



**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)**

**Fourteenth Intergovernmental Session of the IOC Sub-
Commission for the Western Pacific (WESTPAC-XIV)**

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**REPORT BY THE HEAD OF THE WESTPAC OFFICE ON THE WORK
ACCOMPLISHED SINCE THE 13TH INTERGOVERNMENTAL SESSION
(27-29 APRIL 2021, VIRTUAL, BANGLADESH)**

Summary

This report presents a summary of the key activities and accomplishments achieved by the Sub-Commission and WESTPAC Office since the 13th session of the Sub-Commission (27-29 April 2021, Virtual, Bangladesh) up to early March 2023.

The Sub-Commission is invited to consider, with a view of adopting, the Report as is or amended at the present session, and further provide strategic guidance on the future efforts, programme development and implementation.

Part 1. Introduction

1. The prolonged COVID-19 pandemic left, and is even still generating mammoth adverse effects and lasting impacts on every corner of the society and our lives. Over the past three years of the pandemic, in particular since [the last Intergovernmental Session \(WESTPAC-XIII, 27-29 April 2021, Virtual, Bangladesh\)](#), [the IOC Sub-Commission for the Western Pacific \(WESTPAC\)](#) made immense efforts in adapting its operation to “the new normal”, continuously advancing ocean science development and cooperation, and assisting IOC Member States in the region to achieve the sustainable development of ocean, marine and coastal resources.
2. The ocean is at the heart of the sustainable development. Advancing ocean science and cooperation is essential to improve ocean governance and to inform decisions at all levels. [The UN Decade of Ocean Science for Sustainable Development \(2021-2030\)](#) offers a grand opportunity for IOC and its Sub-Commission for the Western Pacific to accelerate the development of science-based solutions. Since early 2019, the Sub-Commission has been taking a lead in the preparations and development of the Ocean Decade in the region.
3. The Sub-Commission carries out a wide range of programmes and activities to address the IOC High Level Objectives and commonly identified ocean priorities of Member States in the region, namely: ocean and climate change; marine biodiversity conservation and ecosystem health; and capacity development.
4. Its key programmes include two regional GOOS (NEAR-GOOS and SEAGOOS), a regional network of Training and Research centres on marine science (RTRCs) presently including five Regional Training and Research centres (RTRCs), sixteen programmes/projects, and five working groups. They are aimed to focus on Asian marginal seas, ocean acidification, ocean deoxygenation, coastal upwelling studies, fluvial sediment to the South China Sea, coral reef restoration and conservation, harmful algal blooms, remote sensing application, marine toxins and seafood safety, marine microplastics, harmful jellyfish, and ocean forecasting system development and application. Some programmes have formed concrete regional components of IOC and related global programmes and efforts, such as GOOS, IP-HAB, GOA-ON, GO2NE, as well as IOC Capacity Development Strategy (2015-2023).
5. Meanwhile, the Sub-Commission has been developing, coordinating and implementing the Ocean Decade related Actions and activities, including the Decade Regional Kick-off Conference, and four Decade Actions. The four Actions include one Decade Programme-[UN 24 entitled “Second Cooperative Study of Kuroshio and Adjacent Regions – from its sciences to human well beings”](#), and three Decade Projects: UN 21-[“Accelerate Marine Spatial Planning in the Western Pacific”](#); UN 22-[“Stem the tide of Asia’s riverine plastic emission into the ocean”](#), and UN 23-[“Accelerating capacity development transformations in the Western Pacific - Regional Network of Training and Research centres \(RTRCs\) on Marine Science”](#). Other potential proposals are also under development.
6. The WESTPAC Office played a pivotal role in the overall development, implementation, monitoring, coordination, and organization of the WESTPAC activities. Its effort over the last intersessional period focused not only on core programme development and implementation, but also on mobilizing and developing actions for the UN Ocean Decade. To better serve the needs of Member States, the Office initiated in 2022 a programme/project enhancement process to further improve their quality delivery, efficiency, and effectiveness. The Office was also granted in June 2022, a new function as a Decade Coordination Office (DCO) for the Western Pacific.
7. Over the intersessional period, continued support was generously provided by Member States in the region. The office has been hosted by the Department of Marine and Coastal Resources, Thailand, with the provision of office space, facilities and operational cost. The Sub-Commission received extrabudgetary support in cash from China via its voluntary contribution to the IOC Special Account, from Japan via the UNESCO/Japanese Funds-in-Trust, and from the Republic of Korea via

the UNESCO/Korean Funds-in-Trust. The in-kind support was also provided by most Member States for various WESTPAC activities. Meanwhile, the support from various international partner organizations /programmes and stakeholders, including PEMSEA, UNEP, MSPglobal project shall be acknowledged.

8. I would like to thank all Member States, WESTPAC colleagues and friends, particularly the officers, advisory group and staff in the Office for their great efforts under this very difficult and stressful conditions of the pandemic.

Part 2. Key accomplishments over the last intersessional period

9. Despite the negative impact of the pandemic and the extremely overstretched situation of the WESTPAC Office, the Sub-Commission continued to position IOC as the lead for marine science development and cooperation in the region, and took a lead in the region to promote and advocate the UN Decade, engage various stakeholders, develop and implement Decade Actions. Some key accomplishments could be summarized as, but not limited to, the following.

- [The UN Ocean Decade Kick-off Conference for the Western Pacific and its Adjacent Areas](#) organized in 25-26 November 2021, featuring [high level commitments](#) and seventeen Decade Action Incubators, and representing the beginning of the region-wide efforts in a substantive development and implementation of Decade Actions.
- Four WESTPAC Initiatives registered in April 2022 as Decade Actions, and the WESTPAC Office granted a new function as the Decade Coordination Office for the Region.
- [The 2nd Cooperative Study of Kuroshio and Adjacent Regions \(CSK-2\)](#) launched with its Steering Group established in August 2021, CSK-2 Science Action Plan and Data & Information Management Plan developed and adopted in June 2022, [the first CSK-2 International Scientific Symposium](#) convened in Feb 2023, and [more than ten CSK-2 projects](#) to be established.
- [An international intercalibration exercise on pH and Total Alkalinity Measurement](#), conducted in May-November 2022, with the participation of 19 labs from 9 countries, and positive results generated.
- [An International Webinar Series on “Advancing the application of remote sensing for sustainable development of ocean, marine and coastal resources,”](#) organized from 22 November to 20 December 2022, leading to a new programme advancing remote sensing application for coastal habitat mapping, blue carbon research and monitoring, and coastal pollution.
- Assistance to the Government of Thailand in mapping seagrass by use of the Google Earth Engine (GEE) and drone technology, with positive results generated; Meanwhile, a training manual using the Google Earth Engine (GEE) both in English and Thai language for seagrass mapping developed in 2022, and to be published.
- [General Management Guide for Harmful Jellyfish Stings in the Western Pacific and Adjacent Areas](#) published in December 2022.
- A programme/project enhancement process conducted in 2022, transforming all WESTPAC programmes and projects to be more socially relevant and respond to national and international environmental, social and economic challenges.

Part 3. Highlights over the last intersessional period

Part 3.1 Mobilizing actions for the UN Decade of Ocean Science for Sustainable Development (2021-2030)

10. One of the Sub-Commission's focuses has been on the development and implementation of the UN Ocean Decade. Since early 2019, WESTPAC has been taking a lead in the region, motivating and engaging experts, institutions, and countries into the preparations and development of the Ocean Decade. Among other efforts, at the beginning WESTPAC produced [a promotional video about the Ocean Decade and the Western Pacific region](#).

11. In collaboration with PICES and other partners in the region, the Sub-Commission led the organization of the [Decade regional planning workshop \(31 July- 2 August 2019, Tokyo, Japan\)](#), which culminated in [a catalogue of knowledge gaps and scientific priorities/questions that need to be addressed in the region, as well as a list of concrete recommendations](#) in support of the Decade. The planning workshop received overwhelming interests with more than 160 participants from 18 countries, spanning communities from ocean policy and management, ocean science and technology, business and industry, NGOs and civil society, donors and foundations, and various intergovernmental and international bodies/programmes. The generated outputs informed the preparation phase of the Decade and the development of the implementation plan.

12. Central to the Ocean Decade is the transformation of ocean science into solution-orientated research that responds to existing and emerging societal needs, WESTPAC convened the [Decade Regional Dialogue on "co-designing the ocean science we need for the ocean we want" \(virtual, 10 November 2020\)](#), engaging a wide range of ocean stakeholders to explore the region's opportunities and challenges and discuss best practices to deliver co-designed, solution-oriented research that could respond to the needs for sustainable development in the region. There were 185 attendees from 35 countries including 10 LDCs (Least Developed Countries) and 14 SIDS (Small Island Developing States). The panellists represented a wide range of stakeholders, which included the private sector, industry, early career ocean professionals, policy community, and both natural and social science research community.

13. Meanwhile, the Sub-Commission has been providing technical and strategic support to all Member States in promoting and driving the Ocean Decade forward, with a number of national and international workshops or campaigns organized in 2020-2022 on the Ocean Decade.

14. The more than two years' preparation and engagement effort culminated into the two days' Decade Kick-off Conference, held on 25-26 November 2021. [The UN Ocean Decade Kick-off Conference for the Western Pacific and its Adjacent Areas](#), organized by the Sub-Commission and hosted by the Government of Thailand, attracted nearly three thousand participants coming from various ocean communities – research, government, business and private sectors, international organizations, NGOs and civil society, youth, and foundations. They came together to reflect on and honour the essential but usually unrecognized role of ocean, and more importantly, to put their heads together to co-design transformative ocean science solutions to ocean health and its sustainable development in the Western Pacific and its adjacent areas.

15. [The two-day event](#) featured [high-level commitments from national governments and UN agencies](#) in the region, [An Ocean Stakeholders Roundtable Dialogue](#) among various ocean communities, and [seventeen UN Decade Action Incubators](#) – a region specific enabling mechanism for fostering partnerships and nurturing new ideas into concrete Decade Actions. These Decade Action Incubators cover a variety of ocean priority issues in the region, including the most important marine biodiversity and ocean ecosystem health such as coral reefs and conservation of marine mammals and sea turtles; multiple stressors such as climate change, marine heatwaves, ocean plastic pollution and harmful algal blooms; coastal inundation and erosion; the most interactive areas between the ocean and human activities such as the Asian Marginal Seas and the largest ocean circulation system in the Pacific – Kuroshio; and the new development and application of tools and

ocean technology such as remote sensing, ocean forecasting and service system, and marine spatial planning.

16. All these efforts led to concrete results at the beginning of the Decade. The Sub-Commission had developed four proposals for UN Decade Actions which were officially registered in April 2022 as the UN Decade Actions. The four Actions include one Decade Programme-[UN 24 entitled “Second Cooperative Study of Kuroshio and Adjacent Regions – from its sciences to human well beings”](#), and three Decade Projects: UN 21-[“Accelerate Marine Spatial Planning in the Western Pacific”](#); UN 22-[“Stem the tide of Asia’s riverine plastic emission into the ocean”](#); and UN 23-[“Accelerating capacity development transformations in the Western Pacific - Regional Network of Training and Research centres \(RTRCs\) on Marine Science”](#).

17. Furthermore, following the Sub-Commission’s decision made at the last session in April 2021(WESTPAC-XIII, April 2021), the Government of Thailand officially made an offer to IOC Paris to host a Decade Coordination Office, as an extension of the current WESTPAC Office which they have been hosting since 1994, with a mandate to develop, coordinate and implement Decade Actions in the region. The Offer was accepted in June 2022 as reflected through [the IOC Resolution EC-55/1](#) at the 55th Session of the IOC Executive Council (UNESCO, Paris, 14-17 June 2022).

18. This newly added function requires mobilizing more financial and human resources to improve and reinforce the present staffing situation of the WESTPAC Office. The WESTPAC Office has been taking tremendous efforts in addressing the understaffing situation. So far it recruited one Decade Regional Coordination Officer, one Marine Spatial Planning Consultant for the UN Decade Action 21. In addition, the Government of Thailand will second two staff, one scientific officer and one programme assistant, to the Office. A Junior Professional Officer (JPO) was also selected through the UNESCO/China JPO Programme, and supposed to report to work in June 2023. This is not adequate, compared to the overwhelming workload of the Office and the unprecedented demands of Member States in the region. We would call on institutions and Member States to consider reinforcing the capacity of the Office in any possible way.

19. The Sub-Commission kicked off the implementation of its led Actions immediately with a number of consultations and planning made virtually with action partners in different countries. More details about these Decade Actions, their implementation and plan will be reported under the session Agenda 4.2-Engagement and contribute to the UN Ocean Decade.

20. As the Ocean Decade enters its third year, thus there is a need to identify challenges and seek new opportunities, develop meaningful partnerships and cooperation needed for further catalysing ocean science solutions to a sustainable ocean and economy. On the occasion of the 14th Intergovernmental Session of the Sub-Commission (4-7 April 2023, Jakarta), the Sub-Commission initiated [a Senior Governmental Officials Roundtable \(SGOs Roundtable\)](#) to facilitate the exchange and cooperation among Member States in the region in advancing the “Science we need for the ocean we want”.

21. The National Decade Committee (NDC), as an essential element of the Decade coordination framework, is supposed to play an instrumental role in engaging national stakeholders and facilitating national contributions to the Decade as well as promoting awareness and interest. During the session, a side event on [the National Decade Committees Forum](#) will be held to facilitate Member States to share their experience and lessons learnt in the NDC development, and discuss how NDCs further demonstrate their value in the Ocean Decade. Both the SGOs roundtable and NDCs Forum will take place on 5 April, with their outputs to be reported back to the plenary on 6 April.

Part 3.2 Delivering knowledge and services to serve the needs of our Member States to address ocean sustainability challenges

22. As is the case for WESTPAC, the prolonged pandemic also presents an opportunity to demonstrate its value in taking adaptive approach to programme implementation. Considering the

varying COVID-19 development and preventive measures in different countries, WESTPAC intensifies its effort in developing and implementing country-specific activities to serve the needs of IOC Member States in the region for ocean sustainability. Just to name a few.

- *Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels*

23. The Sub-Commission has been fulfilling its voluntary commitments to the UN Ocean Conference, with one focusing on [ocean acidification monitoring \(#OceanAction15274\)](#). Core activities include, but not limited to, regular regional programme development workshops and symposia, the development of [Standard Operating/Monitoring Procedures \(SOPs\)](#) and their demonstrations, capacity development and the transfer of technology among institutions and countries.

24. Based on the survey conducted in March 2020, with the knowledge transferred via the WESTPAC OA programme, most of the countries have already established their monitoring programmes and been conducting sustained observations, while others have been sparing no efforts in improving their research infrastructure and deploying relevant monitoring equipment in the pilot sites.

25. WESTPAC continues to support IOC Member States in the region in preparing for and responding to ocean acidification. To further enhance capacity of Member States for ocean acidification monitoring and analysis, and eventually achieve the SDG 14.3, WESTPAC conducted, in May- November 2022, [an intercalibration exercise on pH and Total Alkalinity Measurement](#), with the participation of 19 laboratories from 9 countries, most of which are from developing countries. The preliminary results indicated that most of the participating labs have the needed capacity for measuring pH and TA, with quality in line with the requirements specified in the SDG Indicator 14.3.1 Methodology.

26. Tailored national ocean acidification technical training and engagement workshops have been developed and conducted in Malaysia (Penang, 20-22 September 2022), Vietnam (Nha Trang, 13-15 October 2022), and Thailand (Phuket, 2-4 November 2022). These national training and engagement workshops brought together postgraduate students, academicians, researchers, and officers from government agencies, shared their views on ocean acidification and its impact on marine ecosystem, livelihoods and economy. Hands-on training sessions and discussions on best practices of biological (ARMS and CAU) and chemical (pH and total alkalinity) analysis were conducted. Researchers were also taught how to analyse data and make quality assurance. These national training workshops provided an opportunity for the experts to know the observational needs and gaps in their countries. These activities also enhanced the awareness of key stakeholders in the country on ocean acidification and its impacts, to develop closer partnerships in support of the sustainable development of ocean, marine and coastal resources.

- *Advance the application of remote sensing for marine habitat conservation*

27. Remote sensing can provide much greater and more detailed coverage of the ocean than would be possible to obtain solely by conventional observations such as ships. With the advance of its technologies, remote sensing has got a wide range of applications in the study and conservation of ocean, sea and marine resources. To promote its development and application in the region, the Sub-Commission took “demands-driven, and solution-oriented” approach to the development and application of remote sensing techniques to serve the needs of Member States.

28. To facilitate an exchange of knowledge and development practices about ocean remote sensing applications between ocean remote sensing communities and relevant ocean stakeholders, [an International Webinar Series on “Advancing the application of remote sensing for sustainable development of ocean, marine and coastal resources.”](#) was organized from 22 November to 20 December 2022, once a week for five weeks. The webinar series brought together ocean remote

sensing practitioners, to share the latest knowledge about remote sensing technology development and its applications in the region, and explore the possibility of developing a long-term cooperative programme.

29. The webinar series attracted high interests among remote sensing communities in the region, with a total of 165 people from ocean stakeholder groups registered for the webinars and around 50-70 participants joined each week's webinar. The webinar series provided a great opportunity to share wide applications of remote sensing to conservation and sustainable development of marine and coastal resources, ranging from habitat mapping, coastal development, ocean and coastal processes, productivities and eutrophication, environmental qualities, and coral bleaching warning system.

30. To meet the demand for seagrass mapping in Thailand, several training workshops were conducted for the government's seagrass monitoring team in 2020-2021, and a training manual using the Google Earth Engine (GEE) both in English and Thai languages for seagrass mapping was also developed in 2022. Building on the knowledge and experience learnt from the practices in Thailand, the training manual is aimed to be used in other places and countries in the region, maximizing the benefits for coastal habitat conservation in the region.

- *Delivering knowledge on harmful jellyfish for public health*

31. Jellyfish invasion in WESTPAC countries is becoming an emerging threat to human as more and more cases of jellyfish stung and sightings of venomous jellyfish on beaches have been reported. Venomous jellyfish has wrought havoc on tourism industry in coastal areas. Since the establishment of a regional harmful jellyfish research network in 2017, the Sub-Commission has been coordinating the joint research on harmful jellyfish, with "The Field guide to the Jellyfish of Western Pacific" published in early March 2021. To raise public awareness, outreach and awareness activities on jellyfish blooms and emergency response has been conducted for hoteliers, coastal government authorities and school students. In Dec 2022, [General Management Guide for Harmful Jellyfish Stings in the Western Pacific and Adjacent Areas](#) was published as a practical knowledge collection about the occurrence of harmful jellyfish and first-aid practices for jellyfish stings in the Western Pacific.

- *Accelerating marine special planning in the Western Pacific*

32. Over the past twenty years, Marine Spatial Planning (MSP) has been increasingly recognized as a practical tool or process to promote ecosystem-based approach to ocean management, address conflicting spatial demands among users, and eventually achieve ecological, economic, and social objectives. Though MSP has been in a rapid development, its developments in most of countries in the Western Pacific and adjacent areas are still at its early stage.

33. To accelerate marine spatial planning in the Western Pacific and adjacent areas, the Sub-Commission, together with IOC/UNESCO, organized the first ever [Regional MSPforum](#) on 16 December 2022. The Regional MSPforum for the Western Pacific and its Adjacent Areas attracted great interest as 151 participants registered for this event (98 people from 15 WESTPAC countries and 53 from outside the region). They represented mainly ocean policy/management and research community/academia, but also the private sector, foundations and NGOs, as well as Early Career Ocean Professionals (ECOPs).

34. During the one-day forum, various representatives from diverse stakeholder groups, international partners and SIDS countries shared their experience and ideas on how MSP could support marine protection, ecosystem restoration, and blue economy in the region; what knowledge and capacity development are critical for developing a rational spatial plan, and how we can address them?

35. The Regional MSPforum proved to be a useful platform to bring all partners together to act in the region, identify required technical support, exchange experience amongst different projects, and create synergies between MSP related programs within and beyond IOC to deliver the best support to Member States.

36. In view of the pressing need for capacity development including technical/professional support and local stakeholders' engagement, the IOC/UNESCO, in particular its Sub-Commission for the Western Pacific, and other international partners in the region will assist in any way possible, including the UN Ocean Decade Action 21: Accelerating MSP in the Western Pacific and adjacent areas.

- *Support coral reef marine protected area (MPAs) management in Vietnam*

37. Marine Protected Areas (MPAs) are considered as an effective tool that helps conserve marine biodiversity and improve the provision of ecosystem services. To support Vietnam MPAs management, we just initiated the development of an integrated coral reef monitoring manual to improve Vietnam's monitoring and assessment capacity for MPA management effectiveness in supporting fisheries recruitment and tourism services.

Part 3.3 Capacity development

38. Capacity development has been an integral part of each WESTPAC programme and activity. To assist Member States achieving the SDG 14 and contribute to the implementation of the IOC Capacity Development Strategy (2015-2023), WESTPAC adheres to its guiding principle for capacity development: inclusive, adaptive and empowerment; co-design and co-develop its capacity development activities in close cooperation with Member States to suit their needs for the sustainable development of ocean, seas and coasts. For more details, please refer to the [WESTPAC Approach to Capacity Development](#).

39. The Sub-Commission endeavours to accelerate transformations in capacity development through the integration of training and research, an enhancement of endogenous capabilities and ownership of Member States, and the established mutual assistance and cooperation in the region. As a result of the prolonged pandemic, WESTPAC continued its adapted capacity development modality with a focus on tailored trainings at local/national levels.

40. IOC has a long tradition of capacity development coordination and implementation through its Sub-Commissions and Regional Committees. The Sub-Commission continue to fulfil its voluntary commitment to the UN Ocean Conference, the IOC Capacity Development Strategy (2015–2023), and the UN Ocean Decade --“Develop research capacity and transfer of marine technology through the UNESCO/IOC Regional Network of Training and Research Centres (RTRCs) on Marine Science” (#OceanAction15266). Over the last intersessional period June 2021-April 2022, the Regional Training and Research Centre on Marine Biodiversity and Ecosystem Health (RTRC-MarBEST) in Indonesia organized its [6th International Training on Mangrove Monitoring](#) (29 October-6 November 2021, virtual), in partnership with the Coral Reel Rehabilitation and Management Program -Coral Triangle Initiative (COREMAP-CTI), UNDP, and the Archipelagic & Island States (AIS) Forum.

41. The Regional Training and Research Centre on Ocean Dynamics and Climate (RTRC-ODC) conducted its [10th International training on the regional application of coupled climate models](#), 5–16 July 2021, online. Meanwhile, other three RTRCs, namely on Reef Management and Restoration, Marine Toxin and Food Security, and Plastic Marine Debris and Microplastics, have taken the pandemic as an opportunity to co-design with other stakeholders and partners their training modules and plans. They shall receive young scientists from within and outside region, as soon as the pandemic ends.

42. Upon receiving in late 2021, a proposal by the City University of Hong Kong for a Regional Training and Research Centre on Marine Pollution Monitoring and Assessment, the Sub-Commission is conducting a feasibility study to assess the host institution's technical and operational capacities. Once the process is completed, the new RTRC will provide new training and research opportunities to other developing countries in the region, and even beyond.

43. Since the pandemic, the Sub-Commission continuously demonstrates its unique value for IOC in turning the COVID-19 into an opportunity to address Member States' specific needs. Since June 2021, technical assistance has been provided to Indonesia, Malaysia, Thailand, the Philippines, and Viet Nam to enhance their research capacity for ocean acidification. A series of national ocean acidification training and/or engagement workshops have been co-developed and been conducted, during October 2021-June 2022, in Malaysia, Thailand, and Viet Nam, respectively.

44. Remote sensing is becoming an important tool for mapping marine habitats. In response to the demands of Thailand and Viet Nam, and with the support of UNESCO/Japanese Funds-in-Trust, WESTPAC works closely with national/local authorities in Viet Nam and Thailand, building their capacity in remote sensing to map seagrass meadows for marine protected area management. To this end, a total of four national trainings and workshops have been conducted for Thailand stakeholders and authorities, during May 2021 - April 2022. Meanwhile, technical consultations have been made regularly with relevant research institutions and authorities in Viet Nam on the application of remote sensing to its MPA demonstration site.

45. The Western Pacific is also a hotspot of jellyfish diversity. The need to enhance capacity for jellyfish identification becomes more urgent now due to the increasing incidences of jellyfish stings. As part of its jellyfish research project, the Sub-Commission, in partnership with the Japan Society for the Promotion of Science, conducted a hybrid training on Jellyfish Identification, 17-18 March 2022.

46. To improve the regional and national capacity for molecular techniques for resources management and biodiversity conservation, in late 2019 the Sub-Commission [kicked off the third phase of a UNESCO/Korean Funds in Trust project "Enhance the Capacity for Species Identification and Genetic Analysis on Marine Organisms in the Coral Reef Ecosystems in the Western Pacific"](#). In addition, WESTPAC also started the implementation of another UNESCO/Japanese Funds-in-Trust project aiming to accelerate the transfer of marine technology for marine biodiversity conservation and seafood safety, particularly on coastal habitat conservation, marine toxins and seafood safety, and other hotspot biodiversity related issues, such as the impact of ocean acidification and climate change, and coral reef restoration.

Part 4. Challenges and perspectives

47. WESTPAC's work has been forming a concrete regional component of IOC or its co-sponsored global programmes and efforts addressing global objectives. More importantly, the Sub-Commission has been doing its utmost to concert joint actions of research communities with policy communities and other stakeholders.

48. Over the past ten years, WESTPAC has been operating under a significantly tight financial situation, with a limited amount of programme budget allocated from IOC. The WESTPAC Office has been operating with a sole IOC professional responsible for a broad spectrum of IOC high level objectives: developing, overseeing, mobilizing funding for, and coordinating all programmes and activities; while providing strategic, policy, technical and secretariat support to the Sub-Commission, its various groups and regional governing mechanism. In addition, the Office also responds to the UN, IOC and UNESCO programme oversight, governance, and reporting requirements. The incompatibility of the current size of the secretariat compared to the unprecedented demands is the main risk for positioning IOC in the region as the lead agency for ocean research, and the coordination agency for the UN Decade.

49. The COVID-19 pandemic has proven once again the inextricable link between our survival, prosperity and Nature's health, and the urgency for us to be united to respond to sustainability challenges. The ocean is an enormous economic asset, and ocean economy will play a critical role, but should be developed in a sustainable way. The ocean health and a sustainable ocean economy are vital to "building back better"- a more resilient, equitable, and responsible society in harmony with Nature.

50. Scientific research and monitoring are critical to decision-making and ocean management for a sustainable ocean economy. We need to build literacy and skills, share and apply knowledge, and support marine science capacity building, information exchange, collaboration and technology transfer. The UN Decade of Ocean Science for Sustainable Development (2021-2030) provides a timely and much needed opportunity for all ocean stakeholders, and the Sub-Commission to accelerate the development of ocean science solutions.

51. We would express our sincere thanks once again to all our officers, groups, as well as our Member States and partners for their ever-growing commitment and support.