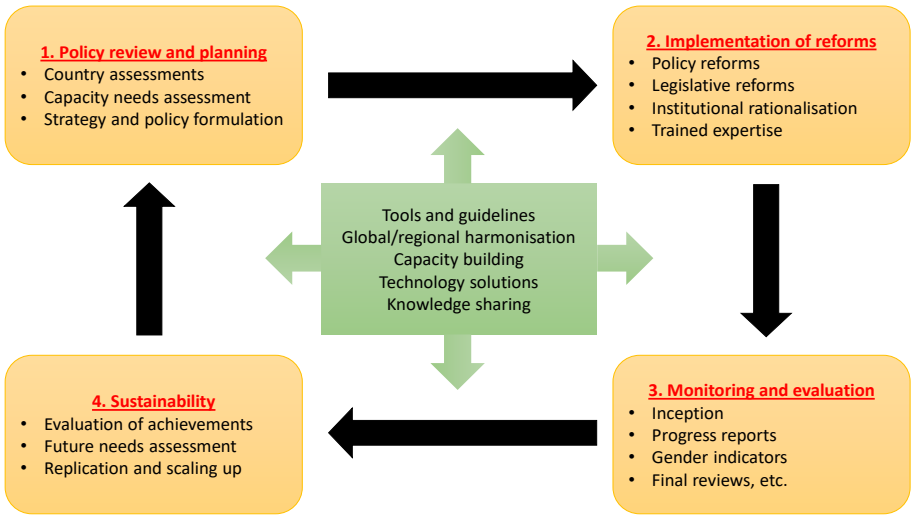
a) review and approve the Terms of Reference and Rules of Procedure for the GPTF;
b) take note of institutional arrangements and project preparations at the national and regional level by LPCs and RCOs, respectively;
c) take note of the strategy of the project and implementing partners;
d) take note of the information provided by the strategic partners on other initiatives and research related to biofouling management and invasive aquatic species;
e) review the project implementation plan, its related budget, and the communication and sustainability strategies;
f) take note of the reporting requirements and the monitoring and evaluation plan;
g) review the concept document and approve the establishment of a Global Industry Alliance (GIA) for Marine Biosafety; and
h) approve the updated work plan for the first biennium.

Project strategy

The aims and objectives of the GloFouling project will focus on national Legal, Policy and Institutional Reform (LPIR) in targeted LDCs and SIDS, with an emphasis on integrated management and cross-sectoral coordination.

The GloFouling Project is formed as a truly global partnership that spurs government action and industry innovation and know-how in order to reduce the transfer of IAS from international shipping, while also reaching out to other marine sectors in a holistic approach. While the reach is global, all the intended outcomes, outputs and activities are directly geared towards the national level with a view to improving maritime institutions, technologies and operations as well as achieving improved monitoring and impact mitigation in the participating developing countries.

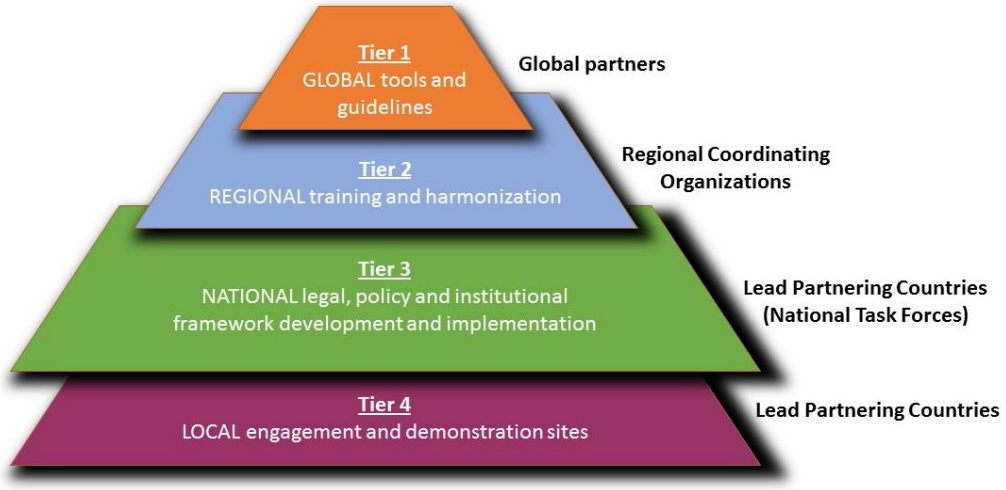
The strategy employed for the GloFouling Partnerships will be based upon the sustainable replication of the Glo-X pyramid model of implementation, developed by IMO from best experiences and previous interventions. This strategy has already been successfully replicated in other projects in the GEF-UNDP-IMO portfolio, such as the GloBallast Partnerships and the GloMEEP Project. The Glo-X model takes its basis from LPIR roadmap developed during the implementation of similar projects and has been adapted towards the need to support developing countries in achieving biofouling management practices as set out in the IMO Biofouling Guidelines. The strategy includes at its core the LPIR that needs to be implemented in order to pave the way for the effective use of resources. This LPIR and implementation process is conceptualised in the figure below where the requirement for capacity building, knowledge sharing and technology solutions are also highlighted as a central theme.



LPIR process

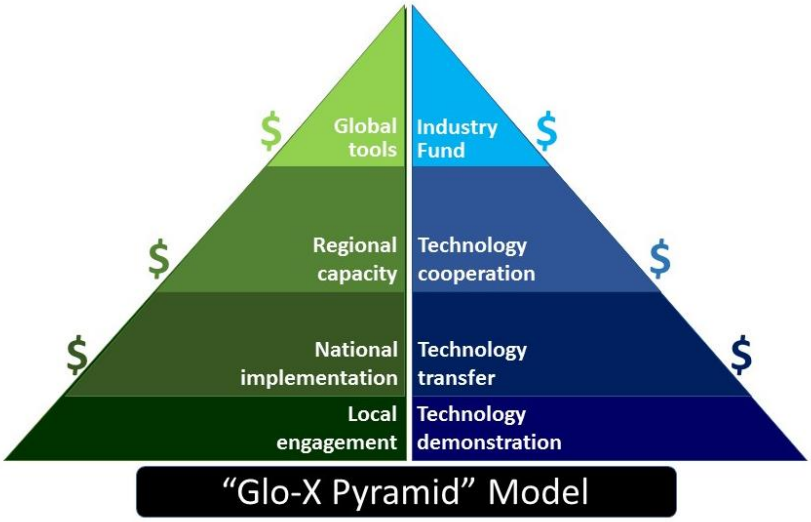
In previous experiences of the Glo-X model, the LPIR process is applied in a 3-tiered approach at the global, regional and national level. For the GloFouling Partnerships, the Glo-X model has been adapted to integrate the local dimension using a 4-tiered implementation approach (see Figure further below):

1. A global tier, providing international coordination and information dissemination, developing toolkits, guidelines and training materials, providing capacity building to developing countries and establishing a strong cooperation with industry representatives and NGOs.
2. A regional tier, providing regional coordination and harmonization, and promoting information sharing.
3. A significant country tier that establishes a fast track (Lead Partnering Country - LPC) and partner track (Partnering Country - PC) process for GEF-eligible countries in the priority regions. LPCs commit to develop and implement a National Biofouling Management Strategy and Action Plan (NBMS), with a view to guide the adoption of LPIR.
4. A local tier in each LPC to provide practical experiences in the implementation of the tools developed by the Project through targeted demonstration sites that should facilitate engagement of stakeholders at the national level and provide opportunities for technology demonstration for the private sector, and with particular attention to best management practices for recreational craft.



The GloFouling model showing the four tiers of engagement

The adapted version of the full Glo-X pyramid model pictured in the Figure below, illustrates how the LPIR roadmap integrates with the engagement of private sector industries through their participation in a public-private partnership created by the GloFouling Project to catalyse technology development, cooperation, transfer and demonstration, which is implemented in parallel to the LPIR process also at the global, regional, national and local level.



Glo-X Pyramid model

Global tier

The project will be managed globally through the Project Coordination Unit (PCU), based at the IMO headquarters in London, UK. Given the frequency of IMO Member State participation in regular IMO meetings, in particular during the MEPC, the PCU is in an ideal position to stay in contact with Member State representatives and to ensure that the momentum for addressing biofouling management issues within the priority regions (and in other regions) continues to increase. This particular aspect gives a strong comparative advantage to IMO to be the implementing agency.

The global tier includes the Global Project Task Force (GPTF), comprised by representatives from, UNDP, IMO, LPCs, RCOs, Strategic Partners and Industry, to provide overall management and advisory support for the project. There are also global outputs and activities focused on developing guidance and best practices that will form the baseline for providing training to country officials and experts on strategic planning and LPIR, and the carrying out of applied biofouling management measures. In addition, global level activities include public awareness raising and the development of knowledge management systems that are expected to function as an information clearing house in support of a uniform global approach, as well as an R&D Forum and exhibition.

Of special note, the global tier will also include three instruments to channel the integration of the private sector:

a) establishing two industry funds to address marine biofouling, bringing major private sector players (from both shipping and non-shipping industries) to support the project objectives by providing a channel to address industry concerns and contribute to the review process;
b) utilizing the WOC Ocean Investment Platform to catalyse funding for biofouling solutions and new technologies; and
c) creating forums to foster dialogue between regulators, the scientific community and the private sector.

Regional tier

While the selection of LPCs was conducted based mainly on national considerations, the regional dimension was also considered. The GloFouling Partnerships will indeed use regional mechanisms to deliver outputs more broadly within target regions and to deliver sustainable biofouling management measures beyond the life of the GloFouling Partnerships Project. Seven regions are involved in the GloFouling Partnership effort: South America, South Asia, Red Sea and Gulf of Aden, Pacific, Eastern Africa, Southeast Asia, and the Wider Caribbean.

The regional tier is first and foremost a mechanism to ensure that all countries in the strategic and outreach regions have an opportunity to participate and learn from the activities undertaken by the LPCs. To that end, the regions will play a coordinating role for developing strategies, policies and programmes at the regional level. In addition, it is expected that the regional component brings significant added value to the long-term sustainability efforts by bringing the biofouling management agenda to the regional convention discussions and developing regional action plans to be integrated into existing marine and coastal management schemes. The Regional Coordinating Organizations (RCOs) identified within the existing regional structures have a close access to the key policy makers of the LPCs and offer significant advantage in terms of achieving the most cost-effective coordination and outreach among the other countries in the region to achieve the objectives of the project.

National tier

The pre-eminent focus of GloFouling Partnerships is at the national level. It is recognized that international measures can set the stage, and regional organizations can help to convene countries, but it is at the national level where the real actions are taken to reduce the risks from IAS from ships and other sources. In particular, the national level activities are designed to provide the tools and techniques to enable LPCs to reform their legal, policy and institutional structures in order to establish a risk-based and cost-effective approach to improved biofouling management that will reduce the risks of marine bio-invasions. GloFouling Partnerships will help participating countries by providing a “roadmap” on how to achieve LPIR, and then by assisting them to steer the course.

Within the strategic regions, a series of national level actions will be carried out based on two tracks:

1. The fast track involves Lead Partnering Countries (LPCs), which have committed themselves to developing national biofouling management strategies and policy reforms. In order to be an LPC, each country had to provide a letter of endorsement and commitment to the project, and to commit co-financing support. At the time of submission, 12 countries have been selected as LPCs. This designation was based upon the confirmed interest of these 12 States to play a leading role in GloFouling Partnerships. To ensure regional representativeness, a decision was made to have no more than two countries from any given region serving as LPCs. Each of the LPCs will appoint a National Focal Point (NFP) and National Project Coordinator (NPC).
   It is expected that LPCs will play a catalytic role in their regions. The LPCs will pioneer legal, policy and institutional developments at the national level, the lessons learned and experiences gained will be shared with other Partnering Countries (PC) in the same priority regions. The LPCs will coordinate and host specific training and regional harmonization activities and invite the other countries in the region to participate in these activities, thus extending the benefits to all the other countries in the region.
2. The partner track involves countries (Partnering Countries – PCs) in each priority region who are invited to participate in the regional task forces and in regional training and workshop activities. PCs are required to officially endorse the project.

The table below presents the countries that have officially endorsed the project and have been selected as GloFouling LPCs or PCs. The LPCs have signalled their interest to play a lead role through project endorsement and also through their co-financing agreements.

List of Lead Partnering Countries (LPCs) and Partnering Countries (PCs)

Region	LPC	PC
Red Sea and Gulf of Aden	Jordan	Djibouti, Somalia, Sudan
South America	Brazil, Ecuador, Peru	Argentina, Chile
Wider Caribbean	Mexico	Jamaica, Suriname
Pacific	Fiji, Tonga	Tuvalu
East Africa	Mauritius, Madagascar	Comoros
South Asia	Sri Lanka	Iran
Southeast Asia	Philippines, Indonesia	Malaysia
East Asia		China
West Africa		Nigeria

The designation of LPCs and PCs is not static. It may be that over the course of the project some LPCs could be moved to the partner track due to less than satisfactory progress, and be replaced by some PCs that may be elevated into the fast track based on their demonstrated eagerness to play a key role and the progress achieved in implementing the IMO Biofouling Guidelines. Criteria, procedures and responsibilities with respect to revising the partnering status will be developed by the PCU during the initial months of project inception, subject to Executive Committee (IMO/UNDP) approval, and then included in Memorandums of Understanding with the lead agencies of each LPC and also the RCOs.

Local tier

Biofouling affects a range of scales of operation and effective management requires engagement across multiple levels. In consideration of local needs in LPCs, the GloFouling Strategy extends the model developed in previous Glo-X interventions to include a fourth tier which will engage with local stakeholders and the public sector to raise awareness and implement biofouling management measures (see Figures 9 and 10). This focus reflects the fact that many elements of biofouling management require input from local stakeholders such as recreational boaters and maritime industry sectors including non-shipping industries such as aquaculture.

National Task Forces (NTFs) will play a catalytic role within LPCs to engage with local stakeholders and increase awareness about the needs for implementing sound biofouling mitigation measures to prevent the transfer of IAS within the same region. Local stakeholders will also be engaged in Project activities through focused awareness-raising campaigns and one of the options available for demonstration sites, which will focus on showcasing best practices for biofouling management for recreational craft.

Project objective and expected outcomes

The overall objective of the GloFouling Partnership Project is to build capacity in developing countries for implementing the IMO Biofouling and other relevant guidelines for biofouling management and to catalyse overall reductions in the transboundary introduction of biofouling-mediated IAS with additional benefits in the reduction of GHG emissions from global shipping.

In the achievement of this objective, five project components have been identified, each with corresponding outcomes, outputs and activities, (see the project logical framework, Section 5). The five components of the project are as follows:

1. Assessing relevant national and regional policies, legislation and institutions to identify gaps, inconsistencies and conflicts, and, as appropriate, adopt LPIR measures to minimise the risk of IAS transferred through biofouling.
2. Developing capacity for the implementation of the IMO Biofouling Guidelines through national capacity building, training and technical support, undertaking focused and sustained communications and awareness-raising and executing Pilot/Demonstration Projects in selected ports and marine protected areas.
3. Building on the existing partnership concepts and mechanisms, established through GEF's GloBallast partnerships, and expanding the existing GIA framework to bring active private sector participation at global, regional, national and local levels, to ensure the development of innovative technological and other solutions and financial sustainability for the control and management of biofouling and for the effective involvement of the relevant stakeholders.
4. Knowledge management and developing an institutional and procedural approach for monitoring and evaluation of biofouling management and control measures.
5. Adaptive project management and coordination for implementation, monitoring and evaluation.

The project will demonstrate practical ways of overcoming barriers to the adoption of best practices, creating an enabling environment for technology development and transfer, and will harness the involvement of IMO as the UN agency specialized in regulating the transfer of IAS through maritime transport and the emission of GHGs from shipping, as well as cross-sectoral leadership and collaboration with the private sector to address biofouling over the long-term via the IOC-UNESCO and the WOC. Clearly associated with and supporting the GEF-6 International Waters and Climate Change Mitigation focal area strategies, the project will help to develop

strategic links across operational programmes across focal areas, and will contribute to an integrated, cross-sectoral approach to marine ecosystems management.

It is expected that by the end of the project, all LPCs will be able to demonstrate significant improvement in their legal, policy and institutional structures, with corresponding reduced risks from biofouling mediated IAS. Such improvements in biofouling management will require that each of the 12 LPCs will establish institutional mechanisms for carrying out the project. This will include identifying a lead agency and establishing a national task force (NTF), and that each NTF will take responsibility to develop a National Biofouling Management Strategy and Action Plan (NBMS), which lays out the mechanisms to be used by national Administrations, including funding, to establish an effective and sustainable biofouling management program.

In addition to catalysing LPIR in LPCs, the GloFouling project will focus on increased capacity building in LPCs and strategic regions. The Project will create new platforms for the collation of existing biofouling management knowledge and will instigate new reviews and studies to present information in accessible and applied form to assist LPCs in developing tools and effective approaches to implementing NBMS. A further indication of project success will be that member states of the Regional Seas conventions and Large Marine Ecosystem programmes will indicate their collective support, by approving regional strategies and protocols on biofouling management.

The Project recognizes that technology solutions must go hand in hand with LPIR in order to substantially reduce the risks of biofouling mediated IAS. Consequently, the project includes a series of activities (see Component 3), designed to join with industry in pursuit of cost-effective technology solutions for biofouling management. It is important to note that a successful conclusion of the project assumes that, during the 5 years of project implementation, research and development by industry will escalate, and effective technology solutions for biofouling management will be made available to companies in shipping and other sectors relevant to biofouling.

Agenda item 4: Lead Partnering Country (LPC) status reports

Introduction

Under this agenda item, the Lead Partnering Countries (LPCs) have been requested to provide a written or oral statement to inform the GPTF members of the state of affairs at the national level regarding biofouling management, invasive aquatic species and project preparations.

Each LPC will make a 10-minute verbal presentation at the 1st GPTF meeting on the above subject.

LPCs were provided with instructions for preparing the presentation and a list of items to guide the type of information that may be provided by each country. The guidance has been included as appendix 1 to this document.

Presentations have been included in Annex 5 of this report.

Template for Lead Partnering Country (LPC) status reports

It is expected that the information provided by the LPC shall include the following:

Basic information on LPC

- National Focal Point and Project Coordinator for GloFouling Project, and their organizations.
- Mention other government departments involved to date with the project

Institutional arrangements

- Is there any National Task Force or similar already in place for discussing invasive aquatic species?
- Is there any existing legislation/regulation governing biofouling management and/or invasive aquatic species in the country? If yes, for what industries or geographical areas?
- What major challenges could be in the way of implementing a national biofouling management regime? (e.g. political support, institutional arrangements, technical capacity, industry participation).

Biofouling and invasive aquatic species

- Brief description of the country's coastal and marine environments and resources
- Are there any registered impacts of IAS at the national level? What are the key issues, species or geographical areas of concern?
- Are there any protocols related to biofouling applicable to marine protected areas in your country?

Marine industries

- Brief description of shipping and port industry in the country
- Apart from shipping, is there a significant national industry on marine aquaculture, ocean/tidal energy, offshore platforms or structures for oil & gas, or deep-sea mining? If yes, what is the level of awareness within these industries about invasive aquatic species and/or biofouling?

- Importance of recreational boating: is there significant international traffic? What kind of services are offered at national marinas?
- Are any inspections conducted in ports or aquaculture farms with regards to the management of biofouling or preventing the transfer of invasive aquatic species?
- Is in-water cleaning permitted within ports (divers or remotely operated vehicles – ROVs)? Are there any operators of remotely operated vehicles (ROVs) for in-water cleaning?
- Regarding dockyards or other areas for ship hull maintenance, are there any controls in place for managing sediments?

Research

- Name any national research centres and/or universities conducting a research programme on biofouling and/or invasive aquatic species?

Status of Project preparations

- Relevant information to inform the GPTF of any project preparation related activities (national projects, programmes, R&D activities, formation of National Task Forces, etc.)

Other useful information

- Please include any other information relating to invasive aquatic species and/or biofouling management that might be useful to the meeting.

Agenda item 5: Lead Partnering Country (LPC) status reports

Introduction

Under this agenda item, the Regional Coordinating Organizations (RCOs) have been requested to provide a written or oral statement to inform the GPTF members of the state of affairs at the regional level regarding biofouling management, invasive aquatic species and project preparations.

Each RCO will make a 10-minute verbal presentation at the 1st GPTF meeting on the above subject.

RCOs were provided with instructions for preparing the presentation and a list of items to guide the type of information that may be provided by each country. The guidance has been included as appendix 1 to this document.

Presentations have been included in Annex 5 of this report.

Template for Regional Coordinating Organization (RCO) status reports

It is expected that the information provided by the RCO shall include the following:

Basic information on RCO

- RCO Focal Point for the GloFouling Project.
- Brief description of the Organization and its main role or mandate related to marine environment protection in the region.
- List of member countries.
- Decision making mechanism at regional level.

Biofouling and invasive aquatic species from a regional perspective

- Brief description of the regional marine environments and resources and their vulnerability to invasive aquatic species. If relevant, mention any achievements or challenges that may be related.

Regional agreements or conventions

- Any existing regional conventions/protocols governing marine biosafety/biosecurity/ballast water issues.
- Major challenges for the implementation of a biofouling management regime in the region (e.g. regional cooperation, political support, institutional arrangements, technical capacity).

Status of GloFouling Project preparations

- Relevant information to inform the GPTF of any project preparation related activities (regional meetings, training activities, discussions with LPCs, identification of NFPs from Participating Countries etc).

Other Useful Information

- Include any other information that might be useful to the meeting. It is important not only to highlight achievements, initiatives, projects, etc., but also challenges that may have been identified, lack of expertise, knowledge gaps, etc.

Agenda item 6: Regulatory aspects – The IMO Biofouling Guidelines

International regulatory framework related to invasive aquatic species

Preventing the transfer of invasive species and coordinating a timely and effective response to invasions requires cooperation and collaboration among governments, economic sectors, non-governmental organizations and international treaty organizations; the UN Convention on the Law of the Sea (UNCLOS) provides the global framework by requiring States to work together "to prevent, reduce and control human caused pollution of the marine environment, including the intentional or accidental introduction of harmful or alien species to a particular part of the marine environment."

The International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention), IMO Member States made a clear commitment to minimizing the transfer of invasive aquatic species by shipping, specifically through ballast water.

The International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention) addresses anti-fouling systems on ships, although its focus is on the prevention of adverse impacts from the use of anti-fouling systems and the biocides they may contain, rather than the prevention of the transfer of invasive aquatic species through hull fouling. The AFS Convention has legal requirements banning organotin compounds used in anti-fouling systems, i.e. tributyltin or TBT. It also highlights considerations for choosing a suitable anti-fouling coating system such as if a coating is registered for use in the country where it is intended to be used. However, the focus of the AFS Convention is on the prevention of adverse impacts from the use of anti-fouling systems and the biocides they may contain, rather than the prevention of the transfer of invasive aquatic species through hull fouling.

The Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines) (resolution MEPC.207(62)) are intended to provide a globally consistent approach to the management of biofouling, which is the accumulation of various aquatic organisms on ships' hulls. They were adopted by the Marine Environment Protection Committee (MEPC) at its sixty-second session in July 2011 and were the result of three years of consultation between IMO Member States.

Although the Biofouling Guidelines are largely focussed on large ships, they can also apply to other marine vessels. In the Biofouling Guidelines, ships are defined as "...vessel of any type whatsoever operating in the aquatic environment and includes hydrofoil boats, air cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units (FSUs) and floating production storage and off-loading units (FPSOs)". The Guidelines have been further supplemented by the Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft, approved by MEPC at its sixty-fourth session in October 2012 and published as MEPC.1/Circ.792. This Guidance is for use by all owners and operators of recreational craft less than 24 metres in length, which may constitute an important pathway for the transfer of invasive aquatic species due to their large numbers and their operating profile that may make them particularly susceptible to biofouling.

The Biofouling Guidelines are voluntary and represent a decisive step towards reducing the transfer of invasive aquatic species by ships. The aims of the Guidelines are to:

- Provide a globally consistent approach to managing biofouling by providing useful recommendations on general measures to minimize the risks associated with biofouling for all types of vessels.
- Provide practical guidance to States, ship masters, operators and owners, ship builders, vessel repair, dry- docking and recycling facilities, vessel cleaning and maintenance operators, ship designers, classification societies, anti-fouling paint manufacturers and suppliers and any other interested parties, on measures to minimize the risk of transferring invasive aquatic species from ships' biofouling.
- Minimize the transfer of invasive aquatic species: a vessel should implement biofouling management practices, including the use of anti-fouling systems and other operational management practices to reduce the development of biofouling.

Review of the IMO 2011 Biofouling Guidelines

As scientific and technological advances are made, the Biofouling Guidelines may be refined to enable the risk to be more adequately addressed. Port States, flag States, coastal States and other parties that can assist in mitigating the problems associated with biofouling should exercise due diligence to implement the Guidelines to the maximum extent possible, which can play a significant role in reducing the risk of the transfer of invasive aquatic species.

In support of this review process, IMO has prepared the Guidance for evaluating the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species, approved by MEPC at its sixty-fifth session in May 2013 and published as MEPC.1/Circ.811. This Guidance is provided to assist Member States and observers who wish to collect information needed to undertake future reviews of the Biofouling Guidelines and to do this in a more consistent way. The Guidance identifies the types of performance measures that could help to assist in evaluating the different recommendations in the Guidelines. This review process is further enhanced by the recent decision during MEPC 72 to include a new output on the review of the Biofouling Guidelines, based on a proposal put forward by Australia, the Netherlands and New Zealand (document MEPC 72/15/1).

Agenda item 7: Biofouling management in non-shipping industries

Background

The pathways for the transfer of invasive aquatic species (IAS) through biofouling are not restricted to the shipping industry, but also to other ocean industries such as aquaculture, ocean energy, offshore platforms and ocean instrumentation. To be effective, any efforts made towards preventing the transfer of IAS through biofouling should therefore include these other industries. To achieve this holistic and harmonised approach, the IMO will partner with the Intergovernmental Oceanographic Commission (IOC-UNESCO), a body with functional autonomy within UNESCO that is the only competent organization for marine science within the UN system.

IOC-UNESCO

IOC-UNESCO will take the lead in delivering activities on the non-shipping aspects. Preliminary discussions between IMO and IOC-UNESCO have also considered the possibility of establishing of a new working group of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). It is expected that FAO, WMO, ISA and other relevant international organizations would play a supporting role in the review of biofouling management practices in non-shipping pathways such as aquaculture, fisheries or deep-sea mining, through their participation in this newly created GESAMP working group.

In parallel, and to coordinate contributions and participation from private sector companies outside the shipping industry (non-shipping pathways), the World Ocean Council (WOC) has been identified as an international, multi-sectoral institution that is in the best position to approach the leading industries related to non-shipping pathways and to focus on long-term private sector engagement for improved biofouling management. The WOC will include the project and its private sector components in its regular agenda, taking responsibility for the sectors that are not regulated by IMO. This will include creating an industry task force similar to the GIA and an investment platform for financing technology development and holding a series of forums for private sector engagement to channel private sector contributions for the development of best practices.

Agenda item 8: Lessons learned from other initiatives and research on biofouling management and invasive aquatic species

Presentations and information provided by Strategic Partners have been included in Annex 5 of this report.

Agenda item 9: Project work plan, budget and monitoring and evaluation

Project Components, Outcomes, Outputs and Activities

The full description of the Project Components, Outcomes, Outputs and Activities is provided in the Project Document under Section 4.2 (pages 42-60) and should be read in conjunction with the Logical Framework provided in Section 5 of the Project Document. The project Logical Framework also provides all the baseline scenarios, mid-term and end of project targets, indicators, sources of verification and risks, assumptions & mitigation strategies associated with each project component described below.

Component 1

Assessing relevant national and regional policies, legislation and institutions to identify gaps, inconsistencies and conflicts, and, as appropriate, adopt legal, policy and institutional reforms (LPIR) to minimise the risk of Invasive Aquatic Species (IAS) transferred through biofouling.

Component 1 of the GloFouling Partnerships Project will assess relevant national and regional policies, legislation and institutions to identify gaps, inconsistencies and conflicts, and will assist in the development and adoption of LPIR to minimise the risk of IAS transferred through biofouling. The end of project target for this Component is to ensure that appropriate and sustainable LPIR to prevent the transfer of IAS through ships' biofouling is in place at national and regional levels. This component will be achieved through a single Outcome:

Component 2

Developing capacity for the implementation of the 2011 Biofouling Guidelines through national capacity building, training and technical support, undertaking focused and sustained communications and awareness-raising and executing Pilot/Demonstration Projects in selected ports and marine protected areas.

This component will aim to develop the capacity within LPCs and strategic regions to effectively assess the current status of biofouling management, develop appropriate management strategies and maintain effective and sustainable processes to reduce the transfer of IAS in association with biofouling on ships' hulls. The capacity building will be developed through three Outcomes specifically addressing training and technical support (Outcome 2.1), awareness raising (Outcome 2.2) and the development of demonstration projects to showcase effective biofouling management (Outcome 2.3):

Component 3

Building on the existing partnership concepts and mechanisms, established through GEF's GloBallast partnerships, and expanding the existing Global Industry Alliance framework (GIA) to bring active private sector participation at global, regional, national and local levels, to ensure the development of innovative technological and other solutions and financial sustainability for the control and management of biofouling and for the effective involvement of the relevant stakeholders.

A crucial part of the effort to reduce the threat of IAS transferred through biofouling is in the area of research and development into cost effective solutions and technologies. The effective implementation of the IMO Biofouling Guidelines and other best practices will require that the current technology hurdles are overcome, and effective solutions are available for testing and approving the use of new technologies.

Pending the development of proper research on the economic impact studies to be prepared by the Project, the estimated savings related to reduced levels of energy consumption seem to indicate there is ample room for market forces to drive innovation, and it strongly suggests that a close partnership with industry is crucial if solutions are to be achieved in the near term. Although several R&D efforts are currently underway, one of the difficulties faced by this diverse global R&D effort is the lack of effective lines of communication between these groups and with governments and the shipping industry. There is also a general lack of involvement of developing

countries and an increasing need to facilitate technology transfer towards developing countries and ensure global sustainability through North-South collaboration, and international harmonization of best practices.

Component 3 of the GloFouling Partnerships Project will replicate and develop the experience gained through the GloBallast Project to develop a Global Industry Alliance on marine biosafety that will foster private-public partnerships and play a key role to support the development of innovative technological and other solutions for the control and management of biofouling. The outputs and activities under Component 3 will be funded mostly by private sector partners.

Component 4

Knowledge management and developing an institutional and procedural approach for monitoring and evaluation of biofouling management and control measures.

Through the outputs included in Component 4 of the GloFouling Partnerships Project, it is expected that knowledge management systems will be developed, and stakeholder and institutional cooperation will be enhanced to contribute to monitoring and evaluation of biofouling management and control measures.

Component 5

Adaptive project management and coordination for implementation, monitoring and evaluation.

Component 5 of the GloFouling Partnerships Project will provide adaptive project management and coordination for implementation and establish the right mechanisms for monitoring and evaluation of the Project.

Financial planning and management

The total cost of the project is USD 49,608,747. This is financed through a GEF grant of USD 6,980,000 plus cash and in-kind co-financing of USD 42,628,747 provided by IMO, LPCs and other stakeholders that have confirmed their support to the GloFouling initiative.

The table below presents the anticipated cash and in-kind co-financing for the GloFouling Project, with the resulting incremental cost ratio of 7.11. It is expected that once it is launched, the project will be able to attract further cash co-financing from the private sector through the two industry funds to be set up in activity 3.1.1.1. Likewise, it is expected that further opportunities will arise during project implementation for increasing co-financing contributions from developed countries and International Financial Institutions (IFIs). This shows that the GEF grant will catalyse significant efforts in the form of co-financing in this important area of IAS and biofouling management.

Group name	Cash contributions	In-kind contributions	Totals	Percentage of total funding
UNDP (Implementing Agency)	0	150,000	150,000	0.30%
IMO (Implementing Partner)	755,000	4,190,815	4,945,815	9.97%
Executing partners	0	996,677	996,677	2.01%
Industry	300,000	14,367,464	14,667,464	29.57%
LPCs	0	14,598,589	14,598,589	29.43%
RCOs	0	1,797,302	1,797,302	3.62%
Strategic Partners	0	5,472,900	5,472,900	11.03%
Grand Total	**1,055,000**	**41,573,747**	**42,628,747**	85.93%
		GEF funding	**6,980,000**	14.07%
		TOTAL FUNDING	**49,608,747**	
		Incremental cost ratio	**7.11**	

The co-financing by IMO represents cash contributions through IMO's Integrated Technical Cooperation Programme (ITCP), plus in-kind contributions directly through IMO personnel time, use of its infrastructure and via relevant IMO events related to the policy review process for marine biofouling.

Budget Revision and Tolerance

As per UNDP requirements outlined in the UNDP POPP, the Project Executive Committee (ExCom) will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project CTA to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Project ExCom. Should the following deviations occur, the Project CTA will seek the approval of the UNDP-GEF TA to ensure accurate reporting to the GEF: a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

Project budget – GEF funds

The project budget presented in the ProDoc has been updated to reflect the new start date of the project and distribute funding accordingly. This is Budget revision A, to be approved by UNPD Financial Services.

GEF Component/Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Amount 2018 (USD)	Amount 2019 (USD)	Amount 2020 (USD)	Amount 2021 (USD)	Amount 2022 (USD)	Amount 2023 (USD)	Total (USD)	See Budget Note:
Component 1: Assessing relevant national and regional policies, legislation and institutions to identify gaps, inconsistencies and conflicts, and, as appropriate, adopt Legal, Policy and Institutional Reforms (LPIR) to minimise the risk of Invasive Aquatic Species (IAS) transferred through biofouling.	IMO	62000	GEF	71200	International Consultants	30,855	170,327	170,327	122,807	112,007	61,711	668,034	
						1,319	170,327	170,327	122,807	112,007	91,247	668,034	
				71300	Local Consultants	4,683	76,257	76,257	14,049	29,601	9,365	210,212	
						0	76,257	76,257	14,049	29,601	14,048	210,212	
				71600	Travel	0	120,388	120,388	33,053	90,291	0	364,120	
						0	120,388	120,388	33,053	90,291	0	364,120	
				74500	Miscellaneous Expenses	0	0	0	1,512	0	0	1,512	
						0	0	0	1,512	0	0	1,512	
				75700	Training, Workshops and Conferences	0	0	0	154,148	17,207	0	171,355	
						0	0	0	154,148	17,207	0	171,355	
				Sub-total GEF		35,538	366,972	366,972	325,569	249,106	71,076	1,415,233	
						1,319	366,972	366,972	325,569	249,106	105,295	1,415,233	
				Total Component 1		**35,538**	**366,972**	**366,972**	**325,569**	**249,106**	**71,076**	**1,415,233**	
						1,319	**366,972**	**366,972**	**325,569**	**249,106**	**105,295**	**1,415,233**	
Component 2 : Developing capacity for the implementation of the IMO Biofouling Guidelines through national capacity building, training and technical support, undertaking focused and sustained communications and awareness-raising and executing Pilot/ Demonstration Projects in selected ports and marine protected areas.	IMO	62000	GEF	71200	International Consultants	78,197	157,372	373,912	263,752	166,552	85,115	1,124,900	
						2,198	252,411	322,072	263,752	166,552	117,915	1,124,900	
				71300	Local Consultants	7,024	21,073	21,073	21,073	21,073	14,049	105,365	
						0	21,073	21,073	21,073	21,073	21,073	105,365	
				71600	Travel	0	13,871	195,372	253,518	61,678	19,481	543,920	
						0	123,662	85,581	253,518	61,678	19,481	543,920	
				72100	Contractual Services-Companies	0	27,000	162,000	54,000	10,800	0	253,800	
						0	27,000	162,000	54,000	10,800	0	253,800	
				74200	Audio Visual&Print Prod Costs	16,200	23,760	13,500	109,620	8,100	38,880	210,060	
						0	39,960	13,500	109,620	8,100	38,880	210,060	
				74500	Miscellaneous Expenses	1,080	1,080	13,608	27,432	16,848	7,560	67,608	
						0	3,456	12,312	27,432	16,848	7,560	67,608	
				75700	Training, Workshops and Conferences	6,036	379,200	181,336	83,085	120,430	6,448	776,535	
						0	405,975	160,597	83,085	120,430	6,448	776,535	
				Sub-total GEF		108,537	623,356	960,801	812,480	405,481	171,533	3,082,188	
						2,198	873,537	777,135	812,480	405,481	211,357	3,082,188	
				Total Component 2		**108,537**	**623,356**	**960,801**	**812,480**	**405,481**	**171,533**	**3,082,188**	
						2,198	**873,537**	**777,135**	**812,480**	**405,481**	**211,357**	**3,082,188**	

GEF Component/Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Amount 2018 (USD)	Amount 2019 (USD)	Amount 2020 (USD)	Amount 2021 (USD)	Amount 2022 (USD)	Amount 2023 (USD)	Total (USD)	See Budget Note:
Component 3: Building on the existing partnership concepts and mechanisms to bring active private sector participation at global, regional, national and local levels, to ensure the development of innovative technological and other solutions and financial sustainability for the control and management of biofouling and for the effective involvement of the relevant stakeholders.	IMO	62000	GEF	71200	International Consultants	17,602	52,806	52,806	52,806	52,806	35,204	264,030	
						1,495	52,806	52,806	52,806	52,806	51,311	264,030	
				71300	Local Consultants	4,683	14,049	14,049	14,049	14,049	9,366	70,245	
						0	14,049	14,049	14,049	14,049	14,049	70,245	
				71600	Travel	5,016	9,444	0	9,444	0	0	23,904	
						0	14,460	0	9,444	0	0	23,904	
				74500	Miscellaneous Expenses	0	1,080	0	0	0	0	1,080	
						0	1,080	0	0	0	0	1,080	
				75700	Training, Workshops and Conferences	8,919	47,394	38,015	47,674	25,578	14,024	181,604	
						0	56,313	38,015	47,674	25,578	14,024	181,604	
				Sub-total GEF		36,220	124,773	104,870	123,973	92,433	58,594	540,863	
						1,495	138,708	104,870	123,973	92,433	79,384	540,863	
				Total Component 3		**36,220**	**124,773**	**104,870**	**123,973**	**92,433**	**58,594**	**540,863**	
						1,495	**138,708**	**104,870**	**123,973**	**92,433**	**79,384**	**540,863**	
Component 4: Knowledge management and developing an institutional and procedural approach for monitoring and evaluation of biofouling management and control measures.	IMO	62000	GEF	71200	International Consultants	15,324	45,972	45,972	45,972	45,972	30,648	229,860	
						1,759	45,972	45,972	45,972	45,972	44,213	229,860	
				71300	Local Consultants	7,024	21,073	21,073	21,073	21,073	14,048	105,364	
						0	21,073	21,073	21,073	21,073	21,072	105,364	
				71600	Travel	0	18,887	0	18,887	0	18,887	56,661	
						0	18,887	0	18,887	0	18,887	56,661	
				72100	Contractual Services-Companies	0	46,170	0	46,170	0	113,018	205,358	
						0	46,170	0	46,170	0	113,018	205,358	
				74200	Audio Visual&Print Prod Costs	0	0	5,400	0	0	0	5,400	
						0	0	5,400	0	0	0	5,400	
				74500	Miscellaneous Expenses	0	1,620	0	1,620	0	1,620	4,860	
						0	1,620	0	1,620	0	1,620	4,860	
				75700	Training, Workshops and Conferences	0	70,933	0	70,933	0	22,569	164,435	
						0	70,933	0	70,933	0	22,569	164,435	
				Sub-total GEF		22,348	204,655	72,445	204,655	67,045	200,790	771,938	
						1,759	204,655	72,445	204,655	67,045	221,379	771,938	
				Total Component 4		22,348	204,655	72,445	204,655	67,045	200,790	771,938	
						1,759	**204,655**	**72,445**	**204,655**	**67,045**	**221,379**	**771,938**	

GEF Component/Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Amount 2018 (USD)	Amount 2019 (USD)	Amount 2020 (USD)	Amount 2021 (USD)	Amount 2022 (USD)	Amount 2023 (USD)	Total (USD)	See Budget Note:
Component 5: Adaptive project management and coordination for implementation, monitoring and evaluation	IMO	62000	GEF	71200	International Consultants	11,100	33,298	49,498	33,298	65,698	22,199	215,091	
						1,759	33,298	49,498	33,298	65,698	31,540	215,091	
				71300	Local Consultants	4,683	14,049	14,049	14,049	14,049	9,366	70,245	
						0	14,049	14,049	14,049	14,049	14,049	70,245	
				71600	Travel	28,331	0	37,186	0	54,895	0	120,412	
						0	28,331	37,186	0	54,895	0	120,412	
				74500	Miscellaneous Expenses	1,080	0	1,080	0	1,080	0	3,240	
						0	1,080	1,080	0	1,080	0	3,240	
				75700	Training, Workshops and Conferences	112,273	33,622	94,882	33,622	94,882	62,338	431,619	
						0	145,895	94,882	33,622	94,882	62,338	431,619	
				Sub-total GEF		157,467	80,969	196,695	80,969	230,604	93,903	840,607	
						1,759	222,653	196,695	80,969	230,604	107,927	840,607	
				Total Component 5		157,467	80,969	196,695	80,969	230,604	93,903	840,607	
						1,759	**222,653**	**196,695**	**80,969**	**230,604**	**107,927**	**840,607**	
Project Management	IMO	62000	GEF	71400	Contractual Services - Individ	20,677	62,035	62,035	62,035	62,035	41,357	310,174	
						264	62,035	62,035	62,035	62,035	61,770	310,174	
				72800	Information Technology Equipmt	5,281	2,970	2,970	2,970	2,970	1,836	18,997	
						0	8,251	2,970	2,970	2,970	1,836	18,997	
				Sub-total GEF		25,958	65,005	65,005	65,005	65,005	43,193	329,171	
						264	70,286	65,005	65,005	65,005	63,606	329,171	
				Total Project Management		25,958	65,005	65,005	65,005	65,005	43,193	329,171	
						264	**70,286**	**65,005**	**65,005**	**65,005**	**63,606**	**329,171**	
PROJECT TOTAL						**386,068**	**1,465,730**	**1,766,788**	**1,612,651**	**1,109,674**	**639,089**	**6,980,000**	
						8,794	**1,876,811**	**1,583,122**	**1,612,651**	**1,109,674**	**788,948**	**6,980,000**	

Monitoring and evaluation plan

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy and in accordance with IMO Rules and Regulations. The Project Chief Technical Adviser (Project CTA) and the UNDP-GEF Technical Adviser (UNDP-GEF TA) will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy and other relevant GEF policies.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point (OFP) and national/regional stakeholders assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools).

Oversight and monitoring responsibilities

Project Chief Technical Adviser (Project CTA): The Project CTA is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project CTA will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project CTA will inform the Project Executive Committee (ExCom), the Global Project Task Force (GPTF) and the UNDP-GEF TA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Project CTA will approve annual work plans based on the multi-year work plan included in the Annex A of the ProDoc, including annual output targets to support the efficient implementation of the project. The Project CTA will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the UNDP-GEF APR/PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. ESMP, gender action plan, stakeholder engagement plan, etc.) occur on a regular basis.

Global Project Task Force (GPTF): The GPTF includes representation from all the LPCs, RCOs, UNDP, GEF, IMO, executing partners, strategic partners and industry representatives. The Project Coordination Unit (PCU) will act as Secretary of the GPTF. The GPTF will meet every two years to assess project performance through the biennial report submitted by the PCU, LPCs and RCOs, analyse the project implementation status and take corrective and adaptive action as needed to ensure the project achieves the desired results. Based on these deliberations, the GPTF will approve the work plan for the next biennium. In the project's final year, the GPTF will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Executive Committee (ExCom): The ExCom, composed of UNDP-GEF, IMO and the PCU, will meet on alternate years to the GPTF. The role of the ExCom will be to review the status of

implementation of the work plan for the biennium, based on feedback from issues raised in the Annual Project Report and Project Implementation Review (APR/PIR) and take corrective action as needed to ensure the project achieves the desired results. The ExCom will also hold extraordinary meetings when urgent project matters may require its attention. Where a consensus cannot be reached within the ExCom, final decision shall rest with the UNDP.

Executing Agency (IMO): The IMO is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary.

UNDP-GEF Technical Adviser (UNDP-GEF TA): The UNDP-GEF TA will support the Project CTA as needed. The UNDP–GEF TA will initiate and organize key GEF M&E activities including the annual UNDP-GEF APR/PIR, the independent mid-term review and the independent terminal evaluation. The UNDP-GEF TA will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP-GEF TA is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the UNDP-GEF APR/PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP-GEF TA and the Project CTA.

The UNDP-GEF TA will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO). Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Technical Adviser and the UNDP-GEF Directorate as needed.

Audit

The project will be audited in accordance with the Financial Regulations and Rules and applicable audit policy of the Implementing Partner (IMO).

Additional monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held soon after the Project Document has been signed by all relevant parties. The Inception workshop will be conducted with the full GPTF, including the PCU, coordinators from the RCOs and NFPs or NPCs of the LPCs, representatives from strategic partners, Executing partners and the GEF, UNDP and IMO. The main objectives of the Inception workshop will be, amongst others:

a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
b) Discuss the roles and responsibilities of the project team, including reporting and communication methodology and lines as well as conflict resolution mechanisms;
c) Review the results framework and confirm the indicators, means of verification and monitoring plan;
d) Discuss reporting, monitoring and evaluation roles and responsibilities and confirm the M&E budget; identify national/regional stakeholders to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and

other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;

f) Review financial reporting procedures and mandatory requirements;
g) Plan and schedule Project ExCom meetings and finalize the first biennium work plan;
h) Introduce PCU staff with the UNDP-GEF HQ staff; and
i) Inform the PCU on UNDP project related budgetary planning, budget reviews, and mandatory budget re phasing.

The Project CTA will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP-GEF Technical Adviser and will be approved by the ExCom.

Quarterly Progress Reports (QPRs): Short reports outlining the main updates in project progress will be developed quarterly by the PCU, with contributions from the LPCs and RCOs. These reports will be submitted to IMO and the UNDP-GEF TA, using a format designed by the PCU.

Annual Project Report (APR) and Project Implementation Review (PIR): The Project CTA and the UNDP-GEF TA will provide objective input to the APR/PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project CTA will ensure that the indicators included in the project results framework are monitored annually in advance of the APR/PIR submission deadline so that progress can be reported in the APR/PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the APR/PIR.

The APR/PIR submitted to the GEF will be shared with the members of the ExCom. The UNDP-GEF Technical Adviser will coordinate the input of all stakeholders to the APR/PIR as appropriate. The quality rating of the previous year's APR/PIR will be used to inform the preparation of the subsequent APR/PIR.

Financial reporting: IMO will provide quarterly and annual financial reporting on the expenditure of the project. Upon closure of the financial year, project expenditure will be audited by the external auditors appointed by IMO and a final audited financial report will be submitted to UNDP-GEF. In parallel, the PCU will produce detailed financial analysis to the ExCom and the GPTF throughout project implementation and for the mid-term review and terminal evaluation.

Gender Action Plan: The PCU will monitor implementation of the Gender Action Plan through the Results Framework for Gender Mainstreaming and will assess all activities using the gender marker ratings described in Annex G of the ProDoc. Reporting on the Gender Action Plan will be presented through the PIR and the GEF TT.

To help monitor gender mainstreaming throughout the Project implementation, the PCU will use the following tools:

- A Gender Marker, to be applied for rating activities and reports and to track expenditure towards gender mainstreaming (refer to table 1); and
- Gender-sensitive indicators included in the M&E plan to review how outputs and outcomes promote equal benefits for men and women and that gender inequality is not reinforced in project implementation (table 2).

Table 1: Gender marker ratings

Rating	Activities	Reports
0	Activities that are not expected to contribute noticeably to gender equality.	Gender is not discussed at all in the report.
1	Activities that will contribute in some way to gender equality, but not significantly.	Reports with one or two sections on gender equality and women's empowerment, but with many other sections that do not discuss gender issues at all.
2	Activities that have gender equality as a significant objective.	Reports not specifically dedicated to gender, but gender issues are specifically discussed in all sections of it, with inclusion of sex-disaggregated data where relevant.
3	Activities that have gender equality as a principal objective.	Reports fully dedicated to one or more gender issues.

Table 2: Results framework for gender mainstreaming

Outcomes	Gender indicators	Verification	Targets
A. Project implementation ensures gender equitable participation in and benefit from project activities	1. Share of women and men as direct beneficiaries of the project: • Gender disaggregated participation in training activities (% Male/Female) • Gender disaggregated participation in regulatory activities (% Male/Female) • Gender disaggregated participation of experts and consultants (% Male/Female) • Gender disaggregated participation in project management (focal points, project coordinators, etc.) (% Male/Female) • Gender disaggregated general participation by country and/or region (% Male/Female) 2. Share of related national and regional reports incorporating gender dimensions (e.g. NBMS, TDA/SAP, etc.). 3. Share of project expenditure in activities that include gender mainstreaming	National and regional reports, Project reports and publications, APR/PIR, Mid-Term Review and Terminal Evaluation Report	Baseline: n/a Objective: 50% Baseline: n/a Objective: 50% Baseline: n/a Objective: 50%
B. Project monitoring and evaluation give adequate attention to gender mainstreaming	1. Percentage of monitoring and evaluation reports (e.g. Project Implementation Reports, Mid-term Review and Terminal Evaluation Reports) that incorporate gender equality/women's empowerment issues and assess results/progress	Project activity reports, APR/PIR, Mid-Term Review and Terminal Evaluation Report	Baseline: n/a Objective: 90%

Contribution to SDGs and SDG 14 voluntary commitments: The PCU will monitor contribution from the Project Outputs to the SDGs using the indicators presented below. In a similar manner, the

voluntary commitments to SDG 14 made to the 2017 Ocean Conference will be reported through the Ocean Action reporting system.

Table 3: SDG framework targets

SDG 14 – Life below Water

Goal 14: Conserve and sustainably use the oceans, seas and marine resources

SDG Targets	*SDG Indicators*	*Project contribution indicators*	*Project results framework*	*Target*
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	14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches	a) Hectares of MPAs incorporating biofouling management best practices developed by the Project b) % of global EEZs	2.1.3.8 and 2.3.1.1	a) 150,000 ha b) TBD*
14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism	14.7.1 Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries	a) Number of SIDS and LDCs that have included cross-sectoral approaches in their National Biofouling Management Strategy (aquaculture and fisheries management) b) % GDP	1.1.2.2	10
14.A Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries	14.A.1 Proportion of total research budget allocated to research in the field of marine technology	a) US dollars catalysed for research on biofouling technologies (global) b) Proportion of total research budget	Output 2.1.1	TBD* (estimate 2018 USD 75 million)
14.C Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want	14.C.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources	Number of countries that developed national regulations for biofouling management, based on the IMO Biofouling Guidelines	1.1.3.1	10

SDG 15 – Life on Land

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

SDG Targets	*SDG Indicators*	*Project contribution indicators*	*Project results framework*	*Target*
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	a) Number and proportion of countries that have developed a National Biofouling Management Strategy b) USD allocated to biofouling issues, globally	1.1.1.2	a) 20 countries (11%) b) TBD*

SDG 17 – Partnerships for the Goals

Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

SDG Targets	*SDG Indicators*	*Project contribution indicators*	*Project results framework*	*Target*
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	17.6.1 Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation	a) Number of South-South collaborations established through the Project (twining agreements or collaboration) b) Number of North-South collaborations established through the Project	1.1.1.2	a) 10 b) TBD*
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	17.7.1 Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies	a) Total amount of funding contributed by technology developers to the GloFouling GIA Fund (in USD) b) Total amount of funding contributed by IFIs and developed countries to biofouling activities (in USD)	3.1.1.1 and 3.1.2.1	a) USD 300k b) USD 500k
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation	17.9.1 Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries	a) US dollar value of South-South collaborations established through the Project (twining agreements or collaboration) b) Total amount of funding contributed by IFIs and developed countries to biofouling activities (in USD)	1.1.1.2	TBD*
17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	17.17.1 Amount of United States dollars committed to public-private and civil society partnerships	a) Total amount of funding contributed to the GloFouling GIA Fund (in USD) b) Total funding catalysed at the national level in LPCs	3.1.1.1	a) USD 300k b) TBD*

SDG 5 – Gender Equality

Goal 5: Achieve gender equality and empower all women and girls

SDG Targets	*SDG Indicators*	*Project monitoring indicators*	*Project results framework*	*Target*
5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	5.5.1 Proportion of seats held by women in national parliaments and local governments	Proportion of women participating in National Task Forces for biofouling management	1.1.2.1	50%
	5.5.2 Proportion of women in managerial positions	Number of women managers attending Project capacitation workshops on biofouling management business opportunities	3.1.2.2	TBD*

SDG 9 – Industry, Innovation and Infrastructure

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

SDG Targets	*SDG Indicators*	*Project contribution indicators*	*Project results framework*	*Target*
9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	9.4.1 CO2 emission per unit of value added	Estimated CO2e emission reduction per unit of value added (global GDP 2010) through the implementation of biofouling management best practices	Outcomes 1.1, 2.1, 2.2 and 2.3	Estimated indirect reduction, by 2030: 50 M t Calculation: shipping industry emissions (in Kg CO2) / GDP shipping industry (constant, USD) ref. 2010

SDG 13 – Climate Action

Goal 13: Take urgent action to combat climate change and its impacts

SDG Targets	*SDG Indicators*	*Project contribution indicators*	*Project results framework*	*Target*
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions	Number of countries that have developed a National Biofouling Management Strategy	1.1.1.2	20

Project impact surveys: The Project will design and implement adequate surveys to gather feedback from participants in capacity-building activities and to measure the impact from project intervention. The surveys will be implemented in three main phases: prior to the activity; immediately after the activity; and 6 months after running the activity. Results from surveys will be analysed by the PCU and any corrective action that may be required.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums such as LME:LEARN and IW:LEARN. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit

to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

GEF Focal Area Tracking Tools: The following GEF Tracking Tool (TT) will be used to monitor global environmental benefits: International Waters TT.

The baseline/CEO Endorsement GEF Focal Area Tracking Tool will be updated by the PCU and shared with the mid-term review consultants and terminal evaluation consultants before any evaluation missions take place. The updated GEF International Waters TT will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.

Additionally, the project will also provide reporting based on contributions to the GEF 7 core indicators as per the table below:

Core Indicator 2	**Marine protected areas created or under improved management for conservation and sustainable use**						***(Hectares)***
			Hectares (2.1+2.2)				
			Expected		Achieved		
			PIF stage	Endorsement	MTR	*TE*	
				150,000			
Indicator 2.2	Marine protected areas under improved management effectiveness						
Name of Protected Area	WDPA ID	IUCN category	Hectares	METT Score (Scale 1-3)			
				Baseline		Achieved	
				PIF stage	Endorsement	MTR	TE
			150,000				
		Sum					

Core Indicator 5	**Area of marine habitat under improved practices to benefit biodiversity**				***(Hectares)***
Indicator 5.2	Number of large marine ecosystems (LMEs) with reduced pollution and hypoxial				
		Number			
		Expected		Achieved	
		PIF stage	Endorsement	MTR	TE
	For list of LMEs, refer to GEF TT		***10***		

Core Indicator 6	**Greenhouse gas emission mitigated**				***(Tons)***
		Tons (6.1+6.2)			
		Entered		Entered	
		PIF stage	Endorsement	MTR	TE
	Expected CO2e (direct)				
	Expected CO2e (indirect)	*0*	***50,380,000***		
Indicator 6.2	Emissions avoided				
		Tons			
		Expected		Achieved	
		PIF stage	Endorsement	MTR	TE
	Expected CO2e (direct)				
	Expected CO2e (indirect)		***50,380,000***		
	Anticipated Year		***2030***		

Core Indicator 7	**Number of shared water ecosystems (fresh or marine) under new or improved cooperative management**				***(Number)***
Indicator 7.3	Level of National/Local reforms and active participation of Inter-Ministerial Committees				
	Shared water ecosystem	Rating (scale 1-4)			
		PIF stage	Endorsement	MTR	TE
	2 countries	***1***	***4***		
	2 countries	***1***	***4***		
	2 countries	***1***	***4***		
	2 countries	***1***	***4***		
	2 countries	***1***	***4***		
Indicator 7.4	Level of engagement in IWLEARN through participation and delivery of key products				
	Shared water ecosystem	Rating (scale 1-4)			
		Rating		Rating	
		PIF stage	Endorsement	MTR	TE
	Participation in IW Conferences	***1***	***4***		

Core Indicator 11	**Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment**			***(Number)***
			Number Achieved	
			MTR	TE
		200 Female		
		200 Male		
		Total	*0*	*0*

Independent Mid-term Review (MTR): An independent MTR process will begin halfway through the Project implementation. The mid-term evaluation report will be submitted to UNDP and the GEF in the same year as the mid-term GPTF. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and

the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Centre (ERC). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultant(s) that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the MTR process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP–GEF TA and approved by the Project ExCom.

Terminal Evaluation (TE): An independent Terminal Evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin at least three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The PCU will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Centre. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultant(s) that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by IMO and the UNDP-GEF Technical Adviser and will be approved by the GPTF. The TE report will be publicly available in English on the UNDP ERC.

The UNDP-GEF Directorate will include the planned project terminal evaluation in the UNDP–GEF evaluation plan and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

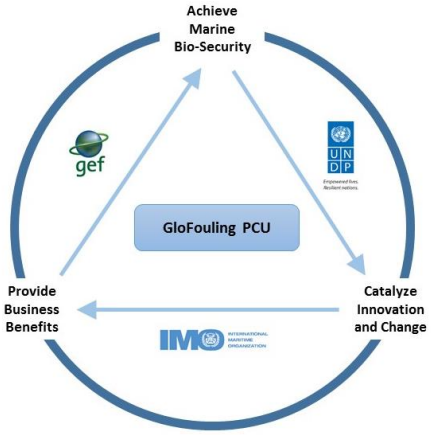
Final Report: The project's terminal APR/PIR along with the TE report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the GPTF during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Project Assurance: UNDP provides a three-tier supervision, oversight and quality assurance role – funded by the GEF agency fee – involving UNDP staff in Country Offices and at regional and headquarters levels. Project Assurance must be totally independent of the Project Management function. The quality assurance role supports the Project ExCom and Project Coordination Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The Project ExCom cannot delegate any of its quality assurance responsibilities to the Project Manager. This project oversight and quality assurance role is covered by the GEF Agency.

Agenda item 10: Role of the private sector and industry leadership

Technology development represents an aspect of the biofouling issue that is ideally suited to industry involvement and leadership. The Glo-X pyramid replicates the LPIR process with a similar intervention focused on the industry and private sector representatives, also at the global, regional and national levels. To implement this concept, and based on similar initiatives implemented by the Glo-X projects, GloFouling will work with leading shipping industry representatives and organizations to establish a Global Industry Alliance (GIA) to stimulate continued R&D research, publicize advances in technology development and consider harmonised standards and requirements.

The strategic partnership between GloFouling Partnerships and industry will be mainly funded through the GIA Fund, built up through annual subscriptions from private sector companies that have a stake in any aspect of biofouling management. The GIA Task Force will be created with representatives from private sector partners that have contributed to the Fund, and the PCU will act as Secretary. So far, five companies have stated their support to the GIA through letters of endorsement (refer to ProDoc). The GIA funds will be utilized over the course of the Project duration for the implementation of activities devised by the GIA Task Force and will also be used to leverage substantial co-financing from other co-sponsors, such as International Financial Institutions. An organogram for the management of the GIA Fund is given in figure



The pathways for the transfer of IAS through biofouling are not restricted to the shipping industry, but also to other ocean industries such as mariculture, ocean energy, oil/offshore, ocean instrumentation, etc. To be effective, any efforts made towards preventing the transfer of IAS through biofouling should therefore include these other industries. To achieve and coordinate contributions and participation from private sector companies outside the shipping industry (non-shipping pathways), the World Ocean Council (WOC) has been identified as an international, multi sectoral institution that is in the best position to approach the leading industries related to non-shipping pathways and to focus on long-term private sector engagement for improved biofouling management. The WOC will include the project and its private-sector components in its regular agenda, taking responsibility for the sectors that are not regulated by IMO. This will include creating an industry task force similar to the GIA and an investment platform for financing technology development and holding a series of forums for private sector engagement to channel private sector contributions for the development of best practices.

The presentation provided by WOC has been included in Annex 5 of this report.

Agenda item 11: Global Industry Alliance (GIA) for Marine Biosafety – establishment and GIA Fund

Background

The Global Industry Alliance (GIA) for Marine Biosafety will be an alliance of maritime industry leaders working together with GEF UNDP IMO GloFouling Partnerships on biofouling management and marine biosafety initiatives. Such a partnership between IMO-GloFouling and the private sector would continue a pioneering and successful initiative created in previous IMO projects that has set out a lead example and model for public-private partnerships in addressing emerging global marine environmental issues.

GloFouling Partnerships: Opportunity for an IMO-Private Sector partnership

The objective of the GIA will be to reduce the transfer of harmful organisms and pathogens via ships biofouling and to maximize the global environmental benefits from addressing this issue in a sustainable and cost-effective manner through enhanced partnership between public sector and the maritime industry, and the alignment of public, NGO and commercial activities toward common goals.

Steps in forming the GIA

The steps to be undertaken for formalizing the GIA are as follows:

1. During the Project preparation phase, several private sector companies and industry representatives have already been consulted on the best way forward and to seek their initial interest and support.
2. Following the GPTF meeting, IMO and the GloFouling Partnerships will publish a call for expressions of interest to join as members of the GIA and to formalize the support from the industry and private sector companies.
3. The GIA will be formed when a core of industry participants accepts membership via signature of the GIA Agreement between IMO and private sector companies that have stated their commitment to the goal of the GIA.

Annex 1 of document GPTF 1/11/1 presents a concept paper that provides information on the GloFouling Partnerships and its collaboration with industry leaders from the private sector. The concept paper describes the main benefits of GIA membership and proposes specific areas for collaboration. The concept paper will be part of the call for expressions of interest published by IMO to secure participation in the GIA.

Agenda item 12: Regional implementation aspects

Introduction

A key objective of the Project is to develop cooperative relationships in the field of biofouling management among the countries in a region and to facilitate replication of Lead Partnering Countries (LPC) activities in Partnering Countries (PCs) in the same region. A regional component, providing regional coordination and harmonization, information sharing, training, and capacity building in the application of biofouling management tools and guidelines was therefore included in the Project as a key activity.

The regional component is first and foremost a mechanism to ensure that all countries in the partner regions have an opportunity to participate and learn from the activities undertaken by the LPCs. To that end, the regions will play a coordinating role for developing national level strategies, policies and programs. In addition, it is expected that the regional component brings significant added value to the long-term sustainability efforts by bringing the biofouling agenda to the regional convention discussions. The Regional Coordinating Organization (RCO) identified within each existing regional structure has a close access to the key policymakers of the countries and offer significant advantage in terms of achieving the most cost-effective coordination among their countries to achieve the objectives of the project.

The objective will be facilitated by the creation of Regional Task Forces (RTFs), the holding of RTF meetings and by inviting participants from neighbouring countries to the regional activities hosted by the LPCs.

It is expected that the RCOs will establish an RTF in each region, comprised of representatives from LPCs and PCs. It is planned that the RTFs will meet three times during the project, and the timing could ideally be linked to some of the GPTF meetings or other major events to be organized by the GloFouling Project. The RTFs will be open to all PCs in the regions who have officially endorsed the GloFouling Project and have shown keen interest in benefiting from and participating in the Project.

Suggested Terms of Reference for the RTFs

Role

The RTFs are primarily a vehicle for communication and consultation. They will provide the main forum in the region for enhancing multilateral and regional cooperation, and for the exchange of information and experiences. The RTFs will help to ensure coordination of activities between countries and consistency of regional activities with IMO Guidelines and other requirements in the field of biofouling management.

Formation

Formation of RTFs will be at the instigation and invitation of the RCO. During the programme the RCOs will be encouraged to initiate contact and the development of cooperative arrangements directly with Partnering Countries, with a view to forming an RTF. Where possible, it is recommended that existing regional mechanisms should be used for establishing each RTF (e.g. other GEF IW projects in the region, UNEP Regional Seas Programme secretariats, where relevant). Opportunities for back-to-back meetings with other relevant regional meetings (such as RCO Focal Point Meetings) should be explored.

Membership

RTF membership will comprise the National Focal Points nominated by the LPCs and PCs, regional shipping and port industry representatives, NGOs, RCO, and a representative from any existing regional programmes or projects (as above). The Chairperson of the RTF may be selected during the 1st RTF Meeting and the RCO will act as Secretariat.

Tasks

Each RTF will undertake the following tasks:

a) Develop regional strategies and action plans to implement IMO Biofouling Guidelines and best practices for other industries at the regional level.
b) Develop recommendations for regional coordination on biofouling management issues (for instance to agree on regional biofouling research needs).
c) Bring the biofouling/invasive aquatic species related discussion to the agenda of Regional Convention Meetings with a view to identify mechanisms for national and regional sustainability on biofouling management issues after the conclusion of GloFouling Partnerships.
d) Share information from the Partnering Countries and lessons learned from the Lead Partnering Countries
e) Serve as a mechanism to expand Partnering Country interest and involvement in the GloFouling Partnerships.
f) Raise issues and concerns, and generate regional status reports, for consideration at GPTF meetings.

Agenda item 13: National implementation aspects

Introduction

This "Guidance for National-level Management and National Task Force (NTF) and Terms of Reference" document was developed by the Project Coordination Unit (PCU), for consideration at the GPTF meeting with an aim to provide to each Lead Pilot Country (LPC) with a standardized framework for the national governance of the GloFouling project as well as roles and functions, membership and structure of NTFs, and reporting purposes.

The "Guidance for National-level Management and National Task Force (NTF) and Terms of Reference" is developed based on the project document of the GloFouling Partnerships and is attached as Appendix 1.

- Appendix 1 to the Guidance provides a suggested agenda outline for 1st NTF meeting.
- Appendix 2 to the Guidance provides a template for a country status report to be submitted to PCU after the 1st NTF meeting
- Appendix 3 to the Guidance provides a template for a National Project Work Plan.

Biofouling Management: Guidance for National Task Forces

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1. Introduction and background

The introduction of invasive marine species into new environments attached to ships' hulls and via other vectors has been identified by the Global Environment Facility (GEF) as one of the four greatest threats to the World's oceans. The other three are land-based sources of marine pollution, overexploitation of living marine resources and physical alteration and destruction of marine habitats.

In response to this threat, the International Maritime Organization (IMO) has taken a number of initiatives. As a specialised agency of the United Nations responsible for the international regulation of ship safety and the prevention of ship-sourced marine pollution, IMO is the most appropriate forum through which to address this issue. The Member States of IMO have developed voluntary guidelines for the control and management of ships' biofouling, to minimize the transfer of harmful aquatic organisms and pathogens in 2011.

2. Lead Agencies, Contact Points and National Task Forces

Previous experience suggested that information about the dangers of biofouling-mediated transfers is poor to non-existent in many countries and constituted a major barrier to action. Furthermore, it was found that where information did exist, no country's single agency had been given or had assumed lead responsibility for work related to the biofouling issue. This combination of poor information and no delegation or assumption of leadership on the part of any specific agency makes it impossible to address the issue effectively or at all, and is seen as the single most important, early priority to address the transfer of invasive aquatic species through biofouling.

A first step in this national endeavour is the designation of a Lead Agency. Since the biofouling issue is clearly associated with maritime transport, the Lead Agency should ideally be the

national maritime administration, although some countries may elect to designate a different agency. The Lead Agency will have overall responsibility for development of the port-specific and country-specific strategies that are the principal objective of any attempt to address biofouling management related issues.

The Lead Agency, through a designated Contact Point (CP), is responsible for the creation and convening of the necessary National Task Force (NTF) and the development and implementation of the necessary country-level information, education and participation activities that are key to success.

3. Purpose of this Guidance

The purpose of this Guidance is to provide assistance and advice to the Contact Points of the National Lead Agencies in each country on the establishment and running of an NTF, as an inter-ministerial and cross-sectoral forum for the effective implementation of biofouling related activities at the country level.

The Guidance provides general advice on:

- how to set up an NTF;
- what the NTF membership should comprise;
- what should be the roles, responsibilities and tasks of the NTF;
- how to run NTF meetings; and
- how to develop and implement National Work Plans within the context of the GloFouling Project to address biofouling and invasive species issues.

4. Roles, responsibilities and tasks of the Lead Agency and NTF

It is not possible for the Lead Agency (LA) and Contact Points (CP) alone to effectively address the biofouling issue in each country. Each Lead Agency must be supported by an inter-ministerial and cross-sectoral NTF.

The roles, responsibilities and tasks of the LA/CP, supported by the NTF, are as follows:

- develop the National Work Plan for the implementation of a biofouling management strategy at the port and country level;
- provide free access to information required for the implementation of the biofouling management strategy;
- authorize, facilitate and assist, subject to adequate prior notification and formal clearance, site visits by technical experts to support the implementation of the strategy;
- provide for the in-country application of IMO Biofouling Guidelines and associated documents by shipping companies and port authorities;
- provide in-country co-ordination between different government agencies, industry sectors and other groups with interest in the biofouling issue (environment, transport, fisheries, etc.);
- provide a forum for inter-ministerial and cross-sectoral communication and consultation on the biofouling issue;
- provide financial, logistical and other support to the activities of the programme; and
- communicate the strategy at regional level in an effort to find synergies, opportunities for regional co-operation and harmonization of national strategies and regulatory framework.

5. NTF membership

It is recommended that NTF membership should comprise the following:

- The CP from the Lead Agency (Task Force Chairman).
- The CP Assistant (Task Force Secretary).
- Representatives from the equivalent of the:
  - National maritime administration (if not the Lead Agency).
  - Port administration.
  - Environmental administration.
  - Fisheries/marine resources administration.
  - Health/quarantine administration.
  - Local government.
  - Marine science community/academia.
  - Shipping industry.
  - Ocean and offshore energy industry.
  - Port users.
  - Non-government environmental organization(s), as appropriate.
  - National maritime training organizations

Each country may elect to invite additional groups to be represented on their NTF.

6. NTF meetings

Appendix 1 contains a suggested agenda for holding the 1st NTF meeting.

A current status report, in accordance with appendix 2, will need to be developed by the Lead Agency, for presentation at the 1st NTF meeting.

Thereafter, NTF meetings should be held as frequently as deemed necessary by the Lead Agency.

These meetings should be chaired by the CP, and the CP Assistant should act as Secretary.

All documents relating to NTF meetings, including agendas and minutes, should be filed and progress records maintained for information and programme co-ordination purposes.

Each NTF should develop its own Rules of Procedure for the conduct of its business, in accordance with the general guidelines above and relevant national legislation.

7. National Work Plans

One of the main tasks of the NTF will be to develop, as a co-operative group, the National Work Plan for the implementation of a biofouling management strategy at the port and country level.

The National Work Plan should outline the different components of the strategy that need to be implemented. How these tasks are approached may differ from country to country, and it is up to the NTF to develop this. Technical support and assistance would be available from IMO on request.

Appendix 3 to provides a template for a National Work Plan.

Appendix 1

SUGGESTED AGENDA OUTLINE FOR 1ST NATIONAL TASK FORCE (NTF) MEETING

1. Open meeting.
2. Adoption of Agenda.
3. Introduction of Chairman (LA-CP).
4. Introduction of Secretary (LA-CP Assistant).
5. Introduction of each NTF member.
6. Overview of roles, responsibilities and tasks of the NTF (refer to section 4 of Biofouling Management: Guidance for National Task Forces).
7. Overview of components to be developed for National Workplan.
8. Allocation of National Workplan development tasks to NTF members.
9. Other business.
10. Close meeting.

Notes:

Any documents required for each agenda item should be prepared and circulated in advance to all participants by the Secretary.

Should the meeting require the expenditure of programme funds, the estimated budget with a break-down of costs for specific activities shall be prepared before the meeting and necessary funds identified in advance.

The minutes of the NTF meeting shall be prepared by the Secretary and circulated to all participants and to the CEP.

Appendix 2

TEMPLATE FOR COUNTRY STATUS REPORT TO BE PRESENTED AT 1ST NTF MEETING

Country:		**Date:**	
Completed by:		**Contact email:**	

BIOFOULING MANAGEMENT – Country Status Report for GloFouling Partnerships

1	**Lead Agency designated?**		☐ **Yes**	☐ **No**
	Lead Agency details (if yes):			
2	**Contact Point designated?**		☐ **Yes**	☐ **No**
	CP details (if yes):			
3	**CP Assistant designated?**		☐ **Yes**	☐ **No**
	CP Assistant details (if yes):			
4	**Any know introductions of invasive aquatic species?**		☐ **Yes**	☐ **No**
	Summary			
5	**Are IMO recommended measures (2011 Biofouling Guidelines) currently applied?**		☐ **Yes**	☐ **No**
	Details (if yes):			
6	**Are there any domestic (national, regional or local) legislations, regulations or requirements related to biofouling and shipping?**		☐ **Yes**	☐ **No**

	Details or reference (Act and Year):		
7	**Are there any domestic (national, regional or local) legislations, regulations or requirements related to biofouling and aquaculture?**	☐ **Yes**	☐ **No**
	Details or reference (Act and Year):		
8	**Are there any domestic (national, regional or local) legislations, regulations or requirements related to biofouling and offshore oil and gas platforms or support vessels?**	☐ **Yes**	☐ **No**
	Details or reference (Act and Year):		
9	**Are there any other maritime industries related to biofouling that have domestic (national, regional or local) legislations, regulations or requirements?**	☐ **Yes**	☐ **No**
	Details or reference (Act and Year):		
10	**Please attach contact details for all NTF members as follows:**		
	Name and Surname/Position/Organization/Telephone/Email		
11	**Please attach any other reports or information that may be relevant (or provide link)**		
12	**National Work Plan – Please attach the completed annual national work plan for the country**		
13	**Minutes of the NTF meeting – Please attach the minutes of the 1st NTF meeting**		

Appendix 3

TEMPLATE FOR A NATIONAL WORK PLAN

Project reference (Activity number)	*Activity*	*Responsibility*	*Level*	*Status (Pending, In development or Completed)*	*Planned year*	*Comments*
Legal, Policy and Institutional Review						
5.1.1.3	National Focal Point and Project coordinator in place	Country	National	Completed		
2.2.1.2	National awareness-raising workshops on biofouling management.	GloFouling	National			
1.1.2.1	Set up a National Task Force (NTF)	NTF	National			
1.1.1.1	National status assessment report	GloFouling	National			
1.1.1.1	National economic assessment report	GloFouling	National			
1.1.1.2	National biofouling management strategy and action plan (includes decision on theme and venue for demonstration site)	NTF	National			
1.1.2.2	National cross-sectoral outreach plan	NTF	National			
4.1.1.2	National website for dissemination of information and awareness-raising	NTFs	National			
1.1.3.1	National legal assessments report	GloFouling	National			
1.1.3.1	Draft appropriate national biofouling management measures	NTF	National			
Training and demonstration sites						
2.1.1.1	National training on the transfer of IAS through biofouling and biofouling management for shipping and non-shipping pathways (general course)	GloFouling	National			
2.1.1.2	National training on inspection methodologies	GloFouling	National			
2.1.1.3	National training on biofouling management plans and record book	GloFouling	National			
2.1.1.4	National training on in-water cleaning	GloFouling	National			

Project reference (Activity number)	*Activity*	*Responsibility*	*Level*	*Status (Pending, In development or Completed)*	*Planned year*	*Comments*
2.1.1.5	National training on dry dock operations and application of AF paints	GloFouling	National			
2.3.1.1	Implement demonstration site	GloFouling	National			
2.1.1.6	Technical workshop for female marine scientists	GloFouling	Regional			
Global activities						
4.1.2.1	National representatives and experts to participate in Research and Development Forums organised by the GloFouling Project	GloFouling	Global			
5.1.1.2	National Focal Point to participate in Global Project Task Force (GPTF) meetings to monitor project	GloFouling	Global			

Agenda item 14: Review of forthcoming activities

Please refer to the Minutes of the Meeting.

Agenda item 15: Communication strategy and sustainability

Please refer to the Minutes of the Meeting.

Agenda item 16: Other business

Please refer to the Minutes of the Meeting.

Annex 1
List of participants

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Annex 2
Minutes of the Meeting

Minutes of the First GPTF Meeting

The meeting was attended by 62 delegates (the list of participants is given in Annex 1)

The opening session was addressed by:

- Mr. Hiroyuki Yamada, Director, Marine Environment Division, International Maritime Organization
- Mr. Andrew Hudson, Principal Technical Advisor, International Waters and POPS, United Nations Development Programme, Global Environment Facility.

Opening remarks and welcome messages

The Director of the IMO Marine Environment Division and Co-Chair of this GPTF Meeting, Mr. Yamada, opened the meeting and welcomed the delegates. He also stated that the meeting would be co-chaired by the IMO Secretariat and the GEF-UNDP representative. Mr. Yamada mentioned that at different stages of the meeting he would be replaced as co-Chair by Mr. Jose Matheickal, Deputy Director, Subdivision for Major Projects, at IMO. The co-Chair also mentioned that the members of the Project Coordination Unit (PCU) – Ms. Lilia Khodjet El Khil, Project Technical Manager, and Mr. John Alonso, Project Technical Analyst – would act as Secretary to the meeting. The GEF-UNDP representative, Mr. Andrew Hudson also welcomed the participants. Mr. Alonso outlined housekeeping arrangements and introduced the programme. This was followed by self-introduction from all the GPTF participants.

Agenda Item 1: Adoption of the Agenda

The Chair invited the meeting to adopt the Agenda (document GPTF 1/1/1). In the absence of any comments, the Chair concluded that the Agenda had been adopted.

Agenda Item 2: GPTF Terms of Reference and Rules of Procedure

The Chair emphasised the importance of the GPTF as the highest advisory body of the project and invited the Secretary to introduce the Terms of Reference (ToR) of the GPTF (document GPTF 1/2/1).

The Chair invited the GEF-UNDP representative to inform the meeting on the previous experience in participating at GPTF meetings, the lessons learned and what is expected from the first GPTF.

Further to comments made by GEF-UNDP on GPTF meetings, the Chair highlighted the need of a Rules of Procedures (RoP) to provide a uniform basis for the GPTF, to conduct the GPTF work in an efficient and effective manner, having regard to the available resources of the Project.

The Chair invited the Secretary to introduce the draft RoP (document GPTF 1/2/1) for GPTF Meeting. Following the introduction of the draft RoP, the following comments were received:

- The representative from Australia requested clarification between the status of “observers” and “members” of the GPTF. The chair clarified the point and no other comments were made.

- The representative from PERSGA mentioned that two years could be a long interval between GPTF meetings and suggested that the meeting should be conveyed annually. The chair clarified that while he understood the suggestion from the participant from PERSGA, the project work plan included other global meetings (such as the R&D Forum) that could be used for highlighting any issues with regard to project implementation. The Project Executive-Committee (ExCom) would also be available for any strategic decisions that may be required during interim periods between GPTF meetings.
- The representative from SACEP received clarification that Regional Coordinating Organizations (RCOs) had equal voting rights as Lead Partnering Countries (LPCs).
- The representative from Sri Lanka requested modification of article 13 e) to add "… or a nominated representative". The suggestion was accepted by the GPTF.

In the absence of further comments, the ToR and RoP were approved and adopted by the GPTF. The Chair also mentioned that the RoP will be kept under review and updated if necessary in the next GPTF Meeting.

Agenda Item 3: Project overview and objectives of the meeting

The Chair introduced the new agenda item by mentioning that the UNDP Project Document (ProDoc) should be used as the reference throughout the implementation of the Project. The Chair stated that the different aspects of the ProDoc such as the strategy, the results framework, the budget and the monitoring and evaluation plan, will be introduced throughout the meeting within the context of Agenda items 3, 9 and 14.

The Chair invited the Secretary to introduce document GPTF 1/3/1 and provide a review of the main aspects of the project and the objectives of the GPTF meeting. After the presentation, and under the assumption that all participants had acquired a common understanding of the general implementation strategy, the Chair opened the floor for comments.

The following comments were received:

- The representative from SACEP highlighted the need to understand better the issue before focusing on the implementation of the IMO Biofouling Guidelines. In this regard, he mentioned the need to bring into the project the support from research institutions and scientists. Further comments, from other participants, agreed that there was a need to secure participation from research institutions. The Secretary mentioned that several universities and research centres specialised in different aspects of invasive aquatic species, biofouling or coatings had already provided official support to the GloFouling Project and would participate as Strategic Partners.
- The representative from PEMSEA sought clarification on the reason why the IMO Biofouling Guidelines were non-mandatory. Mr. Theofanis Karayannis, Head of the Marine Biosafety Section at IMO, clarified that IMO Member States had not seen until now the need to make the Guidelines into a mandatory instrument. Mr. Karayannis also highlighted that nevertheless, the Biofouling Guidelines were going to be reviewed during the 2020-21 biennium and, while it was difficult to forecast the outcome, this process had many similarities to what happened to ballast water and its Convention.

Agenda Item 4: Lead Partnering Countries (LPC) status report

All LPCs who participated in the GPTF presented a report on the national perspectives of biofouling management and IAS issues, some data on their shipping industry and other marine

resources, status of the discussions at national level as well as any initiatives and projects undertaken so far. The Chair encouraged the country representatives to interact and exchange views on different matters regarding the project.

The Country Status Reports as delivered in the GPTF meeting are given in Annex 5 to this report.

Agenda Item 5: Regional Coordinating Organizations (RCO) status reports

The Chair invited the four RCOs to present an overview of their region, the status of biofouling management issues and a brief description of the RCO structure and functions.

The following RCOs presented the Status Report using power point presentations (provided in Annex 5 to this report).

- CPPS – RCO for South East Pacific region
- PEMSEA – RCO for South East Asia region
- PERSGA – RCO for Red Sea and Gulf of Aden region
- SACEP – RCO for South Asia region

RCOs for the Pacific and Wider Caribbean regions – SPREP and RAC/REMPEITC, respectively, could not attend the meeting and hence no presentations were made for these regions.

Instigated by comments from the representatives from PERSGA and CPPS, it was generally noted by all participants that the RCOs play a central role to the implementation and success of the Project. The Chair thanked the RCOs for the continuous support throughout the preparations for the Project and for taking various initiatives. The RCOs are a key element of communication and coordination with national administrations at the regional level and the GloFouling PCU confirmed its intention to communicate with LPCs through the RCOs when developing activities for the GloFouling Project.

Further to the above, other questions and comments were posed after each presentation. These discussions included the following aspects:

- CPPS. On the inclusion of Brazil in one of the priority regions, Mr. Matheickal, acting as co-Chair for IMO, raised the question about coordination of work with CPPS. In this regard, the representative from Brazil highlighted that Brazil works very closely with all other national administrations in Latin America. Nevertheless, some internal discussion within the Brazilian administration would be required before making a formal approach to CPPS. The representative from CPPS stated that his organization would be able to work with Brazil once an official request was presented by the country.
- PEMSEA. The Chair enquired about the possibility of linking GloFouling activities at the regional level with the LMEs and that RCOs could play an important role by communicating directly with national ministries commissioned with the protection of the marine environment (as opposed to IMO's traditional communication channels with ministries of transport). The representative from PERSGA confirmed that the Project would certainly be presented at the next ASEAN Seas conference in 2021 and, given that the next GPTF meeting is scheduled for that same period, it would consider hosting the meeting back-to-back. The Secretary welcomed the suggestion from the representative from PEMSEA.
- PERSGA. The Chair enquired about the participation of Saudi Arabia in environmental activities organised by PERSGA. The representative from PERSGA highlighted that Saudi Arabia had repeatedly confirmed its willingness to protect the marine environment and had recently donated USD 1 million to IMO's Integrated Technical Cooperation

Programme. The Chair noted that future contributions from IMO Member States should be earmarked to specific themes to facilitate contribution to project activities.

- SACEP. The representative from SACEP highlighted the difficulty to include participation from the private sector at the regional level. In this regard, the representative from WOC noted that regional business groups were already being developed in some regions and that this model could be replicated in South Asia to include private sector participants in the development and deployment of new biofouling management solutions and practices. On a slightly separate issue, the representative from SACEP also confirmed that biofouling management issues would be raised in their next regional council meeting and put forward to the national delegates.

Agenda Item 6: Regulatory aspects: the IMO Biofouling Guidelines

The Chair mentioned that the international regulatory regime applicable to biofouling management is highly relevant to the Project. The Chair stated that the Project envisages a key objective of achieving regional cooperation and harmonization of policies with a view to support the uniform implementation of the IMO Biofouling Guidelines. A global forum such as the GPTF could significantly assist in discussing the major hurdles in achieving these objectives in their own regions and discuss opportunities within the Project framework to overcome such barriers. For this purpose, the floor was given to Mr. Theofanis Karayannis, Head of the Marine Biosafety Section in the Marine Environment Division of IMO, to explain the future review of IMO's Biofouling Guidelines.

The presentation, as delivered in the GPTF meeting, is provided in Annex 5 to this report.

Following the presentation from Mr. Karayannis, a short discussion ensued about different aspects of the IMO Biofouling Guidelines and the issue of invasive species and biofouling as a vector in general.

In this regard, it was particularly confirmed the important role played by recreational craft as pathways for secondary expansion of IAS at the regional level. The representative from Australia highlighted the example of Port Philip bay, in Melbourne.

Brazil raised the question about implementation of best practices for biofouling management in fishing vessels and other industries. The representative from WOC commented that for the fishing industry there was some guidance was provided in a publication from FAO, but it did not include any reference to preventing IAS.

The representative from SACEP further enquired about the reasons why the IMO Biofouling Guidelines were currently not implemented. In this regard, several participants (BIMCO, IMarEST, IMO, Australia) mentioned a few reasons, such as lack of awareness from national administrations, ship owners, etc. It was also pointed out that implementation was actually high within the main operators of international container vessels, but much lower for other types of ships. However, while there is high focus on hull maintenance aspects to reduce ship drag, poor attention is given to niche areas. Difficult access to niche areas and their less exposed surface makes them one of the main candidates for harbouring non-indigenous species.

Agenda Item 7: Biofouling management in non-shipping industries

The Chair reminded the participants that the non-shipping aspects of the GloFouling Project will be implemented by Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), with contributions from the World Ocean Council and general help and guidance from the PCU.

The Chair mentioned that on day 3, the World Ocean Council would explain its role in the Project as a key partner for securing participation from the private sector and industry associations from the non-shipping sectors.

The Chair invited the delegates from IOC-UNESCO to make a presentation on their role as implementing partners of the Project. After the presentation, the Chair mentioned that this will be the first time that IMO will work with an implementing partner in a global project and that it was encouraging to see this as a fine example of different organizations of the UN System working as one.

The main aspects highlighted by IOC-UNESCO, were preparations for its Decade of Ocean Science and the eLearning platform and tools that could be used to develop and host some of the training courses to be developed by the GloFouling Project. Preliminary discussions between IMO and IOC-UNESCO have also considered the possibility of establishing a new working group of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). It is expected that FAO, WMO, ISA and other relevant international organizations would play a supporting role in the review of biofouling management practices in non-shipping pathways such as aquaculture, fisheries or deep-sea mining, through their participation in this newly created GESAMP Working Group. The representative from IMO indicated that the GESAMP Office was based at IMO headquarters and this was expected to facilitate discussions on this subject.

The presentation from IOC-UNESCO, as delivered in the GPTF meeting, is provided in Annex 5 to this report.

Agenda Item 8: Lessons learned from other initiatives and research on biofouling management and invasive aquatic species

Due to the highly collaborative nature of the GloFouling Project, the PCU had encouraged some Strategic Partners to present to the participants any initiatives that were being developed by their institutions or organizations with regard to biofouling management and IAS.

In this regard, the following strategic partners made presentations on their current work:

- BIMCO. Development of an in-water cleaning standard.
- Germany. The Baltic experience: lessons from the COMPLETE Project.
- IMarEST Biofouling Management Expert Group. GloFouling Discussion Points. Reference was made about creating a global index with information on locations and requirements for conducting in-water cleaning.
- World Sailing. Strategic partner overview.
- IPPIC.
- Australia. Perspectives on biofouling management from Australia.
- ACT/MERC. Evaluations of In-Water Cleaning: Facilitating Innovations in Environmental Protection & Business Development.
- WMU. Capacity-building needs for maritime administrations.

Additionally, a representative from Heriot-Watt University presented the work currently being developed by their new project, BioFREE, within the context of biofouling and the offshore renewable energy sector.

In general, all the interventions highlighted the high priority given by the Strategic Partners to invasive species issues and the need to coordinate efforts for improved biofouling management and the development of tools, standards and technologies.

The Chair stated that Strategic Partners could add significant value to the project by encouraging institutions to participate in international, regional and national stakeholder meetings to bring their perspectives and support. In addition, several members could also contribute to the Global Industry Alliance (GIA) being established under the GloFouling project framework.

All power point presentations are included in this document as Annex 5.

Agenda Item 9: Project work plan, budget and monitoring and evaluation

The Chair explained that due to the importance of the matter, this agenda item will be conducted a bit differently. First, the Secretary would give an initial presentation on the budget and present a draft work plan. Participants would later break into groups, to be able to discuss the work plan in detail, taking into consideration the previous presentations and documents discussed during the meeting, as well as the contents of the ProDoc.

The Chair invited the Secretariat to take the floor and present the Project budget, work plan and list of activities.

The Secretariat presented key aspects of the budget, highlighting the differences between the GEF-UNDP funds and the co-financing commitments presented by all the implementing partners, LPCs and RCOs. It was further highlighted that a budget revision (A) had already been submitted and approved for the GEF-UNDP funds. The budget revision merely adjusted the original budget to the new timeline for the project ending in December 2023. No other alterations had been made. Budget revision A is available under the Agenda item 9 of this report.

Regarding the activities and their timeline, the Secretariat explained the main aspects of the Results Framework and description of activities. The planning for these activities is presented in the next table.

Table of activities and timeline

Activity number	*Activity*	*Responsibility*	*Level*	*Status*	*2019*	*2020*	*2021*	*2022*	*2023*
National level: governance and LPIR									
5.1.1.3	National Focal Point and Project coordinator in place	LPCs	National	Completed					
1.1.2.1	Set up a National Task Force (NTF)	LPCs	National	Pending					
2.2.1.2	National awareness-raising workshops on biofouling management.	PCU	National	In progress	10%				
1.1.1.1	National status assessments	LPCs	National	Pending					
1.1.1.1	National economic assessments	LPCs	National	Pending					
1.1.1.2	National biofouling management strategies and action plans in LPCs	LPCs	National	Pending					
1.1.1.2	National biofouling management strategies and action plans in PCs	PCs	National	Pending					
1.1.2.2	Develop a National cross-sectoral outreach plan	LPCs	National	Pending					
1.1.3.1	National legal assessments in LPCs	LPCs	National	Pending					
1.1.3.1	Draft appropriate national biofouling management measures	LPCs	National	Pending					
4.1.1.2	National websites for dissemination of information in LPCs	LPCs	National	Continuous					
National level: training									
2.1.1.1	National training in on the transfer of IAS through biofouling and biofouling management for shipping and non-shipping pathways	PCU	National	Pending					
2.1.1.2	National training on inspection methodologies in LPCs	PCU	National	Pending					
2.1.1.3	National training on biofouling management plans and record book in LPCs	PCU	National	Pending					
2.1.1.4	National training on in-water cleaning in LPCs	PCU	National	Pending					
2.1.1.5	National training on dry dock operations and application of AF paints	PCU	National	Pending					
2.3.1.1	Implement demonstration sites in all LPCs.	PCU	National	Pending					
Regional level									
5.1.1.3	Regional coordinator in place	RCOs	Regional	In progress	70%				
1.1.4.1	Set up Regional Task Forces (RTFs)	RCOs	Regional	Pending					
2.2.1.2	Regional awareness-raising workshops on biofouling management	PCU	Regional	In progress	10%				
1.1.4.2	Draft regional strategies in strategic and outreach regions	RCOs	Regional	Pending					
2.1.1.6	Technical workshop for female marine scientists in strategic regions	PCU	Regional	Pending					
2.1.2.1	Regional train-the-trainer workshops on key aspects of biofouling management	PCU	Regional	Pending					
2.1.2.2	Capacitate training institutes or academies for delivery of courses on biofouling management	RCO	Regional	Pending					
4.1.1.2	Create Regional websites for dissemination of information in regions	RCOs	Regional	Pending					

Activity number	*Activity*	*Responsibility*	*Level*	*Status*	*2019*	*2020*	*2021*	*2022*	*2023*
Global level: Project governance									
5.1.1.1	PCU and IOC in place	PCU	Global	In progress	75%				
5.1.1.2	Establish Global Project Task Force GPTF	PCU	Global	Completed					
5.1.1.2	Ex Com meetings	PCU	Global	Pending					
5.1.1.4	Coordinate with the GEF-UNDP International Waters (IW) portfolio	PCU	Global	Completed					
5.1.2.1	Quarterly and annual implementation reports	PCU	Global	Pending					
5.1.2.2	Conduct mid-term review	PCU	Global	Pending					
5.1.2.2	Conduct terminal evaluation	PCU	Global	Pending					
Global level: reports and studies									
2.1.3.1	Guidance for developing a national status assessment	PCU	Global	Pending					
2.1.3.1	Guidance for developing a national economic assessment	PCU	Global	In progress	75%				
2.1.3.2	Global summary based on the outcome of the national economic impact assessments conducted in LPCs	PCU	Global	Pending					
2.1.3.3	Review of existing biofouling management practices across all maritime sectors, the impacts of biofouling for specific industries and how it contributes to the transfer of IAS	PCU, IOC, WOC	Global	Pending					
2.1.3.4	Best practices for the implementation of biofouling management for non-shipping pathways	IOC, WOC	Global	Pending					
2.1.3.5	Guidance for dry-dock operations, selection and application of antifouling coatings to enhance immunity to biofouling	PCU	Global	Pending					
2.1.3.6	Best practices for inspection methodologies	PCU	Global	Pending					
2.1.3.7	Best practices for in-water cleaning and maintenance	PCU	Global	Pending					
2.1.3.8	Biofouling management approaches and best practices for recreational craft and marinas	PCU	Global	Pending					
2.1.3.9	Report on the impact of biofouling management on GHG emissions	PCU	Global	Pending					
2.1.3.10	Overview of the application and use of Biofouling Management Plan and Biofouling Record Books	PCU	Global	Pending					
Global level: awareness raising									
2.2.1.1	Design Project branding and visual identity, maintain a project website, and publish news items and other outreach materials to showcase project activities and achievements.	PCU	Global	In progress	50%				
2.2.1.3	Design and distribute information materials for awareness-raising on biofouling issues and the impact of IAS.	PCU, IOC, WOC	Global	In progress					
2.2.1.3	Long-feature documentary	PCU	Global	Pending					
2.2.1.4	Translate project publications and outreach materials into key languages	PCU	Global	Pending					

Activity number	*Activity*	*Responsibility*	*Level*	*Status*	*2019*	*2020*	*2021*	*2022*	*2023*
2.2.1.5	Represent project in international and regional conventions and forums	PCU	Global	Continuous					
Global level: conferences, private sector participation and knowledge sharing									
1.1.1.3	LPCs and RCOs contribute to the evaluation of the IMO Biofouling Guidelines	PCU	Global	Pending					
3.1.1.1	GIA task force for shipping industry	PCU	Global	In progress	15%				
3.1.1.1	GIA task force for non-shipping industry	WOC	Global	Pending					
3.1.1.2	Participation of industry in GPTF	PCU	Global	Pending					
3.1.2.1	Hold WOC Ocean Investment Platform sessions to catalyse investment	WOC	Global	In progress (annual)					
3.1.2.2	Global conference for female entrepreneurs in the maritime industry	PCU	Global	In progress	25%				
3.1.3.1	Hold industry forums back-to-back with R&D Forum	WOC	Global	In progress					
3.1.3.2	Sustainable Ocean Summit sessions on biofouling & IAS	WOC	Global	Annual					
3.1.3.3	Contribute to the evaluation of IMO's Biofouling Guidelines with input from the private sector	PCU	Global	Pending					
4.1.1.1	Create global knowledge hub on biofouling management.	PCU	Global	In progress	25%				
4.1.2.1	Research and Development Forums	PCU	Global	In progress					

No questions or comments were presented by the participants.

The Chair invited all participants to join the group discussions. Participants were divided into four groups, that focused on different themes and took into consideration some points proposed by the PCU. The themes and questions allocated to each group are included in Annex 4 to this report.

The Chair invited each group rapporteur to present their vision, ideas and recommendations on the themes presented by the PCU.

GROUP 1: Expert reports and studies (best practices, codes of conduct, reviews, etc.).

Order of priority for reports:

1) Review (baseline study) of existing biofouling management practices
2) Version 1 of inspection methodologies to be able to establish what exactly are best practices
3) In-water cleaning
4) Dry-dock operations and selection of antifouling coatings
5) Best practices for non-shipping pathways
6) Recreational craft and marinas
7) Version 2 of inspection methodologies focusing on what was learned in the review of the best practices
8) Report of the impact of biofouling on GHG emissions
9) Application and use of BMPs and BRBs

Other specific subjects that should be included:

- Include Gap Analysis in baselines study
- Identify key non-shipping pathways
- Optimize efficacy and minimize environmental impacts for dry dock operations and the selection and application of AFCs
    - For selection factors (what types of paint should be used in which scenarios)
    - For dry dock operations (application and removal of paint)
- Version 1 and Version 2 of inspection methodologies (before and after review of best practices)
- Review should focus on establishing an in-water cleaning standard
    - Be put to use to establish best practices in shipping
    - Be put to use to establish best practices in other sectors
- Emphasize current management approaches for recreational craft
- Emphasize the impact of biofouling on not only GHG emissions but also the connection between fuel use and money spent

Potential other Topics:

- Microplastics and biofouling
- Best approach for unplanned events (damaged ship/platform)
- Enhanced fatigue loading on tethered structures
- Future ship design and potential changes
- Big Data and application to Biofouling – how to predict potential high-risk fouling candidates

GROUP 2: Training courses and modules

Training priorities:

1) Intro course that should include reference to legal aspects, economics, technical, application of AFCs, risk assessment
2) Use of Biofouling Management Plan and Biofouling Record Books
3) Inspection methodologies
4) Dry dock operations and application of AF coatings
5) In-water cleaning

Courses should be interactive, and consideration should be given to eLearning tools. Use of local knowledge should also be taken into account (divers, fishermen).

Other training needs:

- Port Biological Baseline Studies
- SDGs guidance
- How to adopt international regulations into national legal framework

GROUP 3: Demonstration sites

THEME 1: In-water cleaning - Showcase technologies and operation.

a. What specific activities should be included in the programme/objectives of the demonstration sites that can increase their effectiveness?

   Biofouling cleaning protocol; Video/digital demonstration; Live demonstrations; Effectiveness of the system.

b. What approach or synergies should be included to increase the impact of the demonstration sites?

   Live demonstrations/Practicals.

c. What further funding and from which donors/contributors could be secured to increase the budget and scope of the demonstration sites?

   Paint manufacturers; and Technologies developers.

d. What activities related to non-shipping could be included in the demonstration sites?

   Fishing, Recreational, Aquaculture, Renewable Energy and Offshore activities.

THEME 2: In- water inspection and procedures for recreational crafts

a. What specific activities should be included in the programme/objectives of the demonstration sites that can increase their effectiveness?

   Assessments/Surveys of size of recreational fleet; Training of boat owners to identify key non-native species and level of hull fouling

b. What approach or synergies should be included to increase the impact of the demonstration sites?

   Invitation to National authority for training during major boating events.

c. What further funding and from which donors/contributors could be secured to increase the budget and scope of the demonstration sites?

   Paint manufacturers; and Yacht builders.

d. What activities related to non-shipping could be included in the demonstration sites?

   None.

THEME 3: Inspection methodologies in Ports, Shipyards and Dry-Docks

a. What specific activities should be included in the programme/objectives of the demonstration sites that can increase their effectiveness?

   Dry-Docks: Communication and coordination between marine operators and inspectors for hull fouling.

   Ports and Shipyards: Early inspection of vessels.

b. What approach or synergies should be included to increase the impact of the demonstration sites?

   Use of eDNA to improve biofouling inspections.

c. What further funding and from which donors/contributors could be secured to increase the budget and scope of the demonstration sites?

   Research Funding agencies.

d. What activities related to non-shipping could be included in the demonstration sites?

   Fishing, Recreational, Aquaculture, Renewable Energy and Offshore activities.

THEME 4: Biofouling management in high value marine ecosystems (access, inspection, etc.)

a. What specific activities should be included in the programme/objectives of the demonstration sites that can increase their effectiveness?

   Greater degree of monitoring of IAS and Chemical biocides.

GROUP 4: Awareness-raising

Long feature documentary: Combination of long (max 20 mins) and short (2-5 mins) videos on specific issues to be uploaded on YouTube. Potential collaborators were named such as BBC, National Geographic or NETFLIX. Also, the use of famous celebrities or influential leaders to advocate the cause. As a potential source for further funding: Industry – Shipping, Cleaning Manufacturers, Shipyards, etc. For geographical sites, the output should include a success story region and a challenging area. The main message should be it is time to take action/shared responsibility. Potential subjects – impact, solutions (technology/best practices), IMO role, partners.

Outreach to recreational craft: Specific video for recreational crafts (YouTube/LPC & RCO websites). Partners should include World Sailing to disseminate materials and/or fund video production. Also, participation of marinas/port authorities/ministry of tourism to organize and participate in a national event. A demonstration site for marinas (i.e. cleaning best practices) would be a suitable activity. National Task Forces should include representation from recreational sector.

Non-shipping industries: Communication and raising awareness for non-shipping industries, i.e. energy and aquaculture should be included in both the national and regional strategies, including national and regional strategic partners. Vectors of communication: Social media, Websites and Video. Reaching out: participation in meetings/events of non-shipping industry to present the project and invite to join efforts to adopt guidelines/best practices.

Shipping industry: Activities could include participation in GloFouling meetings in the regional and national levels; forge agreement (MOUs) with industry associations; PCU/RCOs/LPCs participation in industry meetings/events; and invite industry to provide inputs to the development, adoption and dissemination of Guidelines/best practices.

The main conclusion was that a project communication strategy should be included in the project work plan.

In the absence of any major comments on the overall work plan and budget, the Chair concluded that the PCU, with the necessary guidance from IMO and UNDP will duly observe the comments made and take the appropriate action to implement the work plan with the direct help and assistance of the Regional Coordinating Organizations and National Focal Points.

Monitoring and evaluation

Following the discussions on the budget and work plan, the Chair invited the Secretariat to present monitoring and evaluation plan and the reporting requirements. The Secretariat presented the different aspects of the M&E Plan, as described in Agenda item 9. More importantly, the Secretariat presented the monitoring and evaluation table for LPCs, that collects the key outputs resulting from the legal, policy and institutional review. All LPCs will be assessed against this table.

After the presentations and discussions, the Chair concluded that the PCU, with necessary guidance from IMO and UNDP, will duly observe the comments made and take the appropriate action to implement the M&E plan with the direct help and assistance of the RCOs and NFPs.

Table 5: LPC monitoring and evaluation

Country name	National Task Force	National status assessment, including National legal assessment	National economic assessment	National outreach plan	National strategy	National regulation drafted
Brazil						
Ecuador						
Fiji						
Indonesia						
Jordan						
Madagascar						
Mauritius						
Mexico						
Peru						
Philippines						
Sri Lanka						
Tonga						
Target(s):	*NTFs established and met at least once, playing effective role in steering all activities related to GloFouling Partnerships Project.*	*National status assessment report published and endorsed by NTF.*	*National economic assessment report published and endorsed by NTF.*	*Cross-sectoral outreach strategy developed and endorsed by NTF.*	*National strategy and action plan endorsed by NTF.*	*Sustainable national biofouling management measures drafted.*

	Pending
	In development
	Completed

Agenda Items 10 and 11: Role of the private sector and industry leadership through the Global Industry Alliance (GIA) for Marine Biosafety

The Chair emphasised that the Project includes a major private sector partnership component to facilitate increased industry participation during the implementation of the Project. The Chair invited the Secretariat to introduce document GPTF 1/11/1, that explains a model to establish such an industry partnership through the establishment of Global Industry Alliance (GIA) and GIA Fund.

The PCU introduced the document and also gave an update on the draft concept paper that will be amended following comments and feedback received during the GPTF. Currently four private sector companies have officially notified of their intention to join the GIA and discussions with several other companies are on-going. The PCU explained that the aim is to officially launch GIA during the MEPC 74 meeting.

The Technical Adviser for IMO's GloMEEP Project provided input from their experience at the global level, highlighting the amount of time needed to setup this kind of partnerships with several private sector companies.

The Chair also explained the key role to be played by the World Ocean Council (WOC) to outreach to non-shipping industries and to provide investment solutions for start-ups related to biofouling management technologies. The WOC representative outlined the role of his organization within the global ocean governance context as a space for collaboration with and within the ocean business community. Key aspects are to create business value for environmentally responsible companies, by providing access and social licenses for responsible ocean use, create synergies and economies of scale when addressing common issues and provide stability and predictability in ocean operations.

For several years, WOC has been including the issue related to biofouling and invasive species in its Sustainable Ocean Summit, the next being scheduled for November, in Paris, France.

The GPTF took note of this information.

Brazil and SACEP asked how to secure support from the partners for outreaching to national and regional private sector stakeholders. The PCU commented that the national outreach plan, drafted by the NTF will be crucial to be effective.

Agenda Item 12: Regional implementation aspects

The Chair referred to the importance of the regional dimension and emphasised that this project is expected to set the stage for broader regional co-operation on the issue of ballast water transfer. He also stated that lack of action on the regional level could become a serious barrier to progress if single country actions were to lead to other nations using the lack of adequate ballast water management provisions to attract greater interest in their ports. The Chair further stated that the Regional Task Forces are expected to advise, learn from and hopefully co-operate with work undertaken in each of the participating countries.

The Chair invited the Secretariat to introduce document GPTF 1/12/1 explaining the draft ToR for the RTF. It was agreed that the National Task Force meeting will be held before the Regional Task Forces, and both will be held prior to the GPTF meetings.

The PCU commented that the existing MOUs with RCOs will be used as much as possible for the GloFouling Partnerships. Some MOUs pending to be created would be for PEMSEA and CPPS.

If an agreement is reached to access the funds for procurement of expertise or services to support any pre-agreed national level activities, the administration of such procurements will be the responsibility of the RCOs, although such services/expertise can be identified by the NFP who will advise the RCO accordingly. RCOs will include, in their financial report to IMO, any such procurement to support specific national activities within their region.

IMO FS will advise the RCOs the details needed for financial reporting. It is expected that there would not be a change in the way such financial reporting had been done in the past between RCOs and IMO, and IMO FS will work out a way how such reporting will be incorporated into the IMO-UNDP financial reporting mechanism.

The GPTF took note of this information.

Agenda Item 13: National implementation aspects

The Chair referred to the Project Activity – "Establishment of National Task Forces"- and suggested that no single entity would be able to address all the issues associated with biofouling and this would require partnerships and sharing of responsibilities by a number of agencies and organizations at national level. Also, combination of poor information and no delegation or assumption of leadership on the part of any specific agency makes it impossible to address the issue effectively or at all. Establishment of a National Task Force and designation of Lead Agency are seen as the most important, early priorities to address ballast-water related issues.

As part of activity 5.1.1.3, the PCU stated that all LPCs have nominated their National Focal Point (NFP) and National Project Coordinator (NPC).

In order to assist the LPCs in establishing of their NTFs, the PCU, with the experience learned from other IMO projects, developed a set of guidelines that the LPC may wish to use in such a process. The purpose of these Guidelines is to provide assistance, advice and guidance to the Contact Points of the Lead Agencies in each country on the establishment and running of an NTF, as an inter-ministerial and cross-sectoral forum for the effective implementation of biofouling related activities at the country level.

The Chair invited the Secretariat to introduce document GPTF 1/13/1. The PCU explained that this document is meant to be a guideline only to assist the NTF development and meetings. The PCU brought to the attention of the group that certain LPCs have already started the process- for example Mauritius and the Philippines. The PCU once again highlighted the importance and the usefulness of such NTFs and hoped that the LPCs would initiate this as a matter of priority and inform PCU of the progress at national level.

It was also agreed that training institutes be included in the NTF. Certain delegates suggested that relevant national media organizations be invited to such meetings as observers.

The Chair stated that in order to ensure standardisation and a consistent approach across each LPCs, and to reduce the effort required by each NTF, it will be beneficial to agree on a template for national work-plan that identifies the national level activities and tentative timeline for each LPCs.

The PCU explained that there is an expectation that the LPCs would discuss the national workplan in their first meeting and will use the template to inform RCOs and PCU of their national plans. The PCU highlighted that it is of utmost importance that the LPCs complete this work plan as early as possible and share this with RCOs and PCU.

Agenda Item 14: Review of forthcoming activities

The PCU highlighted that the immediate priority at the national level would be to set up the NTF in each LPC (activity 1.1.2.1). To this effect the PCU will be supporting the NFPs by providing a draft programme for national workshops conductive to setting up the NTF. The PCU will provide short presentations on the different aspects related to biofouling management and invasive aquatic species with an aim to ensure all participants are equally informed before entering into the discussions that would be set up during the workshops.

The Secretariat informed that some countries, such as Fiji and Tonga, had already confirmed the dates for their national workshops in early June. The Chair requested the representatives from the other ten LPCs to provide some initial statement related to the dates available for holding their first national workshop and NTF meeting.

- Brazil mentioned that the best date would be July or August 2019 during their biennial conference on biosafety held at the Instituto de Estudos do Mar Almirante Paulo Moreira. The representatives from Brazil extended their invitation to the GPTF to participate in the conference.
- Sri Lanka mentioned that an NTF had been established previously to address ballast water issues, and it could be re-established. The preferred dates would be between July and September 2019.
- Peru stated that a multidisciplinary group at its marine environment institute (IMARPE) could lead the creation of an NTF, with September in 2019 as the preferred month for a national workshop.
- Ecuador also stated September 2019 as a likely date for their national workshop.
- Indonesia mentioned that the national election scheduled for April meant that their national workshop would have to be scheduled between June and September 2019.
- Madagascar recommended hosting their workshop between May and June 2019.
- Other countries stated that they would need to consult internally before providing a confirmation.

Additionally, it is expected that the LPCs would initiate a rapid assessment of their national situation including economic assessments to assist with the development of a national policy. PCU is expected to coordinate the global level effort to develop a template and guideline for such rapid assessments and economic impact assessments and make these available to the LPCs for their follow ups.

The GPTF took note of all this information.

Agenda Item 15: Communication strategy and sustainability

The GPTF agreed that raising awareness of the issue is still an important aspect of the project and encouraged the PCU to distribute the IMO-BBC film “Invaders from the Sea”. The suggestions provided by the group discussion held during the second day were highly relevant.

The IMO Media and Communication team stated their availability to develop a communications strategy for the Project, which would be the priority, followed by defining the project branding and visual identity.

After presenting the main planned outputs, the PCU expressed its appreciation to the initiatives made during the discussions and stated that the use of social media would also help expand the outputs generated by the project. As an example, the PCU presented the newly created

Instagram account and other initiatives such as a photo competition to increase the pool of images related to biofouling and invasive aquatic species.

Agenda Item 16: Other business

The GPTF congratulated the PCU for the progress achieved. GEF-UNDP expressed its appreciation of the efforts carried out by a one-member PCU. The GPTF also stated its appreciation for the participation at short notice of the recently recruited Project Technical Manager, who is expected to join officially the PCU within the next few months. The Chair referred to the fact that efforts to recruit the two other staff for the PCU were initiated.

The meeting was closed at 5 pm on Wednesday, 20 March 2019.

Annex 3
Detailed Programme

GEF-UNDP-IMO GloFouling Partnerships
1st Global Project Task Force (GPTF) meeting
and Project Inception Workshop
Agenda item 1

GPTF 1/1/2
31 January 2019
Original: ENGLISH

DETAILED PROGRAMME

Meeting chaired by Mr. Andrew Hudson, UNDP, and Mr. Hiroyuki Yamada, IMO.

Day 1: Monday 18 March 2019

08:30 - 09:30	Registration
09:30 - 10:00	Opening remarks - *Mr. Andrew Hudson, Head, Water & Ocean Governance Programme, UNDP* - *Mr. Hiroyuki Yamada, Director, Marine Environment Division, IMO*
10:00 - 10:05	Adoption of the Agenda
10:05 - 10:30	GPTF Terms of Reference and Rules of Procedure
10:30 - 11:00	Coffee break
11:00 - 11:30	Project overview & meeting objectives *GloFouling Project Coordination Unit (PCU)*
11:30 - 12:30	LPC current status reports *4 countries: Brazil, Ecuador, Fiji and Indonesia*
12:30 - 13:30	Lunch break
13:30 - 15:00	LPC current status reports *6 countries: Jordan, Madagascar, Mauritius, Mexico, Peru and the Philippines*
15:00 - 15:30	Coffee break
15:30 - 16:00	LPC current status reports *2 countries: Sri Lanka and Tonga*
16:00 - 17:00	RCO current status reports *4 organizations: CPPS, PEMSEA, PERSGA, SACEP*
17:00 - 17:20	Regulatory aspects: the IMO Biofouling Guidelines *Theofanis Karayannis, Head, Marine Biosafety, IMO*
17:20 - 17:30	Summary of discussions
18:00	Dinner/reception

Day 2: Tuesday 19 March 2019

09:30	-	09:35	Introduction to Day 2
09:35	-	09:50	Biofouling management in non-shipping vectors of invasive aquatic species *Henrik Oksfeldt Enevoldsen and Pia Haecky, IOC-UNESCO*
09:50	-	10:30	Lessons learned from other initiatives and research on biofouling management and invasive aquatic species *Biofouling management and BIMCO – Ashok Srinivasan, BIMCO* *The Baltic experience: lessons from the COMPLETE Project – Annika Krutwa, Federal Maritime and Hydrographic Agency (BSH), Germany* *IMarEST Biofouling Management Expert Group - GloFouling Discussion Points – Tom Vance, PML Applications and IMarEST BMEG*
10:30	-	11:00	Coffee break
11:00	-	12:30	Lessons learned from other initiatives and research on biofouling management and invasive aquatic species *World Sailing. Strategic partner overview – Dan Reading, World Sailing* *Title tbc – Raleigh Davis, IPPIC* *BioFREE: Biofouling and the Offshore Renewable Energy Sector – Andrew Want, Heriot-Watt University* *Perspectives on biofouling management from Australia – Peter Wilkinson, Marine & Aquatic Biosecurity, Australian Government Department of Agriculture and Water Resources* *Evaluations of In-Water Cleaning: Facilitating Innovations in Environmental Protection & Business Development – Mario Tamburri, Alliance for Coastal Technologies / Marine Environmental Resource Center (ACT/MERC)*
12:30	-	13:30	Lunch break
13:30	-	13:45	*Capacity-building needs for maritime administrations – Raphael Baumler, World Maritime University*
14:15	-	14:45	Project work plan and budget *GloFouling PCU*
14:45	-	16:00	Group discussions: project work plan and activities (Coffee break available during group discussions)
16:00	-	17:00	Plenary discussion: outcome of group discussions on project work plan and activities
17:00	-	17:30	Plenary discussion: conclusions

Day 3: Wednesday 20 March 2019

09:30	-	09:35	Introduction to Day 3
09:35	-	10:30	Monitoring and evaluation plan, reporting requirements and contribution to the Sustainable Development Goals (SDGs) *GloFouling PCU*
10:30	-	11:00	Coffee break
11:00	-	11:30	Role of the private sector and industry leadership *PCU and Paul Holthus, World Ocean Council (WOC)*
11:30	-	12:30	Global Industry Alliance (GIA) for Marine Biosafety: establishment and GIA Fund
12:30	-	13:30	Lunch break
13:30	-	14:00	Regional implementation aspects
14:00	-	15:00	National Implementation aspects
15:00	-	15:30	Review of other forthcoming activities. Updated 2019-2020 work plan and budget *GloFouling PCU*
15:30	-	16:00	Coffee break
16:00	-	16:30	Communication strategy and sustainability
16:30	-	17:00	Other business
17:00			Closing remarks *Jose Matheickal, Deputy Director, Major Projects, IMO*

Annex 4
Themes for group discussions

Group discussions

Themes *(1 theme per group)*

GROUP 1: Expert reports and studies (best practices, codes of conduct, reviews, etc.)

The Project Document currently includes the following reports/studies that need to be developed:

1) Review (baseline study) of existing biofouling management practices across all maritime sectors, the impacts of biofouling for specific industries and how it contributes to the transfer of IAS – potentially through a GESAMP working group
2) Best practices for biofouling management to prevent the transfer of IAS through non-shipping pathways
3) Best practices for dry-dock operations and the selection and application of antifouling coatings to enhance immunity to biofouling.
4) Inspection methodologies.
5) Best practices for in-water cleaning and maintenance (type of technologies, operations, testing standards, etc.).
6) Biofouling management approaches and best practices for recreational craft and marinas.
7) Report on the impact of biofouling on GHG emissions
8) Application and use of Biofouling Management Plans (BMPs) and Biofouling Record Books (BRBs).

Consider that some of these reports will form the base for training packages for developing countries on specific aspects of biofouling management and IAS.

Questions:

- Consider the themes for each study and put in order of priority
- Are there any other specific subjects that should be included?
- What synergies are possible with work already available or in development from other organizations, researchers, NGOs or private sector?

GROUP 2: Training courses and modules

The Project Document currently includes the following training courses derived from the reports:

a) General training package on biofouling management (all pathways and from diverse perspectives – intro course; legal course; etc.)
b) Inspection methodologies
c) Biofouling management plans and record book
d) In-water cleaning
e) Dry dock operations and application of AF coatings

Questions:

- Consider the themes for each study and put in order of priority
- Are there any other specific subjects that should be included?
- What synergies are possible with work already available or in development from other organizations, researchers, NGOs or private sector?

GROUP 3: Demonstration sites

Countries will have an option to choose from 4 broad themes:

a) In-water cleaning – showcase technologies and operation
b) In-water inspection and procedures for recreational craft
c) Inspection methodologies in ports, shipyards and dry-docks
d) Biofouling management in high value marine ecosystems (access, inspection, etc.)

Questions:

- What specific activities should be included in the programme/objectives of the demonstration sites that can increase their effectiveness?
- What approach or synergies should be included to increase the impact of the demonstration sites?
- What further funding and from which donors/contributors could be secured to increase the budget and scope of the demonstration sites?
- What activities related to non-shipping could be included in the demonstration sites?

GROUP 4: Awareness-raising

There is an ambitious programme for awareness-raising materials. Please discuss the following questions:

- Long-feature documentary: Discuss, potential collaborators and geographical sites that can be included in the documentary. Discuss potential partners that should be approached to increase the overall production budget.
- Outreach to recreational craft: What kind of materials are more effective? What partners could contribute and how? Should there be a link to demonstration sites for recreational craft or national event at marina in LPCs (included in project work plan)?
- Non-shipping industries: What would be the best strategy to increase awareness of the issue and what potential partners can be approached?
- Industry: How can we increase the awareness of industry/private sector (apart from some activities already included, such as the R&D Forum, the Global Industry Alliance and the Sustainable Ocean Summit)

Annex 5
GPTF presentations

GloFouling Partnerships Project

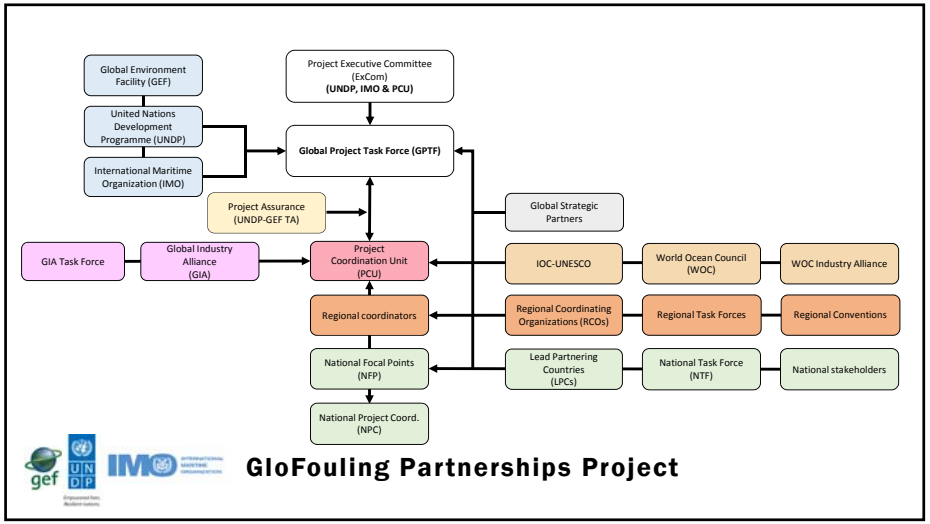
1st meeting Global Project Task Force

Inception Workshop

London, 18-20 March 2019

GloFouling Partnerships Project

Agenda item 2: Terms of Reference

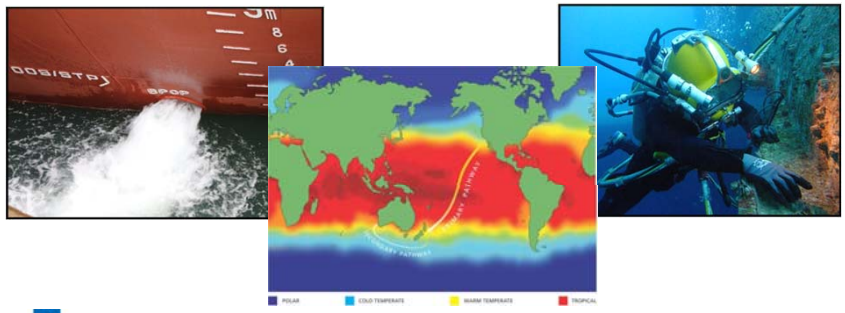


GloFouling Partnerships Project

Agenda item 3: Project overview

GEF-UNDP-IMO Partnerships:

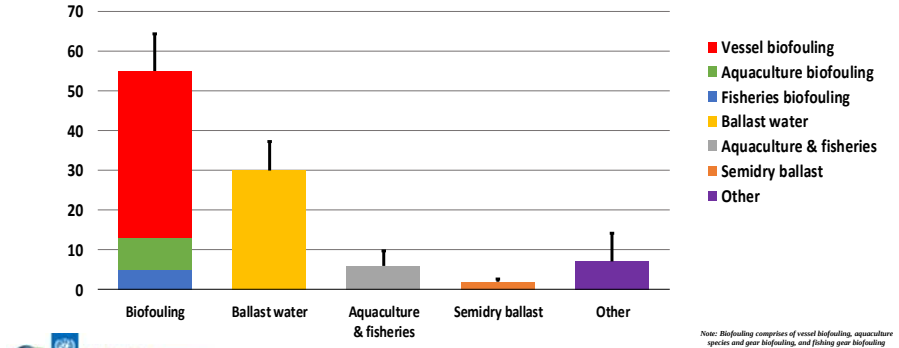
from Ballast water to Biofouling



GloFouling Partnerships Project

Potential association for species with major vector categories

(average across the 18 large-scale IUCN marine bioregions)



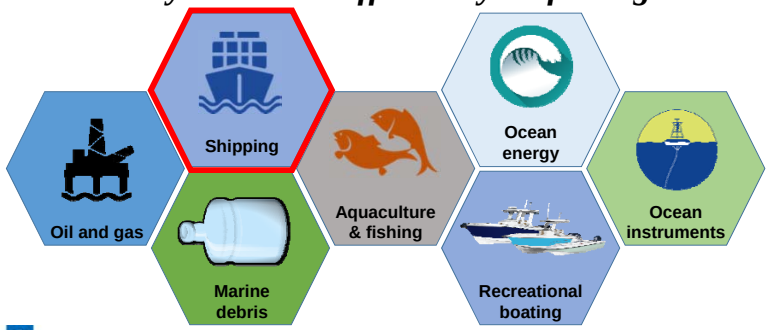
Note: Biofouling comprises of vessel biofouling, aquaculture species and gear biofouling, and fishing gear biofouling (respectively). Standard deviations of the mean for each vector are presented by error bars above each column.

Source: Adapted from Hewitt CL & Campbell ML 2010. The relative contribution of vectors to the introduction and transportation of invasive marine species, Department of Agriculture, Fisheries and Forestry, Australia.

GloFouling Partnerships Project

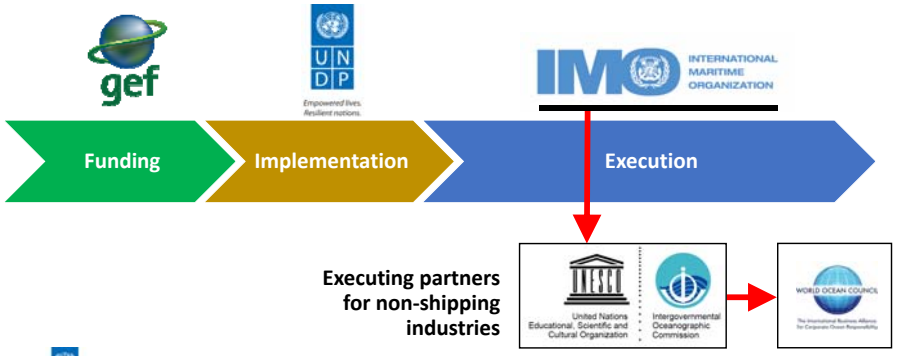
Biofouling as a vector

Many industries affected by biofouling



GloFouling Partnerships Project

GEF, UNDP & IMO joint initiative



GloFouling Partnerships Project

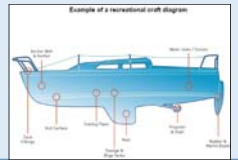
12 Lead Partnering Countries (LPCs)

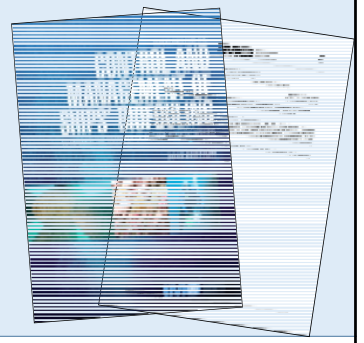
7 Regions

GloFouling Partnerships Project

Goal: Implement IMO instruments for biofouling management and best practices for other industries

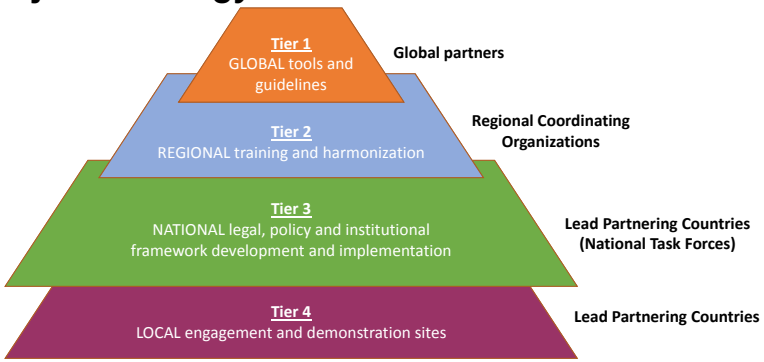
- *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (2011 Biofouling Guidelines)*
- *Guidance for minimizing the transfer of invasive aquatic species as biofouling for recreational craft*





GloFouling Partnerships Project

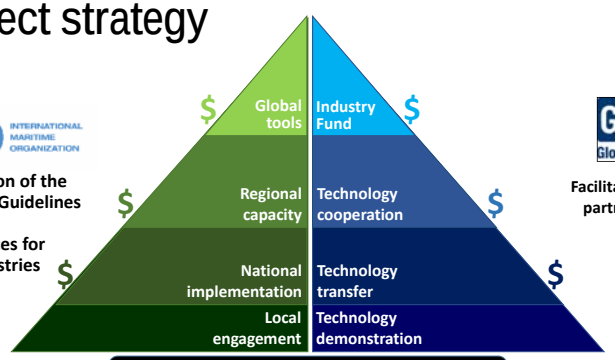
Project strategy



GloFouling Partnerships Project

Project strategy

Implementation of the IMO Biofouling Guidelines and best practices for other industries



Glo-X Pyramid Model

Facilitating public-private partnerships to address biofouling issues

GloFouling Partnerships Project

Funding

GEF grant **USD 6.9 M**

co-financing **USD ~41 M**

Project duration

5 years

2019-2023

Project outcomes

Informed policy decision making in LPCs

PPPs to support technology development and adoption

Capacity building, awareness-raising and technical assistance

Increased stakeholder cooperation and knowledge sharing

GloFouling Partnerships Project

Project outcomes

1. Legal, policy and institutional reform
2. Capacity building, awareness raising and demonstration sites
3. Industry and public-private partnerships
4. Knowledge management and R&D
5. Monitoring and Evaluation

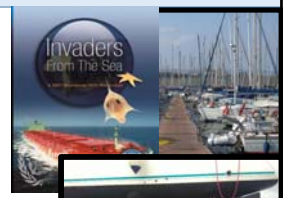
- Assessment of current status at the national level in LPCs
- Development of regional and national policies
  - ❖ National and regional task forces
  - ❖ Development of national and regional strategy and action plan
- Outreach to neighbouring countries through Regional Organizations

GloFouling Partnerships Project

Project outcomes

1. Legal, policy and institutional reform
2. Capacity building, awareness raising and demonstration sites
3. Industry and public-private partnerships
4. Knowledge management and R&D
5. Monitoring and Evaluation

- Specialised studies and publications: best practices
- Training courses and Regional training institutions
- Awareness raising materials and Documentaries
- Demonstration sites
- Outreach to recreational craft community



GloFouling Partnerships Project

Project outcomes

1. Legal, policy and institutional reform | 2. Capacity building, awareness raising and demonstration sites | **3. Industry and public-private partnerships** | 4. Knowledge management and R&D | 5. Monitoring and Evaluation

- Contribution from industry to best practices
- Set up Industry Funds and task force to address industry concerns
- Explore technology funding solutions: Ocean Investment Platform
- Awareness materials for private sector

GloFouling Partnerships Project

Project outcomes

1. Legal, policy and institutional reform | 2. Capacity building, awareness raising and demonstration sites | 3. Industry and public-private partnerships | **4. Knowledge management and R&D** | 5. Monitoring and Evaluation

- Global knowledge hub on all areas related to biofouling (research on IAS, impacts, best practices, elearning, reference databases, country information, regulations, etc.)
- Regional and national information network
- Research and Development Forum
- WOC Sustainable Ocean Summit

GloFouling Partnerships Project

Project outcomes

1. Legal, policy and institutional reform | 2. Capacity building, awareness raising and demonstration sites | 3. Industry and public-private partnerships | 4. Knowledge management and R&D | **5. Monitoring and Evaluation**

- Establish baselines, Reporting on KPIs, etc.
- Global Project Task Force (GPTF
- Mid-term evaluation
- Terminal evaluation

GloFouling Partnerships Project

- Informed national policy decision-making to support implementation of national action plan
- Preparedness of all stakeholders

GloFouling Partnerships Project

Overarching aspects

Empowering women

- *Activities specifically focused on empowerment of women scientists and entrepreneurs*
- *Gender perspectives included in all assessments*

South-South cooperation

Increased communication and knowledge sharing between LPCs

Project Sustainability

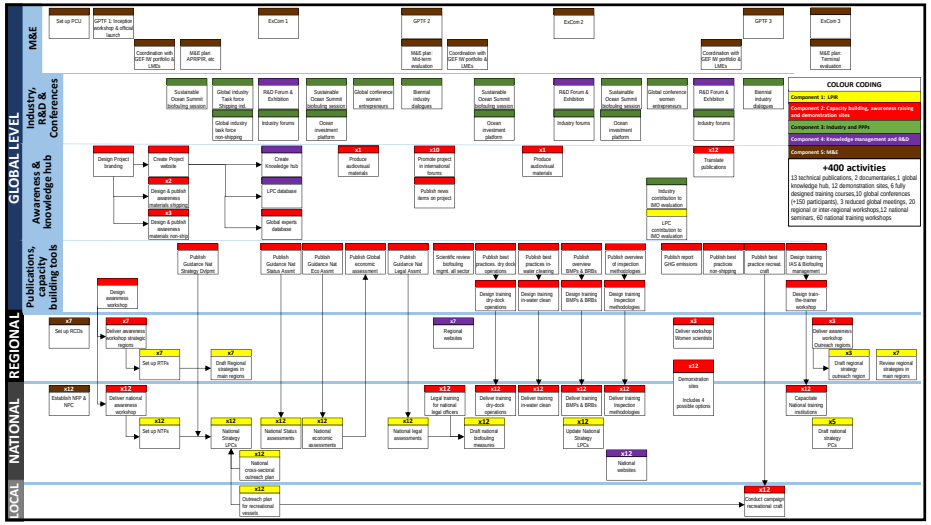
- *Continuity of multi-stakeholder platforms*
- *Financial resources identified to support sustainability of project outputs*
- *Key project partners selected to support sustainability after project completion*
- *Regional learning institutions capacitated to deliver training on biofouling*

GloFouling Partnerships Project

over 400 project activities

- **12** Technical publications
- **12** Demonstration sites
- **6** Global conferences
- **2** Audiovisual productions
- **60** Training workshops
- **1** Global Knowledge hub

GloFouling Partnerships Project



GPTF meeting objectives

- Review institutional arrangements and current status in LPCs and RCOs
- Review information provided by the strategic partners on other initiatives and research
- Discuss the project implementation plan
- Take note of the Monitoring and Evaluation plan
- Review concept document for the Global Industry Alliance (GIA) for Marine Biosafety
- Review communication and sustainability strategies
- Approve the updated work plan for the first biennium.

GloFouling Partnerships Project

Thank you

GEF-UNDP-IMO

GloFouling Partnerships Project

For more information:

GloFouling Project Coordination Unit
glofouling@imo.org

Ministry of the Environment

Brazilian Navy

IEAPM

GEF-UNDP-IMO Glofouling Partnerships 1st Global Project Task Force (GPTF) Meeting

Current Status Report - Brazil

London, UK, 18-21/03/2019

Summary

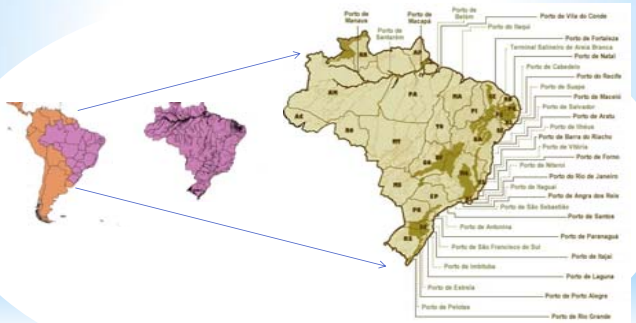
Important aspects

- Status of the Maritime Sector in Brazil
- National Institutional Arrangement for GloFouling Partnerships
- Importance of biofouling related issues to the country
- Brazilian regulations regarding the control and prevention of the introduction of invasive aquatic species
- Concluded Remarks

CVs – Summary

- **Ricardo Coutinho – Co-ordinator**
  - *Ph.D in Biology (Ecology) from the University of South Carolina, USA*
  - *Pos-Doc from Duke University and the Woods Hole Oceanographic Institute, USA*
  - *Brazilian delegate on AFS Convention Diplomatic Conference*
  - *Senior researcher at the Instituto de Estudos do Mar Almirante Paulo Moreira (IEAPM), Brazilian Navy, where he is Head of the Department of Marine Biotechnology and Director of the Laboratory of Marine Resources (LAREMAR)*
- **Robson José Calixto – Focal Point**
  - *Oceanographer, MSc Ocean Engineering, MBA International Affairs*
  - *Deals with IMO subjects since 1996 - Brazilian delegate on AFS, OPRC-HNS, Ballast Water Convention, London Protocol - Diplomatic Conferences*
  - *Brazilian Supervisor for GloBallast Programme – First Phase*
  - *Main representant of the Ministry of Environment in the Brazilian Commision for IMO Affairs*
  - *Former Manager of the Brazilian National Environmental Council*
  - *Environmental Analyst - the Ministry of Environment.*

Brazil has about 8,500 km of coastline, 22,037 km of waterways, with 37 organized public ports and 183 terminals for private use (TUPs).



Distribution of public ports along the Brazilian coast and in inland waters.

Main Federal Legal Basis

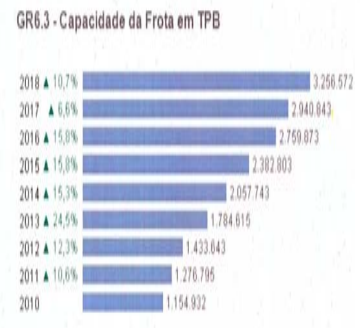
- Brazil ratified the International Convention on the Control of Harmful Anti-fouling Systems 2001, the International Convention for the Control and Management of Ship´s Ballast Water and Sediments, and is part of the 1992 Convention on Biological Diversity .
- Under Complementary Law 140, 2011, it is the responsibility of the Union to control the introduction into the Country of potentially invasive exotic species that may threaten native ecosystems, habitats and species.
- Ordinance No. 424, of October 26, 2011, which provides for specific procedures to be applied in the environmental regularization of ports and port terminals, as well as those granted to dock companies, provided for in art. 24-A of Law 10,683 of May 28, 2003.
- Maritime Authority Standards (Norman) No. 23 - for the Control of Antifouling Systems in Vessels, of July 30, 2007.

In 2016, some **6470 vessels landed in Brazilian ports** and a total of 55,762 berths occurred, since a ship can dock more than once and in different ports.

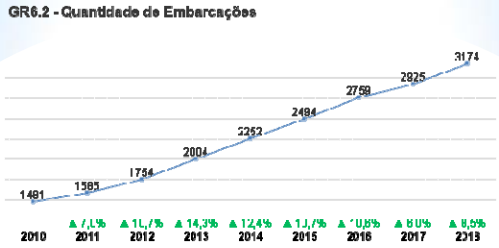
Total cargo handled involving sugar, corn, soy, meat and iron, oil		
2016	2017	2018
1,000,791,270 t	1,087,806,866 t	1,117,311,386 t

Distribution of terminals for private use (TUP) ,Transhipment Stations of Cargo (ETC) and Port Tourism Facility (IPT) in the different regions of Brazil.

Regarding the capacity of the Brazilian fleet in DWT, the evolution from 2010 to 2018 is as follows, with an increase of almost 300%:



The number of vessels with Brazilian flag from 2010 to 2018 more than doubled



National Institutional Arrangement for GloFouling Partnerships

Federal Government
- Ministry of Environment and its related institutions
- Brazilian Navy and its related institutions
- Mining & Energy
- Oil National Agency
- Ports Agency

Private Sector
- Shipowners
- Port Managers
- Brazilian Oil Companies, including Petrobras
- Shipping Companies

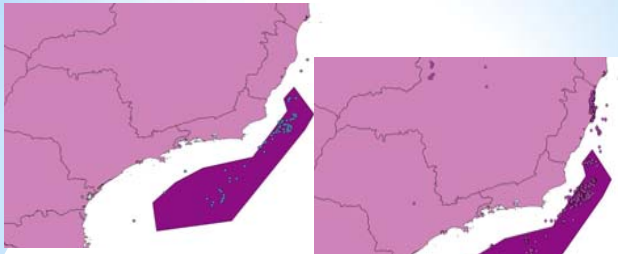
Academia & Third Sector
- Universities of Sao Paulo, Rio de Janeiro, for instance
- Museums
- NGOs to come along
- Union Traders

There are some groups discussing biofouling, but a National Task Force need to be established. The brazilian application for GloFouling counted with support of entities we need to have coming along as well, specially in private sector.

Non-shipping activities in the country that are linked to biofouling

Mariculture

Offshore industries and structures



No. Offshore Plataforms in Operation

No. Offshore Oil Fields in Development

Floating platforms are vectors to spread out exotic invasive species when dry docking. The Oil industry is very aware of the problem related to biofouling and ballast water, as well.

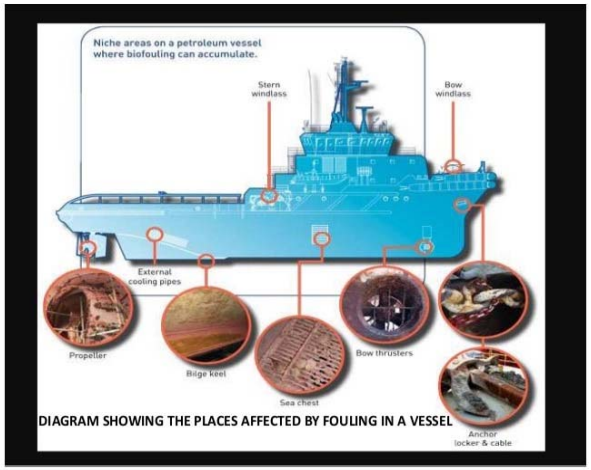
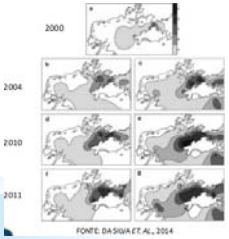


DIAGRAM SHOWING THE PLACES AFFECTED BY FOULING IN A VESSEL

Importance of biofouling related issues to the country

The golden mussel

Limnoperna fortunei



The sun coral

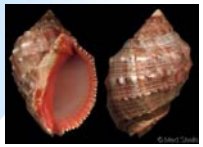
Tubastrea coccinea

Tubastrea tagusensis

Evolution of the Sun Coral in Ilha Grande, Southern Rio de Janeiro.

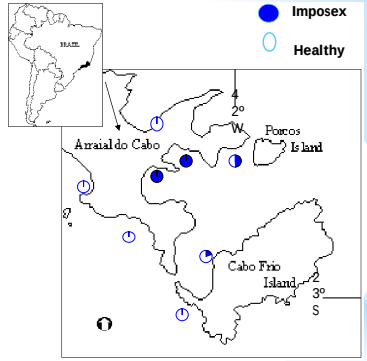
Biofouling-related studies or assessments of bioinvasion

Imposex studies in *Stramonita brasiliensis*



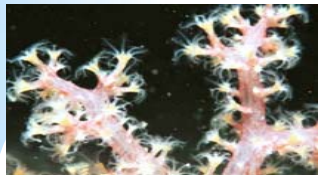
Port of Forno, Arraial do Cabo

RESULTS HELPS TO BANNISH TBT IN THE AFS



Arraial do Cabo coast – Hot spot of invasive species in the Brazilian coast (some examples)

Stereonephthya aff. curvata



Tubastrea coccinea

Carijoa riisei

Perna perna

Sun coral is the main marine bioinvasion problem in Brazil

Brazilian regulations regarding the control and prevention of the introduction of invasive aquatic species

- Resolution of the "*Comissão Nacional da Biodiversidade – Conabio*" No. 05, of October 21, 2009, on the **National Strategy on invasive alien species.**
- **Maritime Authority Standards on Ships' Ballast Water Management** - Norman 20.
- Ordinance No. 424, of October 26, 2011, which provides for specific procedures to be applied in the environmental **regularization of ports and port terminals**, as well as those granted to dock companies, provided for in art. 24-A of Law 10,683 of May 28, 2003.
- **Maritime Authority Standards** (Norman) No. 23/Navy, for the **Control of Antifouling Systems in Vessels**, of July 30, 2007.

Conti. regulation

- *"Conselho Nacional do Meio Ambiente – CONAMA"* Resolution No. 454, of 2012, which establishes the general guidelines and reference procedures for the management of the material to be dredged in waters under national jurisdiction, has defined a procedure for **monitoring TBT contamination in the sediments of public ports and private use terminals.**
- Brazil **ratified** the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001, the **International Convention for the Control and Management of Ships' Ballast Water and Sediments**, of 2004, also forming part of the 1992 **Convention on Biological Diversity.**
- **Brazil was one of the six pilot countries in the first phase of the GloBallast Programme.**

Newly Advances

* Resolution No. 07, 29/05/2018 – National Biodiversity Commission: "*National Strategy on Invasive Exotic Species*". Among the instruments for the implementation of the National Strategy are:
  * *Plans for Prevention, Eradication, Control and Monitoring Invasive Exotics Species; Systems for Early Detection and Rapid Response; Risk analysis and Data base.*
* 22/03/2019 – Lauching a National Plan to Combat Marine Litter, where plastics debris are vectors to transfer marine species by fouling.

Concluded Remarks

Brazil has shown in the last 30 years a great commitment to the global effort to protect marine environments.

It is our expectation that as an LPC of GloFouling Partnerships we will assist participating countries to build their capacity to implement the IMO 2011 Guidelines for the control and management of ship' biofouling to minimize the transferer of invasive aquatic species.

The Government of Brazil is prepared to actively contribute and participate in this endeavor.

Ricardo Coutinho

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* 0055(22)26229058
* Arraial do Cabo – RJ
* Brazil

Robson José Calixto

* Robson-jose.calixto@mma.gov.br
* 0055(61)20282431
* Brasilia – DF
* Brazil

* Contacts/Directions

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting

Republic of Ecuador

Status Report

London, 18 March 2019

Agenda

- Basic Information on LPC
- Institutional Arrangements
- Biofouling and Invasive Acuatic Species
- Marine Industries
- Status of Projects Preparations

Basic Information on LPC

National Focal Point/ General Directorate of Maritime Interest of Ecuador

- Manage support for national maritime development, through support for the development of maritime interests, support for community development and risk management, and the hydraulic dredging service; in order to contribute to the defense of sovereignty, territorial integrity and public and State security.

Project National Coordinator/ National Directorate of Maritime Areas

- Manage the safety of aquatic spaces, through maritime operations for surveillance and control, safeguard of human life at sea and the safety of navigation, as well as the protection of the coastal, fluvial and lacustrine marine environment; in order to contribute to national development and public and State security.

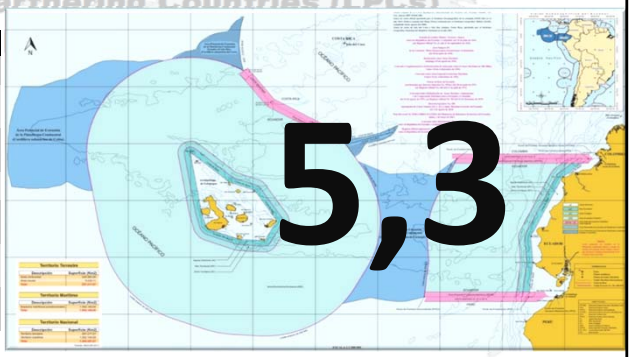
Intitutional Arrangements

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting

Biofouling and invasive aquatic species

12 Lead Partnering Countries (LPCs)

Figures	
Coastline:	5.271,1 Km
Insular coastline:	1.964,8 Km
Continental área:	248.983 Km²
Insular área:	8.233,11 Km²
Maritime domain:	1’092.140 Km²
Continental Reservations:	21
Insular Reservations:	2



5,3

GloFouling Partnerships Project

National Focal Point, LPC Ecuador

5

London, 18-20 March 2019

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting

Biofouling and invasive aquatic species

12 Lead Partnering Countries (LPCs)

7 Regions

- Aquatic Invasive species in Ecuador (2016)

SPECIES	TOTAL MARINE AIS	% MARINE AIS
MICROORGANISMS (6 bacteria type species, 1 virus)	7	12%
MARINE INVERTEBRATES (sponges, annelids, echinoderms)	25	44%
FISHES	16	28%
ALGAE	8	14%
STUARINE PLANTS	1	2%
TOTAL	**57**	**100%**

* This data has been taken in the Gulf of Guayaquil and the Galapagos Islands.

GloFouling Partnerships Project

National Focal Point, LPC Ecuador

6

London, 18-20 March 2019

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting

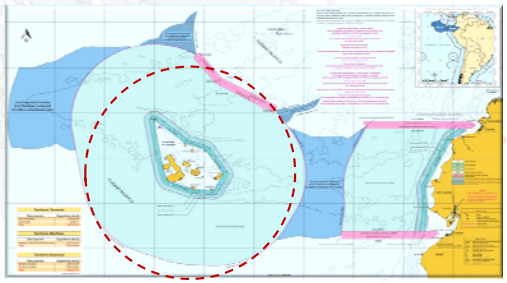
Biofouling and invasive aquatic species

12 Lead Partnering Countries (LPCs)

7 Regions

Action Plan to minimize AIS in the Galapagos (Marine Reserve)

- Galapagos National Park
- Charles Darwin Fundation
- Agency for the regulation and control of biosecurity and quarantine for Galapagos (ABG)
- Oceanographic Institute of the Navy



GloFouling Partnerships Project

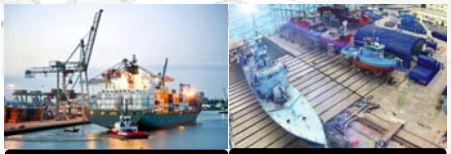
National Focal Point, LPC Ecuador

7

London, 18-20 March 2019

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting

Marine industries



Ports	Dockyards	Fisheries
48 nationwide	20 nationwide	25 marine fishing
4 estate ports	13 in Guayaquil	4 freshwater fishing
41 private ports		50 fish processing, crustacean and mollusk processing and conservation
3 oil port terminals		

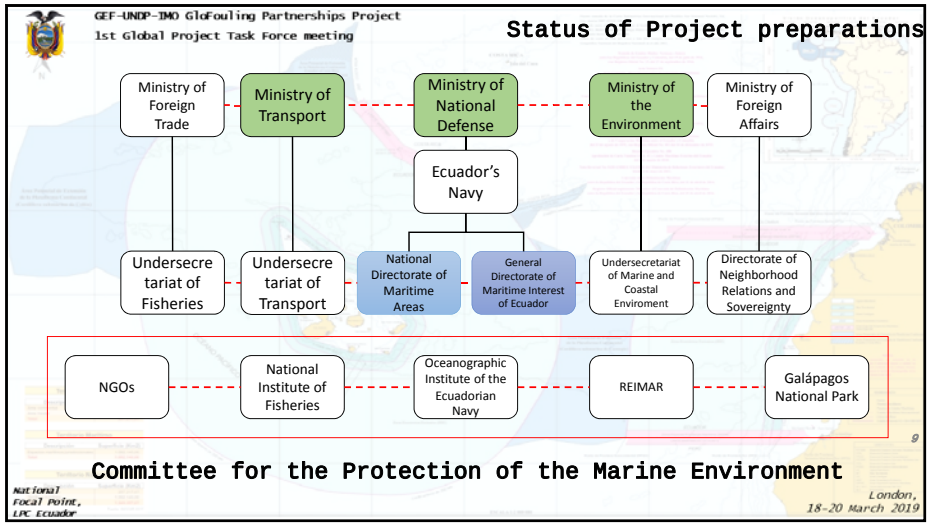
Establishments must have an environmental license

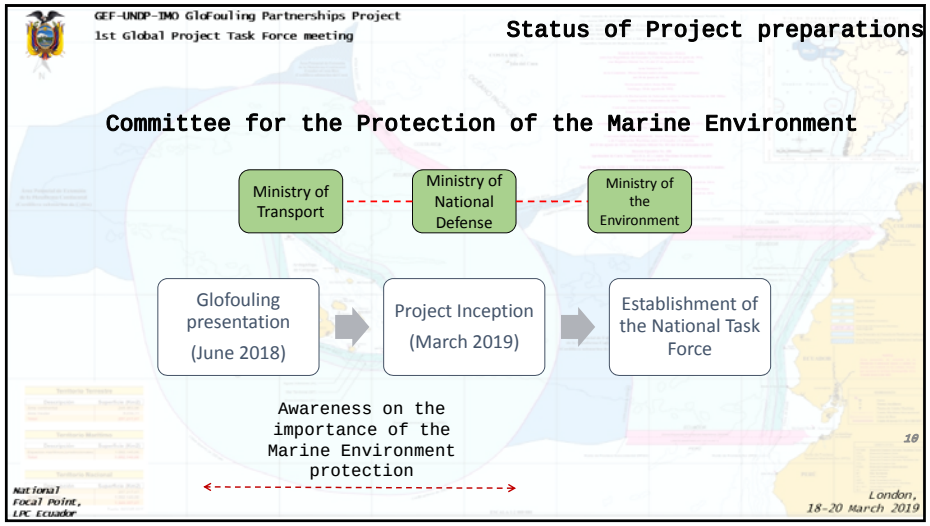
GloFouling Partnerships Project

National Focal Point, LPC Ecuador

8

London, 18-20 March 2019


GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting
Status of Project preparations
Ministry of Foreign Trade
Ministry of Transport
Ministry of National Defense
Ministry of the Environment
Ministry of Foreign Affairs
Ecuador's Navy
Undersecretariat of Fisheries
Undersecretariat of Transport
National Directorate of Maritime Areas
General Directorate of Maritime Interest of Ecuador
Undersecretariat of Marine and Coastal Enviroment
Directorate of Neighborhood Relations and Sovereignty
NGOs
National Institute of Fisheries
Oceanographic Institute of the Ecuadorian Navy
REIMAR
Galápagos National Park
Committee for the Protection of the Marine Environment
National Focal Point, LPC Ecuador
London, 18-20 March 2019


GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting
Status of Project preparations
Committee for the Protection of the Marine Environment
Ministry of Transport
Ministry of National Defense
Ministry of the Environment
Glofouling presentation (June 2018)
Project Inception (March 2019)
Establishment of the National Task Force
Awareness on the importance of the Marine Environment protection
National Focal Point, LPC Ecuador
London, 18-20 March 2019


GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force meeting
12 Lead Partnering Countries (LPCs)
7 Regions
Thank you for your attention!
London, 18 March 2019
GloFouling Partnerships Project
National Focal Point, LPC Ecuador
London, 18-20 March 2019

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force Meeting

Prepared by the Maritime Safety Authority of Fiji

1

Basic Information on LPC

- The National Focal Point and Project Coordinator to the above are appointed by MSAF.
- The other Government department involved would be:-

a) Ministry of Transport and Infrastructure
b) Biosecurity Authority of Fiji (BAF)
c) Department of Environment

- In terms of national bio fouling management, Fiji is still at its preparatory stage.

2

Institutional Arrangements

- The national taskforce to the above includes the departments mentioned in the earlier slide.
- Fiji has the Marine (Anti-fouling Systems on Ships) Regulations 2014;
- Some of the major challenges would be:-

a) Industry participation
b) Lack of enforcement on the relevant authorities
c) Availability of resources to effectively implement the requirements under the Regulation;
d) Appropriate training for appointed officers

3

Bio fouling and Invasive Aquatic Species and Marine Industries

- There will be a regional bio-fouling workshop conducted anticipated to be conducted between 01st -03rd April 2019;
- There will be a National Biofouling Workshop anticipated to be conducted between 04th-05th April 2019;
- As mentioned earlier, Fiji is still in its preparatory stages to the above initiative and the questions posed for the above will be better addressed at the 2 forums mentioned.

4

Research

- In terms of research, Fiji is still in its preparatory stages and it would be interesting to find out once the 2 forums are underway.

5

Status of Project Preparations

- Discussions are already underway with the relevant stakeholders mentioned in slide 1;
- The last meeting attended, saw the stakeholders wishing to go for site visit to Fiji High Industries Limited a subsidiary of the Fiji Ports Corporation Limited.

6

THANK YOU

QUESTIONS?

7

Lead Partnering Country (LPC) status report

1st Global Project Task Force meeting

London, 18-20 March 2019

Presented by

Capt. SUDIONO, M.Mar.

Director of Shipping and Seafarers
Director General of Sea Transportation
Ministry of Transportation
INDONESIA

GloFouling Project

National Focal Point

Capt. SUDIONO

Director of Shipping and Seafarers

Project Coordinator

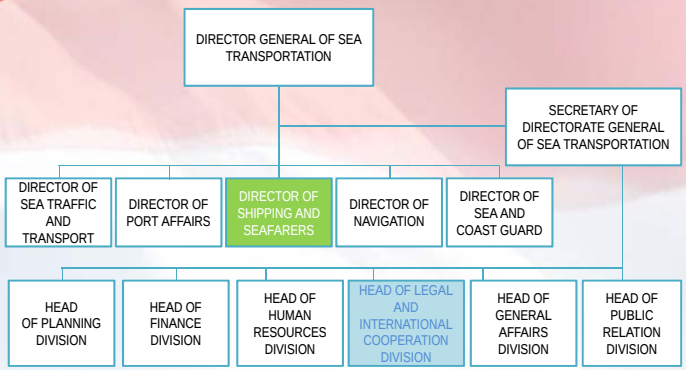
Murni Sitinjak

International Cooperation Division

IN CHARGE FOR

- SHIP DESIGN, STABILITY AND LOAD LINE
- SHIP REGISTRY AND TONNAGE
- MARINE SAFETY
- MARINE POLLUTION PREVENTION AND SAFETY MANAGEMENT
- SEAFARERS

DGST Organization Chart



AGENCIES THAT INVOLVED IN GLOFOULING PROJECT IN INDONESIA

- MINISTRY OF TRANSPORTATION
- COORDINATING MINISTRY OF MARITIME AFFAIRS
- MINISTRY OF FOREIGN AFFAIRS
- MINISTRY OF MARINE AFFAIRS AND FISHERIES
- MINISTRY OF ENVIRONMENT AND FORESTRY
- MINISTRY OF EDUCATION AND CULTURE
- MINISTRY OF INDUSTRY
- INDONESIAN INSTITUTE OF SCIENCES
- HYDROGRAPHIC AND OCEANOGRAPHIC CENTRE - INDONESIAN NAVY
- INDONESIAN CLASSIFICATION BUREAU
- INDONESIAN SHIP OWNER ASSOCIATION

MARINE ENVIRONMENT PROTECTION FOR SOUTH-EAST ASIA SEAS (MEPSEAS)

The beneficiary countries are **Indonesia**, Cambodia, Malaysia, Myanmar, Philippines, Vietnam, and Thailand

IMO and the Norwegian Agency for Development Cooperation (Norad) have embarked on a joint project to assist seven Southeast Asian countries in protecting their marine environments from shipping operations

(MEPSEAS)

Indonesia focus on Conventions AFS and BWM

Task Force

NATIONAL REGULATIONS RELATED WITH MARINE ENVIRONMENT

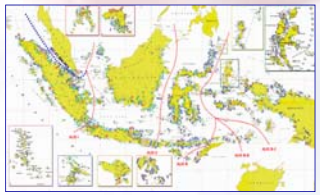
- ACT NO 31 YEAR 2004 ON FISHERIES
- ACT NO 32 YEAR 2009 ON PROTECTION AND MANAGEMENT OF THE ENVIRONMENT
- ACT NO 17 YEAR 2008 ON SHIPPING
- GOVERNMENT REGULATION NO 51 YEAR 2002 ON SHIP
- GOVERNMENT REGULATION NO 21 YEAR 2010 ON MARITIME ENVIRONMENT PROTECTION
- MINISTERIAL REGULATION NO 29 YEAR 2014 ON MARITIME ENVIRONMENT POLLUTION PREVENTION

THE CHALLENGES FOR GLOFOULING IMPLEMENTATION

TOTAL AREA : 7.81 MILLION KM2
2.01 MILLION KM2 OF LAND
3.25 MILLION KM2 OF OCEAN
2.55 MILLION KM2 OF ZEE
VARIOUS KINDS OF SEA ORGANISMS
NUMEROUS SENSITIVE AREA

ARCHIPELAGIC SEA LANES

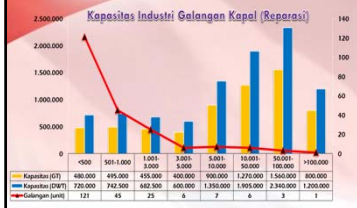
INDONESIA IS LOCATED ON STRATEGIC LOCATIONS OF THE WORLD TRADE ROUTES WHEREAS 90% OF INTERNATIONAL TRADE THROUGH SEA ROUTES, AND 40% OF IT THROUGH INDONESIAN WATER.
THIS POTENTIALLY MAY CAUSE POLLUTION FROM SHIPS



BRIEF DESCRIPTION OF THE COUNTRY'S COASTAL AND MARINE ENVIRONMENTS AND RESOURCES

- Indonesia as IMO Member Council Category C has ratified AFS Convention and BWM Convention as addition to others ratified IMO Conventions.
- Indonesia has 636 ports and total number of vessels is 71,381.
- All of Indonesian waters have huge potential for marine minerals. 70% of Indonesia's oil and gas potential is located in coastal and offshore areas. The Indonesian sea area is also rich in minerals such as gold, silver, tin, manganese, quartz sand, monazite, zircon, nodules, chromite and iron ore. In addition to these minerals, there are also high non-oil and gas potentials in Indonesian sea. Ocean currents, waves, tides, and temperatures can be used as renewable energy and are environmentally friendly.
- Indonesia has the highest diversity of seagrass species in the world, with an area of 30,000-60,000 km2. Seagrass beds have the highest ecological and economic value among other ecosystems such as coral reefs, seaweed and mangrove forests. Indonesia is one of the countries with the highest diversity of coral reefs in the world, as Indonesia is part of the Coral Triangle Initiative (CTI) along with Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor Leste.

NATIONAL SHIPPING INDUSTRY



Number of Dockyard : ± 250 Unit
Output Capacity : 12.000.000 DWT/year
Utilization : 85 %

Number of Shipyard : 160 Unit
Output Capacity : 1.000.000 DWT/year
Utilization : 45 %

All shipping industry shall undergo Environmental Impact Assessment to prevent marine environment/ marine ecosystem damage.

Source: Indonesia Ministry of Industry

Potential Institutes to be involved in the Project

- Bogor Agricultural University
- Institute Teknologi Sepuluh Nopember
- Institute Teknologi Bandung
- Diponegoro University
- Hasanuddin University
- Sekolah Tinggi Ilmu Pelayaran (STIP)
- Balai Besar Pendidikan, Penyegaran dan Peningkatan Ilmu Pelayaran (BP3IP)
- Etc

Status Preparations for the Project

- To appoint candidate National Consultant
- To prepare funds for carrying outProjectactivities, if necessary
- To establishe National Task Force
- Prepare Port Biological Baseline Survey in 2019

THANK YOU

The Hashemite Kingdome of Jordan
Ministry of Transport
Jordan Maritime Commission

GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force Meeting
London, 18-20 March 2019

Prepared by Eng: Mohammad Salman
Director of Technical &Maritime Safety Affairs
GloFouling Partnership Focal Point

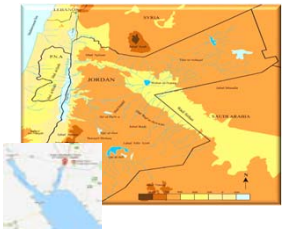
- Focal point:

  Eng. Mohammad Salman, the Director of Technical Affairs & Maritime Safety Directorate in Jordan Maritime Commission.

- National coordinator :

  Eng. Walid AlHanini, Head of Port State Control Division

Introduction

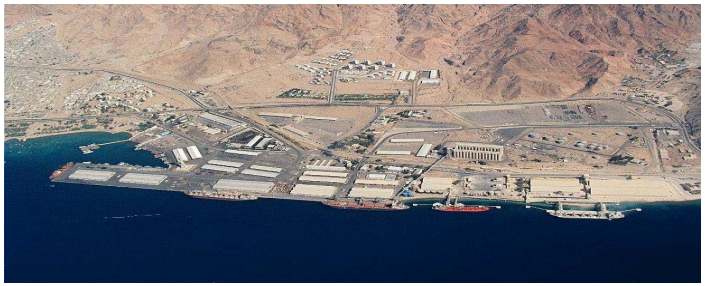


The port of Aqaba lies at the top of the Red Sea, it is the only main commercial port in Jordan with about **1600** commercial ship-calls annually.
The port of Aqaba consists of three Major Zones:

1. **North** Zone (**Old Main port) used for cruise ships & General Cargo**
2. **Middle** Zone **(container port – Passenger Terminal- Motah & Mustarak)**
3. **South** Zone ports **consists of:**
   - **Oil Terminal**
   - LNG Terminal
   - **LPG Terminal**
   - New Ports Community for all Types Cargo

1-The North Zone

Located close to the town of Aqaba .It comprises (12) berths with a total length (2120) meters. These berths are used for Cruise ships & handling General cargo These berth serve vessels of up to (70,000) tons displacement with a draft up to 14.4 meters.



2- Middle Zone

-Container terminal

-Mustarak,

-passenger terminal

2- Middle Port Zone

Located (5) km. South of the main port, Consists of:

- Mo'ta Berth: (150) meters long, (23) meters draft, receives vessels up to (53,000) tons displacement, serves the rice processing plant. And used for handling livestock.
- Mushtarak Berth: (120) meters in length, (11) meters draft, receives vessels up to (100,000) tons displacement and equipped with a conveyor belt of (25) tons / hour a day for handling cement exports.
- The Container Terminal Berth: It comprises three berths of (1000) meters length, (15) meters draft, receives vessels up to (84,000) tons displacement
- Ro – Ro Berth: (40) meters long, (10) meters draft, and able to handle bow and stern-loading vessels of (35,000) displacement
- Yarmouk Berth (Passenger Terminal).

3- The South Zone Ports

3- The South Port Zone

Located (18) km south of the Main port zone and consists mainly of:

* **Oil jetty.** 150-meters length, and (24) meters draft, receives oil tankers of up to (406,000) tons displacement, the berth is used for handling exports and imports of oil and oil products.
* **LPG Berth**. 80 meters long, (7) meters draft, receives up to (14,000) tons displacement vessels and used mainly for LPG Carrier.
* **JFI Berths**:

1- The west berth : is (220) meters long, (15) meters draft, receives up to (70,000) tons displacement vessels, and used for **handling** potash, salt, sulphur & dry **bulk materials**.

2- The Eastern Berth : is (190) meters long, (11) meters draft, receives up to (40,000) tons displacement vessels, and used for **handling bulk fertilizer and ammonia, chemical products**

3- North JFI Berth : is (220) meters long, (20) meters draft, receives up to (70,000) tons displacement vessels, and used for handling **bulk fertilizer & potash, & dry bulk materials**.

* **New industrial phosphate jetty** :

200 length for handling **bulk** phosphate export The berth serve vessels of up to (70,000) tons displacement with a draft of up to (20 meters)

Jordan Maritime Commission (JMC)

.. ***JMC is The Maritime* Administration** of Jordan and has its offices in Aqaba established in 2002, *its mission is:*

Achieving the highest standards for organizing, control and developing the maritime transport sector in Jordan including all transportation modes, services and human resources ***taking into account Protection of the Marine Environment*** *and enhancing maritime safety and security .*

*… **JMC is** sharing the responsibility of planning and applying the IMO environmental related conventions provisions & activities with **ASEZA** (Aqaba Special Economic Zone Association) /Environment commission, ASEZA is a governmental body .*

- *No records about any invasive species issues through samples taken From sea water by Marine Science Station/University of Jordan & Yarmouk University.*
- *No dry or floating Docks in Aqaba, in -water cleaning for ships hull is prohibited .*

FACTS:

- **JMC** is keen in getting comply with the international conventions adopted by IMO .
- Red Sea considered a semi-enclosed seas with high salinity as a result of the high transparency of the water
- **The Gulf of Aqaba is unique 4 countries are sharing this sensitive area**
- Maintain the outstanding level of the Gulf of Aqaba where no increase in plankton and harmful organisms or invasive result threw the Ballast water of the ships in the ballast water tanks so as not to harm the marine environment ,beaches ,resorts and attractions.
- National BWM Committee consists of all related entities was formed in 2008 &The First Globallast Regional Task Force Meeting in June 2009 & Three workshops in BWM were Organized by:
  - The Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden **(PERSGA**) in cooperation with the GloBallast Partnerships Project Coordination Unit / **IMO**
  - The third one (5 -7 May 2014) held in JMC headquarters in Aqaba city hosted &
  - Supported by: GEF UNDP under **the patronage** of the**Minister of transport** board of directors of JMC.
- Last National BWM Committee meeting in JMC premises on 19Jan 2017.

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Lessons learned from similar programs:

1- The **Globallast** partnerships project helped our country very well to **spot the light into the expected dangers may occur at the gulf of Aqaba if the situation is still neglecting the invasive organisms** issues may come with the ballast water from World wide.

2- **we become familiar** of the correct ways of sampling , analyzing & the deferent types of Harmful organisms founded in sea waters.

3- **we believe that we succeeded** in putting our legs on the first steps of a long career to achieve our goals of protecting our gulf by efficient ways. And that is the best lesson learned from the project .

4- **The workshops & training courses** provided **range of information and skills** to participants to enable them to take appropriate steps in accordance with the different functions of the effective application of themes commitment and implementation of BWMC.

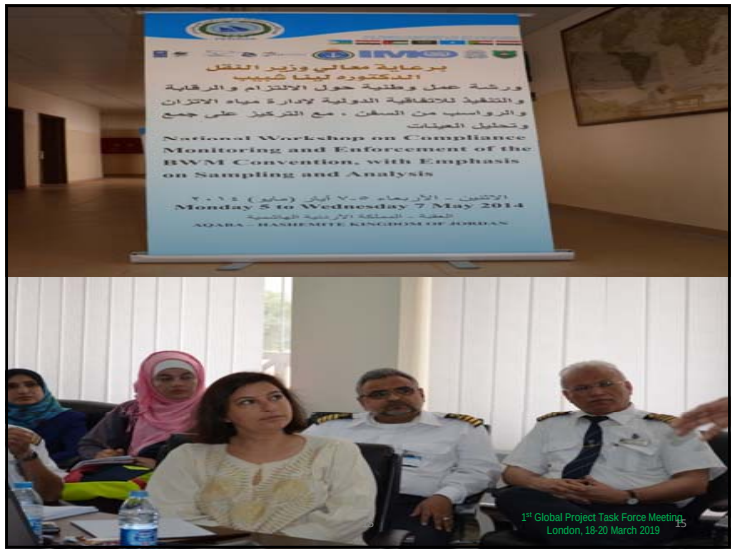
5- **Keeping & strengthen the cooperation** and relation with neighboring countries & regional organizations in the subject keeping the water of the red sea , and thus the gulf of Aqaba free of any harmful organisms & invasive species

Main achievements (in the 10 years):

1- Ratification of ANTIFOULING Convention
2- Ratification of BWMC in 9/9/2014.
3-**Adoption** of BWMC national regulations.
4-**Ballast Record Book** prepared by **F.S** Dept, & used in all the ships Jordanian ships.
5- starting the training of PSC officers of Jordan Maritime commission at the correct way of applying the operational controls and other inspections required to be done onboard foreign ships calling Aqaba ports and Apply the provisions of the Convention.
6- **No records for any invasive species** issues through samples taken From sea water by -marine science Station/University of Jordan & Yarmouk University .

We hope that this new project also help us start establishing a BioFouling programme at the national level in Jordan.
At last but not the least we hope to reach the JMC vision :

“ toward clean seas and safe ships




Thank you for your attention
GEF-UNDP-IMO GloFouling Partnerships Project
1st Global Project Task Force Meeting
Prepared by Ch. Eng:Mohammad Salman
Director of Technical &Maritime Safety Affairs
GloFouling Partnership Focal Point
London, 18-20 March 2019
17
1st Global Project Task Force Meeting
London, 18-20 March 2019

AGENDA

BASIC INFORMATION ON LPC
INSTITUTIONAL ARRANGEMENT
BIOFOULING AND IAS
COASTAL AND MARINE ENVIRONMENTS AND RESSOURCES
INVASIVE AQUATIC SPECIES
MARINE INDUSTRIES
SHIPPING AND PORT INDUSTRIES
MARINE AQUACULTURE:
OFFSHORE MINING
RECREATIONAL BOATING:
RESEARCH
STATUS OF PROJECT PREPARATION

BASIC INFORMATION ON LPC

Country description

Madagascar: 4th biggest island located in Indian Ocean
Port authority: Agence Portuaire, Maritime et Fluvial (APMF), Ministère des Transports, du Tourisme et de la Météorologie
OMI membership: since 1961,
Indian Ocean MOU: since april 2018

Nomination and organization

NATIONAL FOCAL POINT:
Mr **Reza LUDOVIC**
CDG-CEPD, APMF Biologist
NATIONAL PROJECT COORDINATOR:
Mrs **Miora RABEMIAFARA**
HEAS, APMF, Biologist

GLOFOULING PROJECT
NATIONAL COMMITTEE BOARD

BASIC INFORMATION ON LPC

Governement departments and institutions involved

- **Ministry of Transport, Tourism and Meteorology**
- **Ministry of Environment**
- **APMF : Agence Portuaire, Maritime et Fluvial**
- **DGO:** Direction Générale de la Gouvernance des Océans/ Ministry of fisheries
- **DGA:** Direction Générale de la Pêche
- **DGRS :** Direction Générale de la Recherche Scientifique, Min. Research

- **CNRO (** National center for oceanic research)
- **CNRE (**National center for environmental research)
- **IHSM (** Halieutic and Marine science institute)

INSTITUTIONAL ARRANGEMENT

National AFS Task Force → **IAS**

Legislation:

Maritime Code in process of adoption contains requirements for biofouling management
- BWM convention
- AFS convention

Challenges:

- **Lack of legislation/ of regulation**
- **Institutional système very unstable, irregularity of committment**
- **Technical capacity in biofouling management still limited**

BIOFOULING AND IAS

COASTAL AND MARINE ENVIRONMENTS AND RESSOURCES

Madagascar

- 5000 miles of coastline
- Richest marine biodiversity in indian ocean
- Ressources of high national economic value

Ecosystems:

- 50 000 acres of Mangroves
- 1130 miles of Coral reefs
- seagrass
- Beach
- Marine

Animals: endemic of cnidarian, molluscs, crustacean, marine mammals
Migration path of megafauna (whales)





BIOFOULING AND IAS

COASTAL AND MARINE ENVIRONMENTS AND RESSOURCES

Pressures and impacts

- Overfishing,
- Poaching,
- Lack of regulation of transportation to sensitive zones leading to changes of natural habitats,
- Waste from ships and cities,
- Sublittoral damage by zone conversion to farm area,
- Degradation of mangroves, coral bleaching, pollution of the sea, microhabitat change
- IAS



INVASIVE AQUATIC SPECIES

- Few research has been conducted on IAS
- Research limited to few ports and its surrounding areas
- IAS affects some marine protected area

- *Invasive algae (Turbinaria sp)*
- *Invasive cnidarians*
- *Invasive echinoderms (Diadema spp, Acanthester plancii, Salmaciella erythracis*

- No mechanism of control in national level yet

MARINE INDUSTRIES

Shipping and port industries

- **17 PORTS**
- **4 international ports (Toamasina, Ehoala, Majunga, Nosy Be)**

Commercial, fishing, tourism…

Port of Toamasina (East) largest port in the country and one of the largest in East Africa

Regional and international shipping

400 international vessels/ year

Port of Ehoala (south) mineral port

75000 T/ Year

Port of Mahajanga (west)

Industrial port area (fisheries export)
Inter-Island transportation (customers, Food)

MARINE INDUSTRIES

Marine Aquaculture:

- Shrimp farming (*Penaeus monodon*) most important since 1990, Group Unima Aqualma (northwest). Desease caused by IAS : « white spot »
- Fish farming
- Sea cumcumber farming currently developed
- Algea farming in the west coast: *Spirulina*

Offshore mining:

Intensive prospection in progress

Recreational boating:

Popular touristic destination: Fort Dauphin (east southern), Sainte Marie (whales festival), Nosy Be (snorkeling, scuba diving, sailing…)

Port of Tamatave, Port of Nosy Be (future marina), Port of Tulear, Port of Toalagnaro

In-water cleaning with port permitted
Sediments management into a dockyars : considered waste management available

MARINE INDUSTRIES

International traffic for recreational boating:

- 4 Ports : Taolagnaro, Nosy Be, Tomasina, Mahajanga
- Sainte Marie, Tulear and Antsiranana

Most of marinas are private

Fisheries control

- ASH insures inspections and controle of aquaculture
- Centre de Surveillance de Peches (Ministery of fisheries insures inspections of ships)

RESEARCH

CNRO: National center for Oceanic Research

CNRE: National center for Environmental Research

Currently on **June 2018**: study of IAS conducted by **Marex Team** with students from the university of Tamatave at the **Port of Tamatave**. Project funded by The IOC Biodiversity

- *Pennaria disticha* (hydraire of Atlantic)
- *Coassura coasta* (annelid of Japan)
- *Asparagpis taxiformis* (Algae of Australian)

Regional workshop organised by IOC about IAS :

Harmonization of the protocols for the research and management of IAS in Southwestern Indian Ocean (**Madagascar, Comoros, Seycheles, Mauritius, Kenya, Tanzania/Zanzibar**)

STATUS OF PROJECT PREPARATION

Projected Action Plan

1st year (2019)

A- Inception

- **Organization of national Glofouling Project inception workshop**
- **Participation to Regional Glofouling Project inception workshop, strategy action plan, regulation, exchange**

B- Structuring

- **Setting task force (TF) and project Implementation**
- **Regulation and legislation**

C- Implementation

- **Communication system established (Web…**
- **Capacity building (IMO, National)**
- **Developing research and monitoring on IAS (national and regional –IO)**

THANK YOU

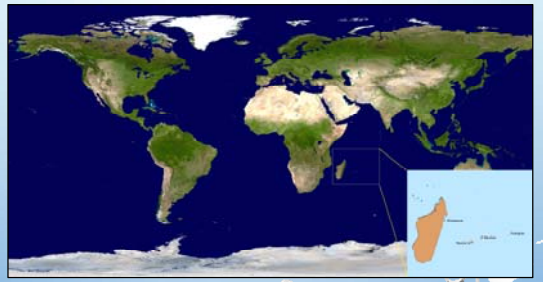
GEF-UNDP-IMO Glofouling Partnerships
Current Status Report - Republic of Mauritius

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

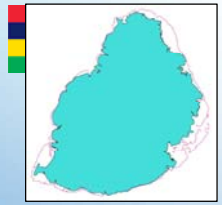


Alain Donat (Director of Shipping – Shipping Division)
Prakash Mussai (Ag. Principal Research Scientist – Mauritius Oceanography Institute)

Republic of Mauritius



Republic of Mauritius



Mauritius (French : Maurice), officially the Republic of Mauritius, is an island nation in the Indian Ocean about 2,000 kilometers (1,200 miles) off the southeast coast of the African Continent.

The country includes the island of Mauritius, Rodrigues (560 kilometers (350 miles) east), the islands of Agalega, the archipelago of Saint Brandon, Tromelin island and Chagos Archipelago.

NATIONAL TASK FORCE COMPOSITION

- MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING (CHAIR)
- MAURITIUS OCEANOGRAPHY INSTITUTE
- FISHERIES DIVISION
- MINISTRY OF SOCIAL SECURITY, NATIONAL SOLIDARITY AND ENVIRONMENT AND SUSTAINABLE DEVELOPMENT
- MINISTRY OF HEALTH AND QUALITY OF LIFE
- MINISTRY OF AGRO-INDUSTRY AND FOOD SECURITY
- UNIVERSITY OF MAURITIUS
- MAURITIUS PORTS AUTHORITY
- NATIONAL COAST GUARD
- SHIPPING INDUSTRY REPRESENTATIVE
- SHIPPING AGENT REPRESENTATIVE
- MAURITIUS MARINE CONSERVATION SOCIETY

Resource mapping

Mauritius Setup for Marine Biosecurity Projects

SHIPPING DIVISION

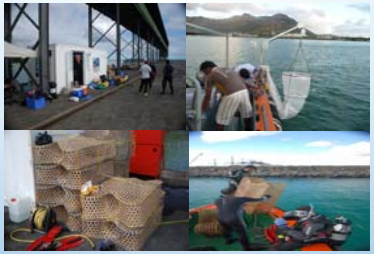
TEAMED UP WITH THE

MAURITIUS OCEANOGRAPHY INSTITUTE

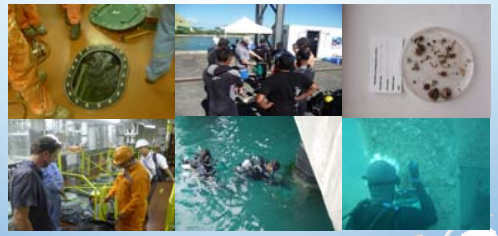
TO ACT AS ITS SCIENTIFIC ARM IN THE BALLAST WATER MANAGEMENT AND FOR THE SHIPS' BIOFOULING PROJECTS

Port Baseline Survey

(BWM Convention)



Training of Scientists, Divers and Surveyors



Republic of Mauritius

Training of Divers for BWM project

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

Port Baseline surveys

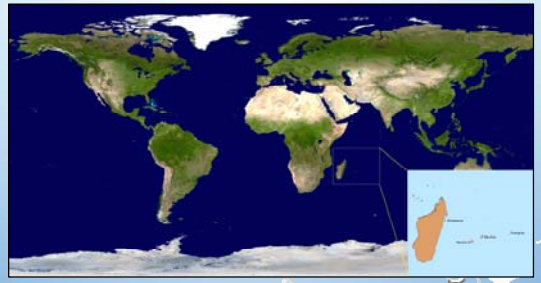
PORT LOUIS SURVEY (2012)

PORT MATHURIN SURVEY (2018)

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

Republic of Mauritius



MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

Deliverables

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

Public Awareness

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

Timeline

International Maritime Organisation (IMO)

Project: 1st Port Louis *Baseline Survey (2012-14)*

Current Project: 1st *Port Mathurin Baseline survey (2016-19)*

Current Project: Ships' Biofouling in Port Louis Harbour (2016-2020)

IMO GLOFOULING Project

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

THE PORT LOUIS SHIPS' BIOFOULING PROJECT

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Republic of Mauritius

GUIDELINES AND RECOMMENDATIONS FOR IN-WATER HULL CLEANING OPERATIONS IN DESIGNATED PORT AREAS

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

- **NATIONAL FOCAL POINT: DIRECTOR OF SHIPPING**
- SHIPPING DIVISION OF THE MINISTRY OF OCEAN ECONOMY,MARINE RESOURCES,FISHERIES AND SHIPPING
- WEBSITE: HTTP://OCEANECONOMY.GOVMU.ORG/ENGLISH/DEPARTMENTS/SHIPPING/PAGES/SHIPPING-VISION-AND-MISSION.ASPX

- **NATIONAL PROJECT COORDINATOR: ACTING PRINCIPAL SCIENTIST**
- MAURITIUS OCEANOGRAPHY INSTITUTE UNDER THE AEGIS OF THE MINISTRY OF OCEAN ECONOMY,MARINE RESOURCES,FISHERIES AND SHIPPING
- WEBSITE: HTTP://MOI.GOVMU.ORG/

- **DEPUTY NATIONAL PROJECT COORDINATOR: MARINE SCIENTIST**
- SHIPPING DIVISION OF THE MINISTRY OF OCEAN ECONOMY,MARINE RESOURCES,FISHERIES AND SHIPPING

THE PORT LOUIS SHIPS' BIOFOULING PROJECT

Phase 1 - Development of a Biofouling Risk Assessment Decision Support (BRADS) tool, as well as the development of a sampling protocol for the hulls of vessels visiting Port Louis Harbour.

Phase 2 - Survey of ships for biofouling flora and fauna.

Phase 3 - Development and establishment of a hydrodynamic model to estimate marine pollutant dispersion from in-water hull cleaning activities.

Phase I – Biofouling Risk Assessment & Decision Support Tool

Aims:
- Develop ship-specific risk assessment for IAS from biofouling
- Provide decision support for vessel hull inspections
- Knowledge transfer and capacity building



Phase II – Biological Survey for Biofouling Species

Aims:
- Create baseline data for extant vessel fouling assemblages
- Establish methods for ongoing monitoring
- Support biofouling (IAS) risk profile for Port Louis
- Knowledge transfer and capacity building



Phase III – Determination of Butyltin & Inorganic Components of Port Sediments

Aims:

- Develop ship-specific risk assessment for IAS from biofouling
- Provide decision support for vessel hull inspections
- Knowledge transfer and capacity building



MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

13-15 MARCH 2019


First team mobilisation and conduct a reconnaissance survey, training of local stakeholders and collection of samples

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

13-15 MARCH 2019


Collection of samples

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

THANKING YOU

MINISTRY OF OCEAN ECONOMY, MARINE RESOURCES, FISHERIES AND SHIPPING

Shipping Division
&
Mauritius
Oceanography Institute

?

Questions

SEMAR
SECRETARÍA DE MARINA

GEF-UNDP-IMO GloFouling Partnerships Project

1st Global Project Task Force meeting

Viceadmiral
Rubén Ceballos Guevara
Unit of Port Captaincies and Maritime Affairs (UNICAPAM)

LONDON, UK

1

MARINA

NATIONAL MARITIME AUTHORITY

Unit of Port Captaincies and Maritime Affairs (UNICAPAM)

March - 2019

Contents

- *Basic information on LPC*
- *Institutional arrangements*
- *Biofouling and invasive aquatic species*
- *Marine industries*
- *Research*
- *National Strategy on Invasive Species in Mexico*
- *Actions undertaken by the National Maritime Authority*

2

SEMAR

IMO

Basic information on LPC

SEMAR
(Secretariat of the Navy)
National Focal Point

SEMARNAT
(Secretariat of Environment and Natural Resources)
National Coordinator Point

SENASICA
National Service for the Health, Food Safety, and Agro-food Quality

CONABIO
(National Commission for the Knowledge and Use of Biodiversity)

SSA/ COFEPRIS: Human health risks

SCT
Secretariat of Communications and Transport

3

SEMAR

IMO

Institutional arrangements

Is there any existing legislation governing biofouling management and/or invasive aquatic species in Mexico?

Nowadays, Mexico does not have any laws with regulatory provisions to address biofouling problems from ships.

Ports have "Rules of Operation", which forbid ships to clean the hull, grate, rudder, etc., without the proper authorization.

What major challenges could be in the way of implementing a national biofouling management regime?

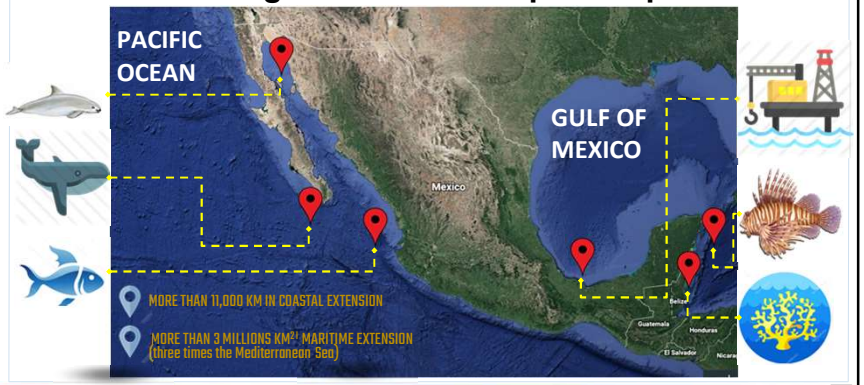
Political support, inter-agency arrangements, lack of technical expertise and private industry participation.

Is there any national task force already in place for discussing invasive aquatic species?

The 2010 "National Strategy on Invasive Species in Mexico", prepared by the National Commission for the Knowledge and Use of Biodiversity (CONABIO), which includes a chapter on biofouling and ballast water

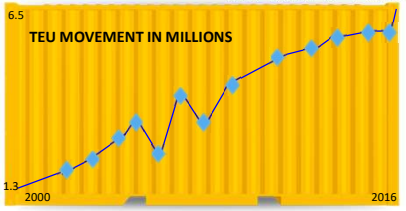
4

BioFouling and Invasive Aquatic Species



5

MARINE INDUSTRIES



- 1.3 TO 6.5 MILLION TEUS MOVEMENT 2000 -2016
- IN 2017, 19,780 SHIPS ARRIVED TO MEXICO
- 8 NAVY SHIPYARDS

- 19,638 CRUISE SHIPS ARRIVED TO MEXICO 2000 -2018
- +200 OFFSHORE RIGS AS OF 2018
- 2,371 MEXICAN FLAGGED SHIPS (MOST FOR THE OIL INDUSTRY)
- 7 MAJOR PORTS: Manzanillo, L.C., Salina Cruz, Altamira, Coatzacoalcos, Dos Bocas and Veracruz

6

RESEARCH

CICESE

IPN

CONABIO
COMISIÓN NACIONAL PARA EL CONOCIMIENTO Y USO DE LA BIODIVERSIDAD

Presently, there is an extensive list of invasive aquatic species present in the country's marine ecosystems*, most are presumed to have been entered adhered to the hull of vessels or in ballast water

So far, there have been no documented impacts on marine ecosystems or aquaculture production systems, but more studies are needed.

7

National Strategy on Invasive Species in Mexico 2010

- Addresses the problem in a general manner and identify biofouling as a gateway for invasive species in Mexico
- Objective: To develop a National System for the Prevention, Control and Eradication of invasive species
- Strategic Objectives:
  - Prevent, detect, and reduce the risk for the introduction, establishment, and dispersion of invasive species.
  - Development of programs for the control and eradication of invasive species
  - Informing at the society the actions carried out for the prevention, control, and eradication of invasive species, and involve them in the efforts and activities

8

8

SEMAR

IMO

Actions undertaken by the National Maritime Authority of Mexico.

- Coordination with environmental and port authorities to create awareness on the problem.

COORDINATION

- A national regulation based on the resolution MEPC.207 (62) "IMO Guidelines for the control and management of bio-fouling in ships, to minimize the transfer of invasive aquatic species", is under development.

- Port Authorities will use it to regulate applications of ships for the cleaning of bio-incrustations on the hull and other submerged structures.

9

SEMAR
SECRETARÍA DE MARINA

Biofouling

Report from Mexico
GloFouling Inception Workshop March 2019

10

REPUBLICA DEL PERU

DIRECCIÓN GENERAL DE CAPITANÍAS Y GUARDACOSTAS
"AUTORIDAD MARÍTIMA NACIONAL"
"INSTITUTO DEL MAR DEL PERÚ"

GEF-UNDP-IMO
GloFouling Partnerships Project

1st Global Project Task Force meeting

Londres, 18 de Marzo 2019

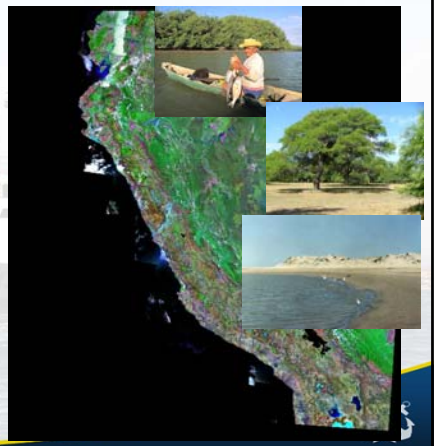
ORGANIGRAMA

- National Focal Point Project
  - NATIONAL MARITIME AUTHORITY
  - DIRCONTROL
  - OSERP
- Technical Coordinator for GloFouling Project
  - PERUVIAN SEA INSTITUTE
  - IMARPE, SENASA, INIA, UNIVERSIDADES

INTERACTION FOR REGULATORY FRAMEWORK

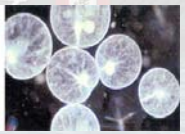
Description of the country's coastal and marine environments and resources

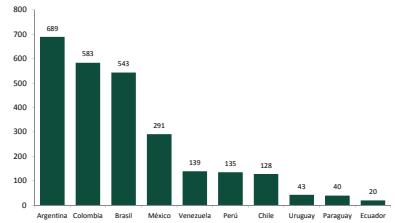
- The coast in Peru is not completely homogeneous, it extends along 3,080 km.
  - ✓ Mangroves, wetlands, macroalgae grasslands, rocky coasts, soft bottoms, beaches with a high biological diversity with an important degree of endemism
- Between the Pacific Ocean and the Andes mountain range, occupying 11% of the surface of the country, housing at the same time 44% of its population.
- The ecological regions are Tropical Forest of the Pacific (Tumbes), the Equatorial Dry Forest (Piura, Lambayeque and La Libertad) and the Pacific Desert (along the coast to the Chilean border).
- These ecosystems have sustained or facilitated:
  - ✓ Port activities
  - ✓ tourism
  - ✓ Aquaculture
  - ✓ Fishing



Impacts the alien species invasive on the marine ecosystem

harmful algal blooms on the aquaculture activity .





Highest presence of invasive alien species Peru records

At the regional level and, considering the reports of the presence of invasive alien species in countries with high biodiversity, Peru occupies the sixth place with the highest presence of invasive alien species Peru records an estimated 135 exotic species with potential and recognized invasive effect (direct and indirect sources, observations and case reports).

Current status on Biofouling and invasive aquatic species

- Port activities, acuaculture along Peruvian coast.
- In order to make Peru a world reference is important to develop continental aquaculture and mariculture so that Peru can compete at the same level with its peers in Latin America such as Chile, Brazil and, Ecuador. Is also important to indicate that the growth of the industry depends directly on the efforts of all actors: private companies, small fish farmers, government entities and the education sector.
- These entities must align their strategies to achieve the short and long-term goals.

Cuadro Nº 6. Ranking de acuicultura en América Latina y El Caribe (2008 – 2010)

Nº	PAÍS	2008	2009	2010 (*)	% 2009	% 2010
1	CHILE	670,845	758,013	752,594	38.4	36.3
2	BRASIL	290,186	415,636	448,887	21.0	21.7
3	MÉXICO	283,625	285,019	270,717	14.4	13.1
4	ECUADOR	172,120	218,361	235,830	11.1	11.4
5	PERU	43,103	44,317	89,021	3.9	4.3
6	COLOMBIA	66,400	77,941	94,176	2.2	4.1
7	CUBA	34,514	36,206	39,102	1.8	1.9
8	HONDURAS	47,080	28,858	31,167	1.5	1.5
9	OTROS	67,843	111,338	120,245	5.6	5.8
	TOTAL	1,875,716	1,975,689	2,071,733	100	100

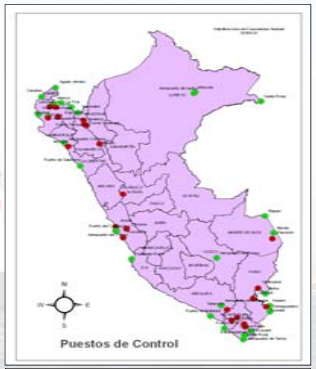
Fuente: Fishstat Plus – FAO
Elaboración: Propia
(*) Los datos de cosecha son proyectados exceptuando las cifras registradas de Perú, Chile y México, las cuales provienen de fuentes oficiales (PRODUCE en Perú, SERNAPESCA en Chile y CONAPESCA en México)

Current status on Biofouling and invasive aquatic species

1) Strategy and national biodiversity action plan (2014 - 2018)

2) The Technical Group of Invasive Alien Species (GTEEI), is a multisectoral and interdisciplinary technical entity of CONADIB, which is chaired by the Ministry of the Environment (MINAM). Ministerial Resolution No. 157-2009-MINAM

3) INSTITUTIONS
   - ✓ National Forest and Wildlife Service, Ministry of Agriculture and Irrigation (MINAGRI)
   - ✓ National Institute of Health (INS), Vice Ministry of Fisheries,
   - ✓ National Institute of Agrarian Innovation INIA
   - ✓ National Agrarian Health Service – SENASA,
   - ✓ Institute of the Peruvian Amazon – IIAP ,
   - ✓ Institute of the Sea of Peru – IMARPE,
   - ✓ National Service of Natural Protected Areas ,
   - ✓ Natural History Museum - UNMSM

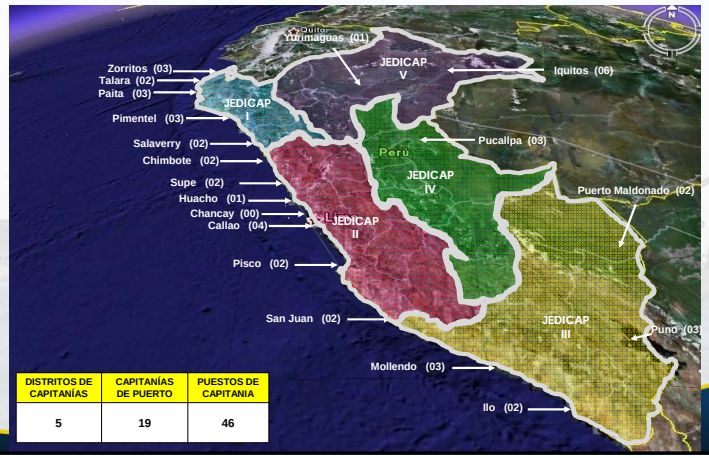


Control posts of the National Agrarian Health Service - SENASA green circles-external checkpoints, red circle-internal checkpoints

Current status on Biofouling and invasive aquatic species

3) The principals challenges could be in the way of implementing a national biofouling management regime, political support, institutional arrangements, technical capacity, industry participation)
   - ✓ The Peruvian State has implemented a policy for the conservation of the marine environment, counting on the technical capacity, public and private institutional arrangements immersed in the process of construction and maintenance of ships, naval artifacts and platforms.
   - ✓ Acknowledgments and Inspections
   - ✓ Certification as Flag State
   - ✓ Port State Supervisors
   - ✓ Allocation of Complementary Regulations
   - ✓ Technical Cooperation

Organization de Control in Peru for Invasive aquatic species



DISTRITOS DE CAPITANÍAS	CAPITANÍAS DE PUERTO	PUESTOS DE CAPITANIA
5	19	46

Brief description of shipping and port industry in Peru

National Action Plan on Invasive Alien Species in Peru
Prevention, control and mitigation of impacts

- **Objective 1**: Prevent the entry of invasive alien species into the national territory.
- **Objective 2**: Promote measures aimed at controlling the dispersion of the IAS identified for the country and mitigate the negative impacts on biodiversity, ecosystem services, health and economy.
- **Objective 3**: Promote technical-legal knowledge to raise awareness among key stakeholders about the risks and impacts of invasive alien species on biodiversity, health and the economy.

El GT-EEI es un grupo especializado de la Comisión Nacional de Diversidad Biológica en Perú (CONADIB)

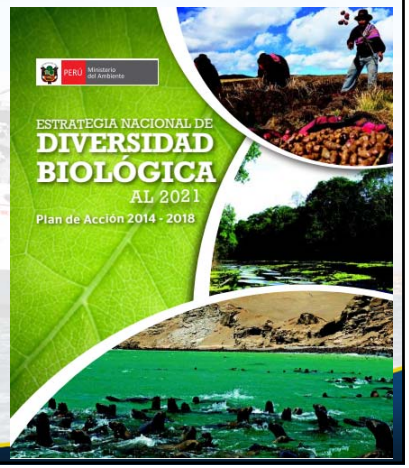
- ✓ National Institute of Health (INS), National Institute of Agrarian Innovation INIA
- ✓ National Agrarian Health Service – SENASA,
- ✓ Institute of the Peruvian Amazon – IIAP ,
- ✓ Institute of the Sea of Peru – IMARPE,
- ✓ National Service of Natural Protected Areas ,
- ✓ Natural History Museum – UNMSM
- ✓ uNIVERSITIES

Legal and institutional framework in Perú Invasive alien species

The legal and institutional framework on IAS in Peru, are basd in
Actions taken to achieve the 2020 Aichi Biodiversity Targets: Regarding the programme of work on Article 8 (j) and related CBD provisions, Peru has made progress with respect to 6 elements (10 tasks) representing 59% of the total 17 tasks, and 50% of the 8 tasks that correspond to Parties, either separately or on a shared basis with the Secretariat and the Working Group.

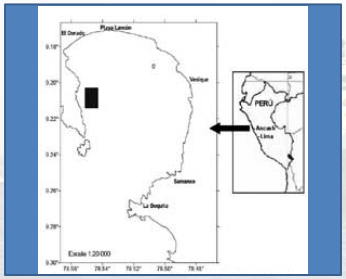
Also considered the Protected areas currently cover 17% of the national territory, including 10 protected areas in the marine and coastal environment (the Guano Islands, Isles and Capes National Reserve System has been recently created).

The Action Plan for the Protection of the Marine Environment and Coastal Areas of the Southeast Pacific, of the Permanent Commission for the South Pacific, is being driven in coordination with the Peruvian Institute of the Sea (IMARPE). It aims to assess the level of pollution and its impact on marine biodiversity and risks to human health.



Research Programme on invasive aquatic species along Peruvian coast to support management

- Currently, there is a list of invasive exotic species with 162 species, of which 45 have been introduced by aquaculture, aquaria and ballast water (MINAM, 2018)



- 1st. report on biofouling in the Samanco bay, Peru

N°	Reino	Clase	Orden	Familia	Especie	Nombre Común	Origen
1	Animalia	Actinopterygii	Rhamdiiformes	Rhamdopsidae	Odontesthes bonariensis	Pejerrey argentino	Acuicultura
2	Animalia	Actinopterygii	Characiformes	Characidae	Brycon siphokeu	Sabalo cola roja	Acuicultura
3	Animalia	Actinopterygii	Characiformes	Characidae	Colossoma macropomum	Gamitana	Acuicultura
4	Animalia	Actinopterygii	Characiformes	Characidae	Piaractus brachypomus	Paco	Acuicultura
5	Animalia	Actinopterygii	Characiformes	Prochilodontidae	Prochilodus nigricans	Boquichico	Acuicultura
6	Animalia	Actinopterygii	Cypriniformes	Cyprinidae	Cyprinus carpio	Carpa	Acuicultura
7	Animalia	Actinopterygii	Perciformes	Cichlidae	Astronotus ocellatus	Acarahuazú	Acuicultura
8	Animalia	Actinopterygii	Perciformes	Cichlidae	Cichla monoculus	Tucunaré	Acuicultura
9	Animalia	Actinopterygii	Perciformes	Cichlidae	Oreochromis aureus	Tilapia aurea	Acuicultura
10	Animalia	Actinopterygii	Perciformes	Cichlidae	Oreochromis mossambicus	Tilapia de Mozambique	Acuicultura
11	Animalia	Actinopterygii	Perciformes	Cichlidae	Oreochromis niloticus	Tilapia del nilo	Acuicultura
12	Animalia	Actinopterygii	Perciformes	Cichlidae	Oreochromis urolepis	Tilapia	Acuicultura
13	Animalia	Actinopterygii	Perciformes	Cichlidae	Oreochromis urolepis hornorum	Tilapia	Acuicultura
14	Animalia	Actinopterygii	Perciformes	Cichlidae	Tilapia rendalli	Tilapia	Acuicultura
15	Animalia	Actinopterygii	Perciformes	Osphronemidae	Trichogaster leeri	Gourami perla	Acuicultura
16	Animalia	Actinopterygii	Perciformes	Osphronemidae	Trichogaster trichopterus	Gourami azul	Acuicultura
17	Animalia	Actinopterygii	Salmoniformes	Salmonidae	Oncorhynchus mykiss	Trucha	Acuicultura
18	Animalia	Actinopterygii	Salmoniformes	Salmonidae	Salmo trutta	Trucha	Acuicultura
19	Animalia	Actinopterygii	Salmoniformes	Salmonidae	Salvelinus fontinalis	Trucha de arroyo	Acuicultura
20	Animalia	Bivalvia	Unionoida	Mycetopodidae	Anodontites trapesialis	Almeja de agua dulce	Acuicultura
21	Animalia	Bivalvia	Veneroida	Corbiculidae	Corbicula fluminea	Almeja asiatica	Acuicultura
22	Animalia	Gastropoda	Pulmonata	Achatinidae	Achatina fulica	Caracol gigante africano	Acuicultura
23	Animalia	Malacostraca	Decapoda	Palaemonidae	Macrobrachium rosenbergii	Langostino	Acuicultura
24	Plantae	Charophyceae	Bryopsidales	Caulerpaceae	Caulerpa filiformis	Charophyceae	Acuicultura
25	Animalia	Actinopterygii	Cyprinodontiformes	Poeciliidae	Poecilia reticulata	Guppy	Acuarofilia
26	Animalia	Actinopterygii	Cyprinodontiformes	Poeciliidae	Poecilia vellifera	Guppy	Acuarofilia
27	Animalia	Actinopterygii	Cyprinodontiformes	Poeciliidae	Xiphophorus helleri	Pez espada	Acuarofilia
28	Animalia	Actinopterygii	Cyprinodontiformes	Poeciliidae	Xiphophorus maculatus	Pez espada	Acuarofilia
29	Animalia	Actinopterygii	Osteoglossiformes	Osteoglossidae	Arapaima gigas	Pacha	Acuicultura
30	Animalia	Actinopterygii	Perciformes	Cichlidae	Amatitlania nigrofasciata	Cichlido convicto	Acuarofilia
31	Animalia	Gastropoda	Mesogahropoda	Thiaridae	Melanoides tuberculatus	Caracol trompeta	Acuarofilia
32	Chromalveolata	Bacillariophyceae	Cymbales	Cheetoceraceae	Chaetoceros calcitrans	planktonic diatom	Agua lastre
33	Chromalveolata	Coscinodiscophyceae	Thalassiosirales	Thalassiosiraceae	Thalassiosira fluviatilis	planktonic diatom	Agua lastre
34	Chromalveolata	Coscinodiscophyceae	Thalassiosirales	Thalassiosiraceae	Thalassiosira pseudonana	planktonic diatom	Agua lastre
35	Chromalveolata	Coscinodiscophyceae	Thalassiosirales	Thalassiosiraceae	Thalassiosira weissflogii	planktonic diatom	Agua lastre
36	Chromalveolata	Prymnesiophyceae	Pavlovales	Pavlovaceae	Pavlova lutheri	haptophyta	Agua lastre
37	Chromalveolata	Prymnesiophyceae	Isochrysidales	Isochrysidaceae	Dicrateria inornata	haptophyta	Agua lastre
38	Chromalveolata	Prymnesiophyceae	Isochrysidales	Isochrysidaceae	Isochrysis galbana	haptophyta	Agua lastre
39	Chromalveolata	Prymnesiophyceae	Isochrysidales	Isochrysidaceae	Isochrysis sp.	haptophyta	Agua lastre
40	Plantae	Chlorophyceae	Chlorococcales	Oocomyxaceae	Nannochloris oculata	Chlorophyta	Agua lastre
41	Plantae	Chlorophyceae	Volvocales	Chlamydomonadaceae	Tetraselmis chuii	Chlorophyta	Agua lastre
42	Plantae	Chlorophyceae	Ulvocales	Dunaliellaceae	Dunaliella tertiolecta	Chlorophyta	Agua lastre
43	Protoctista	Dinophyceae	Gonyaulacales	Goniodomaceae	Alexandrium tamiyavanichi	Dinoflagelado	Agua lastre
44	Protoctista	Dinophyceae	Prorocentrales	Prorocentraceae	Prorocentrum minimum	Dinoflagelidae	Agua lastre
45	Protoctista	Dinophyceae	Prorocentrales	Prorocentraceae	Protoceratium reticulatum	Dinoflagellidae	Agua lastre

Status of Project preparations

There are research programs such as the biodiversity inventories developed by IMARPE and universities.

Other useful information

In Peru's biodiversity strategy, it is considered By 2021, the effectiveness of control, supervision and control in the use of biodiversity will have been improved, and the regulatory mechanisms of threatened species and invasive alien species increased.

STATUS REPORT

GEF-UNDP-IMO Glofouling Partnerships
1st Global Project Task Force Meeting and
Project Inception Workshop

18-20 March 2019

MARITIME PHILIPPINES

Outline

- Basic Information
- Marine Industries /PH ports
- Current Status & Challenges
- Project Preparations

Basic Information

The PHILIPPINES

……an archipelago composed of about 7,641 islands with a total land area of 298,170 square kilometers or 115,831 square miles.

…… 5th longest coastline in the world with its 36,289 kilometers or 22,549 miles of coastline

Basic Information

- ❖ NATIONAL FOCAL POINT : MARITIME INDUSTRY AUTHORITY (MARINA)
- ❖ PROJECT COORDINATOR : OVERSEAS SHIPPING SERVICE, MARINA

Proposed National Task Force

Marine Industries

7th — **Ranked 7th among top fish producing countries in the world with a total production of 4.87 million metric tons of fish, crustaceans, mollusks and aquatic plants**

11th — Ranked 11th in aquaculture production of fish or 1.19% share in the total global aquaculture production, and amounting to USD 1.95 billion

Major Ports in the Philippines

PPA Port System consists of 5 Port District Offices (PDOs):

- Luzon : 1. Manila/ Northern PDO; 2. Southern Luzon PDO
- Visayas : 3. Visayas PDO
- Mindanao : 4. Northern Mindanao PDO; 5. Southern Mindanao PDO

Total Ship Calls (2018)

PDO	DOMESTIC	FOREIGN	TOTAL
MANILA / NORTHERN LUZON	15,948	4,568	20,516
SOUTHERN LUZON	132,361	2,338	134,699
VISAYAS	182,620	834	183,454
NORTHERN MINDANAO	69,093	1,096	70,189
SOUTHERN MINDANAO	54,320	2,476	56,796
TOTAL	454,342	11,312	465,654

Source: PPA

Current Status

- No biofouling-related requirements in the Philippines as far as maritime industry is concerned
- **No** biofouling related assessments or studies in the major ports in the Philippines
- **No national database, information system or major scientific studies on invasive aquatic species in the marine & coastal environment**
- **No in-water inspections for assessing invasive aquatic species on ships**

Challenges

- Political support ✓
- Institutional arrangements ✓
- Technical capacity ✓
- Industry participation ✓

Project Preparations

THANK YOU

MS. SONIA B. MALALUAN
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LONDON-PE
sbmalaluan@marina.gov.ph

MARITIME PHILIPPINES

GEF-UNDP-IMO GloFouling Partnerships Project

Sri Lanka Country Presentation

A J M Gunasekara Thalatha Ranasnghe

Marine Environment Protection Authority
Ministry of Mahaweli Development and Environment

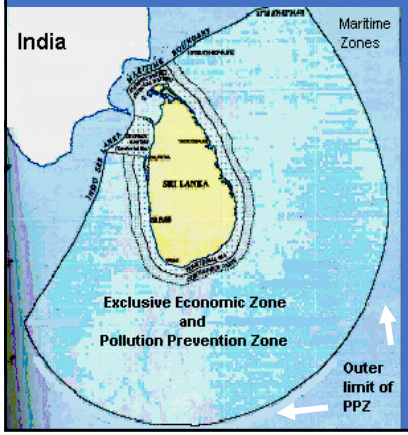
1st Global Project Task Force meeting, London, 18 – 20 March 2019

Background

GEOGRAPHICAL IMPORTANCE FOR SHIPPING

- Sri Lanka Located at Strategic location at the Indian ocean-central point of the east and west.
- Important place of silk route

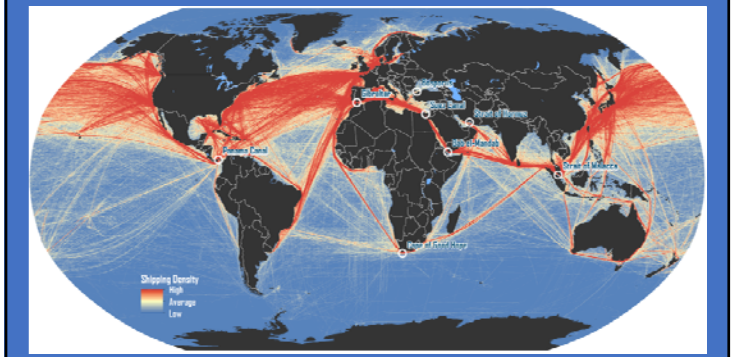
Maritimes Zones of Sri Lanka



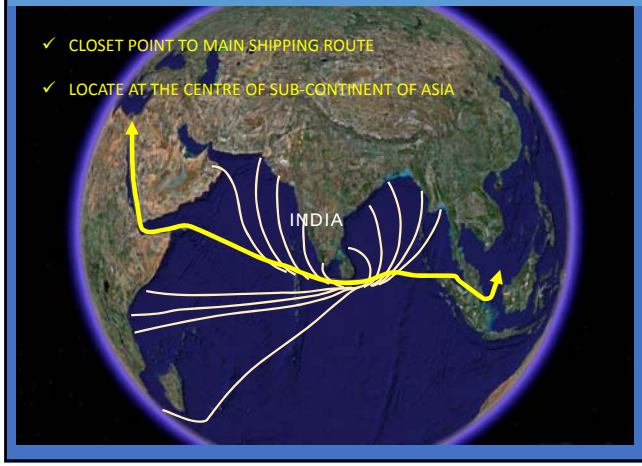
Maritime Zone	from Baseline (Nm)	Area (Sq.Km)
Territorial Sea	12	21700
Contiguous Zone	24	22600
EEZ / PPZ	200	465800

- ***Coastal belt- 1760 Km***

Close to major shipping routes



GEOGRAPHICAL IMPORTANCE FOR SHIPPING



Ports and Shipping Sector

- ❑ Shipping sectors plays very important role of Sri Lankan economy
- ❑ As Island nation mainly rely on shipping for import and export.

Location of major ports

Number of ships handle by Sri Lankan ports

Port	2013	2014	2015	2016
Colombo	3976	4264	4228	4998
Galle	36	60	72	96
Trincomallee	134	127	164	216
Hambatntota	139	335	295	281

Basic information

- **National Focal Point**
  Mr. Anura Dissanayake/Secretary
  Ministry of Mahaweli Development and Environment
- **Project Coordinator**
  - Dr. Terney Pradeep Kumara/General Manager
  - Marine Environment Protection Authority
- **Other Government Departments involved**
  - Biodiversity Secretariat, Ministry of Mahaweli Development and Environment
  - Merchant Shipping Secretariat, Ministry of Port and Shipping
  - Sri Lanka Ports Authority, Ministry of Ports and Shipping
  - Research Agencies and Universities

Institutional Arrangements

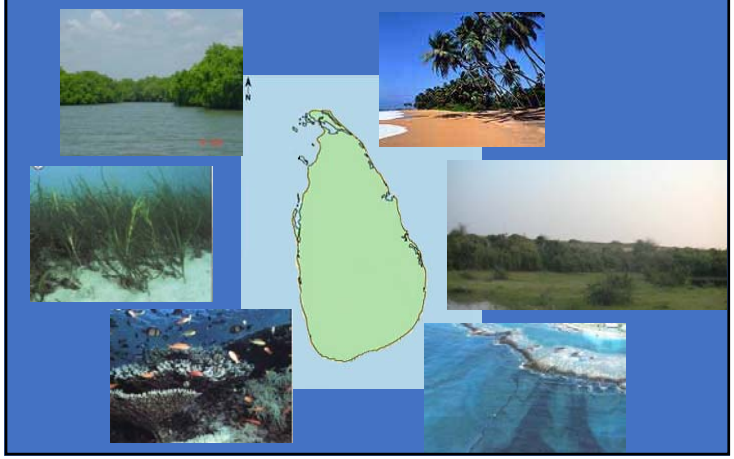
National Task Force Task force was established to AIS management through Ballast water

- *Marine environment Protection Authority – Lead agency*
- *Division of Merchant Shipping (DMS)*
- *Sri Lanka Port Authority (SLPA)*
- *National Aquatic Resources Research and Development Agency*
- *Universities*
- *Sri Lanka Coast guard Department*
- *Ship Building and Ship Repair Yards*
- *Ship Owners Association*
- *Ship Agents Association*
- *Maritime Universities and Colleges (government and private setor)*
- *National aquaculture Development Authority*
- *Min. of Environment/Min. of Tourism/Ministry of Agriculture/Min of Fisheries*
- *NGOs'*

Major Challenges

- Non availability of legislation to control fouling organism – hull cleaning etc.
- Lack of scientific know-how on impact of fouling organism
- Non availability of economically and technically feasible management options
- Lack of support from shipping sector - cost factor
- Awareness among shipping, port and other sectors

Sri Lankan context: Diverse Coastal and Marine Ecosystems



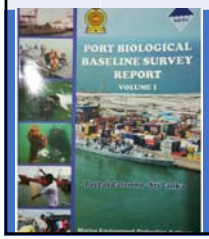
Important Marine Ecosystems

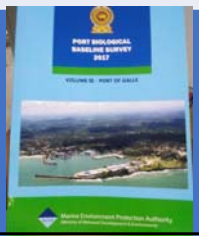
- Sensitive Ecosystems
  - Corals
  - Mangroves
  - Sea grass beds
  - Muddy tidal flats
  - Sandy Beaches
  - Rocky shores
  - Lagoons & Estuaries
- Socio-economic activities
  - Recreational
  - Tourism
  - fisheries



Biofouling and invasive aquatic species

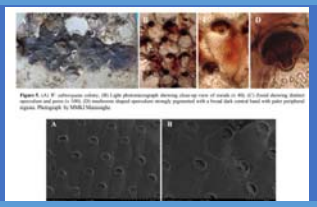
Port	No of invasive species (fouling)	species (fouling)
Colombo	**8**	*Musculista senhousia* *Balanus amphitrite,* *Elminius modestus* *Mytilus galloprovicialis* *Perna viridis* *Crassostrea gigas* *Ostrea edulis* *Carcinus maenas*
Galle	**5**	Perna viridis Crassostrea gigas, Balanus Amphitrite Ophiactis savignyi Clathria prolifera



Port	No of invasive species (fouling)	Species -Fouling
Trincomallee	6	*Perna viridis,* *Crassostrea gigas,* *Ostrea edulis* *Balanus amphitrite,* *Ophiactis savignyi* *Clathria prolifera*
Hambantota	8	*Rapana venosa* *Phallusia nigra* *Perna perna* *Brachidontes pharaonis* *Balanus amphitrite* *Balanus reticulates* *Balanus trigonus* *Schizoporella errata*

Settlement of non-native *Watersipora subtorquata* (d'Orbigny, 1852) in artificial collectors deployed in Colombo Port, Sri Lanka

LARVAL STAGES OF THE BIOFOULING COMMUNITY FOUND IN COLOMBO PORT, SRI LANKA

Membranipora membranacea (Bryozoa)

Legislation related to biofouling

- No legislation is available to control hull fouling
- Underwater hull cleaning is prohibited in Colombo Port
- But there are lot of complaints from ship repairs Colombo Dock yard Pvt Ltd is the major ship repair and ship building company
  - hull cleaning material- thermally destructions

Research Institutes

- National Aquaculture Research and Development Agency
- Marine Environment Protection Authority
- Universities -
  - Univ. of Sri Jayewardenepura
  - University of Ruhuna

Present research
Evaluation invasiveness of Identified Introduced species in four commercial ports

MEPA,
NARA
Universities

Status of Project preparation- GFTF

- Focal point and project coordinator nominated and implementation mechanism is arranged
- Implementation agency – Marine environment Protection Authority
- NTF is established
- Funds allocated to carry out relevant project activities
- Research- commence to identify and evaluate impact of biofouling species

Thank you

TONGA GLOFOULING PROJECT

By Hemaloto Tupou

Basic information on LPC

- National Focal Point, Mrs. Kelela Tonga, Project Coordinator, Mr Hemaloto Tupou.
- Recent appointment of Project Coordinator (last month).
- Both from government agency, Tonga Marine & Ports Division (MPD) under Ministry of Infrastructure (MOI)

Marine & Ports Division Duty in Tonga

- Government agency that regulate all vessels in Tongan waters.
- MPD is the government agency responsible for regulating vessel pollution under the Marine Pollution Prevention Acts 2002.

Supportive Agency to Invasive Aquatic Species

- Government agency with possible active role on IAS are Environment Department of MEIDECC
- Ministry of Agriculture, Forestry and Food
- Ministry of Fisheries
- These government agency have their own regulation and action plan towards invasive species.

Institutional Arrangements National Task Force

- So far no specified body established to combat invasive aquatic species.
- MPD have Marine Pollution Prevention Act 2002. Part 3, Section 16. Provides for the establishment of a National Marine Pollution Committee.
- To advice the Minister for a number of marine pollution related matters and advice on "....on any matters related to marine pollution as required by the Secretary".
- Marine Pollution Prevention Act 2002. "Part 2, Section 6. states " no ballast water containing non-indigenous harmful aquatic organism and or pathogens shall be discharged from a vessel into Tongan waters"
- Ballast Water Convention have implemented by Tonga Government.
- Environment Department have Tonga National Invasive Species Strategy and Action Plan 2013-2020 (NISSAP), concerned with terrestrial ecosystem

Tonga Information

- Tonga 170 islands is made up of corals and volcanic.
- 3 main types of reefs. Fringing, barrier and submerged reefs with abundant marine life.
- Tonga's Marine ecosystem services worth around USD$20.9 mil in 2013 from fisheries (tuna, beche-de-mer etc) and tourism & recreation (swimming with whale, snorkeling etc.)
- Other potential resources from our marine area is deep sea mining.
- Coastal fish populations are estimated to have declined by 50% in last 10 years.
- Coral reefs are being lost at 2% per year.
- No threats from IAS at national level

Marine Industries Shipping and Port

- Two international ports. Nuku'alofa & Neiafu. Load and unloading of containers and bunkering of oil. Approximate 150 – 200 ships from last decade.
- Domestic vessels serviced the outer islands. The mainstay of inter-island transport for passengers and cargo.
- Fishing vessels unload their catch in the main ports for better value of catch.
- Cruise vessel occasionally docked at main ports. Tonga not a popular destinations for cruise vessels compared to other Pacific Islands.

Challenges on Inspection of Ships for IAS

- Lack of resources to carry out the Biofouling study due to little financial resources, appropriate equipment and technical expertise
- Tonga have signed a MOU with Tokyo on Port State Control. Still an observer but plan to conduct PSC in the near future. Port State Control is not yet implemented.
- Lack of specified organization established to combat IAS.
- Shortage of infrastructure and technical expertise to conduct and examine invasive aquatic species.

Way Forward with Invasive Aquatic Species

- Established of a national law specify to Invasive Aquatic Species transferred by ships.
- Established a specialized committee to combat Invasive Aquatic Species transferred by ships, (hulls or ballast water).
- Secure funding for this committee.
- Conduct Port State Control on foreign vessels. Help to minimize the threat of aquatic invasive species.

MALO ‘AUPITO

Southeast Pacific status report

Fernando Félix
Regional Coordinator
Southeast Pacific Action Plan
Permanent Commission for the South Pacific (CPPS)
Guayaquil, Ecuador
www.cpps-int.org

1st GEF-UNDP-IMO GloFouling Partnerships Project. 1st Global Project Task Force Meeting. London, 18-20 March 2019

The Permanent Commission for the South Pacific

- Intergovernmental organization created in 1952
- Coordination of maritime policies of member countries: Chile, Colombia, Ecuador and Peru
- Executive Secretariat of the Southeast Pacific Action Plan (1981) in which Panama is also Party
- 25 binding regional instruments have been ratified by countries

The Southeast Pacific

- Coastline: 8,000 km. High diversity of ecosystems from tropical to sub Antarctic
- 2 LME, Humboldt Current (13) and part of the Pacific Central American (11)
- The Humboldt Current LME is considered a Class I, highly productive (>300 gC/m^2-yr)
- The Pacific Central-American Coastal LME is considered a Class II, moderately high (150-300 gC/m2-yr) productivity
- Main coastal activities: fishing, shipping, tourism, aquaculture

Role of CPPS as RCO of Globallast I & II

- CPPS was RCO of Globallast I & II for the Region Southeast Pacific + Argentina
- Coordinating participation of technicians in training activities, consultancies, administrative issues, GTF & RTF meetings
- A regional strategy on ballast water management was adopted (to be updated in 2019)

Legal framework for invasive species

- Convention for the protection of the Marine and Coastal Zone in the Southeast Pacific (Lima Convention 1981) and its Action Plan:
- Promote the conservation , management and sustainable use of the marine and coastal biodiversity and their ecosystem services in the Southeast Pacific, to ensure the health, food security and wellbeing for present and future generations.

Foreign Affairs Ministerial Declaration (Galapagos, 2012)

- Par 31.

  Countries recognize the serious threat in the introduction of invasive marine species for the marine environment and food security of coastal states. In this regard, they value the efforts made by the General Secretariat (CPPS) in close collaboration with the International Maritime Organization (IMO), designed to support countries in the region to implement measures and legal instruments to reduce the risk of introducing these species by ballast water from vessels.

Status of Glofouling preparations

- XXII COP meeting of the Lima Convention (January 2018)

  Instructed to CPPS Secretariat to accept the invitation from IMO to be the Regional Coordination Organization for the Glofouling Project
- Endorsement letter by CPPS (February 2018
- Co-financing US $ 98,795

Challenges

- Lack of baseline information on invasive species
- Need of a regional information system
- Lost of capacity due to high rotation level of personnel
- Institutionalize national task forces and processes
- Lack of expertise on taxonomy of marine invertebrates
- Financing monitoring and control

PEMSEA

Backgrounder on PEMSEA and current engagement in maritime issues in East Asian Seas

Aimee T. Gonzales
PEMSEA (SEA Regional Coordination Organization)
GEF-UNDP-IMO GloFouling Partnerships Project
First Global Project Task Force Meeting
London 18-20 March 2019

PEMSEA's mission and partnerships

Mission: To foster and sustain healthy and resilient coasts and oceans, communities and economies across the Seas of East Asia through integrated management solutions and partnerships

- Member of the Port Network
- IRBM project country partner

www.pemsea.org

PEMSEA's Regional Governance Mechanism

Sustainable Development Strategy for the Seas of East Asia (SDS-SEA)

PEMSEA strategy/actions on pollution reduction and waste management (SDS-SEA 2018-2022)

1. **ENHANCE accession to and/or compliance with relevant international conventions/agreement** (UN SDG, Aichi Biodiversity Targets, **IMO conventions**, ASEAN Cooperation Plan for transboundary pollution Global Plan of Action for the Protection of Marine Environment from Land-Based Activities)
2. **REDUCE marine pollution loadings** in PEMSEA partner countries (marine debris, plastics/microplastics and nutrient pollution)
3. **DEMONSTRATE good practices and experiences** in integrated river basin and coastal area management **for improved source to sea governance, management and investments in** the East Asian region.

PEMSEA-IMO environmental activities for ports and ships

Maritime Activities

Ballast Water – PBBS	Reducing GHG Emissions	Hull Biofouling
▪ Supporting IMOs MEPSEAS project as a strategic partner for Port Biological Baseline Surveys (PBBS is an integral part of Ballast Water Management) ▪ Countries: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam (Singapore as Advisor)	▪ Funding activities with IMO on "Blue solutions for reducing maritime transport GHG emis-sions through increased energy efficiency of ship, port activities" ▪ Countries a) IKI: Indonesia, Malaysia, Philippines, Thailand, Vietnam; b) GCF: Malaysia, Philippines	▪ Methods of hull cleaning to a) minimise risk of invasive species can reaching new habitats and b) improve vessel hydrodynamic to reduce fuel consumption and GHG emissions ▪ Countries: Indonesia, Philippines (IMO Project



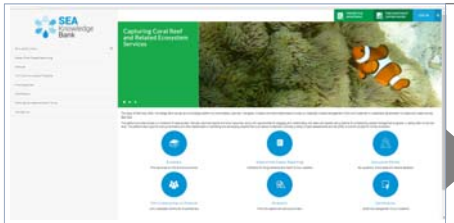
PEMSEA maritime related initiatives
Oil spill preparedness and response in the Gulf of Thailand


Activities in the Gulf of Thailand

- Oil spill preparedness and response (including joint oil spill exercise among the three participating countries
- Guideline on the use of chemical dispersants
- Environmental Sensitivity Mapping (the countries officially adopted the Environmental Sensitivity Index (ESI) Atlas for the Gulf of Thailand)

The SEA Knowledge Bank serves as multiplicator to transfer project findings and best practices to marine stakeholders

SEA Knowledge Bank

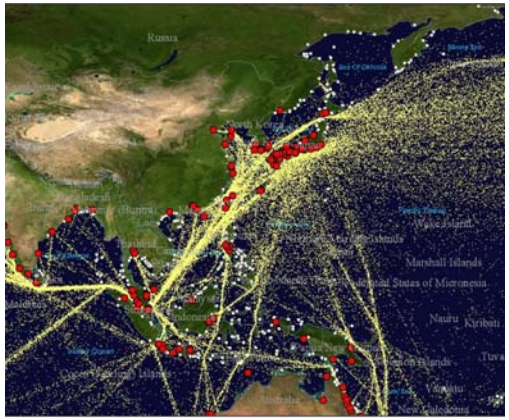


Platform to scale up the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) at the regional, Large Marine Ecosystem (LME) seascape, national and local levels.

Online platform provides access to:

- collection of lessons learned
- best practices on coastal ocean governance, management and investment
- e-library
- ICM solutions with online access to com-munities of practice and networks
- Project marketplace and forums

One of the highest rate of shipping activity in the world



PEMSEA ● Ports ⬭ Protected areas ⬭ Ships www.pemsea.org 9

What are the risks associated with such a high rate of shipping activity?

PEMSEA www.pemsea.org 10

Status of Ratification of Marine Environmental Conventions

	IMO Convention 48	MARPOL 73/78					London Convention 72	London Convention Protocol 96	ANTI FOULING 01	BALLASTWATER 04
		Annex I/II	Annex III	Annex IV	Annex V	Protocol 97 (Annex VI)				
Cambodia	✓	✓	✓	✓	✓					
China	✓	✓	✓	✓	✓	✓	✓	✓	✓	
DPR Korea	✓	✓	✓	✓	✓					
Indonesia	✓	✓	✓	✓	✓	✓			✓	✓
Japan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Philippines	✓	✓	✓	✓	✓	✓	✓	✓		
RO Korea	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Singapore	✓	✓	✓	✓	✓	✓			✓	✓
Timor-Leste	✓									
Viet Nam	✓	✓	✓	✓	✓	✓			✓	

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Challenges and Opportunities

East Asian countries institutional and technical capacity and resources vary from country tó country.

SEA countries: science and policy interface on biofouling is pretty much in its infancy

- Need more awareness raising among policy makers

- Need more evidence based arguments

- limited technical capacity

Interagency collaboration within countries is on the rise

Industry engagement - need to find champions

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Status of GloFouling Project Preparations

PEMSEA - regional cooperating organization

Oct 18	Supported and welcomed the **announcement of the GloFouling project**
Mar 19	Attended the **ASEAN Working Group on Transport** Met with **IMO SEA and Phil MARINA officials**
July19	Present the Glo Fouling project at the **East Asian Seas Partnership Council**

Thank you

www.pemsea.org

http://seaknowledgebank.net/

facebook.com/pemsea

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linkedin.com/company/pemsea

1st GEF-UNDP-IMO GloFouling Global Project Task Force

(GPTF-1)

London, UK
18-20 March 2019

Empowered lives. Resilient nations.

Dr. Salim M. Al-Moghrabi

Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)

(Monday 18 March 2019)

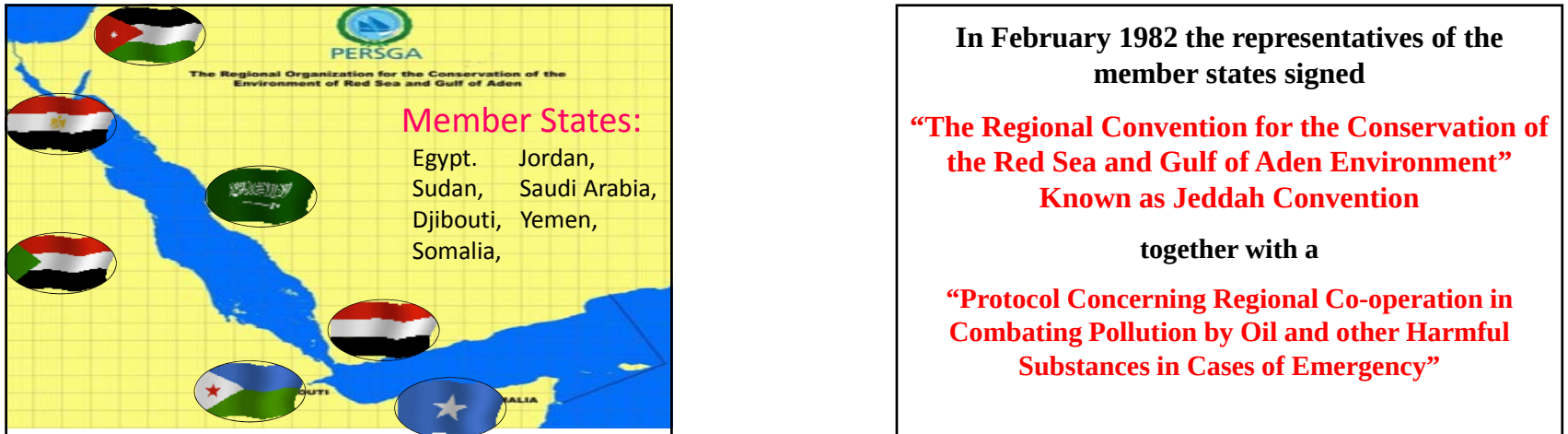
PERSGA

Who is PERSGA?

The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) is:

An intergovernmental Organization Dedicated to the Conservation of the Costal and Marine Environment in the Region of the
Red Sea and Gulf of Aden

Ministers of Environment of the Member States are sitting on the Board of Directors



In February 1982 the representatives of the member states signed

"The Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment" Known as Jeddah Convention

together with a

"Protocol Concerning Regional Co-operation in Combating Pollution by Oil and other Harmful Substances in Cases of Emergency"

PERSGA Headquarter

- The main focus of the Convention concerns the prevention, reduction and fight against pollution.
- It also includes an article directing the contracting parties to establish a Regional Organization, headquartered in Jeddah, to implement the convention
- In September 1995 PERSGA was established

PERSGA Established in May 2006 Hurghada/Egypt

Emergency Mutual Aid in the Red Sea and Gulf of Aden "EMARSGA"

PERSGA Mission

- Conservation of Coastal and marine environment and control of various pollution sources
- Sustainable use of living and none living coastal and marine resources
- Enhance Regional Capabilities in marine emergency planning and response
- Facilitate the implementation of conventions and protocols relevant to marine environment

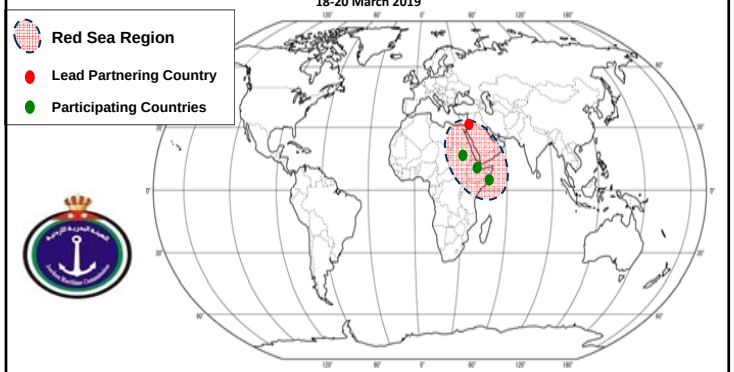
Basic Components in PERSGA Technical Program
Capacity Building and Training
Coastal and Marine Living Resources
Biodiversity and Protected Areas
Scientific Research and Monitoring
Marine Pollution Control and Mutual Aid During Emergency
Pollution from Land-Based Activities
Projects Management and External Financial Support
GIS, Data and Information Management
Environmental Education and Outreach
Climate Change Adaptation Strategy
On-ground Projects
Conventions and Protocols

The Major International Conventions which PERSGA member states have Ratified in addition to the Jeddah Convention are:

- The United Nations Convention for the Laws of the Sea (UNCLOS)
- MARPOL
- SOLAS Convention 74
- OPRC Convention 90
- The Ballast water Management Convention 2004

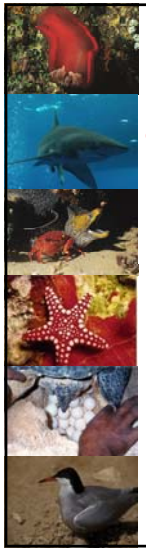
1st GEF-UNDP-IMO GloFouling Global Project Task Force (GPTF-1)

London, UK
18-20 March 2019



Why The Red Sea Region?

* Critical and Unique Location



* A semi-enclosed Sea with unique Geological, Hydrological and Ecological Features

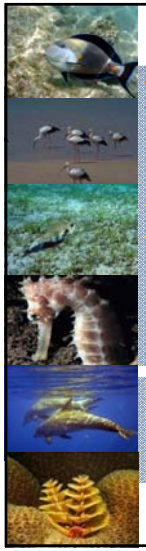
* It Embraces 3 Highly sensitive Habitats:
  - Coral Reefs
  - Mangroves
  - Sea Grass Beds

* High Biodiversity

* High % of Endemic Species (>30%)

* Healthy Costal Resources

* Highly Vulnerable to Pollution and Invasive Species



Regional Challenges

High Traffic: The Red Sea and Gulf of Aden form part of the main East–West route carrying the International Maritime Trade after opening the Suez Canal in 1869

30% of the annual trade in crude oil is carried through

Thank You

شكراً

South Asian Seas Region
And its environmental Status

Dr. Sivaji Patra
Senior Programme Officer (Regional)
South Asian Seas Programme-SACEP

18th March, 2019
GloFouling Meeting- IMO, London,UK

South Asia Co-operative Environment Programme (SACEP)

✖**Established in 1982, SACEP is an inter-governmental organization of eight member states:**

Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka

✖**SACEP core programme and project activities, SACEP priority areas are:**
- **+Waste Management**
- **+Air quality**
- **+ Climate Change and Biodiversity**
- **+Sustainable consumption and production**
- +Marine Environment

SACEP and South Asian Seas Programme (SASP)

- The **South Asian Seas (SAS)** Programme is under the umbrella of South Asia Co-operative Environment (SACEP) and is designated for implementation of the implementation of the SASP.
- The South Asian Seas Action Plan was adopted at Meeting of Plenipotentiaries by the five maritime countries of South Asia, on March 24th 1995,New Delhi, India.

- **SASP** is one of the 18 Regional Seas Programmes of the United Nations Environment Programme (UNEP).

Strengths of SACEP - SAS region

- Well established marine and costal institutional arrangement in place at national and regional level;
- An intergovernmental platform comprising of Ministers of Environment of the member countries already existing;
- Action Plan for SASP already in implementation;
- Human resource and professionals available in the region;
- International Beach cleaning and World Ocean days observed regularly;

SACEP Action Plans for SAS region

South Asian Seas Action Plan's main components :

- environnemental assessment,
- environnemental management,
- environnemental legislation and institutional

Identified priority areas:

- ✓ integrated coastal zone management
- ✓ oil-spill contingency planning,
- ✓ human resource development and
- ✓ the environmental effects of land-based activities

PARTNERS

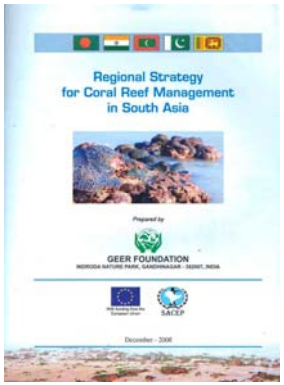
- IMO
- UNEP-GPA &Coral Reef Programme
- FAO
- Bay of Bengal Large Marine Ecosystem
- USDA
- Private Sector/Shipping Associations
- Other regional and sub-regional agencies

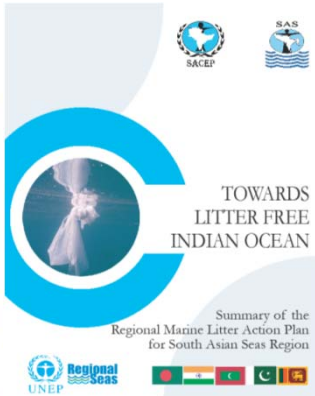
Importance of Regional cooperation for South Asian Seas

- ❑ The habitat and range of many species and few habitats are not confined to the waters of a single country.
- ❑ For certain shared populations standardization of conservation activities through co-operation and collaboration between countries is crucial if the population is to be viable in the long term (e.g Dugong).
- ❑ Collaboration can facilitate maximization of scarce resources for marine biodiversity research which is costly and difficult for individual developing countries to carry out on their own.

6

SAS Regional Steps towards restoring Environment





SAS Regional targets

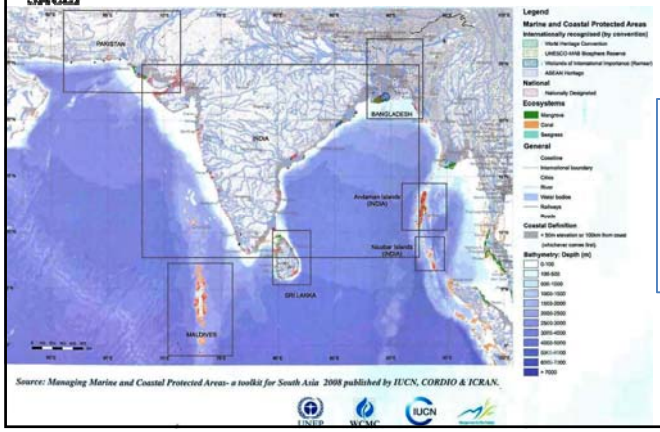
- **Ensuring Ecosystem Services and Wellbeing**
- **Prevention of Species Extinction**
- **Control of Alien Invasive Species**
- **Sustainable Fisheries and Aquaculture**
- **Prevention of Marine Pollution**

(Actions- Establishments and Regulations)

1. **Nitrogen Hub**
2. **London Protocol and OPRC-HNS Implementation**
3. **Regional Marine Litter Action Plan**
4. **Coastal and Marine Biodiversity Strategy**
5. **Nitrogen Resolution**

- **Effective and Equitable Governance of Marine and Coastal Protected Areas**

Coral Reef Map in SAS region



Source: Managing Marine and Coastal Protected Areas- a toolkit for South Asia 2008 published by IUCN, CORDIO & ICRAN.

Global Importance of Coastal and Marine Ecosystems in SAS:

- 6% of the global coral reefs
- Two of the world largest estuaries (the Ganges and the Indus)
- Six of the Global 200 Ecosystems (Sudarbans, Indus delta, Rann of Kutch Flooded Grasslands, Maldives, Chagos, Lakshadweep Atolls, Arabian sea and the Andaman sea)

Situation Analysis in SAS region

	Reef Area (km^2) [1]	No of hard coral species	No. of reef fish species	Reefs at risk (%)[1]	% of Reefs now dead[3]
Bangladesh	<50	52 (25 living)[2]	86[2]	100	50
India	5,790	262[3]	1,087[3]	61	25
Maldives	8,920	250[3]	1,200[3]	11	55
Pakistan	< 50	na	na	na	na
Sri Lanka	680	190[3]	350	86	35

Source : Spalding et al, 2001; Uddin, 2004; Rajasuriya et al, 2004

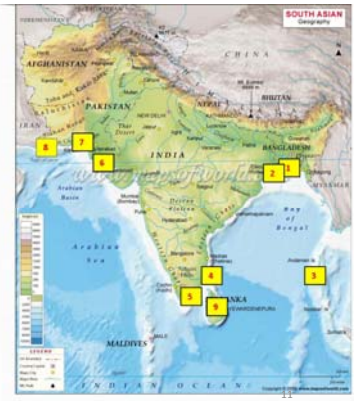
Globally Significant Coastal and Marine Ecosystems in SAS Region – Mangrove Forest

- **6.8% of the global mangrove forests** – Sundarbans (Bangladesh and India) form one of the world's largest contiguous mangrove forest, covering an area of 6,500 km^2

1 **Bangladesh** – Sundarbans
2 **India** - Sundarbans
3 **India** - Andaman and Nicobar Islands
4 **India** - Cauvery Delta
5 **India** - Gulf of Mannar
6 **India** - Gulf of Kachchh
7 **Pakistan** - Indus River Delta, Sindh
8 **Pakistan** – Balochistan coast
9 **Sri Lanka** - Gulf of Mannar and along the coastal lagoons and estuaries.

Mangroves are also present along coastal lagoons and estuaries on east and west coasts of India and Sri Lanka

Mangroves are scare in the Maldives.



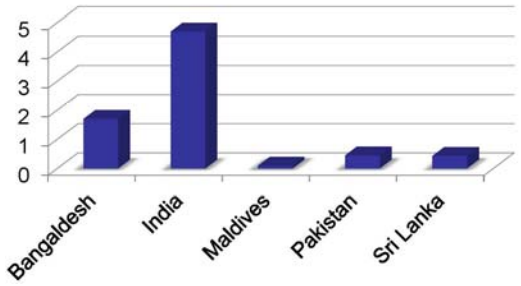
Globally Significant Coastal and Marine Ecosystems in SAS Region – Seagrass

- The largest seagrass meadows in SA is in the Gulf of Mannar and Palk Bay (India and Sri Lanka) and Andaman- Nicorbar areas

1 **Bangladesh** - Mainly along the eastern coast (scanty)
2 **India** - Andaman and Nicobar Islands
3 **India** - Gulf of Mannar & Palk Bay
4 **India** - Lakshadweep
5 **Maldives**
? **Pakistan** (Information is lacking)
6 **Sri Lanka** - Gulf of Mannar & Palk Bay

Fisheries Production in SAS region

Total Fisheries Production (Million tonnes)



Main catch:
- Indo-Pacific mackerels
- Hilsa shad
- Skipjack tuna
- "Drums or croakers"

Source: APFIC, 2012

13

Marine Species Diversity-

Large numbers and many are yet unknown

Plantae	Number of Species
Diatoms	200+
Dinoflagellates	90+
Macroalgae	844
Seagrasses	14
Mangroves	39
Protista	
Protozoa	532+
Foraminifera	500+
Tintinnids	32+
Animalia	
Porifera	486+
Cnidaria	642+
Ctenophora	12+
Platyhelminthia	350
Annelida	338
Chaetognatha	30+
Sipuncula	35
Echiura	33
Gastrotricha	75
Kinorhyncha	10
Tardigrada	10+
Crustacea	3498
Mollusca	3370
Bryozoa	200+
Echinodermata	765
Hemichordata	12
Protochordata	119+
Pisces	2546
Reptilia	35
Mammalia	25
Total number of species	**15,042+**

Table 1.5 Marine species diversity in I

No systematic assessment of the Coastal and Marine Biodiversity of the Northern Indian Ocean has been carried out so far and there is considerable data and information gap both in spatial and temporal coverage

Source: NIOT (2014)
http://www.un.org/depts/los/global_reporting/Chennai_2013/National%20Report.pdf

Source: 5th National Report of India

14

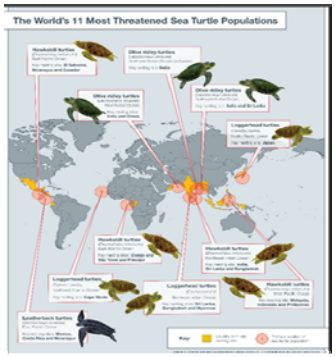
Marine Mammals: Cetaceans and Dugongs

- Marine mammals are a poorly studied group of animals in the region and most of the works are limited to the reports of strandings along the coasts.
- Around 30 species, accounting for two thirds of the recorded cetaceans worldwide are found from the region.
- The region provides important habitats for most baleen whales and dolphins..
- In particular, SAS region is critical to the recovery of the endangered north Indian Ocean blue whales (*Balaenoptera musculus*), as there is evidence that a migratory as well as a resident populations occurs in Sri Lanka, India and Maldives

Sei Whale	*Balaenoptera borealis*	EN	CITES App. 1/CMS App. 1
Blue Whale	*Balaenoptera musculus*	EN	CITES App. 1/ CMS App.1
Fin Whale	*Balaenoptera physalus*	EN	CITES App. 1/CMS App. 1
Sperm whale	*Physeter macrocephalus*	VU	CMS App. 1
Dugong	*Dugong dugon*	VU	CITES App. 1
Hump whale	*Megaptera novaeangliae*	VU	CITES App. 1/CMS App. 1
Ganges River Dolphin	*Platanista gangetica ssp. Gangetica*	EN	CITES A. 1/CMS A. 11
Indus Blind Dolphin	*Platanista gangetica ssp. Minr*	EN	CITES App. 1
Irrawaddy Dolphin	*Orcaella brevirostris*	VU	CITES App. 1
Indo-pacific Humpbacked Dolphin	*Sousa chinensis*	NT	CITES App. 1
Finless Porpoise	*Neophocaena phocaenoides ssp.*	EN	CITES App. 1

15

Marine Turtles



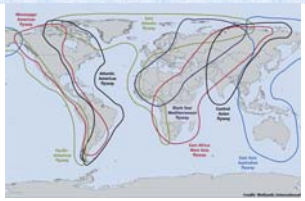
http://www.iucn.org/78331/Experts-Identify-Worlds-Most-Threatened-Sea-Turtle-Populations

- Out of the seven species of marine turtles recorded worldwide, five are found from the ocean waters of South Asia and four have significant nesting grounds within the regions beaches
- The single largest breeding ground of Olive ridley is found in Orissa on the east coast of India, where mass breeding occurs in three nesting beaches; Gahirmatha, Deviriver mouth and Rushikulya
- There are also important foraging grounds for Green turtles in the Gulf of Mannar, Lakshadweep Islands, and Andaman and Nicobar Islands.
- A study conducted in 2011 by sea turtle experts from around the globe have discovered that almost half (45%) of the world's threatened sea turtle populations are found in the northern Indian Ocean.
- specifically threatened populations of both Loggerhead Turtles (*Caretta caretta)* and Olive Ridley Turtles (*Lepidochelys olivacea*) are found in the northern Indian Ocean in waters and on nesting beaches within Exclusive Economic Zones (EEZs) of countries such as India, Sri Lanka and Bangladesh.

16

Coastal waders and Sea Birds

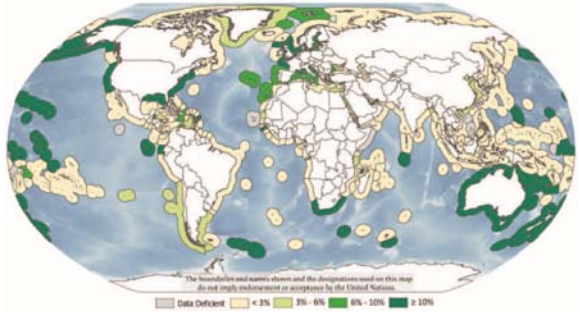
- The coastal belt of South Asia forms an important feeding, nesting and wintering grounds for large number of waders.
- According to the Bird life International Red Data Book, the following three coastal habitats occupies some of the largest wader concentrations in the region:
  - Indus delta and Run of Kutch
  - South India and Sri Lanka (Pulicat and Chilika Lakes and Point Calimere of India; Bundala and Yala National Parks of Sri Lanka)
  - Bay of Bengal coast (Sundarbans)



17

Marine and Coastal Protected Areas (MCPAs)

Number of MCPAs has increased over the years and provide protection especially for nearshore habitats such as coral reefs, mangroves, estuaries, lagoons and beaches. Many are part of terrestrial PAs Protection of the open oceans are comparatively very low.



Source: UNEP-WCMC and IUCN (2016). Protected Planet Report 2016. UNEP-WCMC and IUCN: Cambridge UK and Gland, Switzerland.

18

Threats to SAS Region Environment

- Dumping of untreated waste including sewage, effluents and other waste types into water bodies and marine environment;
- Emerging human settlements and urban centers along the coastal belt;
- Loss of biodiversity;
- Damage to blue/green resources;
- Loss of blue/green resource trade;
- Marine Food contamination;

(Bio Fouling)

19

Threats to Marine and Coastal Biodiversity……

Spread of Alien Invasive

Main transmission pathways

a. Ship Ballast Water
b. Aquaculture
c. Aquarium and ornamental trade
d. Land invasive that affect coastal and near shore ecosystems

20

Oil and chemical spills

South Asia lies close to the main shipping route from the Middle East to the Far East – about 25% of total world movement of crude oil by sea pass through this area.

General shipping traffic to and from the region is dominated by trade routes linking Karachi, Mumbai, and Colombo with East African and South African Ports.

Maritime oil spill risks arise from:

a. non-tanker shipping
b. carriage of refined products
c. offshore exploration and production operations
d. Transfer of oil cargoes at sea
e. Routine shipping operations at ports – bunkering
f. Ship recycling
g. Illegal discharges from the large volume of shipping within the region

Signing of Regional Oil Spill MoU

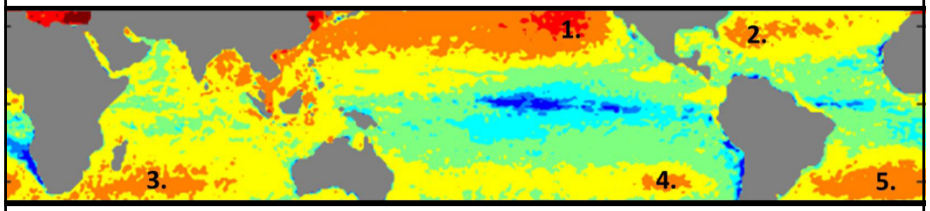
Source: *https://www.reddit.com/r/MapPorn/comments/4y0nux/major_shipping_routes_across_the_world_1842_x_955/*

All member countries have already signed the MoU.

1. **Maldives – 13th October 2009**
2. **Pakistan – 22nd July 2010**
3. **Bangladesh –27th September 2010**
4. **Sri Lanka- 17th December 2014**
5. **India – 12th May 2018**

MOU and the Regional Plan will enter into force 3 months after the Secretariat, i.e. the Secretariat of the South Asian Seas Programme (SASP), has been notified by all five countries of their acceptance of the MoU in accordance with their national legislations

Marine Plastic SAS region



Source : Dr. Michael Sweet, UK

SAS Vision Statement for 2020 and beyond

South Asian Seas countries share healthy marine and coastal ecosystems rich in biodiversity that will continue to provide ecosystem services for the wellbeing of the people, and the social and economic development of the region ”

This strategy is underpinned by the following guiding principles:

- The use of the Ecosystem Approach
- Government commitment at every level
- Maintaining Healthy and Resilient Ecosystems
- Recognition of the economic, social and cultural values of marine and coastal ecosystems
- Adaptive management and learning by doing
- Precautionary approach and risk analysis
- Participatory and Inclusive
- Commitment to Human Rights and Gender Equality
- Building and Strengthening Partnerships (not reinventing the wheel but collaborate and cooperate with existing initiatives and programmes)

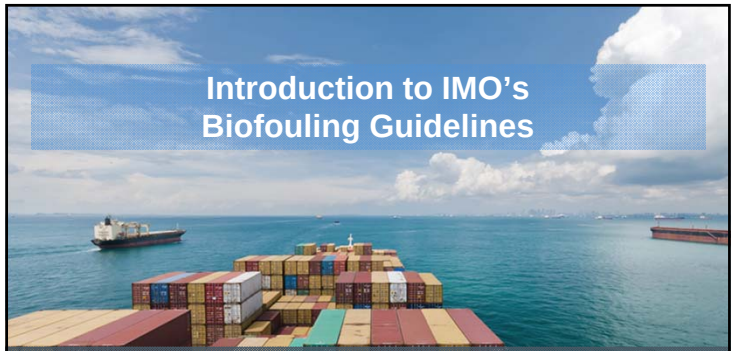
SDG target related to Marine Environment Protections

SDG 6 Clean water and sanitation
Target 6.3: 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.
SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable.
Target 11.6: focus on municipal and other waste management By 2030, reduce the adverse per capita environmental impact of cities, by paying special attention to air quality and municipal and other waste management.
SDG 12 Responsible consumption and production : Ensure sustainable consumption and production patterns.
Target 12.4: achieve the environmentally sound management of chemicals and all wastes throughout their life cycle
Target 12.5: focus on waste generation reduction through prevention, reduction, recycling and reuse By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
SDG 14 Life below water : Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
Target 14.1: focus on waste generation reduction By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
Target 14.2: sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
14.c : Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources

We Love our nature
and
We need to do crucial attempts for revitalizations/ Love the nature again:

- **Personal**
- **Professional**
- **Resourceful**

Thank you for Listening!



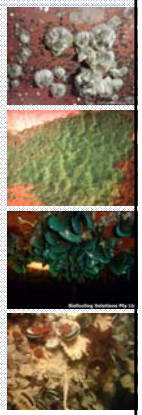
Introduction to IMO's Biofouling Guidelines

Dr Theofanis Karayannis
Head, Marine Biosafety | Marine Environment Division | International Maritime Organization (IMO)

GloFouling Partnerships Project | Global Project Task Force Meeting
London | UK | 18-20 March 2019

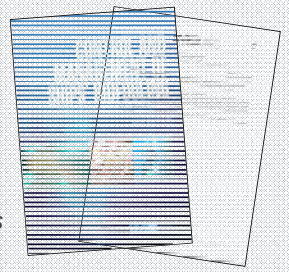
The development of the Biofouling Guidelines

- July 2007: MEPC 56 agreed to include ships' biofouling as a new high priority item on the work programme of the BLG Sub-Committee.
- The proposal noted that there were no international measures in place addressing the risks of the introduction of invasive aquatic species through biofouling of ships.
- July 2011: MEPC 62 adopted the Biofouling Guidelines through resolution MEPC.207(62).



The development of the Biofouling Guidelines

- *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (2011 Biofouling Guidelines).
- *Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft* (MEPC.1/Circ.792).

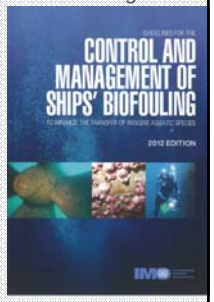


Goals of the Guidelines: provide recommendations to reduce biofouling risks for all ship types

- To minimize the transfer of invasive aquatic species, a ship should implement biofouling management practices, including the use of anti-fouling systems and other operational management practices to reduce the development of biofouling.
- Audience:
  - States
  - ship masters
  - operators and owners
  - ship designers
  - ship builders
  - ship repair
  - dry-docking and recycling facilities
  - ship cleaning and maintenance operators
  - classification societies
  - anti-fouling paint manufacturers and suppliers
  - any other interested parties

The Guidelines – key contents

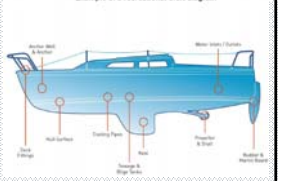
- **Biofouling Management Plan and Record Book:** specific to every ship, with biofouling management details & logs
- **Anti-fouling system installation and maintenance:** choosing a suitable AFS for ship type/speed/operating profile
- **In-water inspection, cleaning & maintenance:** determine AFS/fouling status, remove fouling
- **Design and construction:** reduce niche areas
- **Dissemination of information:** States should inform IMO & ships of relevant regulations
- **Training and education:** Crews should be aware of biofouling management and procedures
- **Future work/research:** Encourage research into fouling prevention and cleaning



Guidance for recreational craft

- Recreational craft are difficult to regulate
- Marinas are not inspected
- Recreational craft visit areas not accessed by large ships and may remain stationary
- Trailered craft can move also to inland waters
- Large numbers of recreational craft and marinas

Example of a recreational craft diagram

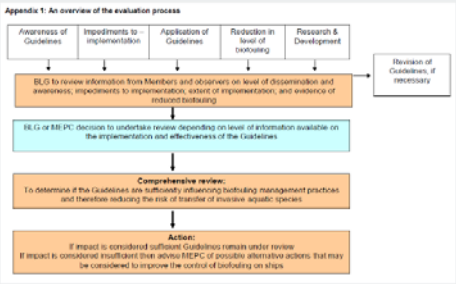


Guidance for recreational craft

- Background
- What influences the amount of biofouling
- How to minimize biofouling
- Anti-fouling systems
- Niche areas
- Hull cleaning, in-water cleaning
- Record keeping
- Trailered craft

Evaluation and review of the Guidelines

- MEPC.1/Circ.811 provides guidance on evaluation



- MEPC 72 agreed to a new output to review the Guidelines – to be carried out by PPR 7 & 8 in 2020-2021

Evaluation and review of the Guidelines

Performance Measures:

- Awareness and dissemination of the Guidelines
- Impediments to implementation; are facilities and tools available?
- Are the Guidelines used?
- Change in level of biofouling?
- Research and development

- Questionnaire as guidance to collect information
- Results may help MEPC or PPR to determine if actions, such as amending the Guidelines, are required

International Maritime Organization

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www.imo.org

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MARINE ENVIRONMENT DIVISION

United Nations Educational, Scientific and Cultural Organization
Intergovernmental Oceanographic Commission

Organisation des Nations Unies pour l'éducation la science et la culture
Commission océanographique intergouvernementale

Organización de las Naciones Unidas para la Educación la Ciencia y la Cultura
Comisión Oceanográfica Intergubernamental

Организация Объединенных Наций по вопросам образования науки и культуры
Межправительственная океанографическая комиссия

IOC UNESCO:

Biofouling management in non-shipping vectors of invasive aquatic species

Henrik Oksfeldt Enevoldsen

Pia Haecky

GEF-UNDP-IMO GloFouling Partnerships Project

The IOC UNESCO contribution:

- Non-Shipping pathways
- IOC mandate complementary to that of the IMO

Project outputs in relation to Non-Shipping pathways:

- Sustained national and regional capacity in place for reducing the introduction of IAS through biofouling
- Best practice guidance documents and tools developed
- Awareness-raising campaign designed and implemented
- Public-private partnerships developed to incentivise the development of cost-effective management and technological solutions for managing biofouling IAS
- Increased investment in biofouling management innovation, solutions and technology
- Improved information base available to countries to develop appropriate national strategies and advocacy
- Enhanced cooperation between stakeholders to ensure holistic and harmonised approach to biofouling management

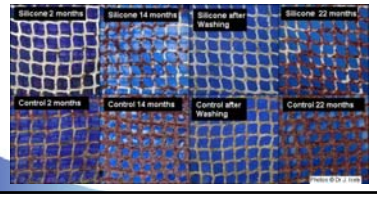
Project activities in relation to Non-Shipping pathways through:

- New GESAMP WG

GESAMP
Group of Experts on the Scientific Aspects of Marine Environmental Protection

- Private sector partnership and engagement through World Ocean Council

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility



United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation la science et la culture
Organización de las Naciones Unidas para la Educación la Ciencia y la Cultura
Организация Объединенных Наций по вопросам образования науки и культуры

Intergovernmental Oceanographic Commission
Commission océanographique intergouvernementale
Comisión Oceanográfica Intergubernamental
Межправительственная океанографическая комиссия

The Intergovernmental Oceanographic Commission of UNESCO:

The marine science side of the UN

Henrik Enevoldsen
Head of Centre / IOC Ocean Science Section

19 March 2019

IOC: Building knowledge and capacity for sustainable ocean management

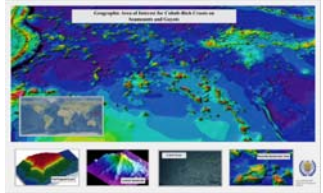
- Only intergovernmental organization mandated to promote marine science in all ocean basins
- Science, services, observations, data exchange and capacity development
- Foster sustainable development of the marine environment
- Extensive regional and global expert networks

IOC figures

- IOC has 148 Member States
- Our governing bodies are the IOC General Assembly and the Executive Council
- IOC staff is made by 62 people (42 at the headquarters and 20 in the field)

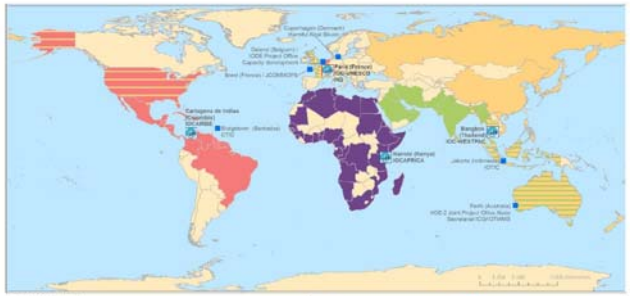
IOC within United Nations

- Focal point for ocean observations, science, services and data exchange
- 'Competent international organization' for marine science (United Nations Convention on the Law of the Sea; UNCLOS)



Intergovernmental Oceanographic Commission of UNESCO

IOC Sub-commissions, Programme and Project Offices

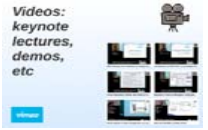


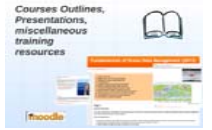
OceanTeacher Learning platform

- **OceanTeacher Global Academy (OTGA) (www.oceanteacher.org)**
- **(online) Learning Platform, supports training activities for several IOC Programmes**

Web-based training system that supports:

- **Classroom training (face-to-face)**
- **Blended training, online tutoring**
- **online self-learning**
- **Contents freely and openly available (but see Copyright)**





17 objectives to transform our world: Agenda 2030

Thank you!
Merci beaucoup!
¡Muchas gracias!
Спасибо
شُكْرًا
谢谢

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

Sustainable Development Goals

http://ioc.unesco.org

BIOFOULING MANAGEMENT

BIMCO
Ashok Srinivasan, Manager, Maritime Technology and Regulation

Who we are and what we do..

BIMCO is the world's largest international shipping association, with around 2,300 members in more than 120 countries. Our global membership includes shipowners, operators, managers, brokers and agents

- Contracts and Clauses (from shipbuilding to recycling)
- Information on website (Cargo databases, KPI system, Regulatory and technical content)
- Training – In-depth and high level training on commercial matters
- Support and advice
- Martech – Technical and regulatory affairs

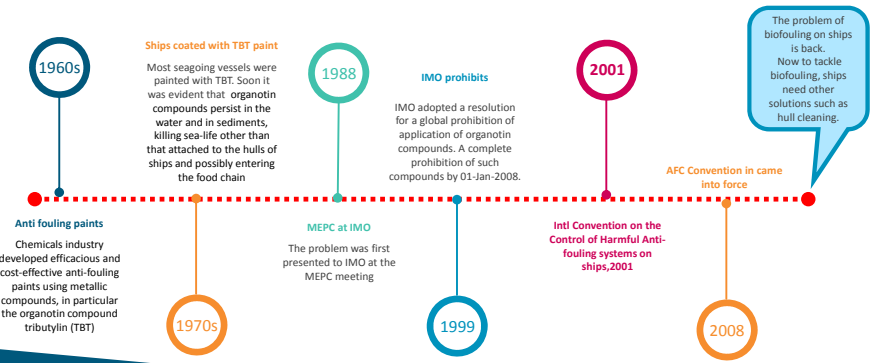
Our vision

To be the chosen partner trusted to provide leadership to the global shipping industry.

Our mission

To be at the forefront of global developments in shipping, providing expert knowledge and practical advice to safeguard and add value to our members' businesses.

History of biofouling management



The biofouling problem

Source: https://gcaptain.com/hull-fouling-control-innovation/

Source: https://www.metalcoatings.com/biofouling_biofilm/

Solution

Cleaning can be done either at dry-docking or in-water.

https://www.navsea.navy.mil/

Coastal state and Port getting stricter

- Ports are getting stricter about allowing in-water cleaning in waters under their jurisdiction.

<u>This is because of</u>

- Increased release of biofouling
- Release of anti-fouling paint coatings
- associated risks of accumulation of heavy metals

In-water cleaning standard

1. Ports are increasingly prohibiting in-water cleaning
2. In-water cleaning vs Dry dock costs / resource
3. Different regional /national initiatives
4. Technology vs Regulation

The Standard should ensure

1. the result of the cleaning is in accordance with a set of specifications
2. the environmental impact of the process is controlled
3. coating damage is controlled; and
4. the cleaning process is planned, safe and effective.

The Standard aims to

1. Describe the conduct of inspections
2. Establish cleaning results
3. Determine the impact on coating
4. Control the biofouling and other debris
5. Provide an approval process
6. And more..
7. Will not be technology specific or process specific

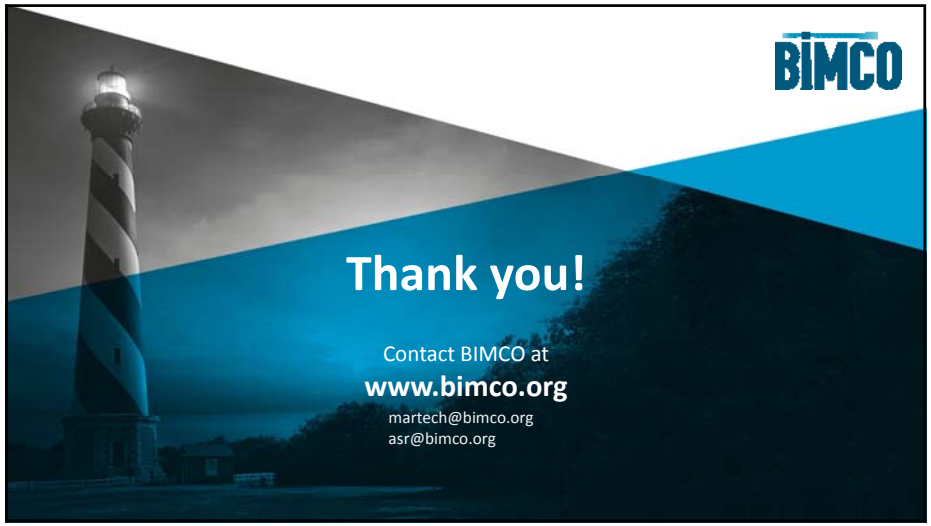
Industry partners

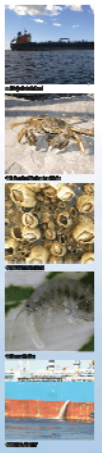
- We are working with shipowners, hull cleaners, ports and paint manufacturers…

Fleet Cleaner
DG-DIVING GROUP
C-Leanship A/S
HullWiper
AkzoNobel
PPG
HEMPEL
CMA CGM
Hapag-Lloyd
International Chamber of Shipping
PORTLAND PORT
Port of Rotterdam

The challenges

- Cleaning method – efficient and safe
- Niche areas to be cleaned as well as the hull
  - Ports are getting stricter on this – transfer of IAS (Invasive Aquatic Species)


BIMCO
Thank you!
Contact BIMCO at
www.bimco.org
martech@bimco.org
asr@bimco.org



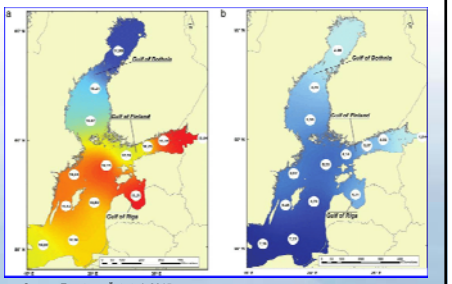
Completing management options in the Baltic Sea Region to reduce risk of invasive species introduction by shipping

GloFouling Inception Workshop
London, 18-20 March 2019

Dr. Annika Krutwa

The Baltic Sea

- World's largest inland brackish sea
- Special hydrographical and climate conditions
- Sensitive and unique ecosystem
- Increasing maritime traffic
- HELCOM: to restore the 'Good Ecological Status'

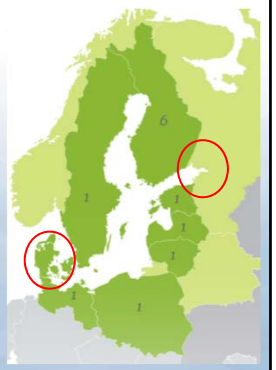


Source: Engström-Öst et al. 2015

COMPLETE project

- 12 partners
- LP Kotka Maritime Research Association
- 23 associated organizations
- 10/2017 – 09/2020

- Harmonization of monitoring for NIS/HAOPs (EU-MSFD/BWMC synergies)
- Regionally harmonized implementation and enforcement of IMO BWMC
- Roadmap proposal for a regional biofouling management strategy
- Stakeholder involvement and participation



Biofouling in the Baltic - Status
No knowledge - No harmonization

Current situation

- Regulations concerning biofouling vary from country to country
- IMO Biofouling guidelines exist but there is no idea how/if they are applied/applicable
- Missing information on:
  - legal aspects concerning biofouling and hull cleaning
  - antifouling practices and procedures
  - common cleaning procedures and facilities
  - cost-efficiency analysis
  - quantities of biofouling waste and its handling procedures
  - the role of leisure boats and their trailers in introductions and spread of NIS

Biofouling in the Baltic - Status

No knowledge - No harmonization

Providing evidence

- Collect local information for all BSR countries/whole BSR
- Collect worldwide information and assess applicability in BSR
- Assess benefits
- Evidence-based harmonization of biofouling management in BSR

To provide recommendations for amendment and further development at IMO based on the experiences from the BSR

WP2

Guidelines for surveillance and monitoring of non-indigenous species

Developing molecular methods for NIS detection

→ Selection of first candidate species for the detection by eDNA methods

Biofouling assessment protocol for leisure boats

→ Protocol has been developed and tested, sampling in 2019

Assessment of biofouling potential and areas of risk

→ Data for the calculation of wetted surface area (WSA) of maritime traffic collected
→ Most vulnerable areas for species introductions identified

Integrated monitoring of NIS

→ Monitoring manual for the BSR will be drafted
→ Includes all applied monitoring methods including new methods, developed during COMPLETE

WP4

Evidence-based options for biofouling management in the Baltic Sea Region

Biofouling regulations, cleaning procedures and facilities

→ Information gathered on: National legislation (cleaning and anti-fouling), facilities and waste management. Application and experiences with IMO biofouling guidelines and guidance

Best practices for biofouling management within and outside BSR

→ Good practices and best available technology (antifouling, cleaning, biofouling management)
→ Assessment of applicability in the BSR

Up-to-date:

- Questionnaire biofouling of leisure boats in the BSR: https://linmantis60.bsh.de/limesurvey/index.php/835883?lang=en
- Questionnaire biofouling of commercial shipping in the BSR: to be published soon
- Workshop "National regulation and approval processes concerning in-water cleaning of boats and ships in the Baltic Sea Region - current procedures and future needs", 27-28 May 2019, Hamburg, Germany

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WP4

Evidence-based options for biofouling management in the Baltic Sea Region

Guidance on antifouling systems (AFS) performance /cost - efficiency

→ Growth of biofouling on different AFS and efficiency of these systems, test of the efficiency of different copper concentrations in AF, hull cleaning effects

Up-to-date:

- Antifouling paint efficiency tested in different salinities, field experiments conducted 2018 and in preparation for 2019
- Hull cleaning force and frequency optimization for different grade of biofouling, field tests ongoing

Benefits of biofouling management on ship speed, fuel consumption and emissions

→ Experiments on the effect of biofouling management on ship emissions and fuel consumption

Up-to-date:

- Performance data for RoRo ship with operation and hull cleaning in the Baltic Sea collected

COMPLETE

Interreg Baltic Sea Region

WP5

Databases and user-friendly information support

Information system on non-indigenous species and harmful aquatic organisms and pathogens

→ Further development of the AquaNIS information system, which contains the most up-to-date and free-access information/data on NIS

Decision support tool for selection of optimal anti-fouling system and cleaning options

→ First version of a decision support tool for evaluating biofouling risk and its cost-effective management will be developed.
→ Tool will integrate knowledge related to performance and cost-efficiency of different anti-fouling strategies

Interactive user-friendly map on hull cleaning services

→ Presents the hull cleaning services and applied technologies in the Baltic Sea Region

COMPLETE

Interreg Baltic Sea Region

WP6

Stakeholder involvement and strategy development processes

Co-operation with stakeholders

→ Stakeholder mapping
→ Once completed, active communication and involvement of all project target groups during the project

Roadmap proposal for a harmonized biofouling management strategy in the Baltic Sea Region

→ Tailored recommendations from the project for the Baltic Sea Region, reviewed and supplemented by the target groups

→ Proposal for specific actions needed in order to reach harmonized biofouling management of maritime and leisure traffic

→ Evaluation which stakeholders have to be involved in developing this regional management strategy

COMPLETE

Interreg Baltic Sea Region

MERI HELCOM XAMK CHALMERS LATVIJAS HIDROEKOLOĢIJAS INSTITŪTS SYKE

http://balticcomplete.com/

BSH BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

Federal Maritime and Hydrographic Agency (BSH)

The central maritime administration in Germany

Facts & figures


BSH in Hamburg


BSH in Rostock


BSH-Laboratory in Sülldorf

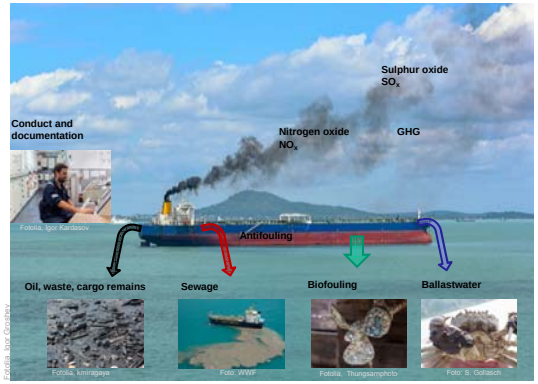
Bundling of different maritime tasks including research in **one** agency!

- Budget: approx.. € 102.000.000
- Employees: 950
- largest marine specialist library in Germany
- Printing house in Rostock (e.g. nautical charts)
- 5 vessels for hydrographic surveying, monitoring and wreck search

On duty for shipping and sea

- General services to shipping (e.g. flag authority)
- Nautical and hydrographic information services
- Navigational safety and security of maritime shipping
- Environmental protection in maritime transport
- Marine data and services (warning systems, research and monitoring of the sea for climate and environment)
- Implementation of international conventions
- Maritime spatial planning (approval of offshore facilities)
- Research and development (departmental research institute of BMVI)

Environmental Protection in Maritime Transport



Baltic Marine Environment Protection Commission

Helsinki Commission

- Governing body of the Helsinki Convention
- intergovernmental
- policy-maker
- GloFouling strategic partner

HELCOM

Examples of HELCOM activities related to IAS

- Baltic Sea Action Plan objective: **No introductions of alien species from ships**
- Roadmap for harmonized ratification and implementation of the BWMC
- Joint HELCOM/OSPAR Task Group on BWMC Exemptions (HELCOM/OSPAR TG BALLAST)
  - →Joint Harmonized Procedure and Online decision support tool http://jointbwmexemptions.org
- Biofouling discussions ongoing
- AFS recommendations in place and revision under negotiation
- Publications, monitoring protocols etc
- COMPLETE project partner

HELCOM

Centre for Marine Biofouling & Corrosion

Commercial division of the Plymouth Marine Laboratory
Strategic partner to GloFouling.

Independent test house and R&D centre
for biofouling and corrosion prevention technology.

Serving:
Oil and Gas, Shipping, Aquaculture,
Renewable Energy & Defense.

www.imarest.org

CMBC – Lab facilities

Controlled laboratory conditions

Proof of concept

Rapid throughput

Early stage TRLs

www.imarest.org

CMBC – Tidal Marina

Exclusive test site

Safe & secure

Bespoke test rigs

Middle stage TRLs

Aggressive fouling!

www.imarest.org

CMBC – Offshore Platforms

Off-shore test beds

Research Vessel

Off-shore buoys

Full environmental data capture

Easy access to extreme marine environments

IMarEST & Biofouling

- 22,000 members covering E, S & T spectrum
- Non-Governmental Organization in Special Consultative Status with the IMO, observer status at IOC and Special Consultative status at the Economic & Social Council of the United Nations…. & others
- Expertise in broad invasive species science and regulation
- Strategic partner to GloBallast & GloMEEP & GloFouling
- Biofouling Management Special Interest Group

www.imarest.org

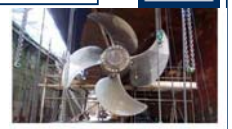
Priorities in Biofouling

- Identification and assessment of evidence on the impacts of marine biofouling species
- Development of global index of current and pending regulation governing in-water hull cleaning
- Calculation of the global environmental impact of changing biocide potency in AF coatings

www.imarest.org

Our thoughts….

- Marine biofouling on hulls differs to alien invasive species in ballast water. Niche areas are different again.
- Impacts from species associated with biofouling are also different from ballast water.
- Healthy and diverse marine ecosystems have evolved to show strong biotic resistance to alien species.



www.imarest.org

Our thoughts

- Disturbed / artificial environments with low native diversity (artificial structures around ports and harbours) are at most risk of colonisation by opportunistic aliens.
- Good biofouling management is of great benefit to the environment by reduction of GHG emissions from shipping through reduced fuel consumption.
- Glofouling will: identify and measure impacts, encourage the uptake of effective antifouling systems and cleaning regimes.

Questions?

Contact: thva@pml.ac.uk

World Sailing

GloFouling
World Sailing - strategic partner overview

Dan Reading – Head of Sustainability

1

Role of World Sailing

World Sailing

- World Sailing is the world governing body for the sport of sailing, recognised by the IOC
- World Sailing is responsible for the promotion of the sport internationally; managing sailing at the Olympic Games; developing the Racing Rules of Sailing and regulations for all sailing competitions; the training of judges, umpires and other administrators
- The development of the sport around the world; and representing the sailors in all matters concerning the sport
- The principle members of World Sailing are the 146 'Member National Authorities' (MNAs) and the 115 'Class Associations'. Each Class Association are entitled to hold a World Championships

2

2

Core remit of World Sailing

World Sailing

3

70 million participants, 270 million fans

World Sailing

Our members, through recognised training, teach the majority of the 1 million people who learn to sail each year.

4

4

5


World Sailing
Sustainability Agenda 2030
A bold ambition for sailing's contribution to global sustainability
sport / nature / technology
World Sailing
6

6


Contribution to UN SDG's
Adopted by all UN member states
Presentation title

7


Existing work
World Sailing
Check, Clean, Dry
RAPID
STOP THE SPREAD
CHECK
CLEAN
DRY
WATCH OUT FOR AQUATIC INVADERS
The Green Blue
Limited to national campaigns
8

8

Existing work

IMO INTERNATIONAL MARITIME ORGANIZATION

E

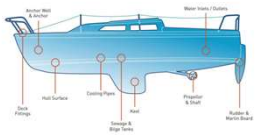
World Sailing

4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

MEPC.1/Circ.792
12 November 2012

GUIDANCE FOR MINIMIZING THE TRANSFER OF INVASIVE AQUATIC SPECIES AS BIOFOULING (HULL FOULING) FOR RECREATIONAL CRAFT

Example of a recreational craft diagram



9

9

GloFouling success for World Sailing:

International biosecurity advice for recreational sailing, events and sailing clubs

10

Thank you

Dan.reading@sailing.org

FACEBOOK	YOUTUBE	TWITTER	INSTAGRAM	SAILING.ORG
World Sailing	World Sailing TV	@worldsailing	worldsailingofficial	WWW

11

11

IPPIC GloFouling Presentation

Raleigh Davis
International Maritime Organization

IPPIC Background

...and others around the world!

IPPIC International Paint & Printing Ink Council

Active at the IMO since 2007

Anti-Fouling Coatings Committee (AFCC)

Paint manufacturers + Active Ingredient Suppliers

Antifouling Coating Basics

Biocidal

Non-Biocidal

Why are Anti-fouling Coatings **Important**?

How are Anti-Fouling Coatings Regulated?

Why are **EFFECTIVE** Anti-fouling Coatings Important for GloFouling?

- To prevent translocation of invasive species
- To reduce greenhouse gas emissions
- To maintain safe ship operations

The AFS Convention has the potential to impact on the translocation of invasive species

AntiFouling Coatings Technologies and Developments

Deep Sea Antifoulings

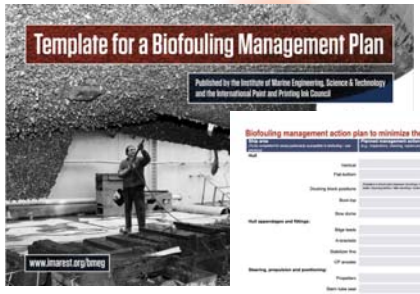
Coastal Antifoulings

AntiFouling Coatings Technologies and Developments, Cntd

Fouling release coatings

New Biocides

Biofouling Management Template



Developed in conjunction with IMaREST, IPPIC's Template for a Biofouling Management plan captures all of the relevant information as required by the IMO for a biofouling management plan, focusing on coatings

IPPIC's role as a Strategic Partner

What can IPPIC Provide GloFouling?

- Comprehensive understanding of prevention of fouling on immersed areas of ships
- Collective and state of the art expertise in paint technologies from AntiFouling Coatings Manufacturers and Active Ingredient Suppliers.
- Access to innovative and emerging technologies

What Opportunities does GloFouling Present IPPIC Members?

- An environment **to explain and promote the benefits** of AntiFouling coatings as an effective way to combat invasive species
- An environment to foster "outside the box" thinking as it pertains to coatings solutions

Questions?

Raleigh Davis
IPPIC Secretariat
rdavis@paint.org

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EMEC THE EUROPEAN MARINE ENERGY CENTRE LTD

BioFREE

BioFREE: biofouling and the offshore renewable energy sector

Dr. Andrew Want

19 March 2019 – IMO, London

NERC SCIENCE OF THE ENVIRONMENT

IMO INTERNATIONAL MARITIME ORGANIZATION

With partners: Dr. Joanne Porter, Dr. Robert Harris, and Caitlin Long

HERIOT WATT UNIVERSITY ORKNEY

International Centre for Island Technology

- In Orkney Since 1989
- Multidisciplinary Team
  - Engineering
  - Ecology
  - Economics
- School of Environment Geoscience Infrastructure and Society (EGIS)

Our International Impact

Offshore Renewable Energy

EMEC
THE EUROPEAN MARINE ENERGY CENTRE LTD

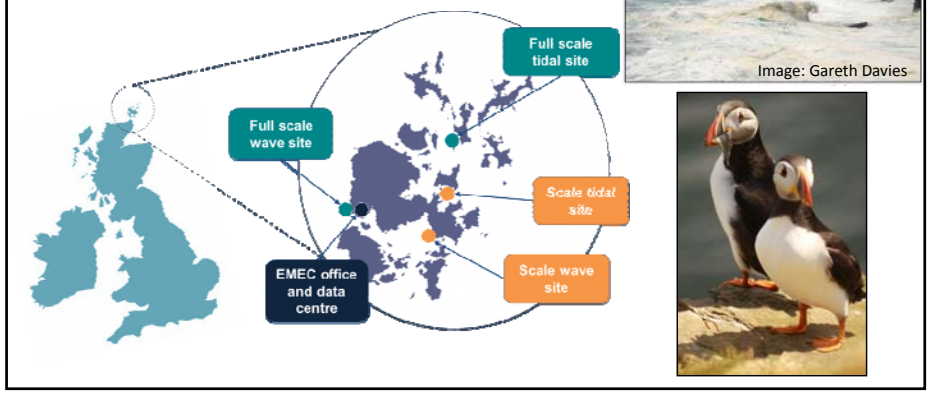
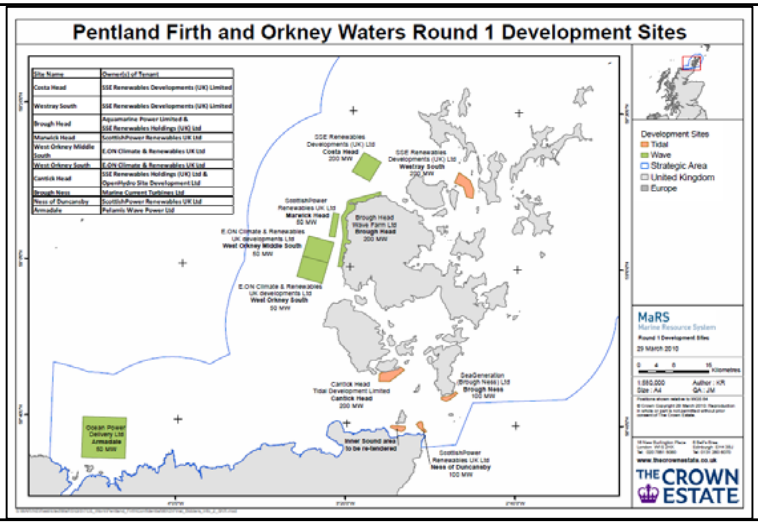
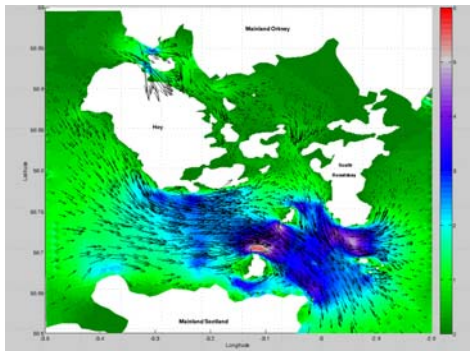



Image: Gareth Davies



Pentland Firth and Orkney Waters:



Baston and Harris, 2013

Phase 1A: 4 x 1.5 MW tidal turbines
Phase 1B: 8 x 1.5 MW tidal turbines
Phase 1C: 57 x 1.5 MW tidal turbines (85.5 MW)

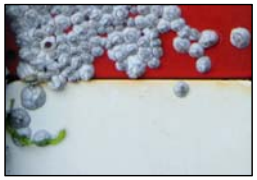
What is the problem?

- Increased roughness and weight thereby impacting drag and energy capture
- Accelerating corrosion of components, i.e. subsea connectors, etc.
- Removal of fouling/antifouling strategies are costly, requiring additional operational 'down-time'
- Providing surfaces on artificial structures in the marine environment may create 'stepping-stone' habitats for the spread of fouling communities (including non-native species)

Is this a new problem?

Yes, there are several issues unique to the Offshore Renewable Energy (ORE) sector:

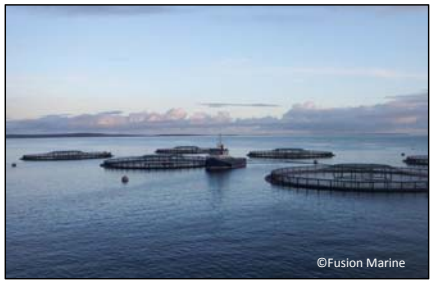
- Novel components/materials used in the sector
- Devices are being placed in poorly understood habitats
- Sensor accuracy is compromised leading to inaccurate determination of device performance and resource assessment



… the hydrodynamic and mechanical consequences of biofouling organisms on moving structures are of particular concern… as well as, mooring systems…

Fouling: mooring systems

©Orbital Marine Power



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BioFREE

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Scientists are working closely with test site personnel, device developers and engineers to gather data, share knowledge and formulate expertise on biofouling most relevant in helping develop the Offshore Renewable Energy (ORE) industry.

Objectives:

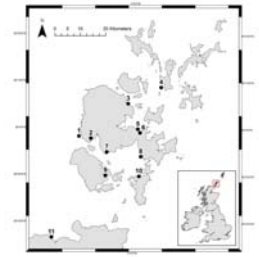
- Gather data from poorly-studied, high-energy habitats targeted by the ORE sector
- Develop a biofouling monitoring and testing system designed for deployment at extreme-energy wave and tidal sites
- Testing of materials used by the ORE industry and anti-fouling strategies
- Provide guidance to better manage fouling…

BioFREE

Guidance to better manage fouling…

- Lowered Levilized Cost of Electricity generated by ORE sector;
- Biofouling management plans/protocols;
- Biosecurity.

Data Collecting Opportunities:



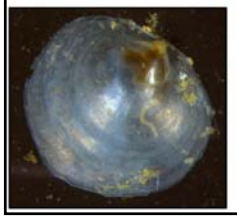
Biofouling sampling – Waverider buoy - off Billia Croo

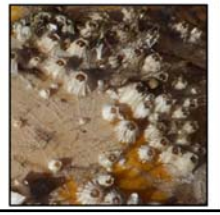
Clockwise from top left: map of survey locations in Orkney; settlement panels - EMEC infrastructure; waverider buoy survey; evidence of gregarious settlement and coating preference; test panels (Whitford Ltd.) - Stromness Harbour.

Data collecting surveys conducted in Orkney during BioFREE (Nov. 2017 – Jan. 2019)

Survey Date	Device	Substrate	Site	Dominant fouling organisms		
20-Dec-17	ADCP	HDPE/steel	FW	*Anomia ephippium*	n/a	n/a
27-Feb-18	WRB	Steel	BC	*Ectopleura larynx*	*Petalonia fascia*	*Hincksia hincksia*
27-Feb-18	WRB	Steel	BC	*Hincksia hincksia*	*Petalonia fascia*	*Lomentaria clavellosa*
27-Feb-18	WRB	Steel	SF	*Petalonia fascia*	*Semibalanus balanoides*	*Jassa falcata/marmorata*
01-Apr-18	WEC moorings	Fiberglass	BC	*Chirona hameri*	*Metridium dianthus*	*Anomia ephippium*
20-May-18	WEC Cable End	Steel	BC	*Chirona hameri*	*Balanus balanus*	n/a
29-Jun-18	WEC	Steel	SF	*Balanus crenatus*	*Electra pilosa*	n/a
16-Aug-18	WEC Moorings	Mixed	SF	*Balanus crenatus*	*Balanus balanus*	*Spirobranchus triqueter*
18-Sep-18	ADCP	HDPE/steel	SF	*Spirobranchus triqueter*	*Metridium dianthus*	*Mytilus edulis*
09-Oct-18	TEC subunit	Steel	FW	*Ciona intestinalis*	*Chirona hameri*	*Ascidiella aspersa*
15-Oct-18	WRB	Steel	BC	*Semibalanus balanoides*	*Amphisbetia operculata*	*Mytilus edulis*
17-Oct-18	WRB	Steel	SF	*Chordaria flagelliformis*	*Ulva lactuca*	*Semibalanus balanoides*

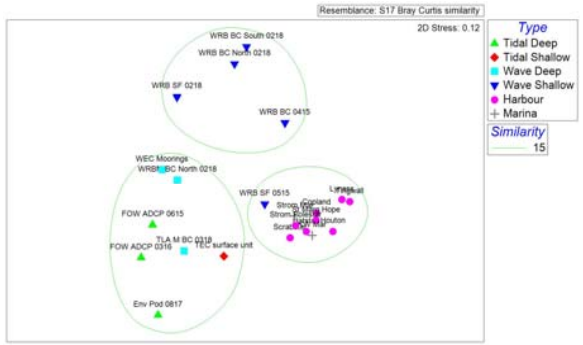
Key fouling species on ORE substrates in Orkney waters include (from left): the Saddle Oyster *Anomia ephippium*; barnacles, such as *Balanus balanus*; macroalgal turf (including *Chordaria flagelliformis*, *Petalonia fascia*, and *Ulva lactuca*); and the sea anemone *Metridium dianthus*.





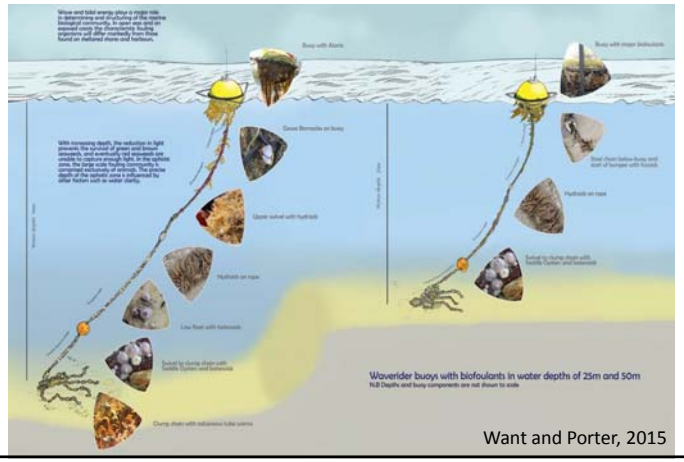
Analysis of Biofouling Data:

- 200+ species recorded
- 6 NNS (in harbours/marinas)
- PRIMER software
- Bray Curtis similarity to explore differences in species between locations
- ANOSIM algorithm to see which species most responsible for the differences
- MDS plot to show differences visually in species suites, between locations



MDS plot using biofouling community data associated with various types of substratum. Ellipses represent groups identified by average-linkage cluster analysis based on Bray–Curtis similarities. The terms 'deep' and 'shallow' refer to the submerged depth of the fouled substrate rather than the bathymetric depth.

Biofouling at different depths and hydrodynamic conditions:



Want and Porter, 2015

HERIOT WATT UNIVERSITY ORKNEY

Whitford

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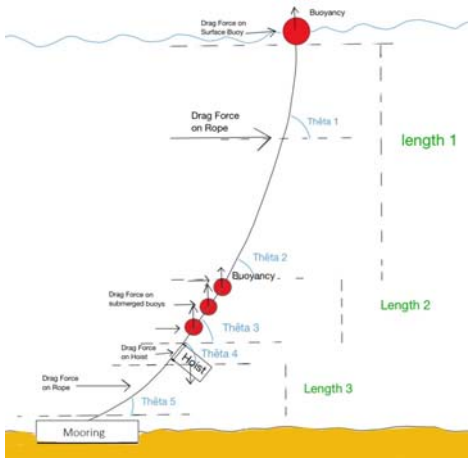
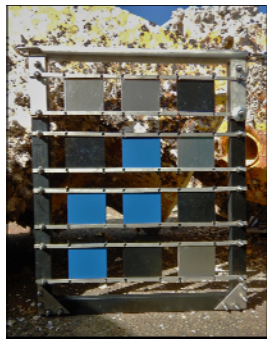
BioFREE Biofouling monitoring and testing system

- Monitoring of fouling organisms at different depths and energy levels
- System allows testing of different materials and anti-fouling coatings
- Allows easy deployment and retrieval for regular access
- Physically and statistically robust





Schematic diagram of the BioFREE monitoring and testing system. Quantification of drag forces and buoyancy on each component was necessary to calculate position of the BioFREE frame relative to the seabed. (Schematic by E. DuTemple).

BioFREE International Partners:

Pacific Northwest National Laboratory/Oregon State University – Oregon, USA
Organization for Marine Science and Technology – Nagasaki, Japan
Marine Energy Research and Innovation – Las Cruces, Chile
EMEC/Heriot-Watt University – Orkney, UK

Pacific Northwest NATIONAL LABORATORY

Oregon State University

MERIC marine energy research & innovation center

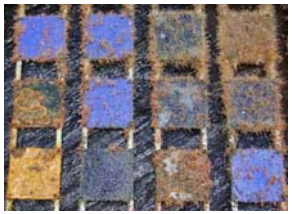
EMEC THE EUROPEAN MARINE ENERGY CENTRE LTD

HERIOT WATT UNIVERSITY ORKNEY

BioFREE 16-17 October 2018 (deployed mid-July)

Fall of Warness:
-High flow
-Moderate wave

Ectopleura larynx
Jassa marmorata
Celleporella hyalina

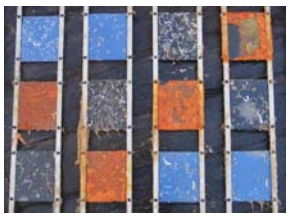


Billia Croo:
-High wave
-Moderate flow

Obelia dichotoma
Anomia ephippium
Electra pilosa

Shapinsay:
-Moderate flow
-Moderate wave

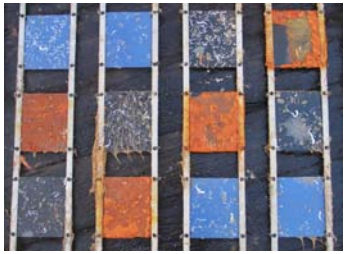
Ectopleura larynx
Ascidiella aspera
Plumularia setacea



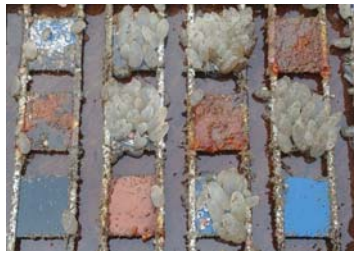
Scapa Flow:
-Moderate wave
-Low flow

Spirobranchus triqueter
Ascidiella aspera
Anomia ephippium

Seasonality and Succession
Scapa Flow



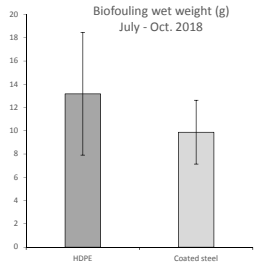
October 2018



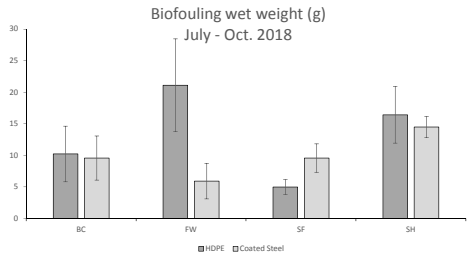
January 2019

Deployment water depth (metres), maximum height of the frame above the seabed (metres), and dominant fouling organisms of BioFREE frames deployed at EMEC test sites in July 2018.

Site	Water depth (approx.)	Maximum frame height (approx.)	Dominant fouling organisms		
Billia Croo	45	3	*Anomia ephippium*	*Electra pilosa*	*Spirobranchus triqueter*
Fall of Warness	40	15	*Ectopleura larynx*	*Jassa marmorata*	*Celleporella hyalina*
Scapa Flow	25	3	*Spirobranchus triqueter*	*Anomia ephippium*	*Ascidiella aspera*
Shapinsay	25	5	*Ectopleura larynx*	*Ascidiella aspera*	*Plumaria setacea*



Mean wet weight (g) of biofouling from HDPE and coated steel panels (n = 8) deployed at EMEC test sites from mid-July to mid-October 2018 (± S.E.).



Mean wet weight (g) of biofouling from replicate panels (2) deployed at EMEC test sites from mid-July to mid-October 2018. BC: Billia Croo; FW: Fall of Warness; SF: Scapa Flow; and, SH: Shapinsay Sound (± S.E.).

BioFREE frames: Tabira Port, Nagasaki Prefecture
-High flow →

Megabalanus rosa
Balanus trigonus
Bugula flabellata

Image: Prof. Yusaku Kyozuka

← Fitted with new panels quarterly

Modelling Buoy Response to Biofouling:

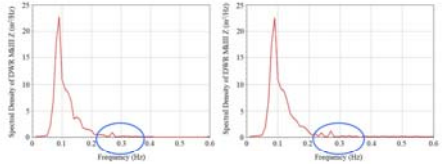


Figure 6. ISSC spectral density of buoy heave response (H_s 4 m, T_p 8 s). (Left) no fouling; (right) heavy fouling. Higher frequency spectral components are identified in the circles.

Table 4. Values of heave spectral moments using simulated biofouling (>0.3 Hz, H_s 4 m, T_p 8 s).

Simulation	M_0 (m²)	M_1 (m² s⁻¹)	M_2 (m² s⁻²)	M_3 (m² s⁻³)	M_4 (m² s⁻⁴)
No fouling	1.0886	0.1317	0.0276	0.0261	0.1121
Light	1.0857	0.1321	0.0294	0.0305	0.1145
Medium	1.0793	0.1345	0.0317	0.0364	0.1124
Heavy	1.0653	0.1359	0.0323	0.0381	0.1202

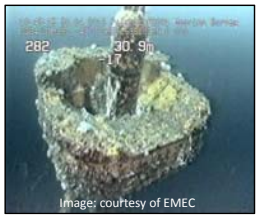
M_n: zeroth moment is the area under the spectrum; M_1: 1st moment is the mean; M_2: 2nd moment is the SD; M_3: 3rd moment is the skewness; M_4: 4th moment is the kurtosis (Sokal & Rohlf 1995).

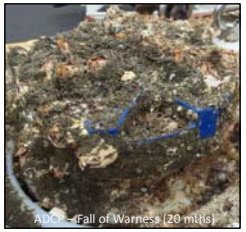
Want *et al.* 2017

- Analysis of heave data identified small changes to the overall spectral response
- Most of the changes were observed as a dampened high frequency response
- This high frequency response could be used as a tool to further compare biofouling influence, and suggests a means of identifying when a buoy is fouled and potentially by which organism
- More data needed…

Findings:

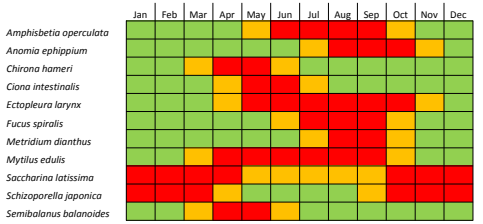
- Proven success of BioFREE monitoring and testing system which can now be used to provide detailed characterisation anywhere and at any chosen deployment;
- Fouling is highly specific to location and varies depending on substrate type;
- Fouling assemblages are highly predictable based on hydrodynamic conditions and deployment depth;
- Orientation of the substrate may be an important means to better understand how of hydrodynamic conditions favoured certain key foulants.





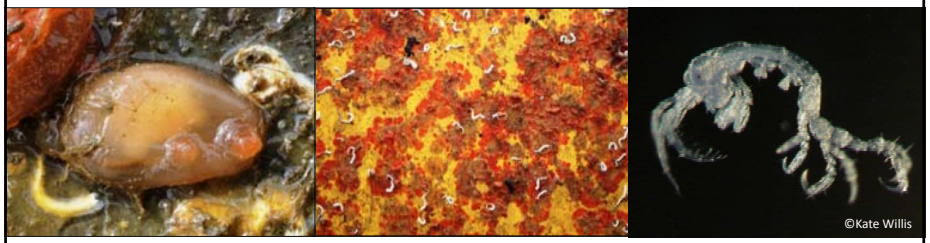
Findings:

- Anti-fouling coatings may be most effective at preventing fouling in high current flow conditions ***BUT***…
- Sensor functioning (critical in assessments of resource and device performance) may be compromised by fouling;
- Marked seasonality of fouling helps determine periods of greatest fouling risk from key organisms;
- Scheduling deployment and maintenance operations in a targeted manner may be an effective means to minimise fouling impacts including potential spread of NNS.



Periods of settlement associated with major fouling species: months in red indicate the highest recognised settlement season, orange months are of intermediate concern, and green months are of least concern (updated from Want *et al*., 2017)

Non-native Species (NNS): Orkney



- *Corella eumyota* – Kirkwall Marina
- *Schizoporella japonica* – Hatston Pier
- *Caprella mutica* – Stromness Marina
- … and others

Note: no NNS have been recorded at ORE sites in Orkney

Biofouling Management Plans:

BioFREE

EMEC
THE EUROPEAN MARINE ENERGY CENTRE LTD

HERIOT WATT UNIVERSITY
ORKNEY

Wello

Orkney: 'Living Laboratory'

HERIOT WATT UNIVERSITY ORKNEY

- Ecuador
- Indonesia
- Mexico
- Philippines
- Sri Lanka

EMEC THE EUROPEAN MARINE ENERGY CENTRE LTD

- Peru
- Many international test centres

aquatera environmental services and projects

- Indonesia
- Mauritius
- Mexico
- Peru
- Philippines

Interested in further collaborations and funding opportunities

Orkney: 'Living Laboratory'

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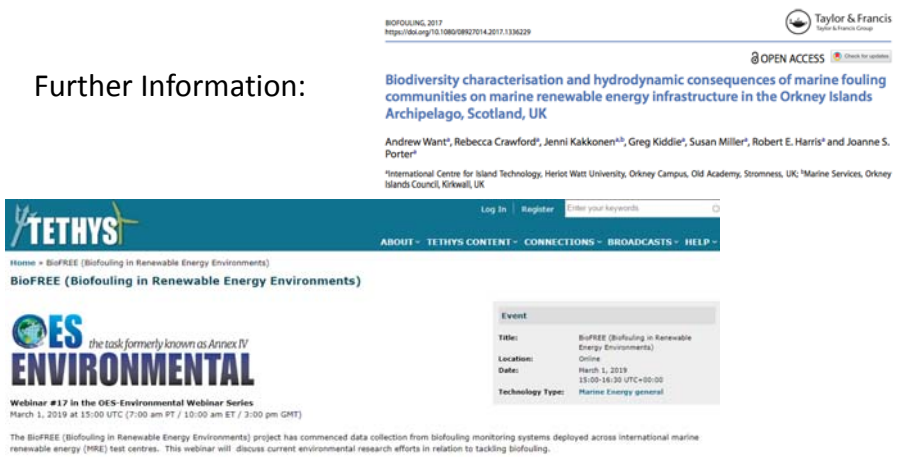
Further Information:



BIOFOULING, 2017
https://doi.org/10.1080/08927014.2017.1336229

Taylor & Francis

OPEN ACCESS

Biodiversity characterisation and hydrodynamic consequences of marine fouling communities on marine renewable energy infrastructure in the Orkney Islands Archipelago, Scotland, UK

Andrew Want[a], Rebecca Crawford[a], Jenni Kakkonen[a,b], Greg Kiddie[a], Susan Miller[a], Robert E. Harris[a] and Joanne S. Porter[a]

[a]International Centre for Island Technology, Heriot Watt University, Orkney Campus, Old Academy, Stromness, UK; [b]Marine Services, Orkney Islands Council, Kirkwall, UK

TETHYS

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Home » BioFREE (Biofouling in Renewable Energy Environments)

BioFREE (Biofouling in Renewable Energy Environments)

OES ENVIRONMENTAL the task formerly known as Annex IV

Webinar #17 in the OES-Environmental Webinar Series

March 1, 2019 at 15:00 UTC (7:00 am PT / 10:00 am ET / 3:00 pm GMT)

The BioFREE (Biofouling in Renewable Energy Environments) project has commenced data collection from biofouling monitoring systems deployed across international marine renewable energy (MRE) test centres. This webinar will discuss current environmental research efforts in relation to tackling biofouling.

Event

Title:	BioFREE (Biofouling in Renewable Energy Environments)
Location:	Online
Date:	March 1, 2019 15:00-16:30 UTC+00:00
Technology Type:	Marine Energy general

https://tethys.pnnl.gov/events/biofree-biofouling-renewable-energy-environments

HERIOT WATT UNIVERSITY ORKNEY

NERC SCIENCE OF THE ENVIRONMENT

EMEC THE EUROPEAN MARINE ENERGY CENTRE LTD

Acknowledgements:

Whitford

Interreg North-West Europe FORESEA

Wello

Pacific Northwest NATIONAL LABORATORY

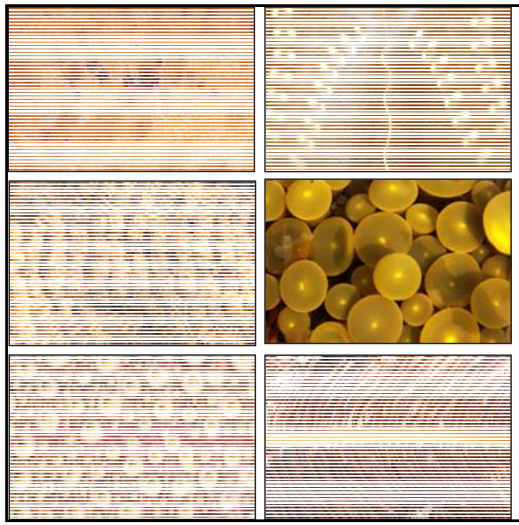
CORPOWER OCEAN

SIMEC ATLANTIS ENERGY

ORBITAL MARINE POWER

Oregon State University

MERIC marine energy research & innovation center



BioFREE

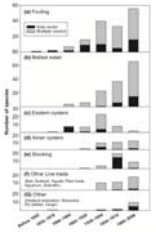
a.want@hw.ac.uk

Evaluations of In-Water Cleaning:

Facilitating Innovations in Environmental Protection & Business Development

Vessel Biofouling

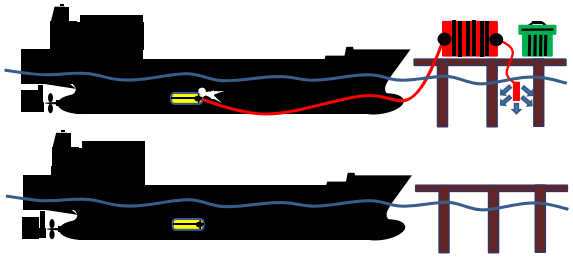
- **Vessel Operations:**
  - **Macrofouling resulting in increased roughness, drag, fuel consumption and exhaust emissions**
  - **Macrofouling can interfere with water systems**
  - **Current vessel hull husbandry based on antifouling coatings (biocide & non-stick) and in-water cleaning**
- **Biosecurity Regulations:**
  - **2011 - IMO Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species**
  - **2017 - Biofouling Management to Minimize the Transfer of Nonindigenous Species from Vessels Arriving at California Ports (*management reporting*)**
  - **2018 - Biofouling on Vessels Arriving to New Zealand (*excessive biofouling can be ordered to leave*)**
  - **2019 - IMO established GloFouling Program**



Ruiz et al., 2015

Vessel In-Water Cleaning

- **A continuum of approaches from reactive in-water cleaning and capture (IWCC) to proactive in-water grooming (IWG)**
- **How well do they clean?**
- **How well do they reduce biosecurity risks?**
- **How well do they reduce water quality risks?**



Modified from: Scianni and Georgiades *submitted*

Independent Technology Evaluations

ALLIANCE FOR COASTAL TECHNOLOGIES

Maritime Environmental Resource Center

U.S. NAVAL RESEARCH LABORATORY

Smithsonian Environmental Research Center

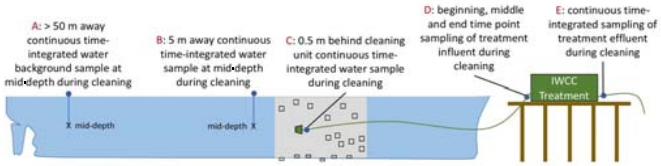
Evaluations of IWCC and IWG Systems

- **IWCC Technology/Service Providers:**
  - **CleanSubSea Envirocart**
  - **ECOsubsea**
  - **SGS EnviroHull**
  - **SGS Whale Shark**
  - **Sinku**
  - **TecHullClean**

- **IWG Technology/Service Providers:**
  - **HullWiper**
  - **SeaRobotics HullBUG**

- **Additional Requests for Technologies**
  - **2019, 2020…**

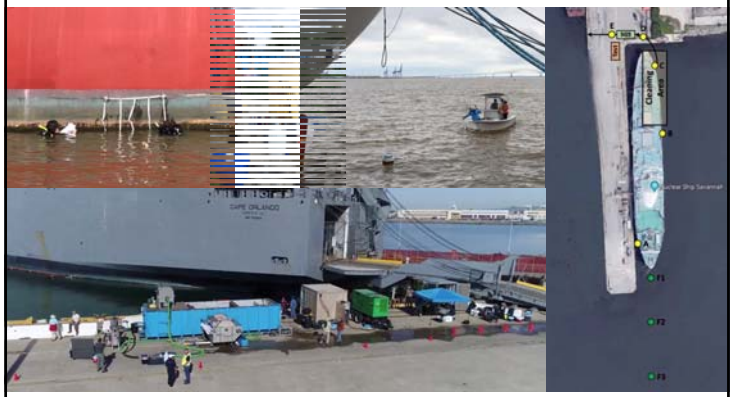
IWCC Evaluations Test Protocols



Source: ACT/MERC IWCC Test Protocols 2018

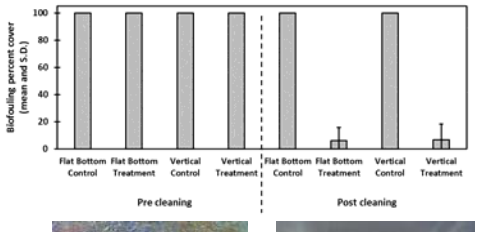
- **Biofouling removal efficacy**
- **Capture/retention efficacy**
- **Treatment/removal efficacy**

Evaluations of an IWCC System



Evaluations of an IWCC System

- **Biofouling removal**



Initial Conclusions

- Rigorous, independent and standardized evaluations of IWCC systems are possible
- Standardize test protocols are important for acceptance, approvals and cross comparisons
- We need to focus on how best to provide independent data, and the scientific foundation needed, for public agencies to make decisions about permits and regulations
- IWCC systems may be able to address vessel operational needs, but biosecurity goals and water quality issues (e.g., copper discharge) may still be a challenge

Next Steps

- Finalize report on SGS IWCC evaluation report
- Workshop and peer-reviewed publication on standardized IWCC and IWG test protocols
- Initiate IWG evaluations and prepare for additional IWCC evaluations

Acknowledgements

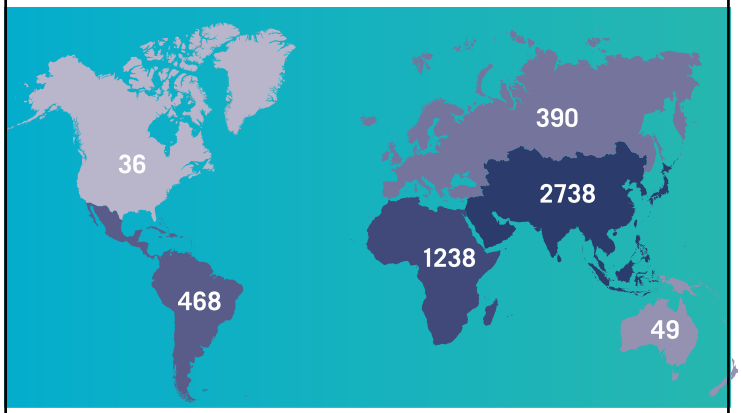
- Testing Team:
  - Mario Tamburri, ACT/MERC/CBL
  - Matt First, US NRL
  - Greg Ruiz, SERC
  - Chris Scianni, CSLC
  - Ian Davidson, SERC
  - Jules Kuo, Hawaii DLNR
  - Plus technical staff, QA/QC, analytical services, etc.
- Technical Advisory Committee:
  - William Hertel, US NSWCC
  - Eugene Georgiades, MPI New Zealand
  - Graeme Inglis, NIWAR New Zealand
  - Carolyn Junemann, MARAD
  - David Elias, RWQCB San Francisco
  - Regina Bergner, USCG
  - Myron Honda, Hawaii DLNR
  - Johnny Eliasson, Chevron Shipping
  - Jesús Cisneros-Aguirre, University of Las Palmas, Spain
- Funders:
  - Maryland Port Administration (MD DOT)
  - US Maritime Administration (MARAD)
  - California State Lands Commission (CSLC)

1st Global Project Task Force (GPTF) meeting and Project Inception Workshop

Capacity-building needs for maritime administrations

WMU & maritime administrations

- Founded in 1983 by the International Maritime Organization (IMO)
- International and interdisciplinary
- Educates the maritime leaders of tomorrow
- Applied maritime and ocean-related research
- Capacity building for sustainable development
- Strong partnerships with governments, industry, international organizations and civil society



Capacity-building for IMO

- Multiple involvement in projects and IMO works (safety, security, environment, cooperation, audits, etc.)
- Active participation with Globallast Partnership (training package, e-learning, publication, missions, etc.)

Diversity of countries

- Location and ecosystem specificities
- Maritime and marine activities
- Flag / Port / Coastal State duties
- Stakeholders and priority targets
- Level of development and resources
- Administrative resources
- Legislative system
- Monitoring and enforcement capacities
- Scientific and research capacities

Generic programmes and adapted capacity-building

FROM SCIENCE TO LEGISLATION AND ENFORCEMENT

Science – visibility - credibility

- **Making visible the invisible**
  - Sciences in action
    - Observation
    - Protocol and methods
    - Education/training of scientists
    - Monitoring programmes
  - Origins of threats (shipping and non-shipping)
  - Social acceptance for action
    - Convincing decision-makers
    - Social and economic costs of IAS
  - Establish inclusive national task force

Legal development and implementation

Basic principles such as :
SDGs
"precautionary approach"
UNCLOS 195 "Article 195
Duty not to transfer damage or hazards
or transform one type of pollution into another

- **Legal and administrative backing**
  - Integrate biofouling guidelines and guidance in national policy / legal system
  - Develop legal instruments / acknowledging network of regulations (national/regional/international)
  - Identify resource allocation / funding possibilities
- **Practical implementation**
  - Prevention / protection strategies (PRE/AT/POST)
  - Absorb good practice (e.g. antifouling systems & cleaning technologies)
  - Build specific expertise (e.g. underwater inspection)
  - Assess opportunities (e.g. energy efficiency / new technology)
  - Research and development
  - Continuous monitoring
  - Facilitate participation and exchanges

Partnership education and research with public and private sectors

Support establishment of control systems - pre/at/post locations

- For ships **in operations**
  - Assess biofouling risks pre-arrival – **ANTICIPATION / PREPARATION**
  - Verification and evaluation – **INSPECTION / ENFORCEMENT**
  - Env. monitoring and contingency plan – **SURVEILLANCE / ACTION**
- For **hull cleaning** areas
  - Assess risks of technology and location – **PRE-ASSESSMENT / APPROVAL**
  - Regular verification of cleaning process – **INSPECTION / ENFORCEMENT**
  - Env. monitoring and response – **SURVEILLANCE / ACTION**

Multi-level capacity-building

- Higher Education
- Train-the-Trainer
- Long courses
- Short workshops
- Awareness seminar and material / E-learning solutions

A comprehensive and coherent capacity-building structure

Interdisciplinary approach

Beyond Capacity-Building: Enable Technology Transfer

- Transfer of knowledge and information

Useful, up-to-date information and relevant knowledge

- Transfer of know-how

Experimentation, practice and simulation

- Transfer of software

Use and testing

- Transfer of hardware

On-site or workshop training / Dedicated training system

Enhance RESEARCH & EDUCATION / INDUSTRY / GOVERNMENT Cooperation

Thank you

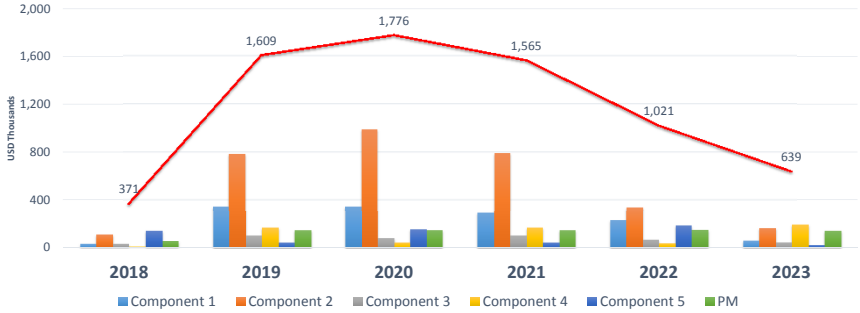
Do you have any question?

Raphaël Baumler
Associate Professor
rb@wmu.se

GloFouling Partnerships Project

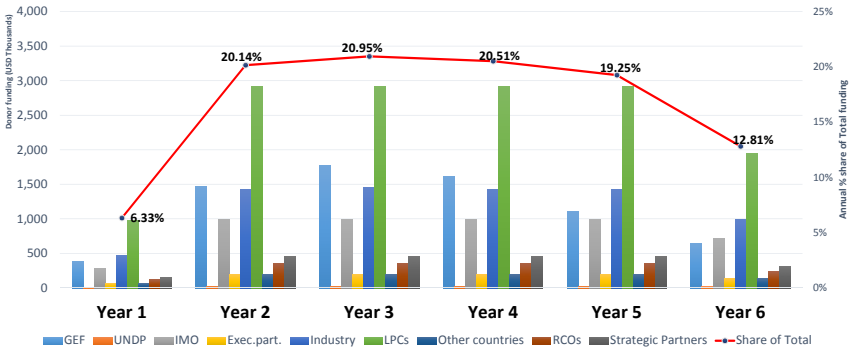
Budget and work plan

GEF-UNDP funds
Budget per year and component *(in USD thousands)*



GloFouling Partnerships Project

Total contributions – cash and in-kind *(in USD thousands)*



GloFouling Partnerships Project

Planning – National level (governance & LPIR)

Activity number	*Activity*	*Responsibility*	*Level*	*Status*	*2019*	*2020*	*2021*	*2022*	*2023*
5.1.1.3	National Focal Point and Project coordinator in place	LPCs	National	Completed					
1.1.2.1	Set up a National Task Force (NTF)	LPCs	National	Pending					
2.2.1.2	National awareness-raising workshops on biofouling management.	PCU	National	In progress	10%				
1.1.1.1	National status assessments	LPCs	National	Pending					
1.1.1.1	National economic assessments	LPCs	National	Pending					
1.1.1.2	National biofouling management strategies and action plans in LPCs	LPCs	National	Pending					
1.1.1.2	National biofouling management strategies and action plans in PCs	PCs	National	Pending					
1.1.2.2	Develop a National cross-sectoral outreach plan	LPCs	National	Pending					
1.1.3.1	National legal assessments in LPCs	LPCs	National	Pending					
1.1.3.1	Draft appropriate national biofouling management measures	LPCs	National	Pending					
4.1.1.2	National websites for dissemination of information in LPCs	LPCs	National	Continuous					

GloFouling Partnerships Project

Planning – National level (training)

Activity number	Activity	Responsibility	Level	Status	2019	2020	2021	2022	2023
2.1.1.1	National training in on the transfer of IAS through biofouling and biofouling management for shipping and non-shipping pathways	PCU	National	Pending					
2.1.1.2	National training on inspection methodologies in LPCs	PCU	National	Pending					
2.1.1.3	National training on biofouling management plans and record book in LPCs	PCU	National	Pending					
2.1.1.4	National training on in-water cleaning in LPCs	PCU	National	Pending					
2.1.1.5	National training on dry dock operations and application of AF paints	PCU	National	Pending					
2.3.1.1	Implement demonstration sites in all LPCs.	PCU	National	Pending					

GloFouling Partnerships Project

Planning – Regional level

Activity number	Activity	Responsibility	Level	Status	2019	2020	2021	2022	2023
5.1.1.3	Regional coordinator in place	RCOs	Regional	In progress	70%				
1.1.4.1	Set up Regional Task Forces (RTFs)	RCOs	Regional	Pending					
2.2.1.2	Regional awareness-raising workshops on biofouling management	PCU	Regional	In progress	10%				
1.1.4.2	Draft regional strategies in strategic and outreach regions	RCOs	Regional	Pending					
2.1.1.6	Technical workshop for female marine scientists in strategic regions	PCU	Regional	Pending					
2.1.2.1	Regional train-the-trainer workshops on key aspects of biofouling management	PCU	Regional	Pending					
2.1.2.2	Capacitate training institutes or academies for delivery of courses on biofouling management	RCO	Regional	Pending					
4.1.1.2	Create Regional websites for dissemination of information in regions	RCOs	Regional	Pending					

GloFouling Partnerships Project

Planning – Global level (governance)

Activity number	Activity	Responsibility	Level	Status	2019	2020	2021	2022	2023
5.1.1.1	PCU and IOC in place	PCU	Global	In progress	75%				
5.1.1.2	Establish Global Project Task Force GPTF	PCU	Global	Completed					
5.1.1.2	Ex Com meetings	PCU	Global	Pending					
5.1.1.4	Coordinate with the GEF-UNDP International Waters (IW) portfolio	PCU	Global	Completed					
5.1.2.1	Quarterly and annual implementation reports	PCU	Global	Pending					
5.1.2.2	Conduct mid-term review	PCU	Global	Pending					
5.1.2.2	Conduct terminal evaluation	PCU	Global	Pending					

GloFouling Partnerships Project

Planning – Global level (reports and studies)

Activity number	Activity	Responsibility	Level	Status	2019	2020	2021	2022	2023
2.1.3.1	Guidance for developing a national status assessment	PCU	Global	Pending					
2.1.3.1	Guidance for developing a national economic assessment	PCU	Global	In progress	75%				
2.1.3.2	Global summary based on the outcome of the national economic impact assessments conducted in LPCs	PCU	Global	Pending					
2.1.3.3	Review of existing biofouling management practices across all maritime sectors, the impacts of biofouling for specific industries and how it contributes to the transfer of IAS	PCU, IOC, WOC	Global	Pending					
2.1.3.4	Best practices for the implementation of biofouling management for non-shipping pathways	IOC, WOC	Global	Pending					
2.1.3.5	Guidance for dry-dock operations, selection and application of antifouling coatings to enhance immunity to biofouling	PCU	Global	Pending					
2.1.3.6	Best practices for inspection methodologies	PCU	Global	Pending					
2.1.3.7	Best practices for in-water cleaning and maintenance	PCU	Global	Pending					
2.1.3.8	Biofouling management approaches and best practices for recreational craft and marinas	PCU	Global	Pending					
2.1.3.9	Report on the impact of biofouling management on GHG emissions	PCU	Global	Pending					
2.1.3.10	Overview of the application and use of Biofouling Management Plan and Biofouling Record Books	PCU	Global	Pending					

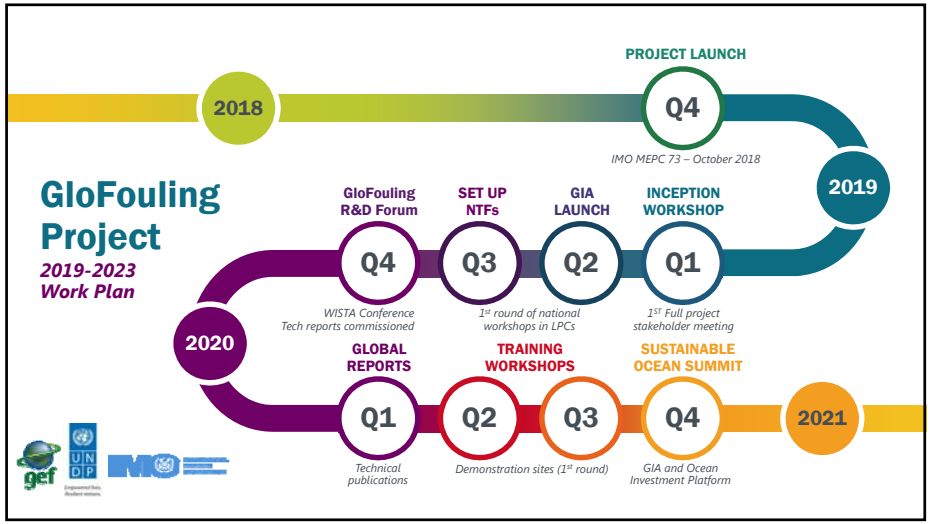
Planning – Global level (awareness raising)

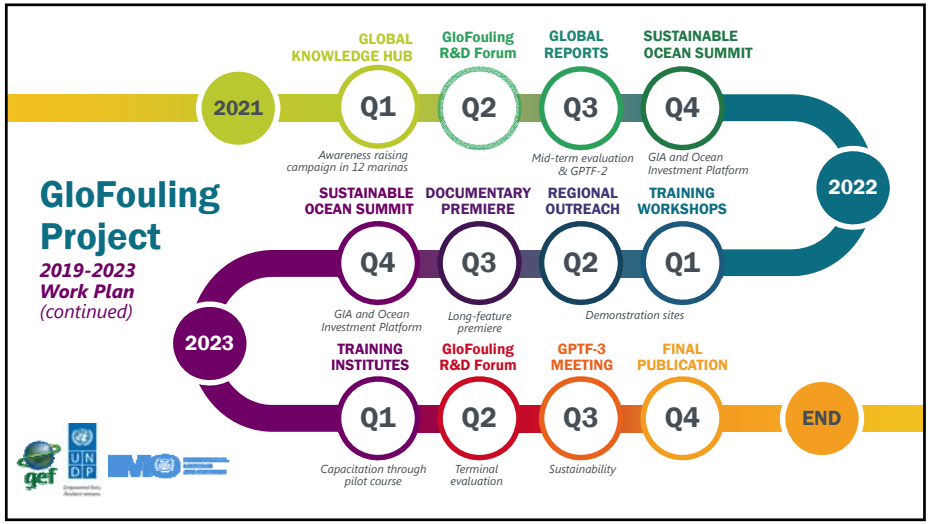
Activity number	Activity	Responsibility	Level	Status	2019	2020	2021	2022	2023
2.2.1.1	Design Project branding and visual identity, maintain a project website, and publish news items and other outreach materials to showcase project activities and achievements.	PCU	Global	In progress	50%				
2.2.1.3	Design and distribute information materials for awareness-raising on biofouling issues and the impact of IAS.	PCU, IOC, WOC	Global	In progress					
2.2.1.3	Long-feature documentary	PCU	Global	Pending					
2.2.1.4	Translate project publications and outreach materials into key languages	PCU	Global	Pending					
2.2.1.5	Represent project in international and regional conventions and forums	PCU	Global	Continuous					

GloFouling Partnerships Project

Planning – Global level (global conferences, private sector participation and knowledge sharing)

Activity number	Activity	Responsibility	Level	Status	2019	2020	2021	2022	2023
1.1.1.3	LPCs and RCOs contribute to the evaluation of the IMO Biofouling Guidelines	PCU	Global	Pending					
3.1.1.1	GIA task force for shipping industry	PCU	Global	In progress	15%				
3.1.1.1	GIA task force for non-shipping industry	WOC	Global	Pending					
3.1.1.2	Participation of industry in GPTF	PCU	Global	Pending					
3.1.2.1	Hold WOC Ocean Investment Platform sessions to catalyse investment	WOC	Global	In progress (annual)					
3.1.2.2	Global conference for female entrepreneurs in the maritime industry	PCU	Global	In progress	25%				
3.1.3.1	Hold industry forums back-to-back with R&D Forum	WOC	Global	In progress					
3.1.3.2	Sustainable Ocean Summit sessions on biofouling & IAS	WOC	Global	Annual					
3.1.3.3	Contribute to the evaluation of IMO's Biofouling Guidelines with input from the private sector	PCU	Global	Pending					
4.1.1.1	Create global knowledge hub on biofouling management.	PCU	Global	In progress	25%				
4.1.2.1	Research and Development Forums	PCU	Global	In progress					





GloFouling Partnerships

Key Project Outputs

Institutional	Awareness raising	Technical & Scientific	Industry	Capacity building
National and regional strategies National status assessments Institutional capacity-building IMO review of 2011 Biofouling Guidelines	Long-feature documentary on biofouling and invasive species Materials for: - biofouling and invasive species - non-shipping industries Campaign for recreational boating community	R&D Forums and Exhibitions 8 Technical publications and reports Knowledge Hub on biofouling issues GESAMP report on non-shipping industries Report on GHG emissions	Industry best practices Global Industry Alliance Ocean Investment Platform Sustainable Ocean Summit In-water cleaning technology review	12 Demonstration sites in developing countries 5 Training courses Gender empowerment activities

Discussion themes

1. Expert reports and studies (best practices, codes of conduct, reviews, etc.)
2. Training courses / modules
3. Demonstration sites
4. Awareness-raising
5. Review of OMI Biofouling Guidelines

GloFouling Partnerships Project

Thank you

GEF-UNDP-IMO

GloFouling Partnerships Project

For more information:

GloFouling Project Coordination Unit
glofouling@imo.org

GloFouling Partnerships Project

Monitoring & Evaluation

Main areas for evaluation

- **Relevance:** At Design, at Implementation and at Completion
- **Effectiveness:** Actual delivery for each Component and Output
- **Efficiency:** Cost-effectiveness, management, monitoring & evaluation
- **Sustainability:** Continuation of benefits. Risks to sustainability (financial, institutional, socio-political, etc.)
- **Impact:** Changes & improvements in process, verifiable stress reductions, improvements in ecological status, training courses

GloFouling Partnerships Project

Monitoring & Evaluation - Project outcomes

Informed policy decision making in LPCs

PPPs to support technology development and adoption

Capacity building, awareness-raising and technical assistance

Increased stakeholder cooperation and knowledge sharing

Results Framework
(ProDoc pages 68-87)

- Targets
- KPIs (indicators)
- *Sources of verification*

GloFouling Partnerships Project

Monitoring and evaluation table for LPCs

LPCs	National Task Force	National status assessment	National economic assessment	National outreach plan	National strategy	National regulation drafted
Brazil						
Ecuador						
Fiji						
Indonesia						
Jordan						
Madagascar						
Mauritius						
Mexico						
Peru						
Philippines						
Sri Lanka						
Tonga						

GloFouling Partnerships Project

Monitoring & Evaluation – Gender

Project document – Annex G (pages 138-140)

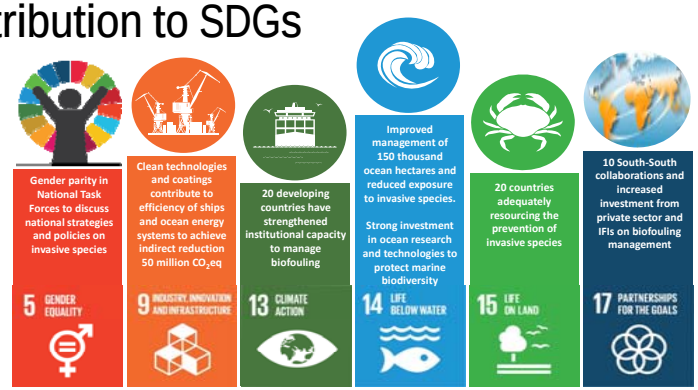
1 – Gender marker ratings

Rating	Activities	Reports
0	Activities that are not expected to contribute to gender equality	Gender is not discussed at all in the report
1	Activities that will contribute in some way to gender equality, but not significantly	Reports with one or two sections on gender equality and women's empowerment
2	Activities that have gender equality as a significant objective	Reports not specifically dedicated to gender, but gender issues are specifically discussed in all sections of it
3	Activities that have gender equality as a principal objective	Reports fully dedicated to one or more gender issues

2 – Results Framework for gender mainstreaming

GloFouling Partnerships Project

Contribution to SDGs



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Thank you

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GloFouling Partnerships Project

For more information:

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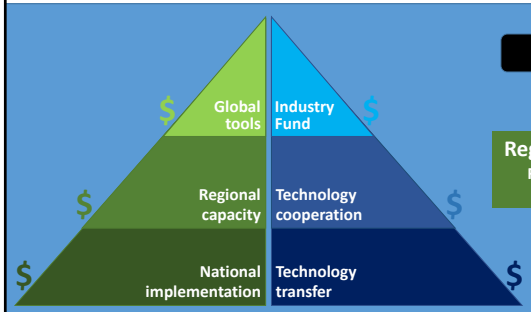
glofouling@imo.org

GloFouling Partnerships Project

Industry participation and GIA

Project strategy and structure



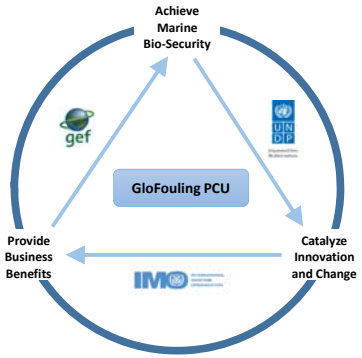
"Glo-X Pyramid" Model
Developed in parallel

Regions & Countries	Private sector
Focused on LPIR and capacity building	Focused on addressing industry concerns

GloFouling Partnerships Project

Private sector participation

GIA Global Industry Alliance



GloFouling Partnerships Project

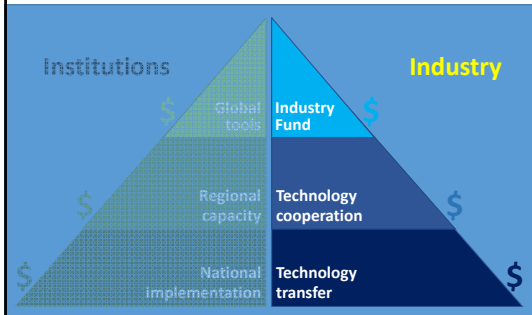
GloFouling Partnerships

Key Project Outputs

Institutional	Awareness raising	Technical & Scientific	Industry	Capacity building
National and regional strategies National status assessments Institutional capacity-building IMO review of 2011 Biofouling Guidelines	Long-feature documentary on biofouling and invasive species Materials for: - biofouling and invasive species - non-shipping industries Campaign for recreational boating community	R&D Forums and Exhibitions 8 Technical publications and reports Knowledge Hub on biofouling issues GESAMP reports on GHG emissions and non-shipping industries	Industry best practices Global Industry Alliance Ocean Investment Platform Sustainable Ocean Summit In-water cleaning technology review	12 Demonstration sites in developing countries Training courses Gender empowerment

GloFouling Partnerships Project

Private sector participation



Industry Fund
Pooling of funds from private sector companies

Governance
only participating companies decide plan of action

Main objective
- Address private sector concerns/issues
- Facilitate diffusion/uptake of technology solutions

GloFouling Partnerships Project

GIA members contribute financially & with expertise

- Technical expertise / data provided in-kind (GIA Task Force)
- Financial capital through a yearly membership fee (GIA Fund)
- GIA Fund: provides necessary financial resources for implementation of selected projects

Project Coordination Unit:

- Serves as Secretariat for the GIA and coordinates implementation

GloFouling Partnerships Project

Private sector participation

IMO Major Projects

GloBallast Partnerships

GIA Global Industry Alliance

GloMEEP

GLOBAL INDUSTRY ALLIANCE TO SUPPORT LOW CARBON SHIPPING

GloFouling

Shipping

IMO GIA Global Industry Alliance

Non-Shipping

WORLD OCEAN COUNCIL

GloFouling Partnerships Project

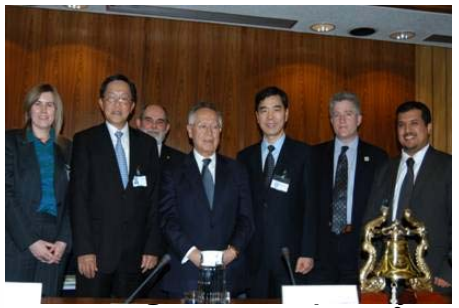
Global Industry Alliance for BWM - GIA (2007-2017)

Keppel Offshore & Marine

Vela

DSME

APL



GloBallast Partnerships

Private sector participation

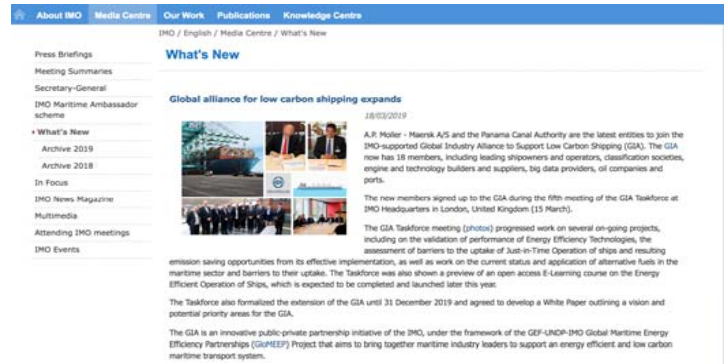
GIA for the GloBallast Project

- Test facilities – Global TestNet
- *Training package for seafarers (elearning)*
- *Shipbuilding Forum*
- *Knowledge support system for marine industry*
- *Port contingency measures*
- *Documentary "Invaders from the Sea"*
- *Establishing equivalency in the performance testing ad compliance monitoring of emerging alternative BWM systems (GloBallast GESAMP report 83)*

Image: Damen Shipyards

GloMEEP GIA for Lowcarbon Shipping (2017- till now)

Membership of the GloMEEP GIA:



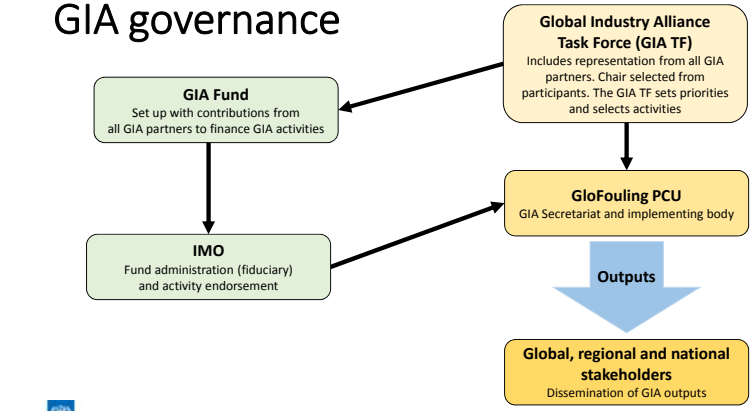
There are five on-going projects under GloMEEP GIA

No	Activity Title	Progress/Status
1	Development of E-learning course on the energy-efficient operation of ships (for seafarers and onshore personnel)	• Videotel KVH contracted • E-learning course under development
2	Development of a Protocol for validation of performance of energy efficiency technologies	• Industry Roundtable held (12 July 2018) • White Paper on fuel performance monitoring • Tendering procedure initiated by GIA Secretariat
3	Development of guide on alternative fuels their potential for shipping and barriers to uptake with a timeline to 2050	• Discussions initiated within the GIA TF
4	Idea generation workshops -Workshops to facilitate brainstorming and idea generation for effective collaboration	• First workshop held (30 May 2018)
5	Development of study on Just-In-Time Operation of ships - solutions for different shipping sectors	• Industry roundtable held (29 Jun 2018, 31 Jan 2019) • Tendering procedure initiated by GIA Secretariat

Full update on GIA's work: MEPC 74/12/4

GloFouling Partnerships Project

GIA governance



GloFouling Partnerships Project

GIA Next Steps

April	May	June to September	October	November
1st set of expert reports and global studies commissioned Project website launched Knowledge hub development	Launch of Global Industry Alliance (during MEPC 74) 1st meeting of GIA Task Force	National Task Forces set up in LPCs (dates to confirm) Regional workshop Pacific National assessment guidance publications	1st IMO GloFouling R&D Forum (back-to-back with 4th ANZPAC workshop on biofouling) WISTA AGM session on biofouling	WOC Sustainable Ocean Summit
	London	LPCs	Melbourne	Paris

GloFouling Partnerships Project

BIOFOULING AND INVASIVE SPECIES:
Industry
Leadership, Collaboration, Action

Paul Holthus, CEO
World Ocean Council
paul.holthus@oceancouncil.org
www.oceancouncil.org

WORLD OCEAN COUNCIL
The International Business Alliance for Corporate Ocean Responsibility

WOC 7th Sustainable Ocean Summit (SOS) PARIS 20-22 Nov 2019

WOC – the Global "Blue Economy" Business Organization

The Multiple Use Ocean

A diverse Ocean Business Community

1. Direct Ocean Users
- Industries that depend on the ocean for the extraction or production of goods (living, non-living, energy) and the provision of services (transport, tourism, etc.)

2. Ocean User Support Industries
- Industries that depend on direct users for their existence (e.g. shipbuilders) or drive ocean industry growth (e.g. extractors, manufacturers, retailers that transport materials or products by sea)

3. Essential Ocean Use "Infrastructure"
- Insurance, finance, legal and other essential services that enable ocean industries to operate



Growing Ocean Use

- Cruise and coastal tourism
- Shipping
- Mariculture/Aquaculture
- Offshore oil and gas
- Mining / Seabed mining
- Fisheries
- Dredging
- Submarine cables/pipelines
- Offshore wind energy
- Wave/tidal energy
- Ports/marinas
- Recreational boating/use
- Desalination
- Navy/military use
- Carbon sequestration

Expanding
- Kinds of use
- Levels of activity
  - Duration
  - Intensity
  - Frequency
- Location of activity
  - Geographical Extent
  - Frequency

- Diverse 'ecosystem' of support sectors

- Finance/Investment
- Insurance
- Maritime Legal

SHIPPING

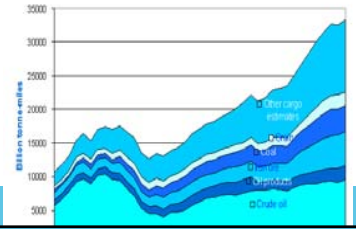
- **90% of global trade**
- **Container shipping has increased by 10% / year since 1985**

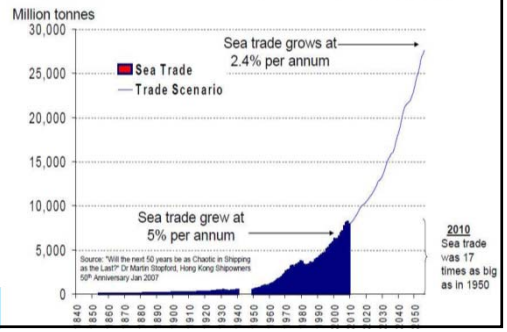


50,054 ships (2010)

- Bulk carriers, container ships, tankers, passenger ships

World seaborne trade 1969-2010

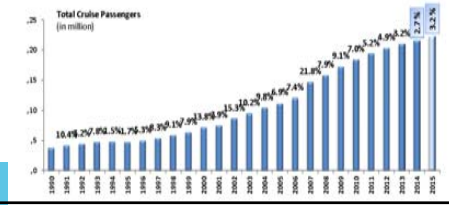




CRUISE LINE TOURISM

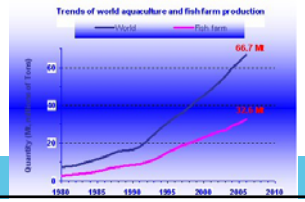
- **25 million passengers in 2017**
- **Demand grew at 20.5% per year over past 5 years**
- Global fleet: 341 ships (92 megaships, > 2000 berths)
- 50 ships on order for 2018-2023
- Europe: up 12% from 2009, now 33% of global market
- Asia: up 10-40% from 2009 in various countries
- New destinations: Africa, Australia, Indonesia, Arctic

Cruise line passengers



AQUACULTURE

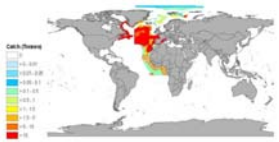
- **Fastest growing food production system**
- **7.5%/year growth over past twenty years**
- **By 2030, 65% of fish protein**
- Further offshore, deeper
- By 2050, 30 Mt/year of extra aquatic products required to feed the planet



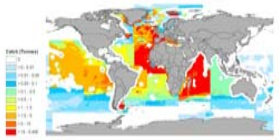

FISHERIES

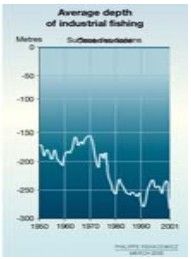
Fisheries are moving further offshore and deeper

Average catch areas: 1950s



Average catch areas: 2000s

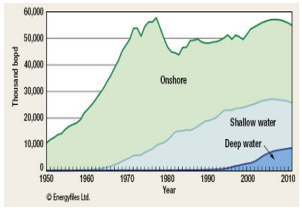


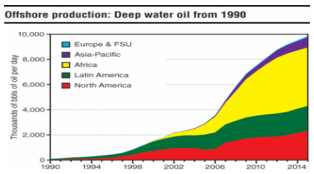


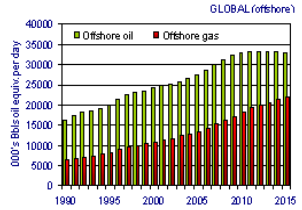
79 million tons produced marine capture fisheries in 2016

- 35 million directly linked jobs
- Livelihoods for 300 million

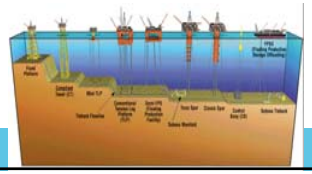

OFFSHORE OIL AND GAS







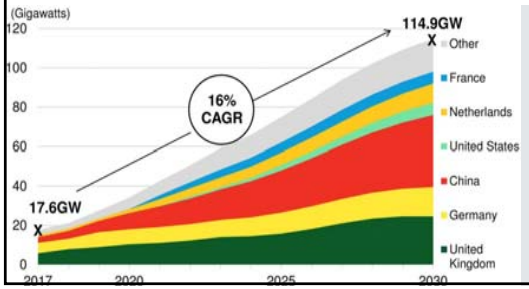
- Currently, 32% of global hydrocarbon production
- 45% of recoverable oil is offshore
- By 2035, deep-sea oil and gas production will double

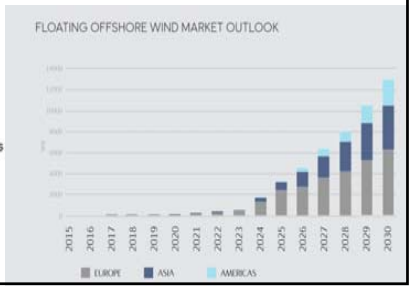


OFFSHORE WIND ENERGY

Offshore farms in 15 countries
By 2020, Europe will need:
- 20 turbine installation ships
- 200-300 support vessels

By 2024, market will exceed USD $ 60 billion
From 2020, significant growth in floating wind





OCEAN ENERGY

Ocean energy potential
- **Wave: 45,000 TWh/year**
- **Tidal: 1,800 TWh/year**
- **Thermal: 33,000 TWh/year**
- **Salinity gradient: 20,000 TWh/year**

EU
- By 2020, 1% of E demand
- By 2050, 15% of E demand (188 GW)

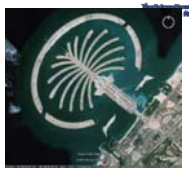
SUBMARINE TELECOM CABLES

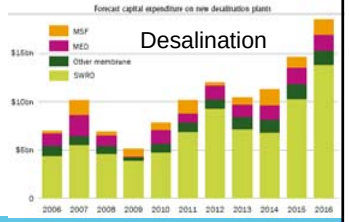
- **More than 1 million km of cables**
- **98% of international internet traffic**

PORTS / COASTAL CONSTRUCTION

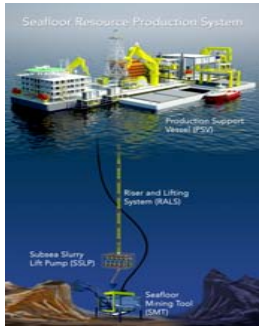
Ports: new, expansion, improvement, deepwater, offshore
Coastal: Piers/jetties, shoreline protection
Dredging: extraction, maintenance, landfill, reclamation

Desalination:
- Doubling every twenty years
- By 2025 demand is expected to exceed supply by 56%





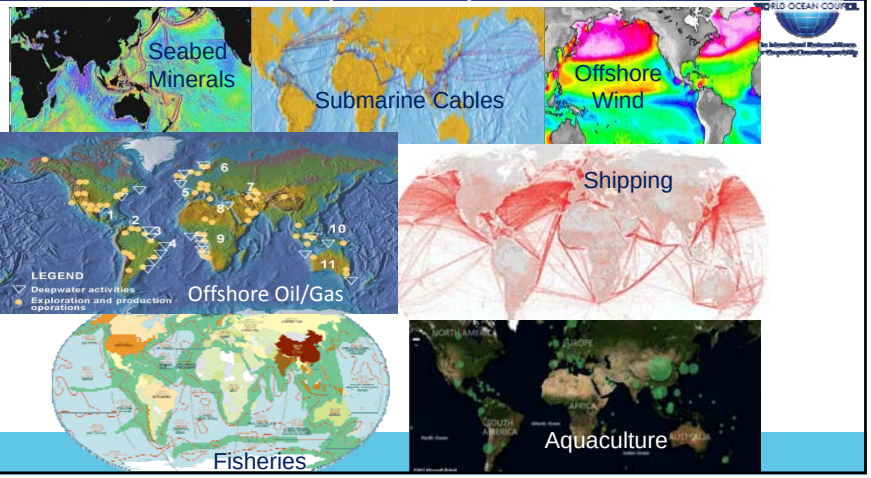
SEABED MINING



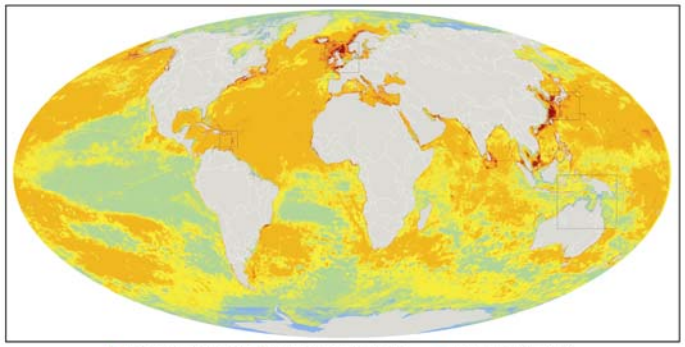
By 2030:
- **10% of world's minerals**
- **$12 billion in economic value**

LIVING ON THE OCEAN: Present -> Future

Global Ocean Industry Activity



Global Ocean Ecosystem Impacts



The Ocean Business Community Challenge

- **Ocean industries require access and social license** to use ocean space and resources
- Many of the **critical issues** creating impacts and affecting access and social license are **cross-cutting or cumulative**
- Sustaining ocean health and productivity requires **responsible use** and stewardship **by all users**
- Best **efforts by a single company**, or an entire industry sector, **are not enough** to secure ocean health
- Ocean **industries will benefit from collaboration** with other sectors to **create synergies** and **economies of scale** to address impacts and ensure access and social license
- **Need structure/process for ocean industry leadership and collaboration**

World Ocean Council (WOC)

International, Cross-Sectoral Business Leadership Alliance

- **Bringing ocean industries together**, e.g. shipping, cruise tourism, fisheries, aquaculture, offshore renewables, oil/gas, investment, etc.
- **Catalyzing private sector leadership, collaboration and action in:**
  - Advancing "Corporate Ocean Responsibility"
  - Communicating responsible ocean industry/economy
- **75+ members globally; 100's of actively engaged companies; 34,000+ in global network**
- Research, scientific and academic institution members as well

Goal: Healthy, productive global ocean and its sustainable use and stewardship by responsible ocean business community

Creating business value for responsible companies

- Access and social license for responsible ocean use
- Synergies and economies of scale in addressing issues
- Stability and predictability in ocean operations

WOC Partnerships and Formal Recognition

UNESCO Intergovernmental Oceanographic Commission (IOC) – Partnership Agreement

Group on Earth Observations (GEO) – Accredited Partner

International Hydrographic Organization (IHO) – Official Observer

International Seabed Authority (ISA) – Accredited Observer

Convention on Biological Diversity (CBD) – Accredited to SBSTTAs and COPs

International Whaling Commission (IWC) – Accredited Observer

UN Framework Convention on Climate Change (UNFCC) – Accredited to COPs

Ocean Climate Platform – Accredited Partner

China Belt and Road Network – Partner

International Standards Organization (ISO) – Underwater Acoustics Sub-Committee

Global Business Alliance for Sustainable Dev't of Int'l Chamber of Commerce (ICC) – Member

WOC CEO - first ocean industry organization invited to address UN General Assembly

WOC: Industry Leadership, Collaboration, Action

Cross-Cutting Framework Areas for Leadership, Collaboration and Action:

- **Sustainable Development Goals (SDGs) for the Ocean Business Community**
- **Ocean Investment Platform**
- **Digital Ocean / Big Ocean Data / Ocean Cloud**
- **Young Ocean Professionals Network**
- **Regional Ocean Leadership Groups**
- **Sustainable Ocean Summit (SOS)**
  (7th SOS, Paris, 20-22 Nov, 2019)

Ocean Business and Investment Action

WOC Ocean Investment Platform

An international structure and process to bring together:

- Leadership companies from major ocean use sectors
- Enterprises that provide the solutions
- The investment community

WOC Ocean Investment Platform is bringing value by:

- Catalysing interaction among ocean users, solution providers and investors
- Facilitating synergies and economies of scale among investors, innovation initiatives and challenge competitions to more effectively address ocean sustainable development needs and opportunities
- Providing a common process to identify, articulate and evaluate ocean industry priorities for investment in innovative sustainability solutions

Ocean Investment Platform: Progress, Plans

Ocean Investment Platform development is underway:

- WOC *Sustainable Ocean Summit* sessions on Investment and Innovation: SOS 2015 Singapore, SOS 2016 Rotterdam, SOS 2017 Halifax, SOS 2018 Hong Kong
- WOC presentation at *Sovereign Wealth Fund Institute Summit (SWFI):* Singapore, Apr 2016; Scottsdale, Feb 2017
- WOC "Ocean Day" at *SWFI Institutional Investor Forum*, Santa Monica, 2018
- SOS 2019: "Investing in Ocean Futures: Finance and Innovation for the Blue Economy"

Initial investment portfolio areas under consideration:

- Waste reduction/reuse on vessels
- Port adaptation/Resilient coastal infrastructure
- Marine debris/Port reception facilities
- Biofouling and invasive species
- Technology for ocean data collection

Collaboration on Regional Ocean Sustainability

Bringing together the range of marine industries at the regional scale to create cross-sectoral business collaboration on sustainable development, science and stewardship

- **Priority issues in various regions include:**
  - Collaborating with inter-governmental bodies
  - Reducing water pollution, protecting biodiversity
  - Preventing maritime accidents
  - Avoiding the introduction of invasive species
  - Reducing/cleaning up marine debris
  - Improving marine science and observations

Priority regions include:

- Arctic, W Africa, W Indian Ocean, Caribbean, Mediterranean, Coral Triangle

WOC Programs: Priority Areas for Action (1)

- **Improving Ocean Governance, Policy and Planning**
  - UNCLOS/BBNJ, UNFCCC, SDGs, Convention on Biological Diversity …
  - Marine Spatial Planning
    - Inter-industry Conflicts/Synergies
- **Reducing Anthropogenic Impacts**
  - Biofouling/Invasive species
  - Marine sound
  - Plastics/Port Reception Facilities
- **Conserving Marine Biodiversity**
  - Marine protected areas
  - Marine mammal 'Ship strikes'
- **Ensuring Food Security**
  - Sustainable fisheries/reduced IUU fishing
  - Sustainable aquaculture

WOC Programs: Priority Areas for Action (2)

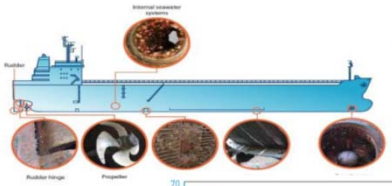
- **Improving Ocean Knowledge** (SDG14a)
  - SMART Ocean - SMART Industries:
    - Data collection from Industry "Ships/Platforms of Opportunity"
- **Reducing Disaster Risk**
  - Port/coastal infrastructure adaptation and resilience
- **Addressing Climate Change**
  - Ocean NETs: Negative Emissions Technologies in the ocean
  - Ocean acidification
- **Advancing Low Carbon Energy from the Sea**
  - Ocean-based renewable energy

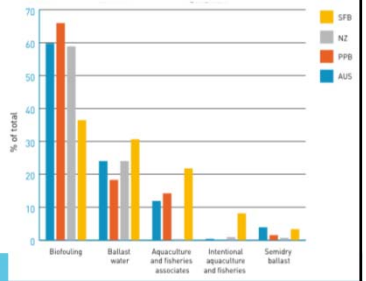
Action on Biofouling/Invasive Species

Prevention
- Coatings
- Research and development
- Monitoring, data and metrics

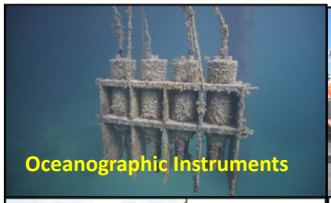
Cleaning
- New technologies emerging
- Testing and increasing use
- Monitoring, data and metrics

GloFouling Partnership
- GEF, IMO, UNDP, IOC, World Ocean Council
- 5 year project starting in 2019





Multiple Vectors for Biofouling/Invasive Species



Action on Biofouling and Invasive Species

Glofouling and the Ocean Business, Recreation and Investment Community:

- Leadership, collaboration and action on biofouling and invasive species
- Best practice guidance documents and tools developed
- Awareness raising among the full range of sectors
- Public-private partnerships to develop cost-effective management and solutions for biofouling
- Increased investment in biofouling management innovation, solutions, technology

***Beyond Glofouling**:*
Shipping and other ocean industries (and recreation and investment) continue with the leadership, collaboration and action needed to address biofouling and invasive species over the long term

Action on Ocean Knowledge

WOC SMART Ocean-SMART Industries (SO-SI) Program

Ensure a **wide range of industry vessels and platforms** are:

- **Providing routine, sustained, standardized information** on ocean and atmosphere
- Contributing to describing the **status, trends and variability** of oceanographic and atmospheric conditions
- **Improving the understanding, modeling and forecasting** of oceanic ecosystems, resources, weather, climate variability and climate change

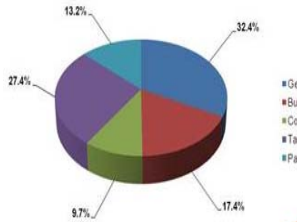
The SO-SI program is working to:

- **Foster, facilitate and broker interaction between scientists needing data and companies with vessels and platforms** that could collect data
- **Expand the number of vessels and platforms** that collect standardized ocean, weather and climate data
- **Improve the coordination and efficiency of data sharing** and input to national/international systems and existing programs

Opportunities of Ships

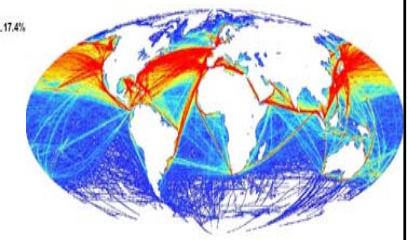
50,054 ships (Oct 2010)

- Tankers: 13,175
- Bulk Carriers: 8,687
- Container ships: 4,831
- Passenger ships: 6,597









Other Ship and Platform Opportunities

Oil and gas

Fisheries

Aquaculture

Ferries

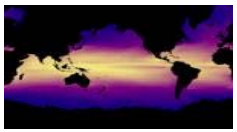
Offshore wind energy

Wave/tidal energy

SMART Ocean-SMART Industries: How it works

WOC…

- Engages scientific institutions to identify:
  - Priority data collection needs and areas
  - Appropriate, cost-effective, ship-suitable technology
- Identifies and recruits companies:
  - With vessels/platforms operating in the priority areas
  - Interested/capable of hosting/depoying instruments or hosting scientists
- Instigates and facilitates working relationship between the company and the scientific institution
- Monitors, coordinates and supports interaction between company and scientific institution
- Ensures industry data collection efforts are efficient, cost effective and contribute to national and international public science programs


WOC 7th Sustainable Ocean Summit (SOS) Paris, 20-22 Nov 2019

www.Oceancouncil.org

Paul Holthus, CEO
World Ocean Council
paul.holthus@oceancouncil.org

WOC – the Global "Blue Economy" Business Organization

GloFouling Partnerships Project

Upcoming activities

April	May	June to September	October	November
1st set of expert reports and global studies commissioned Communication strategy developed Project website launched Knowledge hub development	Launch of Global Industry Alliance (during MEPC 74) 1st meeting of GIA Task Force	National Task Forces set up in LPCs (dates to confirm) Regional workshop Pacific National assessment guidance publications	1st IMO GloFouling R&D Forum (back-to-back with 4th ANZPAC workshop on biofouling) WISTA AGM session on biofouling	WOC Sustainable Ocean Summit And more planning…

GloFouling Partnerships Project

Thank you

GEF-UNDP-IMO

GloFouling Partnerships Project

For more information:

GloFouling Project Coordination Unit
glofouling@imo.org

GloFouling Partnerships Project

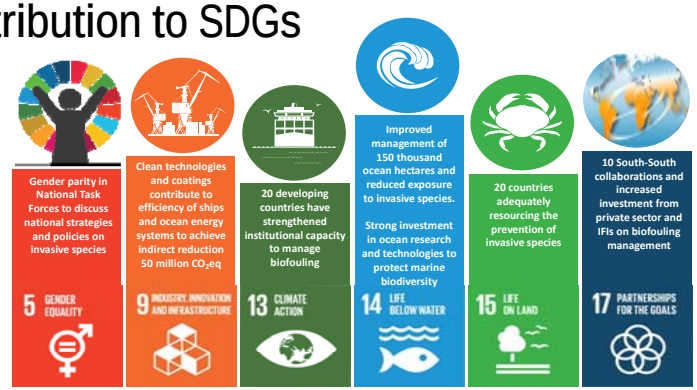
Communication and sustainability

Key media and communication outputs

- Communications strategy
- *Project branding and visual identity*
- *Project website at global, regional and national levels*
- *News items and project activities (including WOC, IOC, LPCs, RCOs)*
- *Awareness raising materials (printed, social media, video animations)*
- *Documentary "Invaders from the Sea"*
- *Translation of publications into key languages*

GloFouling Partnerships Project

Contribution to SDGs



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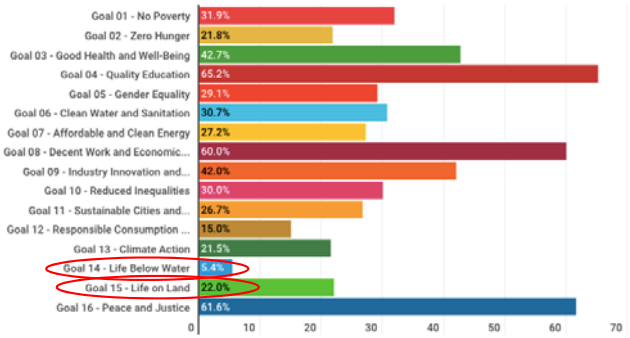
Challenge: How frequently does a global goal appear in leaders top six priorities?



Source: Listening to Leaders 2018: Is development cooperation tuned-in or tone-deaf?

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What about the private sector?

Source: From promise to reality: Does business really care about the SDGs? And what needs to happen to turn words into action. Scott, L. and McGill, A. 2018. Pricewaterhouse Coopers

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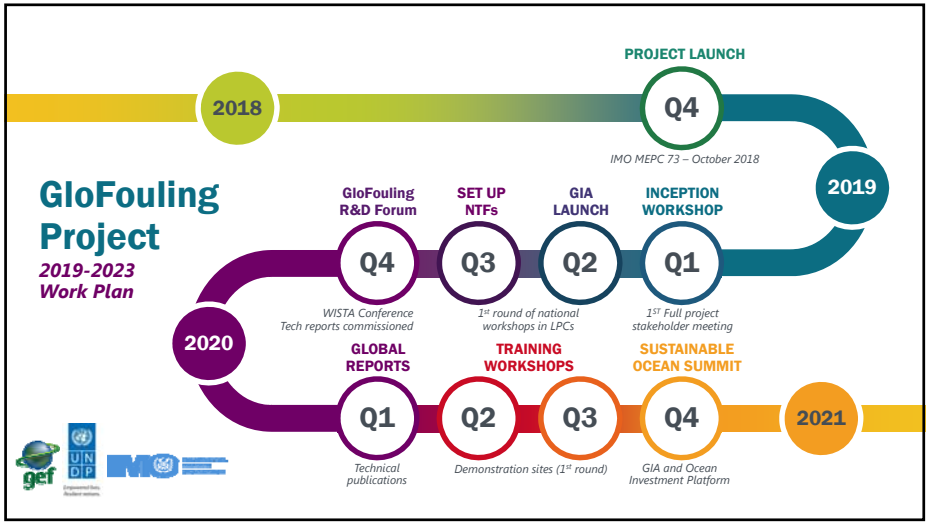
Company prioritisation of the SDGs: Which SDG is most relevant or a priority?

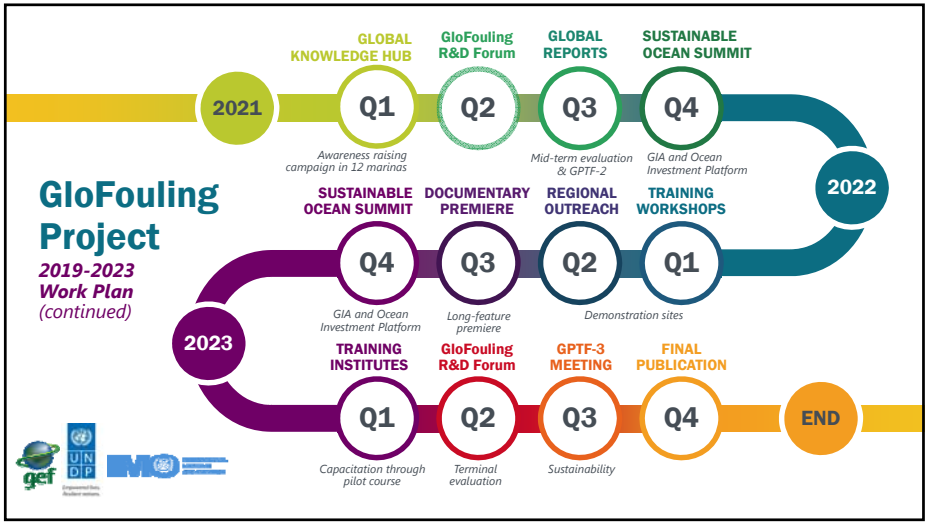
Source: From promise to reality: Does business really care about the SDGs? And what needs to happen to turn words into action. Scott, L. and McGill, A. 2018. Pricewaterhouse Coopers

GloFouling Partnerships Project

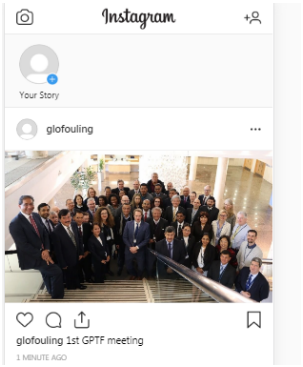
GloFouling Project
2019-2023 Work Plan



GloFouling Project
2019-2023 Work Plan (continued)



Key media and communication outputs



New Instagram account

Instagram.com/glofouling

https://www.instagram.com/p/BvO1FnoF2P6/?utm_source=ig_web_button_share_sheet

IMO campaign – photo competition

Biofouling and invasive species

GloFouling Partnerships Project

Strategic partnerships

GloFouling Partnerships Project

Strategic partnerships

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Thank you

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GloFouling Partnerships Publications