REGIONAL SEMINAR ON BIOFOULING MANAGEMENT AND INVASIVE AQUATIC SPECIES

June 23, 2021; 3-5:30 PM (PST)
Online via Zoom

WORKSHOP REPORT

1. INTRODUCTION

The GEF-UNDP-IMO GloFouling Partnerships Project is aimed at catalyzing government action, industry innovation and capacity building in order to reduce the transfer of Invasive Aquatic Species (IAS) from international shipping and 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 and regional levels 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 Regional Seminar on Biofouling Management and Invasive Aquatic Species was jointly organized by the GloFouling Partnerships Project and the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) on June 23, 2021 via the Zoom platform to:

- Raise awareness on the issue of minimizing the transfer of invasive aquatic species through biofouling and capacitate government representatives to participate in future meetings and negotiations on the issue;
- Exchange information and knowledge on biofouling management, approaches, best practices and innovation that are currently available in the region;
- Identify existing challenges, knowledge and technical gaps in the region; and
- Examine and consider elements and options for regional cooperation and coordination of biofouling management measures that could feed into a strategy to promote regional harmonization of biofouling management.

The regional seminar served as a preparatory meeting for a regional workshop that will be conducted later in the year with the goal of defining a regional strategy for biofouling management.

2. OPENING REMARKS AND INTRODUCTION TO THE SEMINAR

Ms. Aimee Gonzales, Executive Director of the PEMSEA Resource Facility (PRF), welcomed the participants on behalf of PEMSEA to the first biofouling and IAS workshop in the East Asian Seas (EAS) region. Ms. Gonzales emphasized the significance of the subject given the region's role in global shipping and ship building industry and as an important maritime and biodiversity corridor. Communities and industries in countries in the region are highly dependent in the marine environment particularly on the sectors of coastal fisheries, tourism and mariculture. She indicated that Philippines, Indonesia and Thailand are among the top 15 countries in global aquaculture production. She introduced PEMSEA as a regional coordination mechanism that was created by 11 countries in the EAS region and aims to foster healthy and resilient coasts and oceans through integrated management solutions and strategic partnerships. She added that PEMSEA is the regional cooperation organization of the GloFouling Partnership Agreement and is pleased to jointly organize the regional awareness raising seminar on Biofouling Management and IAS together with IMO as the executing agency of the UNDP/GEF-funded GloFouling Partnership Project.

Ms. Gyorgyi Gurban, Head of the Projects Implementation, Department of Partnerships and Project, International Maritime Organization (IMO), welcomed the participants on behalf of the Secretary General of IMO. Ms. Gurban explained that IAS is a major issue in terms of biodiversity conservation and that recent studies highlighted that IAS is one of the major drivers to changes in biodiversity and the ecosystem. She mentioned that the removal of IAS once introduced is almost impossible. With the results of studies that ships biofouling is a major vector in the transfer of IAS, IMO in 2011 developed a Guidelines on Biofouling Management that was adopted by member States. She emphasized that these Guidelines, although not mandatory, offers a set of best management practices at the international level to proactively manage biofouling and to minimize the transfer of invasive species. She mentioned that implementation of the Guideline is still low currently and that adopting a mandatory instrument is the first step, which should be translated at the national level. She emphasized the crucial role of the regional level to ensure a harmonized approach and prevent countries from implementing diverging policies. She explained that the GloFouling Partnership Project aims to significantly promote the implementation of the IMO Biofouling Guidelines to support the uptake of best practices by participating countries within the project's timeline and beyond. She emphasized the important role of regional organizations such as PEMSEA in creating larger impact for the global endeavor in addressing IAS and protecting the environment. She commended PEMSEA for volunteering to be part of the GloFouling Partnership Project and that it is with the coming together of countries and regional organizations to take action that the objective of the Project can be realized. Finally, she extended her appreciation to Ms. Aimee Gonzales, PEMSEA who will be leading the regional effort in biofouling management starting off with the organization of this awareness raising seminar, the IMO GloFouling team and the participants for their active involvement despite the difficult circumstances brought about by the pandemic.

Ms. Aimee Gonzales provided an overview of the seminar, including the program flow and objectives. The program for the seminar is given in Annex A.

The seminar was attended by representatives from the International Maritime Organization (IMO), national government agencies, research and academic institutions, nongovernment organizations, ocean-based industries and other relevant stakeholders from PEMSEA Countries (i.e., Cambodia, China, DPR Korea, Indonesia, Japan, Lao PDR, Philippines, RO Korea, Singapore and Thailand) and other countries from within and outside the East Asian Seas region (i.e., Egypt, Malaysia, Mongolia, South Africa and United Kingdom). The list of participants is given in Annex B (see attached excel file).

Ms. Diana Factuar, PEMSEA, served as Moderator during the seminar.

The links in Annex B provide the Zoom recording and copies of the PowerPoint presentations.

3. WORKSHOP PRESENTATIONS

3.1 Introduction to Invasive Aquatic Species (IAS)

Dr. Sharifah Nora S. Ibrahim, Deputy Executive Director of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security Secretariat discussed key aspects of invasive species (IAS) as one of the drivers of biodiversity loss, the main vectors for the transfer of and impacts of IAS. Dr Ibrahim stressed that IAS are organisms (e.g., plants, animals, pathogens, etc.) that are introduced to a new aquatic environment outside of their natural environment and may pose ecological and economic threats. She further explained that the success of invasion depends largely on the biology, environmental condition and the characteristics of the vector of introduction of IAS, which include biofouling and ballast water. Dr. Ibrahim cited some ecological, economic and health impacts of IAS such as the *Alexandrium minutum*, a dinoflagellate that causes harmful algal blooms and the European crab, which is a voracious predator and affected the commercial shellfish industries. Dr. Ibrahim showed a list of invasive species that are found in some countries in the region (e.g., Brunei Darussalam, Cambodia, Indonesia, Malaysia and Myanmar) that are listed in the IUCN Global Invasive Species Database (http:www.iucngisd.org/gisd/search.php). Finally, she highlighted that once IAS becomes established, it is almost impossible to eradicate. Therefore, it is critical to prevent IAS invasion and to manage the main vectors of biofouling.

3.2 Introduction to Biofouling

Dr. Guillaume Drillet, Head of the Environment, Health, and Safety - Global Marine Services, Marine Business Area Manager (Asia-Pacific), Chair of the Global TestNet gave a short introduction on biofouling, how it is developed, and how this natural occurring phenomenon is not at all times causing negative impact, e.g., biofouling promotes the colonization of corals. Dr. Drillet presented some of the negative impacts of biofouling on industries. For example, biofouling can be seen in water pipes and cooling towers in power plants, inlet pipes

in farms and ponds, and cooling towers connected to drinking water systems onboard ships. Dr Drillet mentioned that biofouling also accumulates on ship hulls, which is the leading cause of invasive species being transported from one location to another. He discussed the impact of biofouling in aquaculture as organisms usually accumulate in fish cages and pens, as well as its negative impact on operational sensors affecting the quality and accuracy of measurements. Finally, Dr. Drillet mentioned that biofouling should be managed as otherwise will cause greater health risk and environmental degradation.

3.3 The following were raised after the presentations of Drs. Ibrahim and Drillet:

- On available studies/reports in the region on the interlinkages of biofouling and climate change particularly on greenhouse gas (GHG) emission. It was explained that there are currently no specific studies on this but the increase in temperature will favour faster development of biofouling and bioaccumulation. Dr. Drillet mentioned a recent study on the impact of temperature on the transfer of species in the Arctic region.

- On the effect of biofouling on underwater noise. Biofouling or the accumulation of biofilms in underwater sensors happens very fast and will affect the sensor's ability to vibrate for the measurement of specific parameter impacting accuracy of measurements hence the need to regularly clean the sensors.

- Options for managing biofouling on sensors particularly proactive approaches that do not entail or reduce frequency of regular cleaning, include mechanical cleaning, the use of anti-fouling coatings in sensors, and sensors are regularly taken out from the water for cleaning.

- On the impacts of biofouling and transport of IAS through marine debris be a concern? There are recent studies on procedures of assessing the natural vector of the transfer of species. The G7 Guideline on Ballast Water Management includes the assessment of species from different locations.

- On clarifying the statement that biofouling is not all negative. Dr. Drillet explained that biofouling is a natural process and that it can be used as a positive measure, e.g., coral colonization, microbial development on medical devices, etc.

- On what materials/methods can be applied to solve the problem of biofouling on suction pipes for cooling water that causes clogging and breaking down of the engine system? Some of the methods being applied include chemical treatment such as the application of chlorine, manual cleaning using brush, use of UV light and recently the application of a new technology of marine growth prevention system.

- On other methods that can be recommended to stop the spread of IAS given that the use of copper plating and anti-fouling paints are not sufficient. Dr Grillet explained that for as long as ships travel globally, the risks of bio-invasions remain. It is not possible to remove this hazard as this would mean stopping shipping (which is not an option) - therefore the risks need to be managed through a combination of approaches which can include the use of antifouling systems, regular ship-hull cleaning and grooming, independent inspections - all of this can be compiled into a biofouling plan which is ship specific and may evolve depending on the operations of the vessel. There is no "one fits all" approach.

- On the effect of environmental location in the growth rate of biofouling, e.g., tropical vs non tropical seas and others. In general, there will be more biofouling in warmer areas with higher temperature. This is because there is a longer season for reproduction (sometimes year-round) and also a higher variety of species. But there are also cases of species for tropical areas that when moved to more temperate waters, they maintain their reproduction rate. So, while colder areas tend to have less variety of species, the levels of biofouling can be equally important "from" tropical areas.

Additional information was also noted on the impact of IAS, i.e., invasive American mussel (*Mytella strigata*) is now affecting development of new floating solar farms in Singapore, with heavy fouling of structures that affects buoyancy and increases maintenance costs (https://www.businesstimes.com.sg/technology/singapore-now-home-to-one-of-the-worlds-largest-floating-solar-farms)

3.4 Presentation of the IMO Biofouling Guidelines

Ms. Megan Jensen, Technical Officer, Sub-Division for Protective Measures, Marine Environment Division of the International Maritime Organization led the discussion on the Biofouling Guidelines. These guidelines are intended to be the global approach to biofouling management and the reduction of the transfer of invasive aquatic species (IAS) by ships. Based on the IMO guidelines, each ship must have a biofouling management plan, a document that describes the measures in place to manage biofouling specific to the type of shipping vessel, and a biofouling record book, which is a logbook on measures undertaken to manage biofouling. Ms Jensen also emphasized that when implementing the IMO guidelines, national authorities should be clear in disseminating biofouling management information, provide ships and shipping agents information on IAS that may be present, provide them with adequate training and education packets on biofouling, and to monitor the effectiveness of the said IMO Guidelines. Ms Jensen also discussed the IMO Guidance for Recreational Craft to Minimize the Transfer of IAS as Biofouling. She explained that recreational craft constitute an important vector for the transfer of invasive aquatic species due to their large numbers and their operating profiles that may make them particularly susceptible to biofouling. It was also emphasized that States should take the IMO Guidelines into consideration when adopting national measures on biofouling management and to disseminate clear information on biofouling management to ships and stakeholders.

3.5 Overview of the UNDP/GEF/IMO GloFouling Partnerships Project

Ms. Lilia Khodjet El Khil, Project Technical Manager, GEF-UNDP-IMO GloFouling Partnerships gave an overview of the GloFouling Partnerships Project. An animated video was shown explaining what are invasive aquatic species and biofouling, as well as the objective of the GloFouling Partnership Project, which is to assist developing countries in the implementation of the IMO Biofouling Guideline and minimize the introduction of IAS. The GEF/UNDP/IMO GloFouling Partnerships Project was initiated in 2019 and will be implemented until 2023. The Project currently has 12 Lead Partnering Countries for implementation including Indonesia and Philippines in the EAs region. The Project has partnered with different regional organizations, including PEMSEA, to coordinate regional activities such as raising awareness on biofouling management, promoting technical and scientific cooperation, to creating a Regional Task Force to discuss and examine options on biofouling management and work towards developing regional strategy on biofouling management. The Project has produced a number of awareness raising resources and knowledge tools that can be accessed in the GloFouling Partnerships Project website (http://www.glofouling.imo.org), as well as Guidance document that will help the Lead Partnering Countries in the development of national status assessment reports, national strategy and policies, and economic assessments.

3.6 Clarifications following the presentations of Ms. Jensen and Ms. Khodjet El Khil are as follows:

- On how the countries and different stakeholders (e.g., shipping companies, ports) can have access to the training courses and guidelines that were developed by the GloFouling Partnerships Project. The conduct of the training courses will be coordinated through the National Focal Points (NFP) of IMO in the countries. The NFP will be responsible in inviting relevant stakeholders, including those in the ports and shipping sector to the training courses. The training courses planned under the project will be delivered by the lead training institution in the country. Afterward, the national training institutions may incorporate the training courses in their regular academic curriculum.

- The IMO Biofouling Guideline and other resources including video and information materials, and examples of biofouling regulations that are being enforced in countries such as Australia and New Zealand can be accessed in the IMO GloFouling website and knowledge hub, https://www.glofouling.imo.org

3.7 Regional Status of IAS and Biofouling Management

Ms. Diana Factuar, PEMSEA discussed the regional status of IAS and biofouling management. In her presentation, she identified some IAS in the region including the *Mytella Strigata* in Singapore, *Mytilopsis sallei* in several ports in South and Southeast Asia, *Mytilopsis adamsi Morrison* in East Asia, South Asian, and Southeast Asian countries. These IAS have caused ecological and economic damages to local fishermen, changed the structure of fouling

microfauna, and reduced the species diversity index. Ms. Factuar emphasized that there is currently no specific policy that addresses biofouling management at the national level. The commitments of governments in dealing with biofouling and IAS are currently within the framework of international instruments that they are party to (e.g., CBD, AFS and BWM). Also, no single agency that has the overall responsibility of biofouling management has been established at the national level. Countries in the region who have identified an interagency coordinating mechanism for biofouling management are China, Malaysia and the Philippines. Cambodia, RO Korea, Singapore and Thailand have not identified a specific mechanism during the conduct of the study. Currently, there are no national strategies and action plans specific to biofouling management but IAS are incorporated in a broader strategies and action plans of countries on biodiversity conservation and management. Finally, Ms. Factuar presented the main conclusions and recommendations from the regional study, including the lack of studies on the extent of IAS in the region, the difficulty of accessing information, and the need for enabling mechanism (e.g., policy, legislation, interagency coordinating mechanism), integrated information system, capacity building and awareness raising to better understand and respond to the issue of biofouling and IAS.

3.8 Status of IAS and Biofouling Management in Indonesia

Dr. I Ketut Aria Pria Utama, Head of Research Centre of Marine-Earth Science and Technology, Institut Teknologi Sepuluh Nopember discussed the status of IAS and biofouling in Indonesia. Dr. Ketut mentioned some IAS found in Indonesia including *Perna virdis* and *Didemnum mole*. These species caused physical disruption to the opening and closing of valves, recession of shell growth, and mortality. He outlined some sectors which are at risk for biofouling such as the international shipping, port and harbor facilities, marinas, offshore oil and gas facilities, aquaculture, marine biodiversity, marine conservation, and tourism. Dr. Ketut presented some of the existing national regulatory and policy framework in Indonesia that somehow covers biofouling and IAS management. He emphasized however that the country currently has no specific policy or regulation on biofouling and IAS management. Finally, Dr. Ketut explained the future plans for biofouling and IAS management in Indonesia, including the conduct of national status and risk assessments on biofouling and IAS, assessment of existing policies and implementation of biofouling management, and the evaluation of the needed policy/regulation on biofouling and IAS management in Indonesia.

3.9 Status of IAS and Biofouling Management in the Philippines

Dr. Benjamin Vallejo, Jr., Institute of Environmental Science and Meteorology, University of the Philippines discussed the status of IAS and biofouling in the Philippines. Dr. Vallejo stressed that the Philippines has acceded to IMO environmental conventions and protocols and that there is no specific management strategy for biofouling. Biofouling is addressed in legislation relating to marine pollution, fisheries, biodiversity management and protected areas management. He described their current project on Port and Ballast Water Baselines using Ecological, Microbiological and eDNA approaches. Some of the initial results showed that some species found in ports of Manila, Sorsogon, Cebu, and Davao are not endemic in the area. Dr Vallejo mentioned that some species prefer the colder temperatures and are normally found in East Asia (e.g., Hong Kong). It may be inferred that these species were

mostly transferred via ship hulls from one port to another. Moving forward with biofouling and IAS management entail a policy that is science-informed. In the Philippines, this would mean a review of the biosecurity frameworks, conduct of port ecological baseline for invasion risk assessments, environmental matching and risk assessments of international ports, and information management and access for policy decision support.

3.10 Questions that were raised following the presentations on the status of IAS and biofouling management at the regional and in Indonesia and Philippines are as follows:

- On available reports on the growth rate of biofouling in offshore floating structure particularly in Indonesia. It was explained that there was a study supported by the German Government some years ago on biofouling in aquaculture structures, including the use of special techniques for cleaning. No information was provided on the availability and access to the report of the said study.

- Ms. Lilia Khodjet El Khil emphasized that the presentations from Indonesia and Philippines also covered some policy aspects of biofouling management, which is crucial to the Project particularly on the uptake of measures at the national level. The future plans and action points indicated in the presentation from Indonesia are very relevant and should be addressed when developing the national strategy and action plan, including the national policy for biofouling management. The presentation from the Philippines highlighted the need to bridge policy development and port ecological baseline. Ms Lilia Khodjet El Khil commented that that two approaches can be considered, i.e., 1) policy on addressing a specific list of IAS, and 2) policy to address biofouling as a whole. However, the measures recommended in the IMO Guidelines on Biofouling Management are not species based and aim at addressing biofouling as a whole.

3.11 Towards developing a regional strategy for biofouling management

Ms. Aimee Gonzales, PRF and Ms. Lilia Khodjet El Khil, IMO co-chaired the session on the development of a regional strategy for biofouling management. It was emphasized that the regional strategy is a crucial part of the Project as IAS can move from one location to another. The regional strategy is important as it will harmonize and ensure that national policies and strategies for biofouling management are coherent. To initiate the preparations of a regional strategy, IMO with the support of an international Consultant, Ms Ernesta Swanepoel, will develop a template with the key elements of a regional strategy. The development of the regional strategy for biofouling management in the East Asian Seas region will be coordinated by PEMSEA and will be undertaken from 2021-2022. It is envisaged that the implementation of the regional strategy will be carried out beyond the project's completion in 2023.

3.12 Inputs and clarifications to the development of the regional strategy on biofouling management are summarized below:

- On distribution of the template and other information for the regional strategy, including participation to workshops of relevant stakeholders in the country. PEMSEA will reach out to the countries for the development of the regional strategy and national level activities will also be coordinated by the IMO's National Focal Points in the country.

    - Given the fact there is no single agency dealing with the subject of biofouling, how does PEMSEA or IMO evaluate the relevant agencies/institutions that will be invited in capacity building activities? For the Lead Partnering Countries, i.e., Indonesia and Philippines, a National Task Force has been established, which aims to bring together the relevant agencies and stakeholders for biofouling management in the country.

    - The need for technology sharing at the regional and international levels in dealing with biofouling. It was emphasized that technology sharing is important particularly on biodiversity information management for IAS and should be included as one of the elements in the regional strategy.

    - CTI-CFF indicated its interest for future collaboration with the Project considering that IAS and biofouling are affecting conservation areas.

    - It was also noted that interested parties/institution should be invited for future collaboration on biofouling and IAS.

4 Summary, Conclusions and Recommendations

4.1 Ms. Aimee Gonzales provided the summary and conclusions from the workshop and highlighted the gaps and challenges, and recommendations that need to be considered in the development of the regional strategy for biofouling management. The gaps and challenges include:

- Lack of studies to establish the extent of IAS/biofouling in the region;
- Difficult to obtain data/information coming from different ministries;
- No specific policy that addresses biofouling; and
- No single ministry or agency is responsible for IAS and biofouling, not well-defined in some countries;

Some of the recommendations include:

- Further studies need to be conducted to establish the economic and ecological impacts of IAS/biofouling on specific sectors;
- Need for an integrated information system at country and regional level;
- National policy/legislation is necessary to address the risks of biofouling;
- Need for a national inter- agency coordinating mechanism specifically addressing IAS/biofouling risks;
- Need awareness building and capacity development for better understanding and management response to the issue;

- Need for technology sharing at the regional, inter-regional and international levels; and
- Need for information sharing at the national, regional, inter-regional and international level.

4.2 Ms. Lilia Khodjet El Khil acknowledged the quality of the presentations during the workshop not only to raise awareness on the issue of IAS and biofouling but it also prepared the ground for more discussions on the establishment of a Regional Task Force and Regional Strategy for Biofouling Management. Ms. Khodjet El Khil emphasized that the focus of the IMO GloFouling Partnership Project in the coming months is to support the national and regional level activities. At the national level, the Lead Partnering Countries are currently preparing their national status assessment reports and will later on move to the development of their national policy and measures for biofouling management. These national level outputs will then feed to the regional strategy. At the regional level, the focus will be the development of the regional strategy that will start this year and moving forward. Finally, Ms. Khodjet El Khil thanked all the participants, speakers and the PEMSEA Secretariat for the successful conduct of the seminar.

5 Closing Message

Ms. Aimee Gonzales emphasized that this awareness raising regional seminar is just the beginning of stakeholders' engagement to help shape and influence the development of a regional GloFouling Strategy. She encouraged the participants from the region to share relevant data/information and contacts of key people that need to be engaged for the development of the strategy. She mentioned that an intergovernmental session on biofouling management will be organized towards the end of this year and that the participants will be informed in the coming months. Finally, she thanked the participants, resource speakers, IMO and PEMSEA moderator and staff for the successful awareness raising seminar on biofouling management and IAS.

Annex A.

REGIONAL SEMINAR ON BIOFOULING MANAGEMENT AND INVASIVE AQUATIC SPECIES

[Virtual connection via Zoom]
https://zoom.us/j/92701899907?pwd=OU1JNUE4YittOUg2Wm9mYlRCVkF6QT09

June 23, 2021 3-5:30 pm (Philippines standard time)

PROGRAMME OUTLINE

Time	Topic	Session	Lead
3:00 – 3:05	Opening	Welcome to all participants and opening speech	Aimee T. Gonzales Executive Director PEMSEA Ms. Gyorgyi Gurban Head, Projects Implementation, Department of Partnerships and Projects International Maritime Organization
3:05 – 3:10	Introduction to the Workshop	• Seminar Agenda • Brief explanation of the goal of the seminar • Introduction (very short) from all participants	Ms. Aimee T. Gonzales Executive Director PEMSEA
3:10 – 3:25	Invasive Aquatic Species	• Key aspects of invasive aquatic species, • Main vectors and • Impacts (ecological, economic, health)	Dr. Sharifah Nora S. Ibrahim Deputy Executive Director, Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF Regional Secretariat

Time	Topic	Session	Lead
3:25 – 3:45	Biofouling	● What is biofouling and how it happens ● Industries affected by biofouling *(5-minute Q&A)*	Dr. Guillaume Drillet Environment, Health and Safety - Global Marine Services Marine Business Area Manager (Asia-Pacific) Chair of the Global TestNet
3:45 – 4:05	International regulatory framework	● IMO Biofouling Guidelines	Ms. Megan Jensen Technical Officer, Sub-Division for Protective Measures, Marine Environment Division, IMO
4:05 – 4:20	Overview of GloFouling Partnerships	● Key aspects of the project ● Tools and materials available from the project *(7-minute Q&A)*	Ms. Lilia Khodjet El Khil Project Technical Manager GEF-UNDP-IMO GloFouling Partnerships
4:20 – 4:25	Break		
4:25 – 4:35	Regional status	● Current status and initiatives undertaken at the regional level to date in relation to biofouling or invasive aquatic species	Ms. Diane Factuar PEMSEA Consultant
4:35 – 4:55	National aspects	● Steps and activities undertaken by Lead Partnering Countries of the GloFouling Partnerships ● Status in other countries *(7-minute Q&A)*	Prof. I Ketut Aria Pria Utama, Ir, MSc, PhD, CEng, FRINA, FAIPI Head, Research Centre of Marine-Earth Science and Technology Institut Teknologi Sepuluh Nopember, Surabaya-Indonesia Dr. Benjamin Vallejo Jr Professor of Environmental Science Biogeography, Environment, Evolution and Climate Laboratory Institute of Environmental Science and Meteorology University of the Philippines
4:55 – 5:10	Regional strategy for	● Summary of regional status and suggested way forward	Ms. Aimee Gonzales Ms. Lilia Khodjet El Khil

Time	Topic	Session	Lead
	biofouling management	● Round of participants comments ● Key challenges and suggestions for next meeting	Co-Chairs
5:10 – 5:15	Other business	● Any other business	
5:15 – 5:20	Closing remarks	● Summary of seminar recommendations and next steps	Ms. Aimee Gonzales Ms. Lilia Khodjet El Khil Co-Chairs

Moderator: Ms. Diane Factuar

Annex B.

Link for the Presentation Materials:

https://drive.google.com/drive/folders/1Y7_SU-sNDFoJ9k8fGdJUH9dTIqxsIUBY?usp=sharing

Link Attendance List:

https://drive.google.com/drive/folders/1KzwlrNnssZz69B8Hy0IiU4BvPvIVjmw4?usp=sharing

Link for the Seminar's Zoom Recording:

https://drive.google.com/file/d/19KuurGthNygNW5OvvoSZY_F69Oqd0VJh/view