SECOND REGIONAL TASK FORCE MEETING ON BIOFOULING MANAGEMENT AND INVASIVE AQUATIC SPECIES

November 23-25, 2022; New Coast Hotel, Manila, Philippines

MEETING REPORT

1. Introduction

1.1 As part of the implementation of the GEF-UNDP-IMO GloFouling Partnerships Project in the EAS region, the Second Regional Task Force (RTF) meeting was jointly organized by the Government of the Philippines through the Maritime Industry Authority (MARINA) and Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) on November 23-25, 2022 through a hybrid format, i.e., in-person meeting at New Coast Hotel in Manila, Philippines and virtually via Zoom.

1.2 The 2nd RTF meeting was a follow through to the 1st RTF meeting[1] that was convened in April 2022, which endorsed the establishment of a Regional Task Force and the development of a Regional Strategy on Biofouling Management in the East Asian Seas (EAS) region. Since then, a draft Regional Strategy on Biofouling Management has been prepared and circulated to the countries, nongovernment, academic and private sector partners for review. The 2nd RTF meeting aims to further review the draft Regional Strategy and discuss its implementation, as well as to take into consideration the countries and private sectors' on-going programs or initiatives on biofouling and IAS management.

2. Welcome Remarks and Opening Messages

2.1 **Mr. Elmer Francisco Sarmiento, Undersecretary for Maritime Affairs of the Philippines' Department of Transportation,** welcomed the participants on behalf of the Government of the Philippines. Mr. Sarmiento thanked IMO and PEMSEA for their continuing support to the country in advancing its efforts for its compliance to international obligations, the improvement of the maritime industry, and the conservation of the marine environment.

[1] Report of the First Regional Task Force Meeting can be accessed at: https://pemsea.org/publications/meeting-documents/first-meeting-regional-task-force-rtf-biofouling-management-east

He emphasized the country's commitment as one of the Lead Partnering Countries for the GEF-UNDP-IMO GloFouling Partnerships Project to ensure the protection of the marine environment, as well as to minimize, if not totally eliminate, the harmful impacts of aquatic biofouling. As part of its steadfast commitment in addressing biofouling, the Philippines was elected and currently serves as the Chair for the Regional Task Force on Biofouling Management in the EAS region. He urged everyone to actively participate in the review and discussions on the draft Regional Strategy and its implementation that will further equip the region in combating the negative impacts of biofouling and invasive aquatic species.

2.2 **Ms. Lilia Khodjet El Khil, Project Manager of the GEF-UNDP-IMO GloFouling Partnerships Project,** underscored the significant progress in raising awareness on the issue of biofouling and invasive aquatic species (IAS) including its environmental and economic impacts both globally and in the EAS region. She highlighted some of the efforts in addressing biofouling and IAS such as the adoption of the IMO's Guidelines on the Control and Management of Ships' biofouling to minimize the introduction of IAS, and the implementation of the GloFouling Partnerships Project since 2019, which was designed to assist developing countries in the uptake of the IMO Biofouling Guidelines. The IMO has partnered with Regional Coordinating Organizations (RCOs) such as PEMSEA to support the implementation of the Project at the regional level including the coordination with Lead Partnering Countries in the region, i.e., for PEMSEA, Indonesia and the Philippines. She recalled the 1st RTF meeting in April 2022, which endorsed the Terms of Reference (TOR) of the RTF who leads the discussions on the development and adoption of a Regional Strategy. The Strategy aims to harmonize the efforts of countries in the region on biofouling and IAS management. Finally, she mentioned the ongoing review of the IMO Biofouling Guidelines and encouraged the participants to join the Correspondence Group in charge of this revision, to contribute to the discussion. The revision of the IMO Biofouling Guidelines is targeted to be completed by the end of 2023.

2.3 **Ms. Aimee Gonzales, Executive Director of the PEMSEA Resource Facility (PRF),** highlighted the significance of the 2nd RTF meeting being the first in-person gathering of countries and other partners in the region for the implementation of the GloFouling Partnerships Project. The RTF is a platform to discuss and deliberate the Regional Strategy and its action plan that will guide the region's collective action in promoting energy efficiency and mitigating GHG emissions, as a timely response to the recently concluded COP27 meeting on climate change. She explained the linkage between biofouling and global warming, and that marine biofouling tends to be more significant in warmer temperatures which enhances the pressures or impacts to shipping and other maritime sectors. She was pleased to note that despite the socioeconomic, political, cultural, and technical and financial capacity differences, countries in the EAS region are willing to work together and are open to finding solutions in biofouling management. She encouraged everyone to actively participate in the 2-day discussions, provide constructive comments and feedback on the draft Regional Strategy, share good practices, and learn from each

other on the benefits, challenges, innovative solutions and opportunities for partnerships in addressing biofouling and IAS.

3. Opening of the 2nd Regional Task Force Meeting

3.1 The 2nd Regional Task Force meeting was chaired by **Ms. Sonia Malaluan, Deputy Administrator for Planning of the Philippines' Maritime Industry Authority (MARINA)**. The Philippines through the MARINA was elected as Chair of the RTF during the 1st RTF meeting that was conducted in April 2022 and served as host for the 2nd RTF meeting.

3.2 Ms. Malaluan facilitated the introduction of in-person and virtual participants, which included representatives from the International Maritime Organization (IMO), RTF member countries, i.e., Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, RO Korea, Singapore, Thailand, Timor Leste and Vietnam; nongovernment, private sector and academic partners, i.e., Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), Global TestNet, Tas Global, Inc., Hongkong University of Science and Technology, and PEMSEA. The list of participants is given in **Annex 1.**

3.3 **Ms. Daisy Padayao, Programme Manager of PRF,** presented the agenda for the 2.5-day RTF meeting which included updates on initiatives and programs on biofouling management and IAS at the global, regional and national levels, presentation and discussion of the draft Regional Strategy on Biofouling Management, research and technological advances on biofouling management, and a field visit to a ship yard. The meeting adopted the agenda as presented and given in **Annex 2.**

4. Session 1: Global/Regional Updates on Biofouling Management and AIS

4.1 **Ms. Lilia Khodjet El Khil**, **IMO** provided an overview of the GloFouling Partnerships Project, which aims to assist developing countries in implementing the IMO Biofouling Guidelines and minimize the introduction of IAS through capacity building activities. The project also aims to raise awareness and share best practices from global actions to national implementation on biofouling management. The duration of the project has been extended by one year and a half and will end on 31st May 2025 (original end date was 31st December 2023) and its activities are being implemented in 12 Lead Partnering Countries including the Philippines and Indonesia, and 14 Partnering Countries in six regions, in addition to outreaching to other countries through the engagement of RCOs such as PEMSEA. As part of awareness raising and capacity building, training on biofouling management has been conducted in 4 Lead Partnering Countries (LPCs) including Indonesia and Philippines while the rest of the LPCs are expected to deliver the training by the end of this year. Ms. Khodjet El Khil informed the participants of the available publications and resources on Biofouling Management which can be accessed at the IMO website (https://www.glofouling.imo.org/). She also mentioned the newly launched eLearning training course, developed by the Project in cooperation with the World

Maritime University (WMU). The Course in hosted on the IMO Learning platform and will be open to anyone willing to take the course next year.

4.2 **Ms. Ernesta Swanepoel, IMO Consultant** apprised the meeting on the process of developing the Guideline for the Development of National Strategy and Action Plan which included consultations with RCOs and the conduct of a Rapid Gap Analysis that will aid in identifying the issues on biofouling management in the region. She commended the EAS region for being the only region which conducted a "temperature check" or survey of the status of biofouling and IAS management, as part of its initial activities in the development of the draft Regional Strategy.

4.3 **Ms. Aimee Gonzalez, PRF** presented the activities conducted from 2020 to 2022 in relation to Biofouling Management including the conduct of 2 regional awareness raising seminars on biofouling management in 2021 and the 1st RTF meeting in April 2022. She reported the available resources on biofouling management in the EAS region, which can be accessed in the PEMSEA website (https://pemsea.org/content/glofouling). Ms. Gonzalez presented the purpose, roles and functions including the composition of the Regional Task Force, which is a multistakeholder working group that will develop a Regional Strategy on Biofouling Management in the EAS region.

4.4 Highlights of the discussions during the session are summarized as follows:

- The Chair enjoined the participants to take note of the available resources and training on biofouling management from IMO and PEMSEA.

- Mr. Roath Sith indicated that the Ministry of Environment of Cambodia will send in the coming days their official nomination to the RTF on Biofouling Management in the region.

- On the use of invasive aquatic species or invasive alien species. It was noted that there is a wide range of different words to describe AIS, e.g., indigenous vs non-indigenous species, etc. For purposes of consistency, it was recommended to follow the terminology as outlined and defined in the IMO Guideline, i.e., invasive aquatic species (IAS).

- Dr. Riyanto of Indonesia clarified the possibility of moving the finalization of the National Economic Assessment by early 2023 instead of December 2022. It was explained that the National Status Assessment and the National Economic Assessment provide the foundation for the development of the National Strategy and Action Plan on Biofouling Management. Though the deadline can be extended, it should be noted that these documents will provide input to the National Strategy

which should be completed by the end of the Project. Indonesia was advised to inform IMO and PEMSEA on the proposed extension for the completion of the National Economic Assessment.

- Mr. Ahmad Wahid of the Directorate General of Sea Transportation (DGST), Indonesia clarified if the National Economic Assessment and the National Strategy can be carried out in parallel. It was affirmed that these can be carried out in parallel since the National Strategy uses the results of the National Status Assessment that provides an assessment of what is available and the gaps, which should be considered in the Strategy. The National Economic Assessment aims to provide a business case and need not necessarily be complete for the development of the National Strategy. IMO/PEMSEA was requested to provide the TOR for the development of the National Strategy and Action Plan.

- Mr. Ramon Hernandez of MARINA informed the meeting that the Philippines has completed the National Status Assessment and currently in the process of completing the National Economic Assessment. The Philippines is also in the process of drafting its National Strategy and Action Plan.

5. Session 2: Country Updates on Biofouling Management and AIS

5.1 **Mr. Mohammad Yaakup Saidi, Manager of the Regional and International Maritime Affairs, Maritime and Port Authority of Brunei Darussalam** provided an update on the management of IAS and biofouling in the country. He presented the relevant national agencies responsible on marine environmental protection including the country's policies, regulations, programs and plans relevant to biofouling management. He explained the delegation of ship inspections related to ballast water to recognized organizations, as well as industry-led biofouling management. He also indicated the country's commitment to accede to the BWM Convention by 2025. At present, the initial drafts of policy paper and regulations on the said Convention are available and may contact Mr. Mohamad Yaakup Saidi for additional information..

5.2 **Mr. Ros Vannara, Chief of the Coastal Management Office, Merchant Marine Department of Cambodia** presented the current status of initiatives related to biofouling management in the country. His presentation focused on building institutional capacities, which included the participation to the Regional Technological Conference on MEPSEAS in November 2022 and the Seminar for Flag Performance Improvement in December 2022, and the process of enacting laws and regulations in Cambodia. Relevant policies and regulations on biofouling management, which are at various stages of approval, include the Law on Waterway Transport and Port, the Declaration on the Prevention of Pollution by Garbage from Ships, the National Policy on Maritime-Waterway Transport and Port, and the National Action Plan to Implement MARPOL Annex I, II and V.

5.3 **Mr. Ahmad Wahid, Director of Marine Safety and Seafarer, DGST, Indonesia** expressed the country's serious commitment to marine environmental protection as shown from the large number of Indonesia's delegation to the meeting. Indonesia, along with the Philippines is one of the lead partnering countries of the GloFouling project. Mr. Wahid presented the country's accomplishments for the implementation of the GloFouling Partnerships Project from 2019-2022. Among the accomplishments included the establishment of a National Task Force, the establishment of national website on biofouling and IAS, completion of the national status assessment, and the conduct of a national training on biofouling and IAS management. Ongoing and activities that will be initiated in 2023, include the finalization of the National Economic Assessment, the development and endorsement of the National Strategy and Action Plan, and the development of Circular on Biofouling Management.

5.4 **Mr. Somvang Bouttavong, Director of the Department of Water Resources, Lao PDR** presented the country's international commitment (e.g., Convention on Biological Diversity), and policy, institutional and legal framework relevant to biofouling management (e.g., National Biodiversity Strategy and Action Plan 2016-2025). He updated the meeting on the status of the country's reporting to the CDB and its initiative to develop a Strategic Implementation Plan for the Fisheries Sector in Lao PDR. He indicated that there is currently no document that mentions IAS but rather uses invasive alien species in general.

5.5 **Mr. Mohamad Amir Fikri Yahya, Assistant Director of Safety, Security and Environment Division of the Marine Department, Malaysia** highlighted the country's policy, action plan and governance mechanism for IAS. Malaysia's management of IAS is anchored on the implementation of the National Policy (2016-2025) and Action Plan on IAS (2021-2025) that is being coordinated by the Ministry of Agriculture and Food Industries, and relevant Technical Sub-Committees.

5.6 **Engr. Ramon Hernandez, Director II of the Shipyards Regulation Service of MARINA** reported that the Philippines has achieved 70% of its required deliverables under the GloFouling Project. Among the completed outputs include the establishment of NTF, establishment of biofouling webpage in the MARINA website (https://marina.gov.ph), the completion of the National Status Assessment, and training on biofouling, ballast water and AFS including the establishment of the MARINA Training Institute (MarTI). Ongoing initiatives include the development of the National Strategic Action Plan (NSAP), National Economic Assessment, and the drafting of National Measures. It is expected that the National Economic Assessment report will be ready by the end of 2022 while the NSAP will be completed in 2023.

5.7 **Mr. Aidan Ho, Assistant Director of Flag State Control of the Maritime and Port Authority of Singapore** provided an overview on the country's commitment relevant to biofouling and IAS such as the implementation of the BWM and AFS Conventions. He indicated that there is currently no specific regulation on biofouling management but emphasized that they are working with the different stakeholders to ensure the implementation of the IMO Biofouling Guideline in the country's shipping industry and in all ships that are calling in Singapore.

5.8 **Mr. Jonas F. Alves do Rego, Senior Officer of the Maritime Administration, Timor Leste** underscored the various considerations for biofouling management in the country at the national and regional levels. He emphasized the country's need for capacity strengthening including technical knowledge, human and financial resources, and regional cooperation in order to move forward in biofouling and IAS management.

5.9 **Mr. Decha Chotepanitses, Ship Surveyor of the Marine Department of Thailand** informed the meeting on the policy and legal framework related to biofouling management in Thailand, which is anchored on the country's commitment to the CBD. He indicated that a National Task Force for Biodiversity will be established as part of the implementation of the National Reform Plan in Natural Resources and Environment and may also be considered as the possible mechanism for pursuing the implementation of the Biofouling Guideline. He also provided information on biofouling and IAS-related researches and studies in Thailand.

5.10 **Ms. Thin Thi Thoung, Senior Official of Science Technology and Environment Department of Vietnam Maritime Administration**, provided a brief background on Vietnam's maritime industry (e.g., ports, ship building and ship repair), its contribution to the national economy, as well as the various threats from the said sector into the marine environment. She presented the various initiatives of the country in addressing biofouling and IAS including its ratifications of international conventions (e.g., MARPOL, AFS, CBD, RAMSAR, CITES, World Cultural and Natural Heritage), participation to relevant international and regional projects, and the enactment of national laws (e.g., Law on Biodiversity (2018) and Law on Environmental Protection (2020)). She mentioned that Vietnam is expected to ratify the BWM Convention in 2023.

5.11 Highlights of the discussions during the session are summarized as follows:

- On the availability of information on the impacts of biofouling and IAS in the Mekong River. It was noted that Lao PDR currently has its National Biodiversity Strategy and Action Plan but has no specific status assessment on biofouling and IAS. It was also noted that the national status assessment is an important undertaking and Lao PDR can benefit from the experiences of Philippines and Indonesia.

- On the potential transfer of IAS from the marine into freshwater environment. It was explained that most invasive species cannot survive in a very different environment, e.g., from marine to freshwater due to differences in salinity. However, marine organisms may survive in brackish water or estuarine environment, and some exceptional species may be propagated in a different environment. It was noted that the IMO Biofouling Guideline was developed for its applicability for both marine and freshwater environment. It was also noted that one of the measures in managing biofouling in recreational vessels is to undertake the cleaning in rivers and other freshwater environment.

- It was noted that the enforcement and guidelines on the application of biofouling technology is one of the areas that has not been given much attention on discussions relevant to biofouling.

- Director Hernandez, MARINA asked if there are experiences from other countries in terms of biofouling management in domestic ships. He indicated that there is an ongoing study with the University of the Philippines to determine if there are similar risks of biofouling in other islands of the country. He added that most of the ports in the country are affected by IAS hence the plan to implement biofouling management in domestic vessels.

- Mr. Wahid of Indonesia reiterated the country's preparation of the National Economic Assessment and the National Strategy and Action Plan as part of its biofouling management efforts. He mentioned about the current initiative of the country to conduct an assessment of IAS covering most ports that will serve as baseline information on IAS. He also indicated their initiatives of engaging other Ministries, the Classification Society and the paint industry in terms of antifouling systems and applications.

- On the impacts of biofouling and IAS in other countries in the region. It was explained that it may be difficult to determine the risks of biofouling and IAS in other countries since only Indonesia and the Philippines have undertaken a national status assessment. It was noted that it is important to determine the interests of other countries in undertaking a national status assessment to be able to identify the required support and how it can be provided.

- The important role of the Regional Task Force in the sharing of experiences and best practices, as well as the implementation of a harmonized and collective action on biofouling management was noted.

- On ensuring that the cleaning of ship's hull will not release materials that will impact the marine environment. It was explained that capturing of materials, particles and residues

from hull cleaning is very possible with the available biofouling technologies. There is however a gap in terms of determining the efficiency of capturing technologies and how much from the cleaning residues are really captured. It was also noted that to date, biofouling cleaning is not very well established particularly with the scientific community. It was also noted that biological and toxic materials that may be released into the environment has not been fully assessed including the areas where the hull cleaning will be undertaken and the maritime sectors that are being monitored, i.e., biofouling is mostly implemented in the shipping industry but not in the aquaculture and fisheries sector.

- It was noted that it is important to separate the discussions on handling and treatment of materials/particles/residues from dry dock and in water cleaning since there are different regulations/conventions that govern the enforcement of environmental standards (e.g., BWM, AFS).

- The shipping industry in Brunei Darussalam follows the international standards and practices in biofouling management. It is a common practice in the country that the shipping industry provides report to the Maritime and Port Authority of Brunei.

6. Session 3: Regional Strategy on Biofouling Management in the EAS Region

6.1 **Dr. Won Tae Shin, PEMSEA Consultant**, presented the draft regional strategy on biofouling management in the EAS region. He outlined the mission, vision, strategic objectives, and strategic actions of the draft Regional Strategy. Dr. Shin indicated that the strategic actions are non-exhaustive and may further be amended in the countries' national strategy and action plans. He emphasized that the Regional Strategy serves as a framework strategy and that the national strategy and action plan should provide details on actions, targets, indicators, timeframe and responsible organizations/entities.

6.2 Following the presentation on the draft Regional Strategy, the countries and other partners provided their comments and feedback, which are summarized in the Table below including the responses of IMO and PEMSEA.

Country	Comments/Feedback	Response/s from IMO/PEMSEA
Philippines	Supports the development of the regional strategy Comments on action plan:	 Actions noted and will be reflected in the next draft

Country	Comments/Feedback	Response/s from IMO/PEMSEA
	• Under R&D – monitoring and risk assessment timeframe should be moved to medium-term • Under capacity and awareness raising- add 'publications of best practices in the EAS region' in the short-term • Where does compliance, M&E be included?	Will be integrated in governance
Indonesia	Explain the coverage of the EAS region Use generic terminology instead of specific terms (Relevant ordinance and presidential decree) Under R&D – question on technology of disposal of biofouling materials/residues Under cap building- specify training needed on biofouling management (BM), apart from what	Add PEMSEA country partners/ASEAN in the introduction on LMES Noted Noted – e.g., national issuances Noted – delete 'removal' and broaden text Noted – include in the action plan training/capacity needs assessment, identify gaps and where/how to fill the gaps IMO has a general course on BM and there is an upcoming training on biofouling record book, training on inspections, training under the TEST Biofouling Project
Vietnam	Supports the development of regional strategy Add an explanation on the links between biofouling and GHG/climate change/ships energy efficiency Provide more explanation on steps on biofouling management	Will be added in the introduction section Will sharpen the intro text on capacity building and awareness raising

Country	Comments/Feedback	Response/s from IMO/PEMSEA
		IMO - emphasized the need to streamline the knowledge among countries
Thailand	Explain the practical impacts of implementing biofouling management and the development of a strategy Use of existing mechanisms for interagency committee	Provide the rationale for working on regional strategy at strategic, policy, economic benefits, operational level (interagency committee) Agreed.
Timor Leste	Request support in developing national legislation on biofouling management, including hull cleaning and other operational requirements	Strategy identifies ways to finance activities to help develop legislation, training and capacity building Resources are available to develop national regulatory management including in water cleaning from IMO's guide on national strategy and action plan development. It is a step-by-step methodology to develop policies, procedures and based on experience gained by countries in developing legislation and regulation
Prof. Qian, HKU	Offer to organize training on biofouling. Offer to support development of guidelines to develop baseline information- step by step approach on biofouling management Suggest that the list of available antifouling technologies and reviews be made available to all	Noted and offer is much welcome
Singapore	No further comments on draft IMO PPR sub- committee is currently reviewing biofouling guidelines (IMO correspondence group) Review draft strategy to align with revised IMO guidelines	Noted Will add an action to monitor PPR sub-committee's work under governance

Country	Comments/Feedback	Response/s from IMO/PEMSEA
Malaysia	Clarification of database – who will do this?	Reword the 'establishment of database' and emphasize more on linking, connecting and sharing, collating of data, information and database
Cambodia	Adopt generic terminology under governance	Noted
Lao PDR	Supports the strategy	
Brunei Darussalam	Establish a platform on information sharing,	Further refine the text to review/assess resource needs, info needs, data needs, etc.
Guilaume Drillet	Assess which data, which information	Identify what are the existing databases and the gaps
Prof Ketut	Share info on research/scientific studies and published journals on biofouling	Share through www.pemsea.org or national websites
Tas Global	Share photos of IAS which we can be inputted in an AI (artificial intelligence) database of TAS Global	Noted
Ernesta Swanpoele	Region will decide on contents of the strategy but guiding principles, scope, rationale may be added. 2011 IMO guidelines can serve as reference Need to differentiate what's happening in the region and what's happening in countries Certain details can be placed in the national strategy, e.g., national governance. Suggests that they be removed from the regional strategy	Noted and will be reflected in the draft
Lilia Khodjet El Khil, IMO	Rework strategic objective title to 'support establishment of national biofouling governance' Distinction between national, legal and institutional arrangements and development of national strategy- 'develop strategy and institutional arrangements	Noted on textual changes

Country	Comments/Feedback	Response/s from IMO/PEMSEA
	Under R&D- add prevention of biofouling growth (ex. use of anti-fouling paint, etc.) not just removing of biofouling Objective- under capacity- regional training facility established - clarify what is meant by 'facility' Under cap building- identify types of activities (concrete) Add a text on PEMSEA Countries to be updated about international discussions and negotiations and suggests an additional activity on continuous reporting on biofouling management negotiations Question: Develop a regional program on biofouling management. Suggests to develop a Regional ProDoc for submission to funding institutions.	Regional training hub could be the alternative replacement Take out IMO- GEF so as not to limit funding sources/opportunity

6.3 **Ms. Aimee Gonzales, PRF** outlined the next steps for the finalization and endorsement of the Regional Strategy on Biofouling Management in the EAS region and summarized as follows:

- Countries and other RTF members to send feedback on the draft Strategy by 7 December 2022;
- Countries and other RTF members to provide comments/feedback on draft proceedings by 7 December 2022
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- PRF to circulate final proceedings to be circulated by 12 December 2022;
- PEMSEA to present the Regional Strategy at the 15th EAS Partnership Council in July 2023 and incorporate biofouling activities in the SDS-SEA Implementation Plan 2023-2027;
- IMO to present the Regional Strategy at the ASEAN WG on Maritime Transport at the open-ended session meeting (March 2024 tbc); and

- LPCs to table the endorsement of the Regional Strategy on Biofouling Management as a formal agenda item in the ASEAN WG on Maritime Transport, with support from IMO and PEMSEA.

7. Updates on Industry and Research Sector Developments

7.1 **Mr. Kim Yusik, CEO and Owner of Tas Global, Inc. and the Chair of the Global Industry Alliance**, shared the KBioFouling initiatives which aims to equip developing countries with GloFouling solutions using ODA funds. The components of the KBioFouling include the application of the most efficient in water cleaning (IWC) robot, capturing technology, water treatment, and the application of artificial intelligence for prewarning for biofouling, hull performance and GHG monitoring. He also discussed the emerging needs of the shipping industry for IWC and the future developments for the IWC technology including a fully autonomous and an integrated IWC system.

7.2 **Mr. Gillaume Drillet, Chair of Global TestNet,** explained that Global TestNet is a network of more than 100 laboratories and 14 active members, which aims to promote comparable and accurate results on the performance evaluation of technologies and methodologies to control the risk of bio-invasion and harmful species introduction by shipping. Mr. Drillet shared the history of Global TestNet's work relevant to biofouling, as well as the activities of its members which include the testing of antifouling coatings, biofouling inspection and verification, validation of efficacy and impacts of in-water grooming or cleaning technologies, performance optimization and evaluation of IWC, studies on wastewater discharges, and support to the development of effective Biofouling Management Plans and Record Books.

7.3 **Prof. Pei-Yuan Qian, Deputy Director of the Southern Marine Science and Engineering Guangdong Lab (Guangzhou) of Hong Kong University of Science and Technology,** explained that biofouling is a global challenge and estimated to contribute to about US$ 18 Billion of economic losses annually. Prof. Qian presented the development trends of antifouling coatings and the results of their studies on promising compounds for antifouling coatings that have lesser impact to the marine environment. He indicated that only about 10 from about 1400 compounds are promising as non-toxic antifouling composition (e.g., butenolides). Their ongoing research include the field testing and comparison of efficacy and environmental safety of these compounds for future product development and commercialization.

7.4 Highlights of the discussions are summarized as follows:

- On the process of collecting the biofouling materials/residues and disposal. It was explained that larger biofouling materials can be collected, and treatment and disposal

are being undertaken similar to process for other industrial wastes. Some smaller biofouling particles need to undergo filtration process.

- On the availability of regulations for illegal dumping of biofouling materials. It was explained that to date, it may be difficult to identify specific regulation since hull cleaning does not have industrial classification and the approval of cleaning technologies is still in process. It was noted that this aspect should be considered by the countries in developing their biofouling regulations and enforcement.

- On how to convince shipping companies and shipyards to use advanced technologies for ship's hull cleaning which is very expensive. It was explained that although hull cleaning using robotic technology may be more expensive, it is 3 times faster and safer compared to hull cleaning by divers. Cost-benefit analysis can be undertaken however its application is dependent on the availability of regulation and whether it will be mandatory.

- On the efficiency of capture technologies to ensure that smaller organisms or particles (e.g., microplastic) are not released in the environment. It was explained that capturing technology will not have 100% efficiency but the capturing efficiency can be calculated.

- On ensuring that antifouling coating is not affected during hull cleaning. It was noted that there is currently no technology that will not affect the antifouling coating.

- On whether Global TestNet conducts intercalibration among its members to ensure a robust testing methodology. It was affirmed that Global TestNet conducts intercalibration and members undertake theoretical discussions and inter-calculation for the implementation of specific testing protocols. It was also noted that members of the Global TestNet are committed to ensuring that testing methodologies are robust and that they are disconnected from ship owners to maintain its independence.

- On the extent of effectiveness of Prof. Qian's antifouling system (AFS). It was explained that the effectiveness of the AFS was tested for 24 months in Hong Kong and 36 months in other areas in China. It was noted that AFS should be tested for longer period effectivity since the obligation for ships drydocking is every 5 years. It was also noted that Prof. Qian's group has ongoing discussions with ship owners in Hong Kong and China and antifouling company to use butenoids and undertake field testing for longer period (e.g., 5 years).

- Prof. Ketut of Indonesia indicated their ongoing work on developing antifouling coating system and have undertaken optimization processes, and laboratory and field tests of various polymers for antifouling coating. He requested Prof. Qian to share available publications and reports for reference.

- Ms. Lilia Khodjet El Khil, IMO appreciated the interesting discussions on measures and available technologies on biofouling management. She reiterated that there is currently a Correspondence Group that is working on the revision of the IMO Biofouling Guidelines. The Group is revisiting the definitions in the Guideline and looking at the different aspects of biofouling management including biofouling rating, testing, the handling of wastes from cleaning, the outcome of cleaning, the risk profile, inspection and its frequencyamong others. The Group currently includes three countries from the region, namely Japan, RO Korea and Singapore and she enjoined the participants to take part in the discussions. Interested participants may inform Ms. Khodjet El Khil and she will put them into contact with the Chair of the Correspondence Group.

8. Summary and Next Steps

8.1 **Ms. Aimee Gonzales, PRF** reiterated the next steps for the finalization and endorsement of the Regional Strategy on Biofouling Management in the EAS Region. The next steps are given in **6.3.**

8.2 **Ms. Lilia Khodjet El Khil, IMO** expressed her strong support for the uptake of the Regional Strategy and indicated that IMO will present the Strategy as an information document in the next meeting of the ASEAN Working Group on Maritime Transport.

8.3 **Ms. Sonia Malaluan, MARINA and Chair of the 2nd RTF Meeting** provided the summary of the 2-day RTF meeting, which comprised of updates from the global, regional and country levels on biofouling and IAS management on the 1st day, and the presentation and discussions on the draft Regional Strategy and updates on research and developments on biofouling technologies on the 2nd day.

9. Closing

9.1 **Mr. Ahmad Wahid of DGST, Indonesia and Vice Chair of the RTF** expressed his sincere appreciation to IMO for its continuing support and to GEF/UNDP for funding the GloFouling Partnerships Project. Indonesia as an archipelagic country has around 200 vessels per day passing from the Pacific to Indian Ocean, about 100 sea ports and a number of shipyards which has the potential of introducing IAS in the marine environment. He enjoined the strong cooperation among countries to minimize the impacts of IAS. He expressed that Indonesia, as a Lead Partnering Country together with

the Philippines and the current Vice Chair of the RTF, is ready to welcome the participants to the next RTF meeting in 2023 in Indonesia. Finally, he thanked PEMSEA and MARINA for hosting a very successful, well-organized and well-prepared meeting.

9.2 **Ms. Aimee Gonzales, PRF** thanked the participants and the resource speakers for their active participation and valuable inputs during the 2-day discussions. She thanked MARINA for its support in hosting and organizing the meeting, and IMO for engaging PEMSEA to be part of the GloFouling Partnerships Project. Ms. Gonzales requested the participants to inform their Heads of Agencies of the outcomes of the meeting, and highlighted that the region's effort in preparing a 'home-grown' Strategy could input to a future negotiation for a global convention on biofouling and IAS management. She also enjoined the participants to inform PEMSEA of any issues and how PEMSEA can assist them in pursuit of biofouling management policy development in their respective countries.

9.3 **Ms. Lilia Khodjet El Khil, IMO** thanked everyone for the productive 2-day meeting. She indicated that the Regional Strategy was very well-prepared with a clear and practical action plan. She reiterated her strong support for the uptake of the Strategy and emphasized its importance in addressing marine biodiversity loss and climate change with IAS as one of the drivers of biodiversity loss. She hoped that the enthusiasm will continue after the meeting and that the Regional Strategy will be adopted and implemented in the region. She complimented the Philippines for the very productive meeting, for the demonstration and discovery of other skills and talents, for the fun time accorded to the participants, and its great hospitality. She also thanked PEMSEA and MARINA for the very well-organized meeting. Finally, she enjoined the participants to reach out to PEMSEA for any biofouling-related issues, and IMO/PEMSEA will determine ways on how to continuously support the biofouling management efforts in the region.

9.4 **Atty. Hernani Fabia, Administrator of MARINA,** conveyed his sincere appreciation to the participants for sharing their time and expertise on behalf of the Government of the Philippines. He indicated that the meeting was a good venue to introduce the GloFouling Partnerships Project, learn about the status of the countries on biofouling and IAS management, and for nongovernment organizations, academe and industries to share their knowledge and expertise. He added that the meeting provided an opportunity to present and discuss the draft Regional Strategy for finalization and adoption that will support the effort for biofouling management not only at the country level but in the region. He thanked IMO for its continuing support to the country, PEMSEA for co-organizing the meeting, and OSS of MARINA for the successful conduct of the 2nd RTF meeting. Finally, he reminded the participants for the following day's visit to a ship yard that will allow them to observe ship hull cleaning. He indicated that the Philippines to date, has not issued any regulation on ship hull cleaning.

9.5 **Ms. Sonia Malaluan, MARINA and Chair of the 2nd RTF Meeting,** expressed her heartfelt gratitude to the PEMSEA team, IMO, country delegations, private sector and academic partners, and virtual participants for the productive 2-day meeting. She then officially concluded the 2nd RTF meeting.

Powerpoint presentations can be accessed at: https://drive.google.com/drive/folders/1AgJuhA-9AIkmCv3-K8OdPY7LANszpCrY
Photos can be accessed at: Biofouling
Zoom recording can be accessed at: Day 1 and Day 2


CHAIR
PEMSEA
IMO

Annex 1. List of Participants

2nd Regional Task Force Meeting on Biofouling Management
New Coast Hotel, Manila; November 23-25, 2022

**Orange = in – person attendance*
** White = online attendance*
** Yellow = no confirmation yet*

No of Participant	Country	Name	Surname	Gender	Job Title	Organization	Email Address
3	Brunei Darussalam	Helmi	Haji Talib	Male	Senior Port Superintendent, Port Regulation Division	Maritime and Port Authority, Brunei Darussalam	helmi.talib@mpabd.gov.bn
		Mohammad Yaakup	Haji Mohd. Saidi	Male	Manager, Regional and International Maritime Affairs	Maritime and Port Authority, Brunei Darussalam	international@mpabd.gov.bn
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	Timor Leste						

1		Jonas Felisbela Alves	Do Rego	Male	Senior Officer Maritime Administration	National Directorate of Maritime Transport of Timor Leste	Jonas.algojo@gmail.com
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		Chotepanitses	Decha	Male	Engineer, Professional Level Ship Standard Bureau	Marine Department	decha.c@md.go.th
2	Vietnam	Thi Thuong Thuong	Thinh	Female	Official of the Science, Technology and Environment Department	VIETNAM MARITIME ADMINISTRATION (VINAMARINE) No.8 Pham Hung Road, Mai Dich Ward, Cau Giay District, Ha Noi, Viet Nam	thuongttt@vinamarine.gov.vn
		Thi Viet Ha	Nguyen	Female	Official of international Cooperation and IMO Department	VIETNAM MARITIME ADMINISTRATION (VINAMARINE) No.8 Pham Hung Road, Mai Dich Ward, Cau Giay District, Ha Noi, Viet Nam	ha ntv@vinamarine.gov.vn
	NON-GOVERNMENT PARTNERS AND ACADEME						
	Organization	Name	Surname	Gender	Position	Organization	Email Address
1	Global TestNet	Guillaume	Drillet	Male	Environment, Health and Safety - Global Marine Services	Marine Business Area Manager (Asia-Pacific) Chair of the Global TestNet SGS Testing & Control Services Singapore Pte Ltd	Guillaume.Drillet@sgs.com

1 (online)	Hongkong University of Science and Technology	Pei-Yuan	QIAN	Male	David von Hansemann Professor of Science Chair Professor, Department of Ocean Science Chair Professor, Division of Life Science Director, Hong Kong Branch of Southern Marine Science and Engineering Guangdong Laboratory (Guangzhou)	Hong Kong University of Science and Technology Clear Water Bay, Hong Kong	boqianpy@ust.hk
2	IMO	Lilia	Khodjet El Khil	Female	Project Technical Manager	GEF-UNDP-IMO GloFouling Partnerships Department of Partnerships and Projects	LKhodjet@imo.org
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Annex 2. Agenda

SECOND REGIONAL TASK FORCE MEETING ON BIOFOULING MANAGEMENT AND INVASIVE AQUATIC SPECIES

MEETING VENUE

New Coast Hotel Manila
1588 Pedro Gil, corner M. H. Del Pilar St, Malate, Manila

ZOOM LINK https://us06web.zoom.us/j/82586880769?pwd=WjF5QUp2Nk9rYUJpV0JVVk14bFJwUT09

23-25 NOVEMBER 2022; 9 AM-5PM (Philippines standard time)

PROGRAMME OUTLINE

23 November 2022

Chair of the Meeting: Ms. Sonia Malaluan, Deputy Administrator for Planning, Maritime Industry Authority (MARINA), Philippines

Time	Agenda	Note
8:15-9:00	Registration • Face to face and online registration of participants	Online participants are requested to check their internet connection at least 30 minutes before the start of meeting
Opening		MC: **Daisy Padayao**, PEMSEA
9:00-9:45	Welcome messages	**Elmer Francisco Sarmiento** Undersecretary for Maritime Affairs, Department of Transportation, Philippines

Time	Agenda	Note
		Lilia Khodjet El Khil, Project Manager, GloFouling Partnerships Project, IMO **Aimee T. Gonzales**, Executive Director, PEMSEA Resource Facility
9:45 – 10:15	• Presentation and Adoption of the Meeting Agenda • Brief introduction of participants • Group photo	Meeting Chair: Hernani N. Fabia MARINA Administrator
10:15-10:30	Coffee break	
Session 1	**Global/Regional Reporting on Biofouling**	
10:30-12:00	• GloFouling Partnerships Project Updates, IMO • Update of the process leading to the regional strategy template, IMO Consultant • Regional Biofouling Activity Updates, PEMSEA • Q&A	15 minutes per presentation 5 mins 20 mins 30 minutes Q&A
Session 2	**Country Updates**	
13:30-15:30	• Current status and initiatives undertaken at the country level to date in relation to biofouling or invasive aquatic species - ASEAN work related to biofouling or invasive aquatic species	10 minutes per country (about 3 slides)
15:30-16:00	Coffee break	

Time	Agenda	Note
16:00 – 17:00	• Continuation on Country Report • Q&A / Discussion • Summary of the meeting discussion • Announcement of Day 2 activities	Meeting Chair
18:00-20:00	Welcome reception	MARINA (host)

24 November 2022

Time	Agenda	Note
Session 3	**Regional Strategy on Biofouling Management in EAS Region**	
9:00-09:30	• Presentation of the Second draft of the Regional Biofouling Strategy	**Dr. Won-Tae Shin**, Regional Consultant on Biofouling Strategy
09:30-10:30	• Feedback from country representatives - Countries to present comments on the 2nd draft of the Regional Strategy	5 minutes per country (alphabetical order)
10:30-11:00	Coffee break	
11:00-12:00	• Continuation of feedback - Countries - RTF members - Q&A	
12:00- 13:30	Lunch	
Session 4	**Updates on Industry and Research Sector Developments**	

13:30-14:30	• Recent development in biofouling removal technology Yusik Kim, Chief Executive Officer - TAS GLOBAL Co., Ltd • Standardization and Testing of Biofouling Guillaume Drillet, Chair of Global TestNet Marine Field Services & Monitoring, and Regional Manager for Asia & Oceania, Industries & Environment • Research and Development on Environmentally friendly antifouling technology: from laboratory to marine coating industry Dr. Pei-Yuan QIAN, Director, Hongkong University of Science and Technology • Q&A	
14:30-15:00	Coffee break	

15:00-16:00	• Summary of comments and feedback (incl endorsement from RTF members) • Next steps: - Refinement of the Regional Strategy and Action Plan based on feedback from the 2nd RTF Meeting - Presentation of the Regional Strategy and Action Plan at the PEMSEA Executive Committee Meeting, 29 November 2022 - Presentation at the ASEAN WG Maritime Transport, 2024 - Possible adoption of the Regional Strategy and Action Plan on Biofouling Management at the East Asian Seas Partnership Council (2023) - Development of the National Strategy and Action Plan on Biofouling Management of the Lead Partner Countries in line with the Regional Strategy (2022-2023) - Discussion with other countries for consideration of the Regional Strategy in their national programs for Biofouling management	PEMSEA
Closing		
16:00- 16:30	• Summary of two-day meeting and close of formal RTF meeting • Announcement on Day 3 Field Trip	Meeting Chair

25 November 2022

Time	Agenda	Lead
AM	FIELD TRIP	MARINA as host
Lunch	FREE TIME	