UN23: Accelerating capacity development transformation in the Western Pacific – Regional Network of Training and Research Centers (RTRCs) on Marine Science

UNESCO/IOC RTRC on Plastic Marine Debris and Microplastics

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Presentation Outline

01 | Background and Motivation

02 | Progresses made

03 | Impacts of activities

04 | Challenges and opportunities

05 | Click here to add a title

Background and motivation





- Marine plastic pollution has become a major marine environmental issue that needs to be tackled urgently
- Strong demand for improving research capacity and level in the WESTPAC region
- Many member states support the establishment of the RTRC on Plastic Marine Debris and Microplastics



Photos Credit: https://globalcosmeticsnews.com/japan-passes-bill-to-reduce-microplastics-in-order-to-combat-pollution/; Colourbox; Algalita; and Amber Dowling from Blue Ant Media

Background and motivation

WESTPAC Microplastic Research programme established at the 11th Session (21-23 April 2017, Qingdao, China) with **Daoji Li** designated as the PI from East China Normal University.

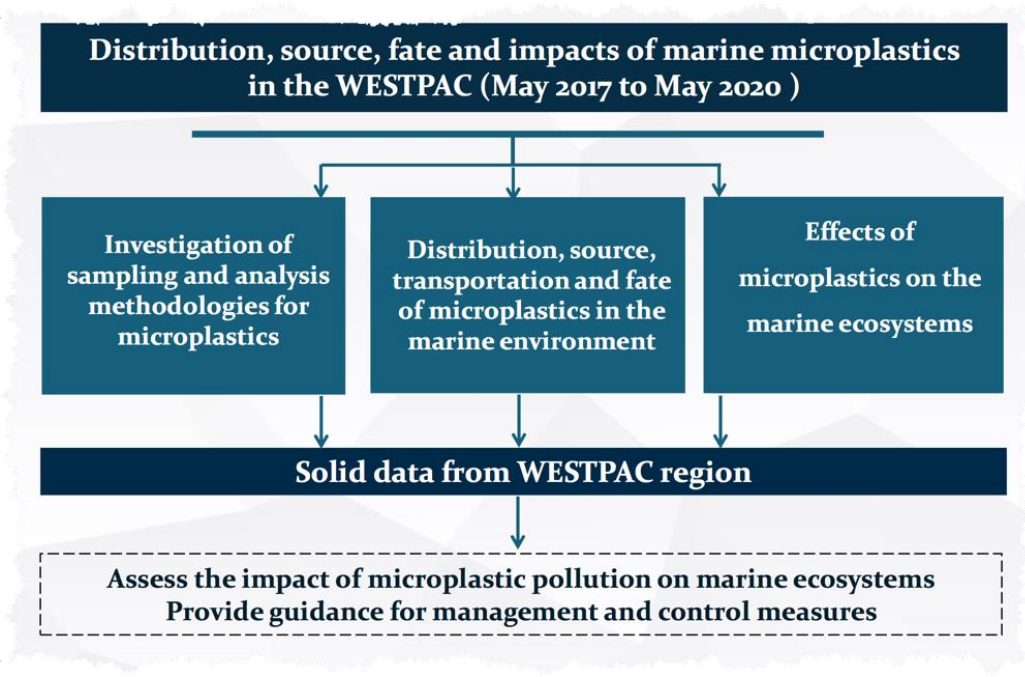


Member States at the 11th WESTPAC intergovernmental Session established the Microplastics programme, 21-23 April 2017

Achievements made

- Regional marine microplastic monitoring and research network established;
- Existing microplastic monitoring and research approaches shared;
- A standardized method harmonized for microplastic sampling and analysis in beach sediments, coastal water, rivers, etc.
- Pilot sites in beaches selected for sampling;
- Two Working Groups established, respectively on Microplastics in Surface Water WG: and Microplastics in Marine Organism WG





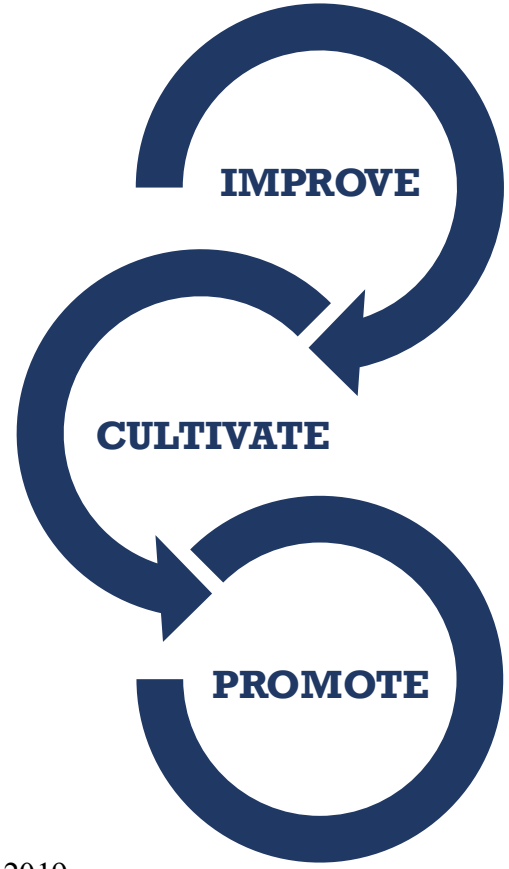
Background and motivation

Objectives





At the 12th WESTPAC intergovernmental Session, 2019



(1) Improve the research capacity, including sampling, measuring, modeling and assessing abilities, of countries in the Asia-Pacific region, or others

(2) Cultivate talented young researchers from IOC member states, particularly those from developing countries， or others

(3) Promote the ability of marine environmental governance by developing countries in the region or others

(4) networking of the regional experts to provide advice to the member countries on related issue of marine debris and microplastics

(5) Promoting and launching regional targeted scientific research projects

Progresses



Photo: The New Building of State Key Laboratory of Estuarine and Coastal Research (SKLEC)

Project Summary

- **Project Title:**
  UNESCO/IOC Regional Training and Research Center on Plastic Marine Debris and Microplastics
- **Duration:**
  5 years
- **Name of host institution(s):**
  East China Normal University (ECNU), Shanghai, China
- **Executing institution, including person(s) in charge of the "Center"**
  State Key Laboratory of Estuarine and Coastal Research (SKLEC), ECNU
  Prof. Daoji Li will be the Director
- **Total budget (US$):**
  800,000 US$
- **Funding sources – Organization and sum of money**
  East China Normal University

Progresses

Partnerships & Networking for marine plastic debris and microplastics

The SKLEC is cooperating with many partners, specially for marine plastic debris and microplastic research, including, but not limited to:

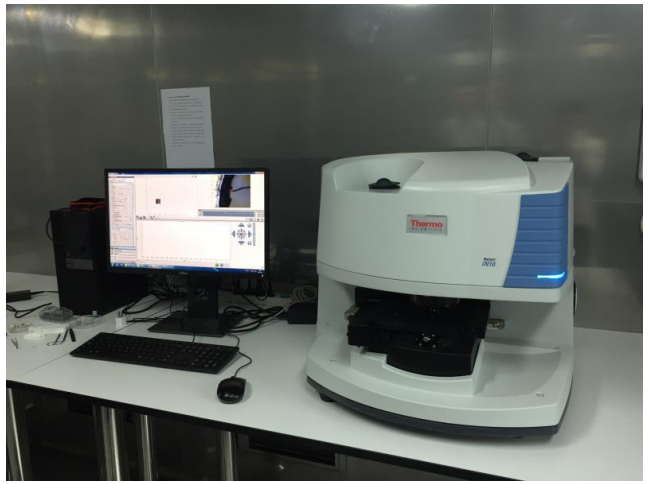
- **Department of Marine and Coastal Resources, Thailand**
- **First Institute of Oceanography, Ministry of Natural Resources, China**
- **Korea Institute of Ocean Science and Technology, Korea**
- **Marine Sciences Department, University of Connecticut (the United States)**
- **Norwegian Institute for Water Research – NIVA (Norway)**
- **P. P. Shirshov Institute of Oceanology, Russian Academy of Sciences (Russia)**
- **Research Center for Oceanography, Indonesian Institute of Sciences, Indonesia**
- **Tokyo University of Agriculture and Technology (Japan)**
- **Universiti Sains Malaysia, Malaysia**
- **Vietnam Institute of Oceanography (Vietnam)**
- **Woods Hole Oceanographic Institution (the United States)**

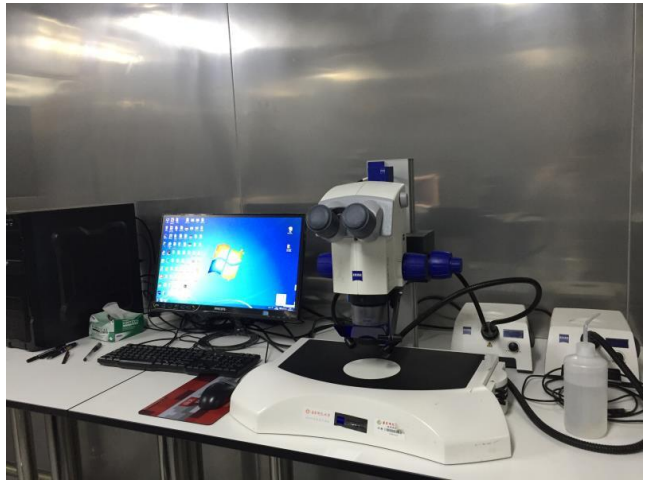


Majority of partners above belong to the IOC/WESPAC marine microplastics program's scientist network which was built after the 2nd International Symposium on Marine Microplastic Pollution and Control.

Progresses

Facilities for Marine Microplastic Research


Microplastic Ultra-Clean Analysis Rooms

Equipped with FTIR, Raman spectrometer, and a variety of analytical microscopes

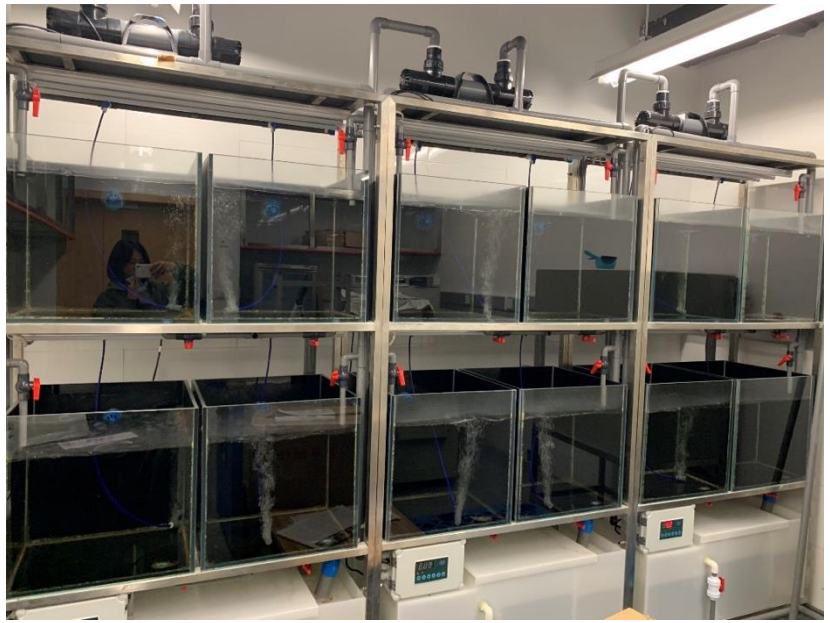
Progresses

Facilities for Marine Microplastic Research (Continued)









Experiment Rooms and Ocean Life Culture Rooms for Microplastic Research

Other chemical laboratories in SKLEC which are equipped with Gas Chromatography/Mass Spectrometry (GC/MS), Flow Cytometry (FCM), Photon Detection System, Plasma Emission Spectrometer (ICP), Varian Gas Chromatograph, LS100Q Laser Particle Size Analyzer, atomic absorption spectrometer, hydrocarbon nitrous oxide element analyzer, high performance liquid chromatograph, TOC analyzer are also shared with all the research teams.

Progresses

Facilities for Marine Microplastic Research (Continued)



Staff Lounge



Meeting Room



Classroom

Progresses

Type of activity

(1) International workshops, seminars

- 1 international workshop per year;
- 2 seminars for specific topics per year

(2) Short-term training

- once a year, 1 week each time

(3) Postgraduate teaching program

- Tentatively 1-2 for two years

(4) Visiting professorship

- 1-2 visiting professorships for one or two months every year

(5) Joint research program

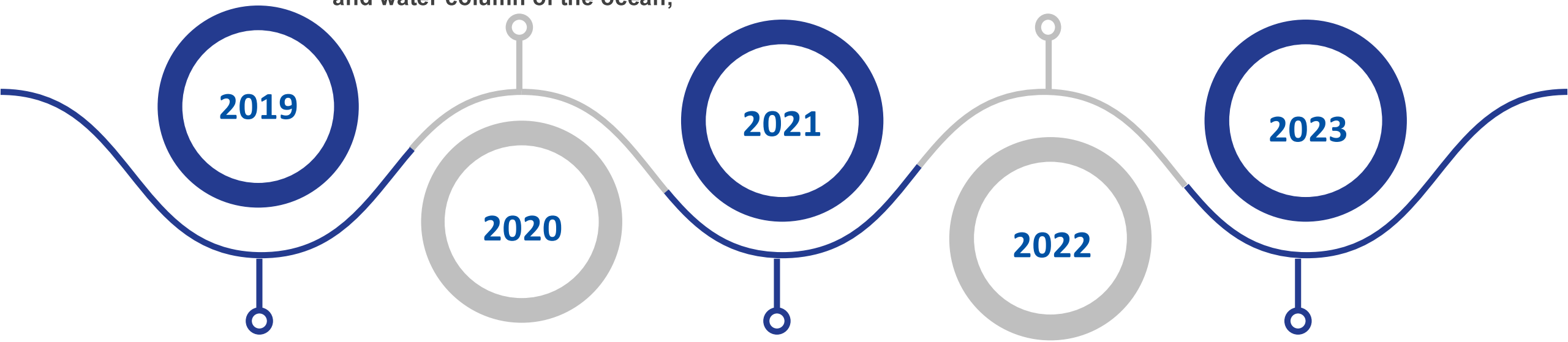
- with other IOC member states

(6) Scholarships

- 2-3 scholarships for PhD candidates, subject to application

Progresses

Time course of development



2019

Establishment of RTRC
International Workshops

2020

Guidelines draft for microplastics sampling and monitoring in surface and water column of the ocean;

2021

Demonstration video for microplastic sampling and analysis

2022

Catalyze the UN decade project

2023

Establish RTRC branch in Sanya, China
Training in Sanya
UN decade workshops

Progresses

New branch of RTRC in Sanya, China







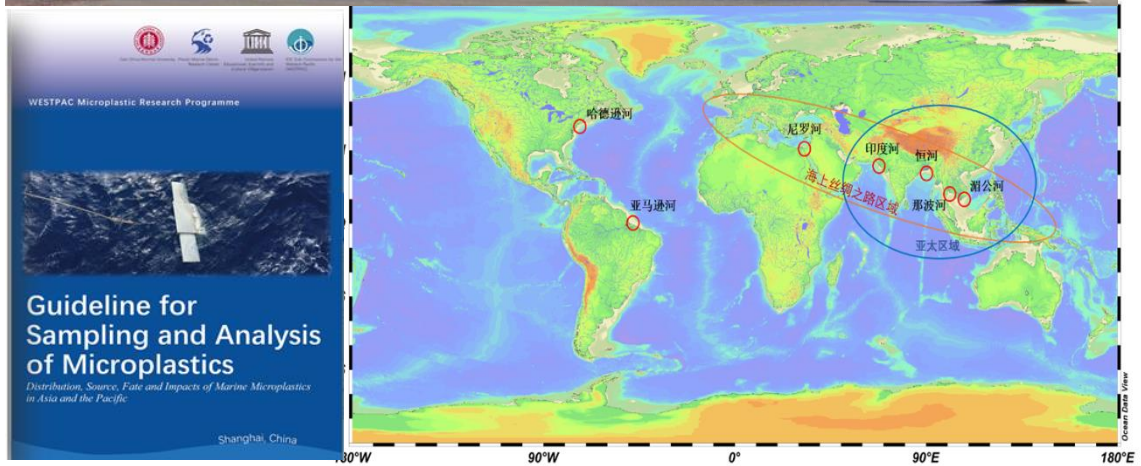




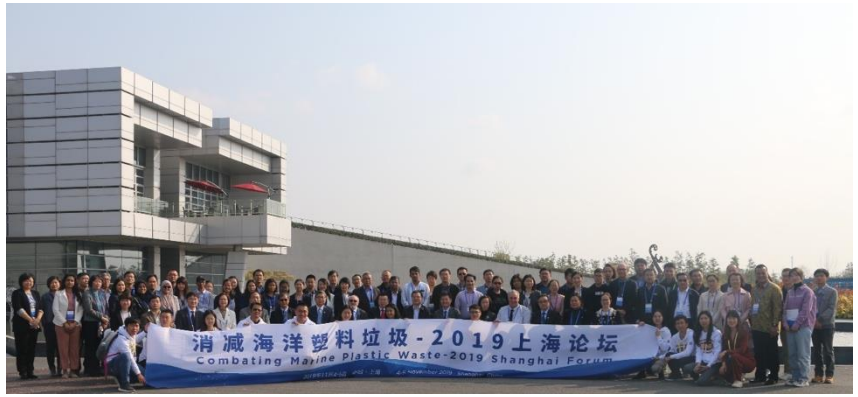
Progresses

International workshops





3rd workshop (3-4 Nov, 2019, Shanghai, China)



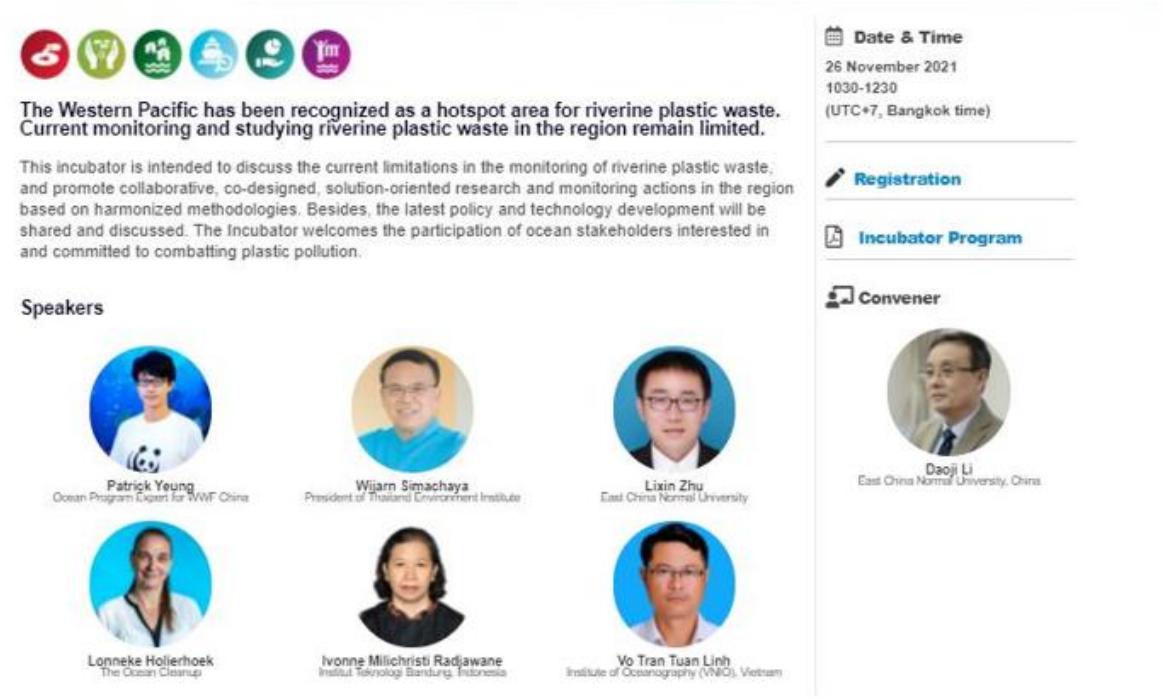
4-5 Nov 2019, Shanghai, China



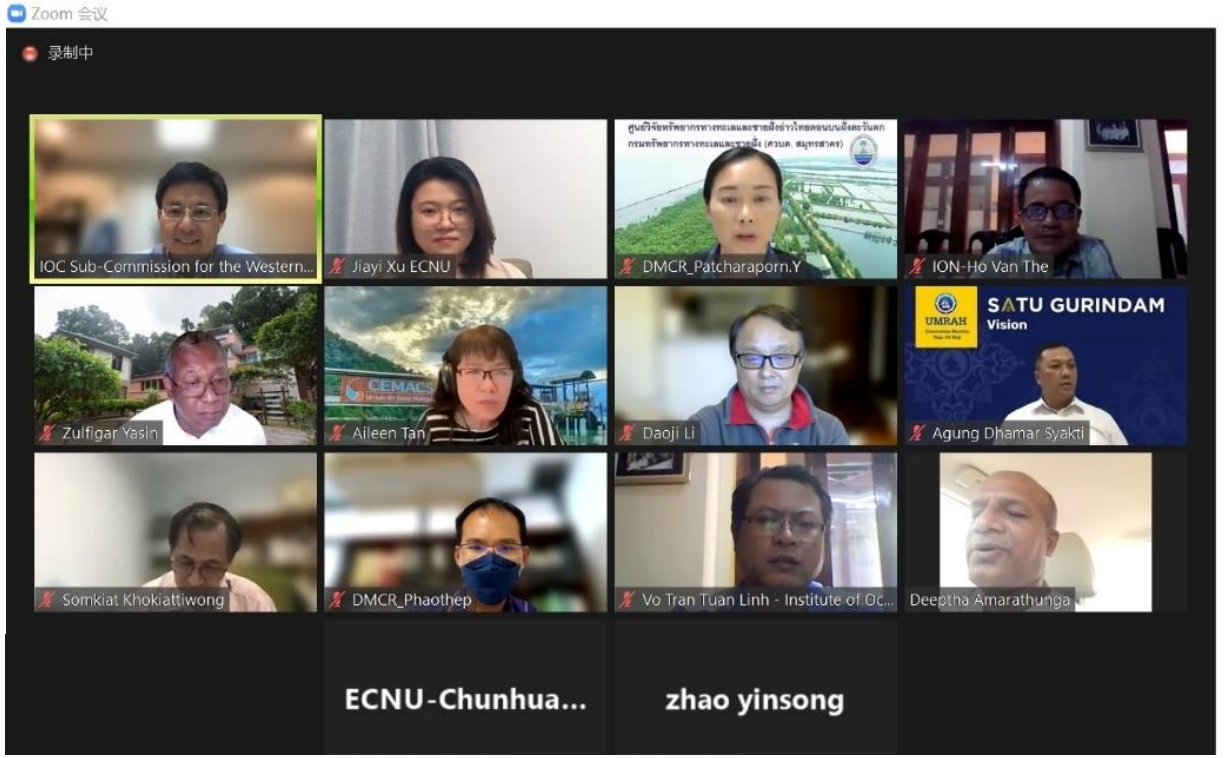
17-18 Dec 2021, Shanghai, China

Progresses

International workshops



Incubator 11 “Stem the tide of plastic and microplastic transport from rivers to the ocean” at UN Decade of Ocean Science for Sustainable Development (2021-2030) Regional Kickoff Conference for the Western Pacific and its Adjacent Areas （November 2021, online）



Brainstorm online meeting on Ocean Decade Action (May 2022, online)

Progresses

International workshops







UN decade project workshop, 20-23 Nov, Sanya, Hainan, China

Progresses

Outreach activities





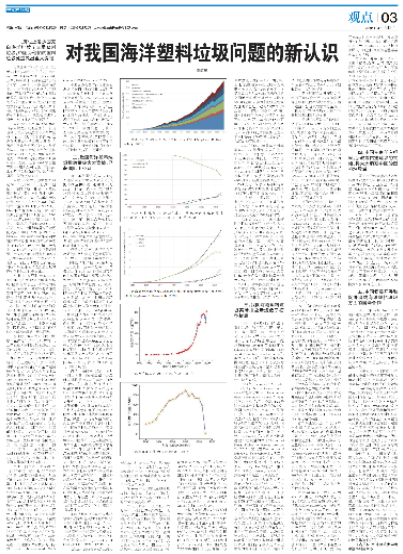










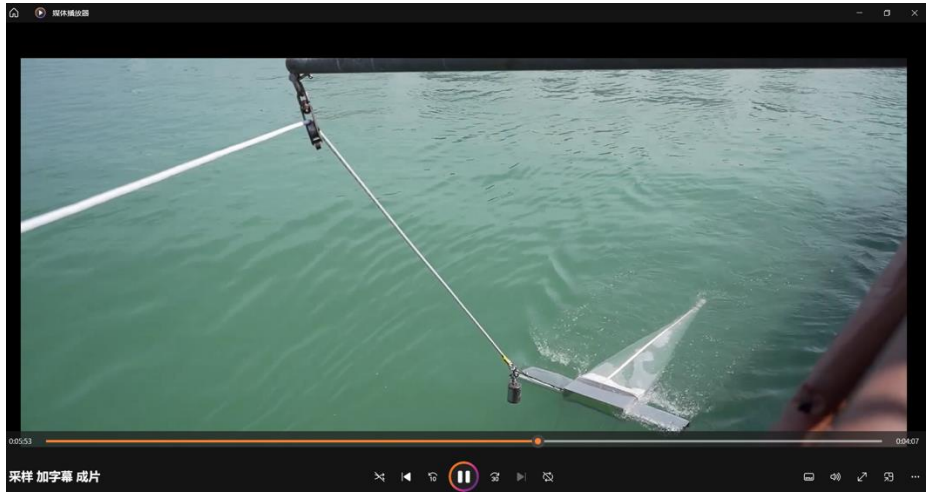


Progresses

Short-term training









Progresses

Short-term training











Progresses

Short-term training



In Nov 2019, conduct a training at COBSEA



In September 2019 and 2020, conduct a training for young scientists in China

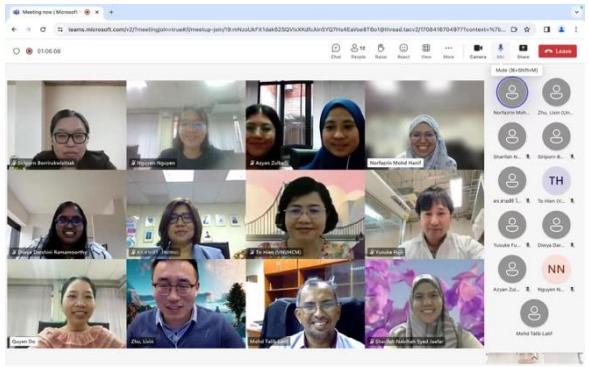


In September 2019, Training young professionals at Bangkok





2023, RTRC member is training young scientists and students from Malysia to use μFTER



RTRC member was invited to give an online training for early career scientists in the WESTPAC region (Feb, 2024)

Progresses

PhD students and early-career scientists



Researcher
Khalida Jabeen (Pakistan)
Obtained her PhD and conducted Postdoctoral research at ECNU



PhD student
Vo Tran Tuan Linh (Vietnam)



PhD student
Jitrapat Hattaya (Thailand)



PhD student
Danish Ather (Pakistan)

Impacts of activities

Category	National level	Regional level	International level
Legal and policy responses	➢ Legislative measures (waste management, framework, production/use-specific) ➢ National action plans ➢ Non-binding and voluntary measures that supplement legislative measures	➢ Regional seas programmes ➢ Work of regional fisheries bodies and the Code of Conduct for Responsible Fisheries ➢ Policy coordination in EU and ASEAN ➢ Action plans developed by G7, G20, APEC	➢ Strengthen existing instruments ➢ Establish a new global legally binding mechanism ➢ Three-pillar approach: waste management, recycling, and innovation ➢ Voluntarty measures (GPML, GPA) can be included in all of the above options. ➢
Technological responses	➢ Redesign of plastic items and packaging ➢ Technological improvements in waste management	➢ Research and innovation programme of EU that funds work on marine litter (Horizon 2020)	➢ Enhanced international coordination, collaboration on research and development to better understand the pathways and impacts of marine litter and potential solutions and technological innovation
Economic responses	➢ Establishment of incentives, taxes, levies and fines		➢ Establishment of a multi-donor trust fund in the WB ➢ Global funding mechanisms
Educational and informational responses	➢ Educational and awareness-raising initiatives launched in society at large and within specific industries	➢ Regional nodes of GPML in order to strengthen interregional and regional cooperation and awareness-rising efforts ➢ Research and capacity development initiatives under regional institutions such as UNESCO IOC	➢ Campaigns such as Global Clean Seas project, platforms such as GPML ➢ Conferences and events ➢ Civil society initiatives such as the global brand audit and global awareness raising campaigns. ➢

- Adopted in the **CHAIR´S SUMMARY** FOR THE AD HOC OPEN-ENDED EXPERT GROUP ON MARINE LITTER AND MICROPLASTICS at the 4th session of the expert group, 9-13 November 2020

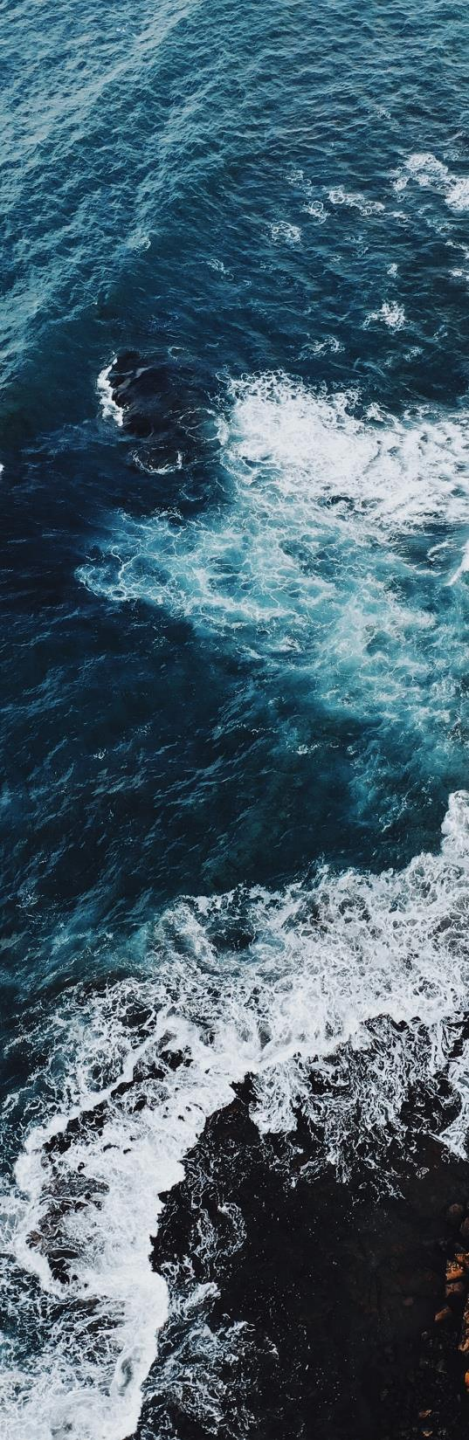
Challenges and opportunities

Challenges:

- Financial limitations for early-career scientists

Opportunities and recommendations on the way forwards:

- Better involvement of private sectors
- Establishment of regional instrument sharing platform



Thank You !

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