



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**TWELFTH INTERGOVERNMENTAL SESSION OF THE IOC SUB-COMMISSION
FOR THE WESTERN PACIFIC (WESTPAC-XII)**

Manila, the Philippines,
2–5 April 2019

EXECUTIVE SUMMARY

In accordance with Rule of Procedure 48.3, WESTPAC, as a primary subsidiary body of IOC, is required to report to a governing body on its sessions.

The IOC Assembly at its thirtieth session will be invited to consider this executive summary. For more detailed information on this session, please refer to the Summary Report of the Twelfth Intergovernmental Session of WESTPAC at <http://iocwestpac.org>.

- 1 The Twelfth Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (WESTPAC) was held at the Philippines International Convention Center, Manila, from 2 to 5 April 2019 with the Agenda given in [Annex I](#). The session was hosted by the Government of the Philippines, through its Department of Foreign Affairs, National Commission for UNESCO, the University of the Philippines Diliman and its Marine Science Institute. The session was attended by close to 100 delegates from 16 Member States in the Western Pacific and its adjacent regions, and representatives from the Coral Triangle Initiative on Coral Reef, Fisheries and Food Security ([CTI-CFF](#)), the Partnerships in Environmental Management for the Seas of East Asia ([PEMSEA](#)), the South-East Asian Fisheries Development Centre ([SEAFDEC](#)), the General Bathymetric Chart of the Oceans ([GEBCO](#)) [Seabed 2030](#), and the United Nations Environment/Coordinating Body on the Seas of East Asia ([COBSEA](#)).
- 2 The Sub-Commission expressed its highest appreciation to the Government of the Philippines for the thoughtful arrangements made for all delegates and representatives, and warmly

¹ Agenda and Recommendations are available in English only.

welcomed the delegates from Fiji, France and Singapore who joined this session after an absence of a few year.

3 Hon. Generoso Calonge, Assistant Secretary, Maritime and Ocean Affairs Office, Department of Foreign Affairs of the Philippines, Vladimir Ryabinin, IOC Executive Secretary, and Vo Si Tuan, Chair of the IOC Sub-Commission for the Western Pacific welcomed participants. Immediately after the opening, a mini science symposium was held to set a scene for the preparations of the “UN Decade of Ocean Science for Sustainable Development (2021–2030)”, hereinafter referred to as the Decade, during the session. The Sub-Commission considered the session as a timely starting point for the region to prepare for the Decade and to contribute ideas and insights.

4 A brainstorming session with representatives of all WESTPAC programmes, working groups, partner organizations, and Member States addressed ways to engage in the preparations and implementation of the Decade.

5 A signing ceremony took place concerning the establishment of new Regional Training and Research Centres. Two Letters of Intention were signed between the IOC of UNESCO and respectively the University of the Philippines Diliman regarding the establishment of a Regional Training and Research Centre on Reef Management and Restoration; and the Institute of Oceanography, Vietnam Academy of Science and Technology concerning the establishment of a Regional Training and Research Centre on Marine Toxins and Seafood Safety. The Sub-Commission also informed that another Regional Training and Research Centre on Plastic Marine Debris and Microplastic is being established at the East China Normal University and shall provide regular training and research opportunities soon.

WESTPAC Programme implementation over the last intersessional period

6 Despite the significantly tight human and financial resources from the IOC regular budget, the Sub-Commission has positioned IOC as leader for marine science development and cooperation in the region, through considerable activities across its four identified priorities, namely: ocean processes and climate change; marine biodiversity and food security; ocean ecosystem health; and enhanced knowledge of emerging issues.

7 It was estimated that around 2012 (41% female) marine scientists, governmental officials and resources managers directly took part in WESTPAC activities in 2017–2018. These activities include the 10th WESTPAC International Scientific Conference, the 12th intergovernmental session of WESTPAC, 12 trainings / summer schools, and 33 regional science development workshops/ consultative meetings. See some key programmes/activities over the last intersessional period:

- Triennial WESTPAC International Marine Science Conference and biennial WESTPAC intergovernmental session.
- Two GOOS Regional Alliances: regional ocean observing systems as part of the Global Ocean Observing System (GOOS): North-East Asian Regional-Global Ocean Observing System ([NEAR-GOOS](#)), and Southeast Asian Seas-Global Ocean Observing System ([SEA-GOOS](#)) with its three pilot projects, i.e., Monsoon Onset Monitoring and its Social & Ecosystem Impacts (MOMSEI), Ocean Forecasting System (OFS) and Monitoring the Ecological Impacts of Ocean Acidification on Coral Reef Ecosystems.
- Twelve marine research projects/programmes: Harmful Algal Blooms (HABs); Coral Reef Conservation; Coral Resilience to Climate and Human Impacts; DNA Taxonomy

and Recruitment Monitoring for Coral Reef Marine Organisms (DRMREEF); Marine Endangered Species; Ocean Remote Sensing for Coastal Habitat Mapping (ORSP); South China Sea Fluvial Sediments and Environmental Change (FluSed); Marine Toxin and Seafood Safety (TMO); Air-sea Interaction in the Kuroshio Extension and its Climate Impact; Upwelling Studies; Marine Microplastic Research and Monitoring and Harmful Jellyfish Research.

- A regional network of Training and Research Centers on Marine Science: two Regional Training and Research Centres in operation respectively on Ocean Dynamics and Climate (RTRC-ODC), and Marine Biodiversity and Ecosystem Health (RTRC-MarBEST); and three new RTRCs being established; and
- Two working groups on Ocean Oxygen Network (WG 005); and Energy and Materials Exchange in Marginal Seas (WG 006), respectively.

8 The major accomplishments over the last intersessional period include:

- Strengthening science-policy interface, through the implementation of [UN-ASEAN Plan of Action](#) on Comprehensive Partnership (2016–2020) and UNESCO-ASEAN Cooperation Framework (2015–2019), the active engagement into the 2nd cycle of the UN World Ocean Assessment, the synergy with the ASEAN's effort in combating marine debris, and the fostering of the largest ocean knowledge exchange platform in the region-WESTPAC International Marine Science Conference;
- Developing sustained ocean observations and services, through the NEAR-GOOS data and information exchange network; and the development and launching of a new version of the SEA-GOOS Ocean Forecasting System ([SEAGOOS-OFS](#)), providing 5-day forecasting products and downloadable archived data for surface wave height, wave period, and three-dimensional ocean current, sea temperature and salinity;
- Advancing knowledge on climate change, marine biodiversity and ecosystem health, through the conduct of a feasibility study on the 2nd Cooperative Study of Kuroshio and its adjacent regions ([CSK-2](#)), the transfer of molecular techniques for marine biodiversity conservation and resource management, the joint research on marine toxins with the first paper published from the Southeast Asia on ciguatera toxin confirmed case, the strengthening of the regional research and monitoring network on the ecological impacts of ocean acidification on coral reefs, and the development of microplastic research and monitoring network;
- Bolstering institutional and human capacity, mainly through its integrated capacity development tools, including the "IOC Regional Network of Training and Research Centres (RTRCs) on Marine Science" with two RTRCs in operation and three new RTRCs being established, the conduct of regular topic-specific trainings/summer schools on a rotation basis, and the establishment of "WESTPAC Young Scientist Travel Grant" and "Best Young Scientist Award".

9 The Sub-Commission expressed its appreciation, in particular to:

- The Government of Thailand, through its Department of Marine and Coastal Resources, for the provision of office space and facilities for the WESTPAC Office; and its National Commission for UNESCO for the financial support to the WESTPAC activities on ocean acidification monitoring, microplastic research, scientific diving and dinoflagellate sampling and processing;

- The Government of the Philippines, through its Department of Foreign Affairs, National Commission for UNESCO, the University of the Philippines and its Marine Science Institute for hosting the 12th Intergovernmental session of the Sub-Commission (2–5 April 2019);
- The Government of China, through its State Oceanic Administration and First Institute of Oceanography for hosting the Regional Training and Research Centre on Ocean Dynamics and Climate, with annual trainings since 2011 that have attracted a total of 359 young scientists from 43 countries;
- The Government of Indonesia, through its Indonesian Institute of Sciences, for hosting the Regional Training and Research Center on Marine Biodiversity and Ecosystem Health with annual trainings provided since 2016;
- Member States for their either in-cash or in-kind support, such as China via its voluntary contribution to the IOC Special Account, Japan via the UNESCO/Japanese Funds-in-Trust, and the Republic of Korea via the UNESCO/Korean Funds-in-Trust. A significant in-kind support was also provided by China, Thailand, Indonesia, Japan, Republic of Korea, Malaysia, the Philippines, USA and Viet Nam for various WESTPAC programmes and activities.

10 As shown in the WESTPAC adopted [Programme and Budget \(May 2017–April 2019\)](#), the required funding for the intersessional period totals US\$ 8M, while US\$ 115K were allocated to WESTPAC for its activities in 2018–2019. Almost all WESTPAC activities were implemented through extrabudgetary support, either in-cash or in-kind, from Member States.

11 The Sub-Commission has been demonstrating its strategically important value for IOC in achieving its global objectives, via its functions as a strategic link between global objectives and national priorities and actions; as an essential driver to forge joint actions of marine scientific communities in addressing development challenges; as an indigenous clearinghouse and capacity developer for transfer of marine technology and empowering force for Member States to enhance their research capacities for sustainable development. The Sub-Commission further expressed deep concern over the incompatibility of the current size of the WESTPAC Office and a broader spectrum of the WESTPAC activities.

WESTPAC Programme Development over the next Intersessional Period

I. Preparations of the UN Decade of Ocean Science for Sustainable Development (2021–2030)

12 The Sub-Commission will actively engage in the preparation and implementation of the Decade as follows:

- (i) Advocating and communicating the UN Decade of Ocean Science with various stakeholders;
- (ii) Organizing and hosting regional and global workshop(s) for the Decade;
- (iii) Contributing capacity building opportunities and transferring marine technology, for instance via its regional network of Training and Research Centres (RTRCs);
- (iv) Developing and strengthening Centres of Excellences in marine sciences to serve the Decade's objectives;

- (v) Developing, coordinating and aligning international programmes/activities to meet the UN Decade's objectives; and
- (vi) Forging triennial WESTPAC International Marine Science Conference as an essential regional platform to ensure a timely response to the challenges of the Decade, and examine its outputs.

13 Shortly after the 1st Global Planning Meeting of the United Nations Decade of Ocean Science for Sustainable Development (13–15 May 2019, Copenhagen, Denmark), the Sub-Commission will organize a Decade Regional Consultative and Planning Workshop for the North Pacific and Western Pacific Marginal Seas in Tokyo, Japan, from 31 July to 2 August 2019, in close cooperation with the North Pacific Marine Science Organization (PICES), Japanese National Committee for IOC/UNESCO, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), the University of Tokyo and other partners in the region. The regional workshop will provide a valuable forum for international, interdisciplinary and multi-stakeholder dialogues to contribute to the preparation phase of the Decade.

14 Recognizing that the Decade will fully support countries in the achievement of the 2030 Agenda for Sustainable Development Goals (and more particularly SDG 14), the Sub-Commission further encouraged all Member States to actively engage in the preparation and implementation of the Decade. The Sub-Commission adopted [Recommendation SC-WESTPAC-XII.1](#) on the Decade.

II. Implementation of the IOC Capacity Development Strategy (2015–2021)

15 The Sub-Commission will continuously implement the IOC Capacity Development Strategy (2015–2021) ([IOC/INF-1332](#)). Adhering to its guiding principle for capacity development: inclusive, adaptive and empowering, the Sub-Commission will strengthen the co-design and co-development of its capacity development activities with Member States in order to suit their needs towards the sustainable development of ocean, seas and coasts.

16 With an emphasis on “training-through-research”, the Sub-Commission will carry out, but not limited to, the capacity development actions identified in the strategy, including: the continuous development of the “IOC Regional Network of Training and Research Centres on Marine Science in the Western Pacific and its adjacent regions” with annual trainings and research opportunities provided at the Regional Training and Research Centres (RTRCs) on their areas of specialization (Action 1.2.4); the conduct of national/regional tailored trainings/training workshops/summer schools on a rotational basis in Member States, such as ocean remote sensing, ocean acidification monitoring, monsoon onset monitoring and air-sea interactions, microplastic monitoring and sampling etc. (Action 1.2.1); continued engagement of young and women scientists into WESTPAC research programmes (Action 1.4.1); the selection of the “WESTPAC Best Young Scientist Award” and “Young Scientist Travel Grant” at the 11th WESTPAC International Marine Science Conference 2020 (Action 1.3.4 and 1.3.1). Meanwhile, WESTPAC is taking more actions to develop capacity at different levels such as “Bringing marine science in schools”, to promote ocean literacy (Action 5.2.1), and to assist Member States with the development of marine science management procedures and national policies (Action 4.2.1).

17 The “IOC Regional Network of Training and Research Centres on Marine Science in the Western Pacific and its adjacent regions” was initiated in 2008 by the Sub-Commission and subsequently adopted by IOC/UNESCO, aiming to improve national and regional capability and capacity on marine science in a sustainable and systematic manner. The level of support to this initiative was expressed by the strong willingness of a wealth of countries in the region at various

occasions, such as the 11th WESTPAC Intergovernmental session (21–23 April 2017) and the workshop on Future RTRC Networking in the Western Pacific organized in Japan on 23–24 January 2018. The RTRC initiative has been recognized as a best practice for capacity development and transfer of marine technology in the region.

18 While appreciating the operation of the Regional Training and Research Centre on Ocean Dynamics and Climate (RTRC-ODC) at the First Institute of Oceanography (FIO), State Oceanic Administration of China, and the Regional Training and Research Center on Marine Biodiversity and Ecosystem Health (RTRC-MarBEST) at the Research Center for Oceanography of the Indonesian Institute of Sciences, the Sub-Commission will develop and offer regular trainings and research opportunities at the other three new Regional Training and Research Centres being established (see para. 5).

19 The Sub-Commission considered the RTRC initiative as an effective vehicle for capacity development and transfer of marine technology in the framework of the Decade. The Sub-Commission adopted [Recommendation SC-WESTPAC-XII.4](#) on the IOC Regional Network of Training and Research Centres on Marine Science.

III. WESTPAC Programme and Budget May 2019–April 2021

20 Given the social, economic, environmental importance of the Kuroshio, the Sub-Commission decided to extend the tenure of the Intersessional Working Group of the Feasibility Study on the Second Cooperative Study of the Kuroshio and Adjacent Regions (IWG-CSK2) with new terms of reference, and adopted [Recommendation SC-WESTPAC-XII.3](#) in this regard. The Sub-Commission strongly encouraged interested Member States to identify experts to join the IWG. Furthermore, the Sub-Commission invited all interested Member States to engage their competent government agencies into the CSK-2 development and planning process, in order to seek understanding of and support for CSK-2.

21 In view of the pivotal roles of IOC regional subsidiary bodies in the IOC development process, the Sub-Commission expressed its commitment to assist IOC and Member States in the implementation of SDG 14, particularly its targets 14.3 and 14.a. The Sub-Commission further requested the IOC Executive Secretary to reinforce the Sub-Commissions' Secretariat with a view to enhancing IOC's presence and visibility.

22 With a view to further synergizing efforts, catalyzing collective actions, and leveraging potential support for all WESTPAC activities, the Sub-Commission reviewed and adopted the *Guidelines for Effective Communications about Programme Development and Implementation*, in order to further improve WESTPAC programme delivery, efficiency and effectiveness.

23 The Sub-Commission approved the WESTPAC Programme and Budget for May 2019–April 2021 through [Recommendation SC-WESTPAC-XII.4](#) with an estimated budget of US\$ 6.78M. The Sub-Commission considered that its approved budget is mainly used as seed money for activities that Member States would like to jointly promote and seek funding from various sources in support of their implementation. Based on current information received, only US\$ 100K (of US\$ 518M Expenditure Plan for the whole IOC) or US\$ 115K (of US\$ 534.6M Expenditure Plan) will be secured from the IOC Regular Budget for WESTPAC activities for the period 2020–2021. This is evidence that almost all activities of the Sub-Commission will have to be continuously supported from extrabudgetary resources.

11th WESTPAC International Marine Science Conference, and 13th Intergovernmental session of the IOC Sub-Commission for the Western Pacific (WESTPAC)

24 The Sub-Commission expressed its appreciation to the Government of Indonesia for hosting the 11th WESTPAC International Marine Science Conference on 25–28 August 2020, and adopted the [Recommendation SC-WESTPAC-XII.2](#).

The Sub-Commission noted with great appreciation the kind offers of Indonesia and Bangladesh to host the 13th Intergovernmental session of the IOC Sub-Commission for the Western Pacific (WESTPAC) in early 2021, and adopted the [Recommendation SC-WESTPAC-XII.6](#) on the date and place of the next session.

Election of WESTPAC Officers

25 The Sub-Commission elected, by acclamation, Vo Si Tuan from Viet Nam as Chairperson and Fangli Qiao (China), Zainal Arifin (Indonesia), and Kentaro Ando (Japan), as Vice-Chairpersons of the Sub-Commission for the next intersessional period.

ANNEX I

AGENDA

- 1. OPENING**
 - 1.1 WELCOME REMARKS
 - 1.2 MINI SCIENCE SYMPOSIUM
 - 1.3 AN EVENT ON RTRCS
- 2. ORGANIZATION OF THE SESSION**
 - 2.1 ADOPTION OF THE AGENDA
 - 2.2 CONDUCT OF THE SESSION
- 3. STATUTORY REPORTS**
 - 3.1 STATEMENT OF THE CHAIRPERSON
 - 3.2 REPORT BY THE HEAD OF WESTPAC OFFICE ON INTERSESSIONAL ACTIVITIES AND BUDGET OVERVIEW, INCLUDING THE OPERATION OF THE WESTPAC OFFICE
 - 3.3 RECENT DEVELOPMENTS WITHIN UNESCO, ITS IOC, AND THEIR RELEVANCE TO WESTPAC
 - 3.3.1 UN Decade of Ocean Science for Sustainable Development (2021–2030)**
 - 3.3.2 IOC Draft Medium Term Strategy (2022-2029)**
- 4. STRATEGIC DEVELOPMENT**
 - 4.1 PREPARATIONS FOR THE REGIONAL WORKSHOP FOR THE NORTH PACIFIC, UNDER THE AUSPICES OF THE UN DECADE OF OCEAN SCIENCE
 - 4.2 PREPARATIONS FOR THE ELEVENTH WESTPAC INTERNATIONAL MARINE SCIENCE CONFERENCE (TENTATIVELY SCHEDULED FOR AUGUST 2020, INDONESIA)
 - 4.3 THE IMPLEMENTATION OF SDG, PARTICULARLY SDG 14, AT NATIONAL LEVEL, AND THE CONTRIBUTION OF WESTPAC VIA ITS TWO VOLUNTARY COMMITMENTS: OCEAN ACIDIFICATION AND CAPACITY DEVELOPMENT
 - 4.4 GUIDELINES FOR EFFECTIVE COMMUNICATIONS ABOUT PROGRAMME DEVELOPMENT AND IMPLEMENTATION
- 5. REVIEW AND EVALUATION OF REGIONAL PROGRAMMES, PROJECTS AND WORKING GROUPS FOR MAY 2017–APRIL 2019**
 - 5.1 OCEAN PROCESSES AND CLIMATE IN THE INDO-PACIFIC
 - 5.1.1 North East Asian Regional-GOOS**
 - 5.1.2 South East Asian Regional-GOOS**

- 5.1.2.1 Monsoon Onset Monitoring and its Social and Ecosystem Impacts (MOMSEI)
- 5.1.2.2 Ocean Forecasting System (OFS)
- 5.1.2.3 Monitoring the Ecological Impacts of Ocean Acidification on Coral Reef Ecosystems
- 5.1.3 Air-Sea Interaction in the Kuroshio Extension and its Climate Impact**
- 5.1.4 Upwelling Studies through Ocean Data Integration towards Sustaining Ocean Health and Productivity**
- 5.1.5 South China Sea Fluvial Sediments and Environmental Changes**
- 5.1.6 Indo-Pacific Ocean Environmental Variations and Air-Sea Interactions**
- 5.1.7 Intersessional Working Group on the Feasibility Study on the Second Cooperative Study of the Kuroshio and Adjacent Regions**
- 5.2 MARINE BIODIVERSITY, SEAFOOD SAFETY AND SECURITY
 - 5.2.1 Coral Reef Conservation and Restoration**
 - 5.2.2 Coral Resilience to Climate and Anthropogenic Impacts**
 - 5.2.3 DNA Taxonomy and Recruitment Monitoring of the Coral Reef Marine Organisms**
 - 5.2.4 Ocean Remote Sensing for Coastal Habitat Mapping**
 - 5.2.5 Marine Toxins and Seafood Safety**
 - 5.2.6 Regional Study on Marine Endangered Species (Mammals and Sea Turtles) in Tropical Asia for Effective Conservation**
- 5.3 HEALTHY OCEAN ECOYSTEMS
 - 5.3.1 Marine Microplastic Research and Monitoring**
 - 5.3.2 Harmful Algal Blooms**
 - 5.3.3 Harmful Jellyfish Research Network**
- 5.4 ENHANCED KNOWLEDGE OF EMERGING OCEAN SCIENCE ISSUES
 - 5.4.1 WG 005: Ocean Oxygen Network**
 - 5.4.2 WG 006: Energy and Materials Exchange Between Land and Open Ocean**
- 5.5 CAPACITY DEVELOPMENT FOR MARINE SCIENCE, OBSERVATIONS AND SERVICES
 - 5.5.1 IOC Capacity Development Strategy for 2015-2021 & the Role of WESTPAC in its Development and Implementation**
 - 5.5.2 IOC Regional Training and Research Centre on Ocean Dynamics and Climate (RTRC-ODC)**
 - 5.5.3 IOC Regional Training and Research Center on Marine Biodiversity and Ecosystem Health (RTRC-MarBEST)**

5.6 RECOMMENDATION OF WESTPAC ADVISORY GROUP ON THE
IMPLEMENTATION OF REGIONAL PROGRAMMES, PROJECTS AND WORKING
GROUPS FOR THE PERIOD MAY 2017–APRIL 2019

6. COOPERATION WITH OTHER ORGANIZATIONS AND PROGRAMMES

7. WESTPAC WORKPLAN AND BUDGET FOR THE PERIOD MAY 2019 - APRIL 2021

8. ADMINISTRATION AND MANAGEMENT

8.1 ELECTIONS OF THE OFFICERS OF THE SUB-COMMISSION

8.2 WESTPAC MEMBERSHIP AND PARTNERSHIP

8.3 RESOURCES MOBILIZATION

9. DATE AND PLACE OF THE NEXT SESSION

10. OTHER MATTERS

11. ADOPTION OF DECISIONS AND RECOMMENDATIONS

12. CLOSURE

ANNEX II

ADOPTED RECOMMENDATIONS

- [Recommendation SC-WESTPAC-XII.1](#) THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT
- [Recommendation SC-WESTPAC-XII.2](#) WESTPAC INTERNATIONAL MARINE SCIENCE CONFERENCE
- [Recommendation SC-WESTPAC-XII.3](#) THE INTERSESSIONAL WORKING GROUP OF THE FEASIBILITY STUDY ON THE SECOND COOPERATIVE STUDY OF THE KUROSHIO AND ADJACENT REGIONS (IWG-CSK2)
- [Recommendation SC-WESTPAC-XII.4](#) UNESCO/IOC REGIONAL NETWORK OF TRAINING AND RESEARCH CENTRES (RTRCS) ON MARINE SCIENCE IN THE WESTERN PACIFIC
- [Recommendation SC-WESTPAC-XII.5](#) WESTPAC PROGRAMME AND BUDGET FOR MAY 2019–APRIL 2021
- [Recommendation SC-WESTPAC-XII.6](#) DATE AND PLACE OF THE NEXT SESSION

Recommendation SC-WESTPAC-XII.1

The UN Decade of Ocean Science for Sustainable Development

The IOC Sub-Commission for the Western Pacific (WESTPAC),

Noting the United Nations General Assembly resolution [A/RES/72/73](#) that proclaims the United Nations Decade of Ocean Science for Sustainable Development for the 10-year period beginning on 1 January 2021, within existing structures and available resources, and calls upon the Intergovernmental Oceanographic Commission to prepare an implementation plan for the Decade in consultation with Member States, specialized agencies, funds, programmes and bodies of the United Nations, as well as other intergovernmental organizations, non-governmental organizations and relevant stakeholders,

Further noting that the 1st Global Planning Meeting was scheduled for 13–15 May 2019 in Copenhagen, Denmark,

Having considered the Sub-Commission has a unique opportunity to contribute to the preparations and implementation of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030),

Acknowledging a strong willingness of Member States and international partners in the region to support the UN Decade of Ocean Science, and constructive discussions at the 12th Session and a brainstorming session therein, covering a variety of topics such as:

- (i) advancing knowledge on the role of ocean in the earth system, in particular from coastal areas to the open oceans,
- (ii) the development of integrated observation systems, technologies, and advanced models for complex ocean systems,
- (iii) science-policy interface,
- (iv) science communications,
- (v) science for and with societies, and
- (vi) the nurturing of young generation of marine scientists,

Further recognizing that WESTPAC is a lead organizer of the Regional Consultative Workshop for the North Pacific towards the UN Decade of Ocean Science for Sustainable Development, scheduled for 31 July–2 August 2019, Tokyo, Japan, with the financial support of the UNESCO/ Japanese Funds-in-Trusts,

Calls upon Member States to:

- (i) promote the application of world class ocean science to societies;
- (ii) enhance collaborations with stakeholders;
- (iii) develop linkages with national projects/programmes;
- (iv) inspire and engage young generations; and
- (v) promote ocean literacy in the region;

Encourages WESTPAC Member States to actively contribute to these activities, and to the Global Planning Meetings as well as the Regional Consultative Workshop for the North Pacific towards the UN Decade of Ocean Science for Sustainable Development (31 July–2 August 2019, Tokyo, Japan).

Recommendation SC-WESTPAC-XII.2

WESTPAC International Marine Science Conference

The IOC Sub-Commission for the Western Pacific (WESTPAC),

Recalling:

- (i) the decision of its first session in 1990 that a major multi-disciplinary symposium should become a principal inter-sessional activity of WESTPAC,
- (ii) the WESTPAC International Scientific Symposium (renamed as “Conference” in 2017) is the only scientific series and has evolved as the largest regular gathering to enhance the exchange of marine scientific knowledge in the region,
- (iii) the proclamation of the United Nations General Assembly on the UN Decade of Ocean Science for Sustainable Development (2021–2030), to which the triennial WESTPAC International Marine Science Conference can make great contribution,

Expressing its great appreciation for the willingness of the Government of the Republic of Indonesia, through its Indonesian Institute of Sciences, to host and co-organize the 11th WESTPAC International Marine Science Conference in 2020,

Having formulated the WESTPAC Programme and Budget (May 2019–April 2021) with the Conference adopted as a key activity,

Bearing in mind the need for presentation and exchange of scientific results in an inter- and multi-disciplinary forum, and a great opportunity that the 11th WESTPAC International Marine Science Conference can further advocate, and engage ocean stakeholders in the preparation and implementation of the Decade,

Decides to establish an International Scientific Steering Committee to provide guidance in the formulation of the Conference Themes, Sub-Themes, and Programme, including the scope, contents and structure;

Recommends that pertinent regional and international organizations be invited to support and participate in the Conference;

Encourages all Member States and related international organizations to actively participate in and contribute to ensuring the success of the Conference.

Recommendation SC-WESTPAC-XII.3

**The Intersessional Working Group of the Feasibility Study
on the Second Cooperative Study of the Kuroshio and Adjacent Regions
(IWG-CSK2)**

The IOC Sub-Commission for the Western Pacific (WESTPAC),

Recalling the decision at its 10th session ([WESTPAC-X](#), Phuket, Thailand, 12–15 May 2015) setting-up an open-ended International Task Force on Feasibility Study of the Second Cooperative Study of the Kuroshio and Adjacent Regions (CSK-2),

Further recalling the Recommendation SC-WESTPAC-XI.2 adopted at the 11th Session of WESTPAC ([WESTPAC-XI](#), Qingdao, China, 21–23 April 2017) setting-up an Intersessional Working Group of the Feasibility Study on the Second Cooperative Study of the Kuroshio and Adjacent Regions (IWG-CSK2),

Having considered the report of IWG-CSK2 presented at the 12th Session of WESTPAC (WESTPAC-XII, Manila, the Philippines, 2–5 April 2019),

Expressing its appreciation to the IWG-CSK2 for the work done during the inter-sessional period 2017–2019,

Recognizing the vital social, economic, environmental and cultural importance of Kuroshio and its adjacent region,

Decides to extend the duration of the IWG-CSK2 in accordance with the revised Terms of Reference contained in the Annex to this Recommendation;

Encourages the WESTPAC Member States to actively participate in and contribute to the IWG-CSK2.

Annex to Recommendation SC-WESTPAC-XII.3

Terms of Reference of the Intersessional Working Group of the Feasibility Study on the Second Cooperative Study of the Kuroshio and Adjacent Regions (IWG-CSK2)

I. Objectives and Outputs

Objectives

Following the outputs from the Intersessional Working Group of the Feasibility Study on the Second Cooperative Study of the Kuroshio and Adjacent Regions (IWG-CSK2) during the intersessional period 2017–2019, the Working Group will:

- (i) Complete the review report of CSK and its related research projects;
- (ii) Take into account identified gaps for conducting CSK-2;
- (iii) Consider the potential for future coordination with on-going relevant national and international projects such as CLIVAR and GOOS, the requirements of WESTPAC Member States, and capacities available for the implementation of the project;
- (iv) Deliberate on a potential contribution of CSK-2 to the United Nations Decade of Ocean Science for Sustainable Development (2021–2030);

- (v) Develop a science plan of CSK-2, and its implementation strategy if feasible, while taking into account its societal and economic benefits to Member States; and
- (vi) Submit a report to the 13th session of WESTPAC in 2021.

Expected Outputs

- (i) One review paper or report to be published in an international journal or as a WESTPAC publication;
- (ii) One report concerning a science plan and strategy towards the implementation of CSK-2, including its expected output(s) and outcome(s).

II. Membership

The Intersessional Working Group is open-ended. The initial members for the intersessional period 2019–2021 include Kentaro Ando (Japan), Xiaopei Lin and Jingsong Guo (China), Vo Si Tuan (Viet Nam), Yang-Ki Cho and Jae-Hak Lee (Republic of Korea), Gil Jacinto and Cesar Villanoy (the Philippines), Zainal Arifin and Augy Syahailatua (Indonesia), and Vyacheslav Lobanov (Russian Federation).

III. Period of IWG-CSK2

The IWG-CSK2 will work until the 13th session of WESTPAC in 2021.

Recommendation SC-WESTPAC-XII.4

UNESCO/IOC Regional Network of Training and Research Centres (RTRCs) on Marine Science in the Western Pacific

The IOC Sub-Commission for the Western Pacific (WESTPAC),

Noting the United Nations General Assembly (UNGA) [Resolution 70/1](#) of 25 September 2015 on the 2030 Agenda and Sustainable Development Goals (SDG) that include a dedicated SDG for the ocean (SDG 14), and the UNGA resolution [A/RES/72/73](#) in December 2017 on the preparations of the UN Decade Ocean Science for Sustainable Development (2021–2030),

Being aware of the guidance document “UNESCO/IOC Regional Network of Training and Research Centres on Marine Science in the Western Pacific”, which was adopted at the seventh Intergovernmental Session of the WESTPAC in May 2008 and subsequently approved by IOC at the Forty-first session of its Executive Council through Resolution [EC-XLI.3](#),

Bearing in mind the IOC Capacity Development Strategy (2015–2021), which was adopted at the 28th Session of IOC Assembly in 2015 through Resolution [XXVIII-2](#) with the “UNESCO/IOC Regional Network of Training and Research Centers on Marine Sciences in the Western Pacific” identified as a targeted action to achieve the expected outputs of the Strategy,

Recalling that the development of the “UNESCO/IOC Regional Network of Training and Research Centers on Marine Science in the Western Pacific” has been accepted as a UN Ocean Conference voluntary commitment to the implementation of SDG 14, and has become an effective mechanism in the region for the implementation of the IOC Capacity Development Strategy,

Appreciating that the RTRC on Ocean Dynamics and Climate (RTRC-ODC) in China and the RTRC on Marine Biodiversity and Ecosystem Health (RTRC-MarBEST) in Indonesia have been operating successfully and recognized as a best practice for capacity development and technology transfer,

Welcoming with great appreciation the three new proposals to establish RTRCs on marine plastic debris and microplastics, marine toxins and seafood safety, and reef restoration and management by China, Viet Nam, and the Philippines, respectively,

Encourages Member States to actively participate in and promote RTRCs in order to further strengthen research capacity of Member States as well as to support the UN Decade of Ocean Science for Sustainable Development (2021–2030);

Invites the Executive Secretary of IOC to work with those Member States on their proposals to establish RTRCs and take the necessary actions to maximize the impact of this capacity development initiative.

Recommendation SC-WESTPAC-XII.5

WESTPAC Programme and Budget for May 2019–April 2021

The IOC Sub-Commission for the Western Pacific (WESTPAC),

Noting the reports of the Technical Secretary for WESTPAC on the intersessional activities and the WESTPAC Programme and Budget, May 2019–April 2021, contained in documents [IOC/SC-WESTPAC-XII/5](#).

Expressing its appreciation to the Government of Thailand for its continued support to the IOC Regional Office for WESTPAC (WESTPAC Office), and to all other Member States for their contributions, either in cash or in kind, in support of the implementation of the WESTPAC Programme and Budget for May 2017– April 2019,

Acknowledging the importance of the WESTPAC Office for the successful programme implementation,

Noting with concern a limited allocation of the IOC regular budget for WESTPAC activities as a result of the financial constraint of UNESCO and IOC since late 2011,

Further noting that the UNESCO General Conference will examine and adopt at its 40th session in November 2019, the UNESCO Draft Programme and Budget for 2020–2021 (40 C/5), in which \$ 518M Expenditure Plan and \$ 534.6M Expenditure Plan of UNESCO for 2020–2021 foresee the IOC regular budget allocation as \$ 10.776 M, and \$11.075 M respectively for the biennium 2020–2021,

Considering the IOC Draft Programme and Budget for 2020–2021 submitted for consideration by the IOC Assembly at its 30th Session (IOC-XXX, Paris, 2019), in which **\$ 100 K** in the UNESCO \$ 518M expenditure plan (\$ 10.776M for IOC), and **\$ 115 K** in the \$ 534.6M Expenditure Plan (\$ 11.075 M for IOC) was allocated to WESTPAC for its activities over 2020–2021,

Recognizing that the WESTPAC Programme and Budget serves as a collaborative framework for activities that the Sub-Commission would like to jointly promote and seek funding from various sources in support of their implementation,

Adopts the WESTPAC Programme and Budget for May 2019–April 2021 in the Annex to this recommendation;

Urges Member States to continue and increase their support to WESTPAC and its Office through in-cash and in-kind contributions;

Requests the Executive Secretary of IOC to allocate necessary resources and assist in obtaining extra-budgetary funds for the Sub-Commission and its programmes from governmental agencies and donors.

WESTPAC PROGRAMME AND BUDGET FOR MAY 2019–April 2021²

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
POLICY, STRATEGIC, TECHNICAL AND SECRETARIAT SUPPORT							
WESTPAC Advisory Group Meeting	WESTPAC Advisory Group Meeting	Review and provide guidance	All activities developed with high quality, effectiveness	Late 2019, 2020, 2021	10K	10K	20K
UN Decade Planning and consultation	UN Decade regional planning workshop, and engagement into global planning process	To communicate the Decade objectives, and engage stakeholders in Decade preparations	List of knowledge, list of potential partnerships, list of new programmes to be developed, etc.	31 July-2 August Tokyo, Japan		200K	100K
	UN Decade national advocacy and engagement workshop	To advocate UN Decade in ocean stakeholder in China	Engagement enhanced	2019 Qingdao, China		5K	30K
12th WESTPAC International Marine Science Conference	Keynotes, sessions, workshops and side events	Gather marine scientists to develop multi-disciplinary collaboration	Conference Programme	Indonesia 2020	10K	10K	900K
13th Intergovernmental Session	Statutory science-policy interface	Regional consensus reached on its program, new officers elected	Summary report	2021	8K	10K	120K
Coordination, including the office operation	Development, coordination and implementation, and resources mobilization of WESTPAC activities	Ensure the full operation of the Sub-Commission and implementation of workplan	New activities developed, workplan implemented and quality service provided	May 2019-April 2021	40K	200K	100K
OCEAN PROCESSES AND CLIMATE IN THE INDO-PACIFIC							
North East Asian Regional-GOOS (NEAR-GOOS)	1. 20 th Session of Coordinating Committee for NEAR-GOOS	To review the NEAR-GOOS development	Action plans and recommendations	November 2019, Republic of Korea	0/2.5K		20K
	2. 21 st Session of Coordinating Committee for NEAR-GOOS	To review the NEAR-GOOS development	Action plans and recommendations	Late 2020	0/2.5K		20K
	3. 9 th GOOS Regional Forum	Strengthen collaboration with other GOOS projects	Further development of NEAR-GOOS through Integration into the Global GOOS	August 2019			2K
	4. the WG workshop/technical	To improve ocean forecasting capacity in the NEAR-GOOS region	Release and improvement of NEAR-region	During the intersessional period			10K

² the WESTPAC Programme and Budget mainly serves as a collaborative framework for joint activities that the Sub-Commission would like to promote and seek funding from various sources in support of their implementation.

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$			
					IOC (in-cash)		Other in-kind sources (national or internat'l)	
					Regular	Extra budget		
	meeting on NEAR-GOOS OFS		GOOS OFS webpages and forecast products					
	5. Continue NEAR-GOOS Climate Monitoring Section	To understand long-term variability of the water mass structure cause by climate change	Continuous time series of CTD and hydrochemical data along the section since 2011	Oct-Dec of 2019 and 2020			400K	
	6. Ferry-based Monitoring	Monitoring the status and changes in the marine environment in the NEAR-GOOS region	Surface observation network	During the intersessional period			200K	
	7. Partnership with PICES and other marine science organizations	Strengthen collaboration	Awareness on NEAR-GOOS enhanced	During the intersessional period			4K	
Ocean Forecasting System (OFS)								
South East Asian Regional-GOOS (SEAGOOS)	1. develop subdomain high-resolution models	Develop subdomain high-resolution models	subdomain high-resolution models developed	May 2019-April 2021			150K	
	2. Joint survey cruises for validation	Joint survey cruises to obtain the data to validate the OFS product	temperature, salinity, current, and meteorological parameters collected	May 2019-April 2021			200K	
	Monsoon Onset Monitoring and its Social and Ecosystem Impacts (MOMSEI)							
	1. Summer schools	Capacity building	Report	August 2019, August 2020			30K	
	2. Expert Workshop	Scientific review	Report	December 2019			10K	
	3. Cruise	in situ data collection	Cruise report	November 2019			100K	
	Ocean Acidification and its Impacts on Marine Ecosystems (OA)							
	1. Workshop and Session at the WESTPAC international Marine Science Conference	Exchange knowledge and information, identify emerging issues	Latest knowledge shared	2020		5K	5K	
	2. 6 th Training Workshop/Symposium	<ul style="list-style-type: none"> Review project progresses Examine new techniques Develop partnerships assess the OA status and its impact 		2019	0/5K	5K	10K	
	3. 7 th Training Workshop/Symposium	<ul style="list-style-type: none"> Review project progresses Examine new techniques Develop partnerships 		2020	0/5K	5K	10K	

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
		<ul style="list-style-type: none"> • assess the OA status and its impact 					
Air-Sea Interaction in the Kuroshio Extension and its Climate Impact (ASIKE)	1. Joint Cruise for multi-disciplinary investigation in the western Pacific	<ul style="list-style-type: none"> • Update the existing mooring systems in Kuroshio extension region and Mariana trench. • Conduct intensive observation using underwater gliders and surface autonomous vehicles within a warm/cold core eddy. • Test the prototype of deep Argo floats developed by Chinese institutes. • Finish a repeat hydrologic line from 5N to 40N along the 143E. 	More in-situ data will be collected from this cruise.	1 Oct 2019 – 20 Nov 2019			2000K
	2. 2019 Ocean Obs' Meeting session	<ul style="list-style-type: none"> • Promoting more collaboration among the IOC-WESTPAC countries • Improve CSK-2 science plan • Develop new technology 	Observation plan and social-economy service in the Western Pacific Ocean	16-20 Sep 2019			6K
Upwelling Studies through Ocean Data Integration towards Sustaining Ocean Health and Productivity (Upwelling studies)	1. Comparative studies on upwellings established	compile references on established upwelling sites in the region	Short report of established upwelling site in SCS and surrounding seas	Sep 2019			5K
	2. Training: Integrated data analysis for upwelling study	<ul style="list-style-type: none"> • analyse data from upwelling site using available datasets • construct integrated data gathering which involve field data, satellite data and wind-data at any particular upwelling site • conduct simple analysis 	Capacity improved for analyzing and integrating data	Oct/Nov2019			15K.
	3. Workshop on Upwelling Region and its Dynamics in the South China Sea and its Adjacent Areas	<ul style="list-style-type: none"> • To present and discuss the existing understanding of upwelling area and its 	Scientific progress on the area of interest;	Sep 2020		10K	15K

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
		dynamics To discuss development plan					
South China Sea Fluvial Sediments and Environmental Change (FluSed)	1. Research cruise	Deep-sea sediment transport mooring (sink)	Deploying a deep-sea mooring observation system in the southern South China Sea	May 2019, South China Sea			100K
	2. 12th FluSed workshop	Exchange of scientific results	Strengthen collaboration: joint writing manuscripts, data comparison, further cooperation discussion.	December 2019, Singapore (tentative)			20K
	3. Research cruise	Deep-sea sediment transport mooring (sink)	Recovery and redeploying of the deep-sea mooring observation system in the southern South China Sea	May 2020, South China Sea			100K
	4. Research cruise	River discharge observation (source)	Deploying a tripod at the Mekong River estuary	July 2020, Vietnam			60K
	5. Research cruise	River discharge observation (source)	Deploying a tripod at a Sumatra estuary	August 2020, Indonesia			60K
	6. 13th FluSed workshop	Exchange of scientific results	Strengthen collaboration: joint writing manuscripts, data comparison, further cooperation discussion.	December 2020, Shanghai (tentative)			20K
Indo-Pacific Ocean Environmental Variations and Air-Sea Interactions (IPOVAI)	1. Study the effects of sea spray in climate model	To set up new model for Asian monsoon onset	New monsoon model	2021, Qingdao			100K
	2. Test new Typhoon model at operational forecasting center(s)	To improve forecasting ability of Typhoon intensity	Forecasting ability improved	2020			100K
	3. technical workshop	To share the new progress on Typhoon model		2020 or 2021 Qingdao			20K
Feasibility Study of the 2 nd Cooperative Study of the Kuroshio and its Adjacent Regions	1. Workshop	Develop science plan, and discuss MSR and data policy	Science plan	November 2019, Manila	5K		10K
	2. Publication	Publication of the review report	Publication	August 2019			3K
	3. Workshop	Develop implementation plan	Implementation strategy plan	November 2020	5K		10K
MARINE BIODIVERSITY CONSERVATION, HEALTHY ECOSYSTEMS, SEAFOOD SECURITY AND SAFETY							
Coral Reef Conservation and Restoration	1. Workshop: updating activities of project coral reef conservation and restoration in the WESTPAC region	<ul style="list-style-type: none"> to update and plan activities; to summarize all coral restoration and conservation techniques; 	Report/scientific paper	April 2020 (IOC/WESTPAC International Scientific Conference)		10K	

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
		<ul style="list-style-type: none"> to promote those techniques among WESTPAC member countries 					
	2. Workshop: updating a list of marine non-indigenous species in the WESTPAC region	<ul style="list-style-type: none"> To summarize a list of marine non-indigenous species in the WESTPAC region; To increase public awareness on the impact of marine NIS 	Report/scientific paper Poster/guideline for management	August 2020 (Bangkok, Thailand)		5K	15K
	3. Preparing 1 book related to coral restoration techniques	<ul style="list-style-type: none"> To disseminate the synthesis data on coral restoration techniques through scientific communities To have a guideline on reef rehabilitation for reef managers in Southeast Asia region 	Book	December 2019			5K
Coral Reef Resilience to Climate Change and Human Impacts	1. Summer School	Extensive training on "Impact of Anthropogenic Forcing on Coral Reefs and Consequence at Ecosystem Level"	Capacity improved	Penang, Malaysia, 2019			10K
	2. Finalize book chapters for the monograph of coral reefs in the Western Pacific	Using for training of summer schools, research and education	A book entitled Anthropogenic Environmental Impacts on Coral Reefs in the Western and South-western Pacific	2019			5K
	3. Capacity building	Regional and local training courses on molecular techniques for genetics connectivity/ resilience research	Trained scientists and students under the Young Scientist Network for Coral Reef Research in the Western Pacific	2019, Thailand			10K
	4. Workshop	Brainstorming and discussion on coral reef resilience, management and conservation in the Western Pacific	Recommendations for enhancing coral reef resilience, management and conservation from the WESTPAC.	2020	4K	5K	10K In collaboration with IMBeR

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
DNA Taxonomy and Recruitment Monitoring of the Coral Reef Marine Organisms	1. Inception meeting of the 3 rd phase of the project	To plan and officially launch the 3 rd phase activities	Activity plan for the 3 rd phase	June 2019, Vietnam		15K	
	2. Operation and expansion of data in the WESTPAC marine biodiversity portal system	To expand biodiversity information on coral reef marine organisms	Expanded marine biodiversity database	Continuous			80K
	3. Operation of a pilot site for recruitment monitoring	To monitor larval recruitment in a coral reef	Monitoring report	Continuous, Vietnam			20K
	4. Publication of WESTPAC marine biodiversity book	To provide a guide for identification of major species in the region and their distribution	An illustrated book	December 2020		10K	
Ocean Remote Sensing for Coastal Habitat Mapping	1. publishing e-booklet	To deliver changes in seagrass beds revealed by remote sensing to citizens and policy makers	Awareness				
	2. workshop on new technologies of remote sensing	To share new technologies of remote sensing among ORSP members	Knowledge shared and improved	December 2019, Nha Trang, Vietnam		10K	4K
	3. Training workshop of remote sensing for coastal habitat mapping	To improve capacity for remote sensing for coastal habitat mapping	Regional capacity of remote sensing for coastal habitat mapping increased;	October 2020, Toyama, Japan		10K	4K
	4. Book publication	To deliver information on changes in seagrass beds by natural and human impacts	delivering information on changes in seagrass beds by natural and human impacts to societies.	2020		5K	4K
Marine Toxin and Seafood Safety	1. The 5 th IOC/WESTPAC-TMO workshop	ASP toxin contamination in WESTPAC region: Current situation and activity by TMO	Publication collected; Scientific information updated; Working plan developed on domoic acid study	Oct 2019, Vietnam		15K	5K
	2. The 6 th IOC/WESTPAC-TMO workshop	To develop Guidebook on marine toxins	Outline of Guidebook on marine toxins; Identify capacity building activities	Mar/April 2020, Malaysia/Singapore		15K	5K
	3. The 7 th IOC/WESTPAC-TMO training workshop on	To develop technical guidance for chemical analysis of domoic acid in	Technical guidance for chemical analysis of domoic acid	Nov/Dec 2020 Vietnam		15K	5K

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
	“Chemical analysis of domoic acid in shellfish and plankton samples”	shellfish and plankton samples					
	4. The 8th IOC/WESTPAC-TMO workshop	To review and finalize contents and structure of Guidebook on marine toxins	Draft of Guidebook on marine toxins	May 2021, Thailand/Singapore		15K	5K
Regional Study on Marine Endangered Species (Mammals and Sea Turtles) in the Tropical Asia for Effective Conservation	1. Regional symposium on MES	Exchange information and results on development of technology and knowledge	Dissemination of updated technology and knowledge	Mid 2019, Thailand			25K
	2. Regional training course on MES	Training on both traditional and modern method/technology of observation and study	Dissemination of integrated methods of MES observation and study	Mid 2019, Indonesia			20K
	3. Session at the 11th WESTPAC IMSC	Exchange information and results on development of technology and knowledge	Dissemination of updated technology and knowledge	2020, Indonesia			10K
	4. Regional workshop on MES	Exchange information and results on development of technology and knowledge	Dissemination of updated technology and knowledge	2021, China			10K
	5. Local MES sessions / workshops	Exchange information and results on development of technology and knowledge	Dissemination of updated technology and knowledge	2019, 2020, 2021 Malaysia, Indonesia, China			30K
Distribution, source, fate and impacts of marine microplastics in the Asia Pacific region	1. Analyze the results from beaches and sediments which were collected using the harmonized method.	Analyze the results from beaches and sediments which were collected using the harmonized method.	Contamination condition level of microplastic in beaches and sediments in West Pacific Region	2019-2021 Shanghai			100K
	2. Finalize the sampling and analytical methods in surface water and marine organisms.	Harmonize the methods		TBD			10K
	3. Third WESTPAC Workshop on Distribution, Source, Fate and Impacts of Marine Microplastics in Asia and the Pacific			October 2019, Indonesia or China			25K
	4. Field survey on the microplastic contamination levels in water surface and			TBD			100K

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
	marine organisms using the harmonized methods						
Harmful Algal Blooms	1. Strategic meeting	Discussion on future activities, especially on capacity building, and scientific development	List of training courses Drafts of outreach material	2019 and 2020 Venue TBD		15K	
	2. Establishment of regional network	Facilitation of information exchange and dissemination	Networking	2019-2021			
	3. Capacity building	International/national training workshops	Trained researchers and technicians	2019-2021		15K	10K
	4. Interaction with other HAB projects	Information exchange and collaboration of activities	Enhance effectiveness of activities	2019-2021			
	5. Production of outreach material	Information dissemination	Teaching material or poster	2019-2021			3K
Enhancement of Sustainable Harmful Jellyfish Research & Networking in WESTPAC region	1. Training on Identification of the polyps of harmful jellyfish	To provide identification techniques on harmful jellyfish with a focus on the polyps stage	To enhance the regional research network on harmful jellyfish.	August 2019, Penang, Malaysia		10K	5K
	2. Awareness & Education program on Harmful Jellyfish in local school & related tourism spots	To build a sustainable platform of harmful jellyfish data collection with community-based management strategy	Networking with local community in WESTPAC region to transfer the local knowledge with scientific data on harmful jellyfish research	April 2020, Pulau Langkawi, Malaysia			
	3. Workshop on identification of harmful jellyfish from Class Scyphozoa	To provide identification techniques on harmful jellyfish with a focus on class Scyphozoa species	Standardize the quantitative (& qualitative) information collected by members and compiled as one dataset for the region	December 2020, Penang, Malaysia		10K	5K
	4. WESTPAC Field Guide of Harmful Jellyfish	To publish the first WESTPAC Field Guide of Harmful Jellyfish in Western Pacific region	WESTPAC Field Guide of Harmful Jellyfish in Western Pacific region	April 2021		5K	
ENHANCED KNOWLEDGE OF EMERGING OCEAN SCIENCE ISSUES							
WG005: Ocean Oxygen Network (O ₂ NE)	1. Inception Workshop	<ul style="list-style-type: none"> Obtain updated reports on deoxygenation sites Outline a technical brief about the threat of deoxygenation to marine ecosystems 		Manila, Philippines 4Q, 2019	6K		10K

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
		<ul style="list-style-type: none"> Outline and identify contributors to a scientific paper towards deoxygenation Identify capacity building needs on deoxygenation 					
	2. Website	Greater visibility of the issue and generating awareness and interest by many more stakeholders on deoxygenation	Greater awareness and engagement	Philippines, 3Q, 2019			5K
	3. GO ₂ NE International Summer School	Connect young researchers with leading scientists from the academic and SMEs world, and improve their capacity for laboratory experiments, field work, modelling and special sessions on communication, ethics, and engagement with stakeholder.	Several young scientists in the WESTPAC region trained and made part of a global network of researchers working on deoxygenation	Xiamen, China, 2-8 Sept 2019			
WG006: A framework for cooperative studies in the Western Pacific Marginal Seas: Energy and materials exchange between land and open ocean	1. 3 rd workshop	Exchange information for cooperative researches based on the common interests discussed in the previous workshop. Promote planning of possible cooperative cruises. Provide an opportunity to encourage early career scientists to progress their relationship.	Expand cooperative research groups and recommend cooperative cruises in the marginal seas. Framework by early career scientists starts for future cooperative researches.	June 2019, Seoul, Republic of Korea	6K		10K
	2. 4 th workshop	Confirm common understanding on the energy and material exchange in the marginal seas. Start a few frameworks for cooperative research by early career scientists.	Recommend international cooperative research in the marginal seas, mainly managed by early career scientists.	October 2020 in Toyama	6K		10K
CAPACITY DEVELOPMENT FOR MARINE SCIENCE, OBSERVATIONS AND SERVICES							
Regional Training and Research Center on Ocean Dynamics and Climate (RTRC-ODC)							
UNESCO/IOC Regional Network of	1. Ninth Training Course	Climate dynamics and air-sea interactions	Understanding on the basic theory of climate	during 17-28 June 2019, Qingdao		2K	30K

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$			
					IOC (in-cash)		Other in-kind sources (national or internat'l)	
					Regular	Extra budget		
Training and Research Centers on Marine Science			dynamics and the air-sea interaction in tropic and mid-latitude regions					
	2. Tenth Training Course	Development and application of coupled regional climate models	Understanding the coupling processes of atmosphere, ocean circulation, surface wave, sea ice and land surface, development and application of coupled regional climate models	2020 Qingdao		2K	30K	
	3. The 10th anniversary celebrations of ODC center	A ceremony for the 10th anniversary celebrations of ODC center	Summary for the outcomes of ODC center	2020 Qingdao		2K	10K	
	Regional Training and Research Center on Marine Biodiversity and Ecosystem Health (RTRC-MarBEST)							
	1. Training on Estimation of carbon stock and sequestration in seagrass ecosystem	Applying protocol on carbon stock and sequestration estimation in seagrass ecosystem based on ASEAN Protocol	Capacity improved for carbon stock and sequestration estimation	2nd week of November 2019 in RTRC MarBEST		8K	20K	
	2. Training on Mangrove Health Index Training	To develop and strengthen the capacity of human resources in the field of Mangrove health index	Capacity improved for developing mangrove health index	October/November 2020		8K	20K	
	3. Training on Coral Taxonomy	Developing the capacity of human resources on taxonomy of coral	Capacity improved for coral taxonomy	October/November 2021		8K	20K	
	Regional Training and Research Center on Reef Management and Restoration (Tentative)							
	1. Training on reef assessment and monitoring	To develop capacity for reef assessment and monitoring	Capacity improved for reef assessment and monitoring	2019		10K	20K	
	2. Training on reef management, including MPA tools	To develop capacity for reef management	Capacity improved for reef management	2020		10K	20K	
	3. Training on coral restoration techniques	To develop capacity for coral reef techniques	Capacity improved for coral reef techniques	2021		10K	20K	
	Regional Training and Research Center on Marine toxins and Seafood safety (Tentative)							
	1. TC-WS "Scientific sampling for toxic benthic organisms"	To strengthen capacity on scientific sampling toxic benthic organisms	A practical protocol for scientific sampling of toxic benthic organisms;	2020		8K	20K	
	2. TC-WS "Cultural experiment for potential ciguatoxin producers"	To strengthen capacity on ecology of toxic organisms	A practical protocol for cultural experiment of CTX producers	2021		8K	20K	

Project/Programme	Activities	Objectives	Expected outputs	Date and Place	Funding Required, US\$		
					IOC (in-cash)		Other in-kind sources (national or internat'l)
					Regular	Extra budget	
	Regional Training and Research Center on Plastic Marine Debris and Microplastics (Tentative)						
	1. Training course on MP sampling and lab analysis	To strengthen capacity for MP sampling and lab analysis	Capacity improved for MP sampling and lab analysis	Nov 2019 Shanghai		5K	30K
	2. Training course on MP sampling and lab analysis	To strengthen capacity for MP sampling and lab analysis	Capacity improved for MP sampling and lab analysis	2020 Venue TBD		5K	30K
Sub-total					100³/115⁴	731	5,950
Total					6,781²/6,796³		

³ In the scenario of the UNESCO \$ 518M Expenditure Plan

⁴ In the scenario of the UNESCO \$ 534.6M Expenditure Plan

Recommendation SC-WESTPAC-XII.6

Date and Place of the Next Session

The IOC Sub-Commission for the Western Pacific (WESTPAC),

Bearing in mind the need for a sufficient period of time between the WESTPAC sessions for its programme implementation,

Recalling Recommendation SC-WESTPAC-I.3 in 1990 to have a three-year time span between its regular sessions,

Further recalling Recommendation SC-WESTPAC-VII.6, adopted at the 7th Session of WESTPAC ([WESTPAC-VII](#), Sabah, Malaysia, 26–29 May 2008), which decided to reschedule the period between the sessions from three years to two years beginning with the closure of WESTPAC-VII, in phase with the IOC planning cycles, and to schedule the session for early in the year,

Expresses appreciations to the Government of the Philippines, through its Department of Foreign Affairs, National Commission for UNESCO, the University of the Philippines Diliman and its Marine Science Institute, for hosting its 12th intergovernmental session on 2–4 April 2019 in Manila, and the excellent arrangements made for the session;

Accepts with appreciation the offers of the Government of Indonesia and the Government of Bangladesh to host its 13th intergovernmental session in 2021, subject to the final consultations of relevant parties and the final endorsement of their relevant authorities.