# WESTPAC Ocean Oxygen Network ($O_2$NE) Working Group

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DAN INOVASI NASIONAL

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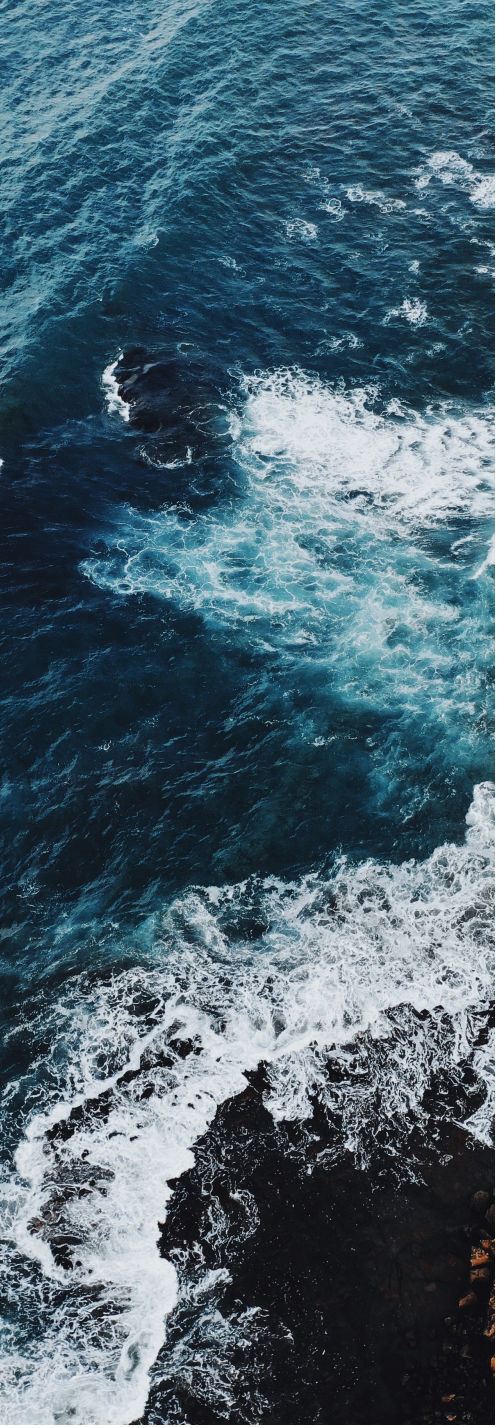


# Presentation outline

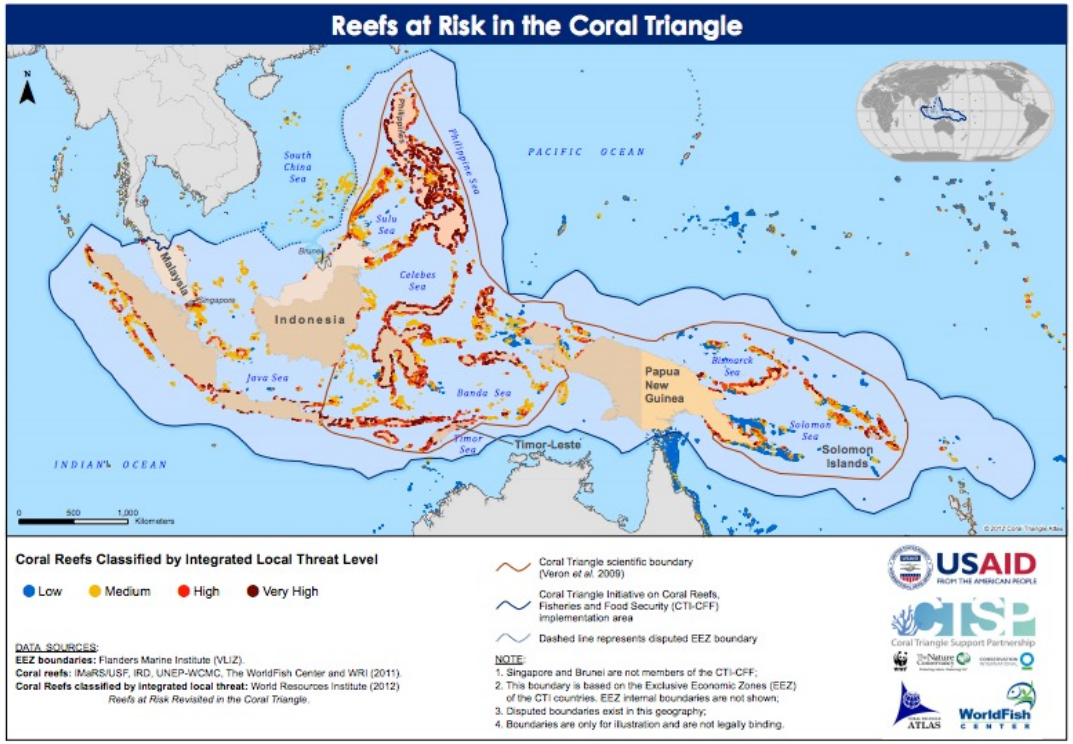
- Introduction and justification
- Timeframe and objectives
- Major activities, outputs & outcomes over the last intersessional period (May 2021- April 2023)
- A summary of key achievement since its establishment
- Self assessment on implementation against objectives
- Problems encountered and recommended actions
- Objectives to be achieved, if applicable, over the next intersessional period (May 2023- April 2025)
- Planned activities for May 2023- April 2025

# Justification

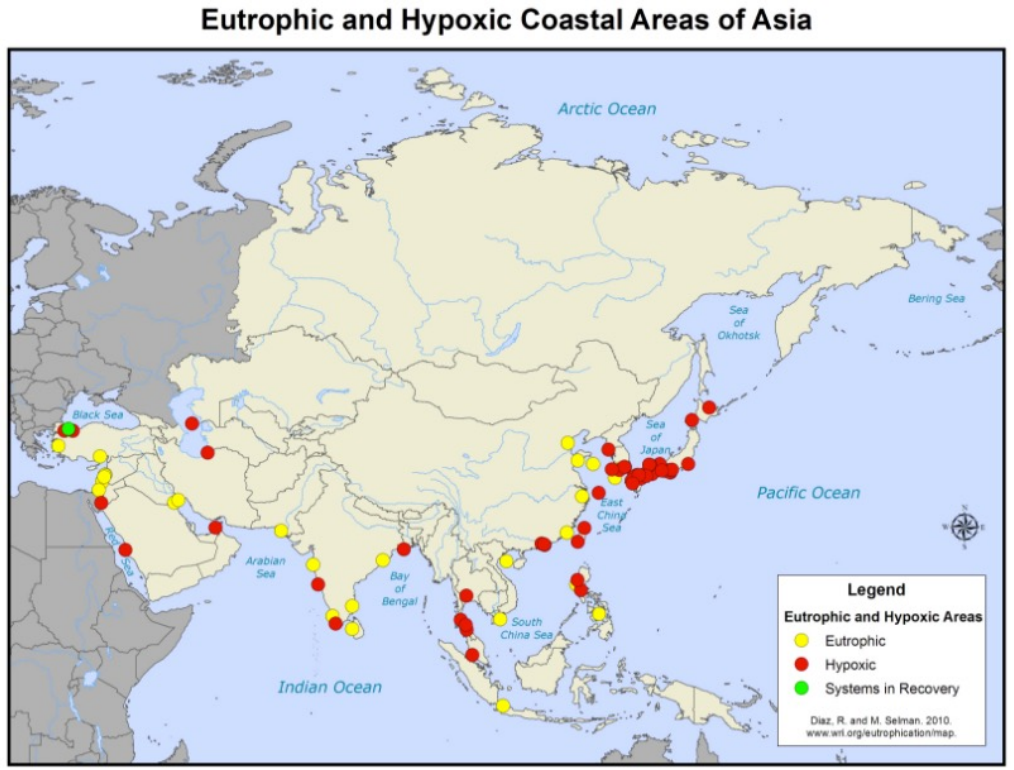
(Why this programme/project/working group is needed for the Sub-Commission)

**“The Ocean is Losing its Breath – and the WESTPAC region is particularly vulnerable”**

- The number of open ocean and coastal areas reporting low oxygen conditions (including water bodies such as estuaries, semi-enclosed seas, and coastal lagoons) has increased exponentially since the mid-twentieth century.
- However, areas of low oxygen in the WESTPAC region are likely under-reported because they are fewer than expected in densely populated areas.
- Aquaculture/mariculture sites in the region are particularly vulnerable due to intensive sea farming practices, proximity to point and non-point sources of nutrients, and the resulting eutrophic and hypoxic conditions, especially during the monsoon months.
- Deoxygenation will have a significant impact on aquaculture product availability, as the region accounts for 80% of global aquaculture production.
- Furthermore, the region is known for having the world's highest marine biodiversity, which could be jeopardized if low-oxygen areas were to expand.




Source: Coral Triangle Atlas - http://ctatlas.reefbase.org/default.aspx




http://www.wri.org/resources/maps/coastal-eutrophic-and-hypoxic-areas-asia

# Timeframe & Objectives

## (Specific, Measurable, Achievable, Relevant and Time bound)

## What were expected to achieve over the project timeframe?

Integrate the disparate research efforts on deoxygenation that are taken worldwide and to offer a regional and multidisciplinary view of the problem (through workshops and review papers on the issue)

Facilitate communication with established networks, observation systems, IOC WESTPAC member states, stakeholders, policymakers in order to stimulate the awareness on the deoxygenation issue with meaningful and understandable messages (through meetings and workshops)

Promote scientific development and cooperation and identify emergent fields of research (through research publications, webinars, papers, workshops and conferences)

Increase research capacity and knowledge transfer (through one summer camp and workshop side events in WESTPAC scientific conference).

# Expected outputs, or outcomes

a. Produce a technical brief summarizing the threat of deoxygenation to marine ecosystems in the Western Pacific;
b. Produce peer-reviewed scientific articles
c. Support related capacity development and scientific analyses to close existing thematic and geographical knowledge gaps
d. Raise awareness so that deoxygenation may be included as one of the SDG 14 targets alongside ocean acidification.

## Timeframe

**2017– 2025**

**(8 years)**

# Timeframe & Objectives

**(Specific, Measurable, Achievable, Relevant and Time bound)**

**What were expected to achieve over the project timeframe?**

- Objective 1: Scientific session on ocean deoxygenation at the 2020 WESTPAC International Scientific Conference (ISC)
- Objective 2: Workshop side event during the 2020 WESTPAC ISC
- Objective 3: Summer school on deoxygenation similar to ocean acidification training courses offered by WESTPAC but also builds on the 2019 IOC-GO2NE summer school program held at Xiamen University
- Objective 4: Starting Q2 of 2021, create and maintain a website for WESTPAC O2NE

## Timeframe

**2017– 2025**

**(8 years)**

# Expected outputs, or outcomes

a. Produce a technical brief summarizing the threat of deoxygenation to marine ecosystems in the Western Pacific;
b. Produce peer-reviewed scientific articles
c. Support related capacity development and scientific analyses to close existing thematic and geographical knowledge gaps

# Major activities, outputs & outcomes

## May 2021 – April 2023

## Major activities

- **Output 1:** Shared with IOC WG GO2NE developments of WESTPAC O2NE
- **Output 2:** Forwarded information and encouraged the participation of active WESTPAC researchers working on deoxygenation to the 53rd International Colloquium on Ocean Dynamics 3rd GO2NE Conference, in Liege (Belgium) on 16-20 May 2022
- **Output 3:** Provided content to the Regional Knowledge Hub on Ocean and Coastal Deoxygenation in the Western Pacific for uploading on WESTPAC's website
- **Output 4:** Hosted webinar in Dec 2022 featuring two WESTPAC O2NE researchers that has obtained 170 views so far from Asia and the rest of the world https://youtu.be/SpmAl0FrQTU

## Outputs & Outcomes

- Output 1
- Output 2
- Output 3
- …

## Timeframe

**2017– 2025**

**(8 years)**

# A Summary of major achievements

## Since its establishment– now

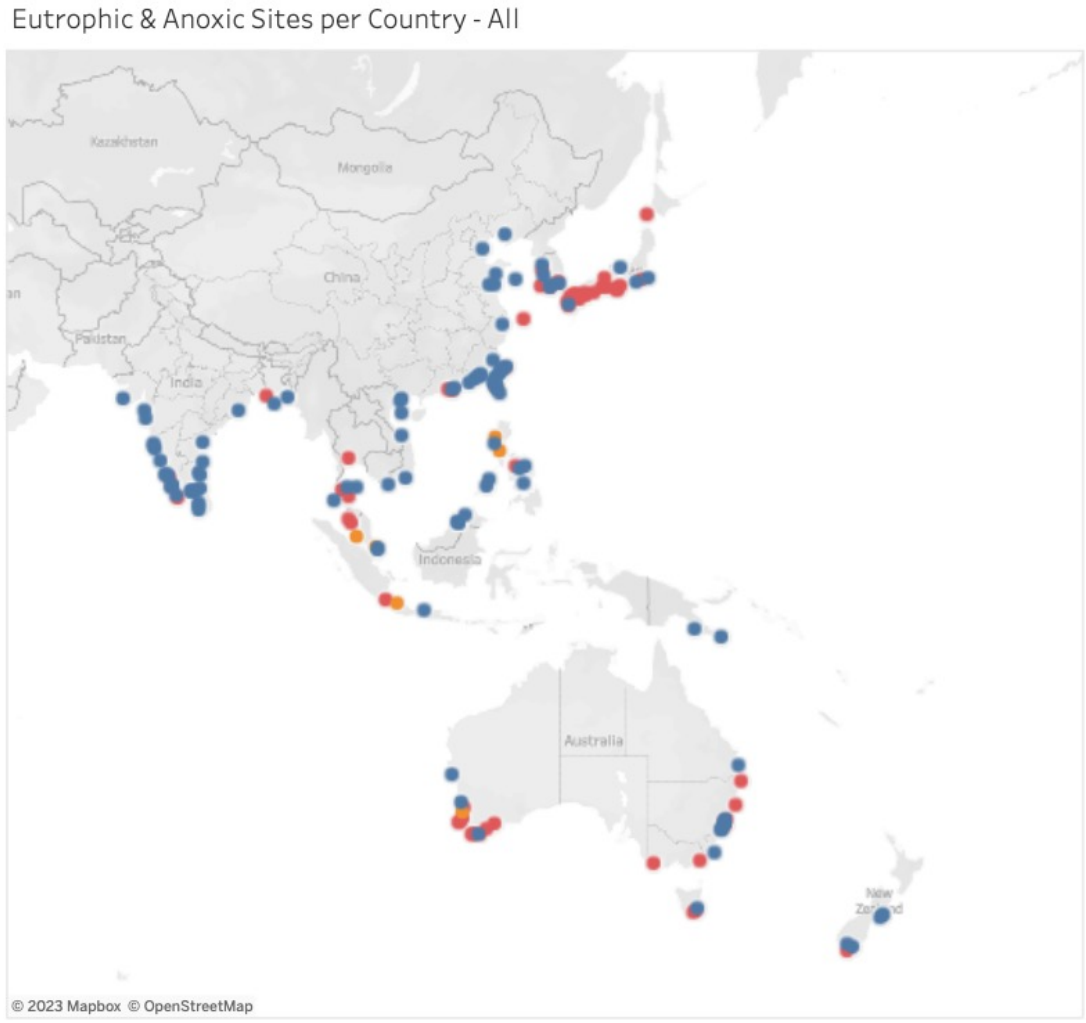
- Side event during the 201x WESTPAC Scientific Conference in Qingdao with participation of IOC GO2NE and more than 40 researchers in the region interested in and studying deoxygenation.
- The First Workshop of the WESTPAC Ocean Oxygen Working Network (O2NE) took place on 20-22 November 2019 in Manila.
- Updated list of hypoxic and eutrophic sites based on published papers in the WESTPAC region that will be the basis for identifying researchers for an expanded network of scientists for WESTPAC O2NE.
- Thirty-five eutrophic and/or hypoxic sites were identified in ASEAN; 142 sites in the rest of Asia. Thus, there are close to two hundred hypoxic and/or eutrophic sites in the WESTPAC region.
- Hosted a webinar under the continuing GO2NE featuring work done by two WESTPAC researchers from Malaysia and the Philippines with 70 online participants. Forthcoming webinar this year to feature researchers from Thailand and other member countries.

## Timeframe

**2017– 2025**

**(8 years)**

The First Workshop of the WESTPAC Ocean Oxygen Working Network (O2NE) took place on 20-22 November 2019 in Manila.




Updated sites (as of Jan 2023) in WESTPAC region that are hypoxic and/or eutrophic based on published papers. Almost 200 sites identified.


**Moderation**

**Gil Jacinto**
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(retired)

**Lara Sotto**
Marine Science Institute,
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**Hypoxia in Manila Bay: Insights from Fieldwork, Nutrient Load and Hydrodynamic Modeling**

**Aileen Tan Shau Hwai**
Centre For Marine & Coastal Studies,
Universiti Sains Malaysia,
Malaysia

**Fish Kills in Malaysia**

# Self-assessment about implementation against objectives

The COVID-19 pandemic brought virtually all plans and networking activities of the WG to a standstill, especially in 2020 and into 2022. The major event to enable the WG to come together with other oxygen researchers during the WESTPAC International Scientific Conference did not take place nor is still likely to happen in 2023.

As the situation has improved at the start of 2023, it will be easier to engage the WG members and other scientists to review the plans and restart the activities of the group.

As the group is new, face-to-face interaction is crucial to ensure an effective and productive network.

## Timeframe

2017– 2025

(8 years)

# Problems encountered & recommended actions

**to be considered by the 14th Intergovernmental Session of WESTPAC**

## Problems encountered

- Problem 1 COVID-19 pandemic brought virtually all plans and networking activities of the WG to a standstill
- Problem 2 Side event and workshop to increase interest and involvement of scientists in the region during the planned 11th WESTPAC International Scientific Conference postponed repeatedly

## Actions

- Action 1 Hold/organize at least two webinars in 2023 tapping identified WESTPAC O2NE researchers alongside the regular GO2NE webinar
- Action 2 Plan and invite suitable speakers focusing on deoxygenation for the 11th WESTPAC ISC; organize a side event to discuss a review paper for the region and a summer camp for young researchers working on deoxygenation.

# Objectives to be achieved, if applicable

## Over the intersessional period (May 2023 – April 2025)

- Objective 1 Hold/organize at least two webinars in 2023 and another two webinars in 2024, tapping identified WESTPAC O2NE researchers alongside the regular GO2NE webinar
- Objective 2 Plan and invite suitable speakers focusing on deoxygenation for the 11th WESTPAC ISC; organize a side event to discuss a review paper for the region and a summer camp for young researchers working on deoxygenation.
- Objective 3 Upload by mid-2023 and update monthly the WESTPAC O2NE website within the WESTPAC webpage.
- Objective 4 Update and validate the database of publications on hypoxia and eutrophication in the WESTPAC region with the help of identified active WESTPAC researchers.

## Smart objectives

Specific, measurable, achievable, relevant & time bound

# Planned activities

## for the next intersessional period (May 2023 – April 2025)

| Program | Activities | Objectives | Expected outputs/outcomes | Date and place | Funding Required | | Remark |
|---|---|---|---|---|---|---|---|
| | | | | | IOC | Other sources (i.e. from national or international) | |
| | 1. Two webinars 2023; two webinars 2024 | Awareness raising; networking | More WESTPAC scientists engaged in O2NE | Virtual | | | |
| | 2. Deoxygenation session WESTPAC ISC 2024 | Reports on deoxygenation research in region; networking | More WESTPAC scientists engaged in O2NE | Bangkok | | | |
| | 3. Deoxygenation workshop WESTPAC ISC | Networking; planning for review papers and summer training workshop | More WESTPAC scientists engaged in O2NE; more work done by scientists in region in hypoxic sites | Bangkok | | | |
| | 4. Upload by mid-2023 and update monthly the WESTPAC O2NE website within the WESTPAC webpage. | Awareness raising; networking | More WESTPAC scientists engaged in O2NE | virtual | | | |

# ThankYou


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Website