

Strengthening Ocean Science and Society for Climate Adaptation through ECOP Network

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Introduction

BACKGROUND:

The coastal regions of Asia-Pacific are facing unprecedented, multidimensional crisis driven by climate change and marine ecosystem degradation. Global mean sea surface temperatures in this region have risen at a rate of 0.20 - 0.25 °C per decade, exacerbating ocean warming, acidification, and deoxygenation. These climate forcings, compounded by overfishing, coastal pollution, and rapid development, are accelerating ecosystem degradation. Such challenges threaten food security, local livelihoods, and biodiversity, thereby increasing disaster risk for vulnerable coastal communities. Addressing these multifaceted issues requires integrated frameworks that translate empirical scientific insights into actionable societal solutions. To bridge this gap, the Early Career Ocean Professionals (ECOP) Thailand network was mobilized and established as a cohesive platform designed to unify emerging researchers and practitioners across diverse oceanographic sectors.

OBJECTIVES:

- Establish the ECOP Thailand network to foster knowledge exchange and collaborative research.
- Build resilience through climate adaptation and ecosystem-based disaster risk reduction (Eco-DRR) initiatives.
- Strengthen science to policy linkages by translating coastal research into actionable recommendations for policymakers.
- Advance ocean literacy and public awareness regarding climate-driven threats, with a particular focus on coral reef conservation and coastal hypoxia.

Results and Discussions

SURVEY:

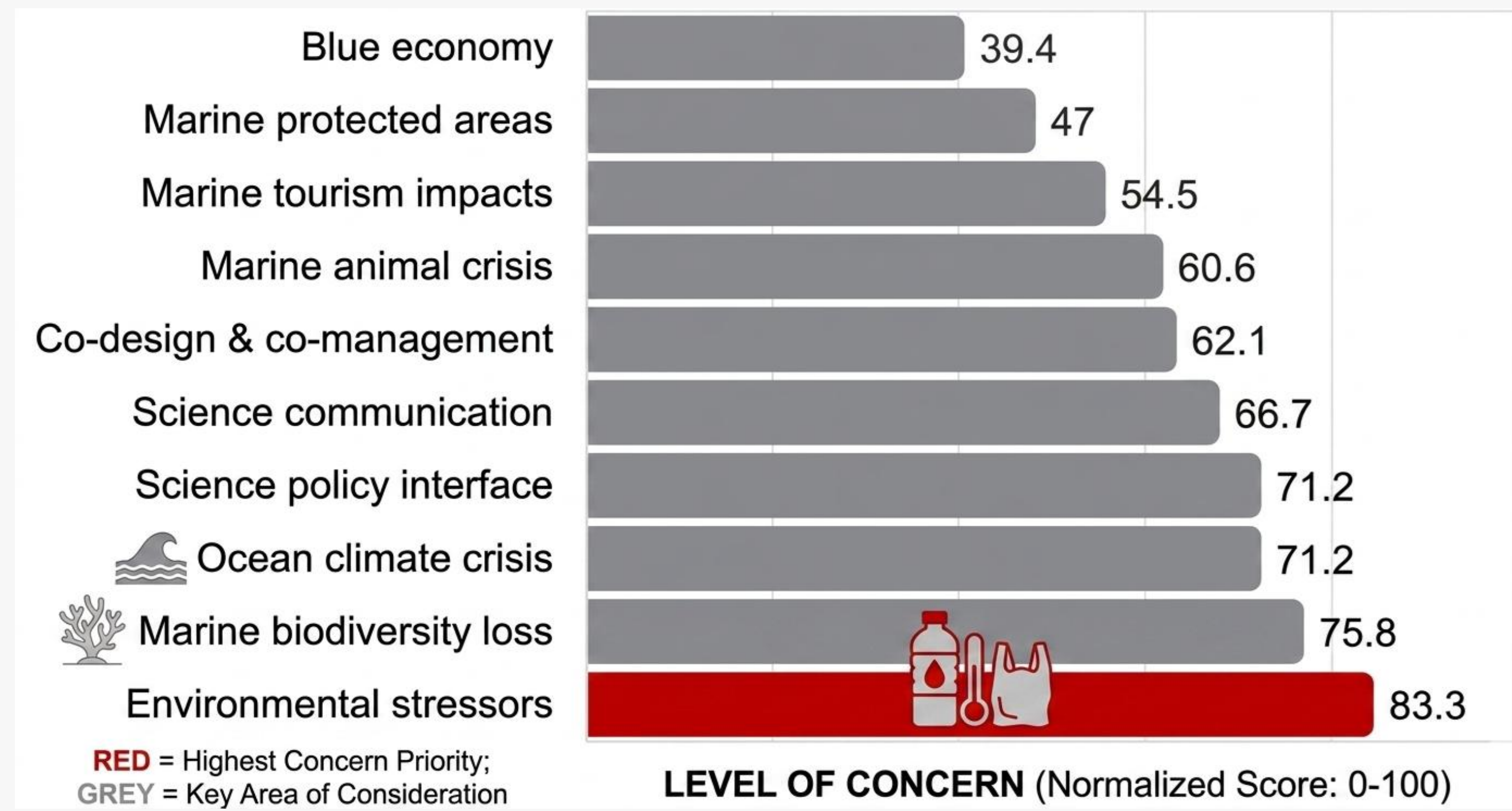


Figure 2. Percentage of respondents ($n = 75$) identifying key marine environmental issues as high-priority capacity development needs in Thailand.

Respondents prioritized environmental stressors (83.3%) and marine biodiversity loss (75.8%) as the foremost areas of concern, followed by the ocean climate crisis and the science policy interface, both identified at 71.2%. These findings align with global trends among early career ocean professionals, where gaps in interdisciplinary collaboration, science communication and science policy engagement remain critical barriers to effective marine governance (Satterthwaite et al., 2025). ECOP Thailand's focus on bridging knowledge production with policy relevant action is therefore well positioned to address these regionally identified priorities.

Methodology



Figure 1. Conceptual framework of the ECOP Thailand "knowledge to action" approach. This qualitative case study analyzes key data sources, including activities, surveys, case studies and reports. Representative activities and data instruments are illustrated alongside the framework.

This study employed a qualitative case study approach to examine ECOP Thailand's role in fostering climate adaptation, ocean literacy and science informed decision making. We synthesized activities from 2024–2026, including webinars, workshops, and a national survey of marine professionals ($n = 75$). Thai Marine Scientists Network Survey 2025 was modified from the survey of ECOP Programme (<https://www.ecopdecade.org/ecopreports/>). To illustrate the application of interdisciplinary collaboration, we conducted a cross-case analysis of coral reef connectivity and coastal hypoxia. Data were compiled from program documentation, event reports, and communication archives. Through thematic analysis, evidence was coded and synthesized into recurring patterns regarding knowledge exchange, capacity building, and stakeholder engagement. This approach allowed us to identify lessons learned and evaluate ECOP Thailand's contributions to sustainable ocean governance and climate adaptation.

KNOWLEDGE TO ACTION:

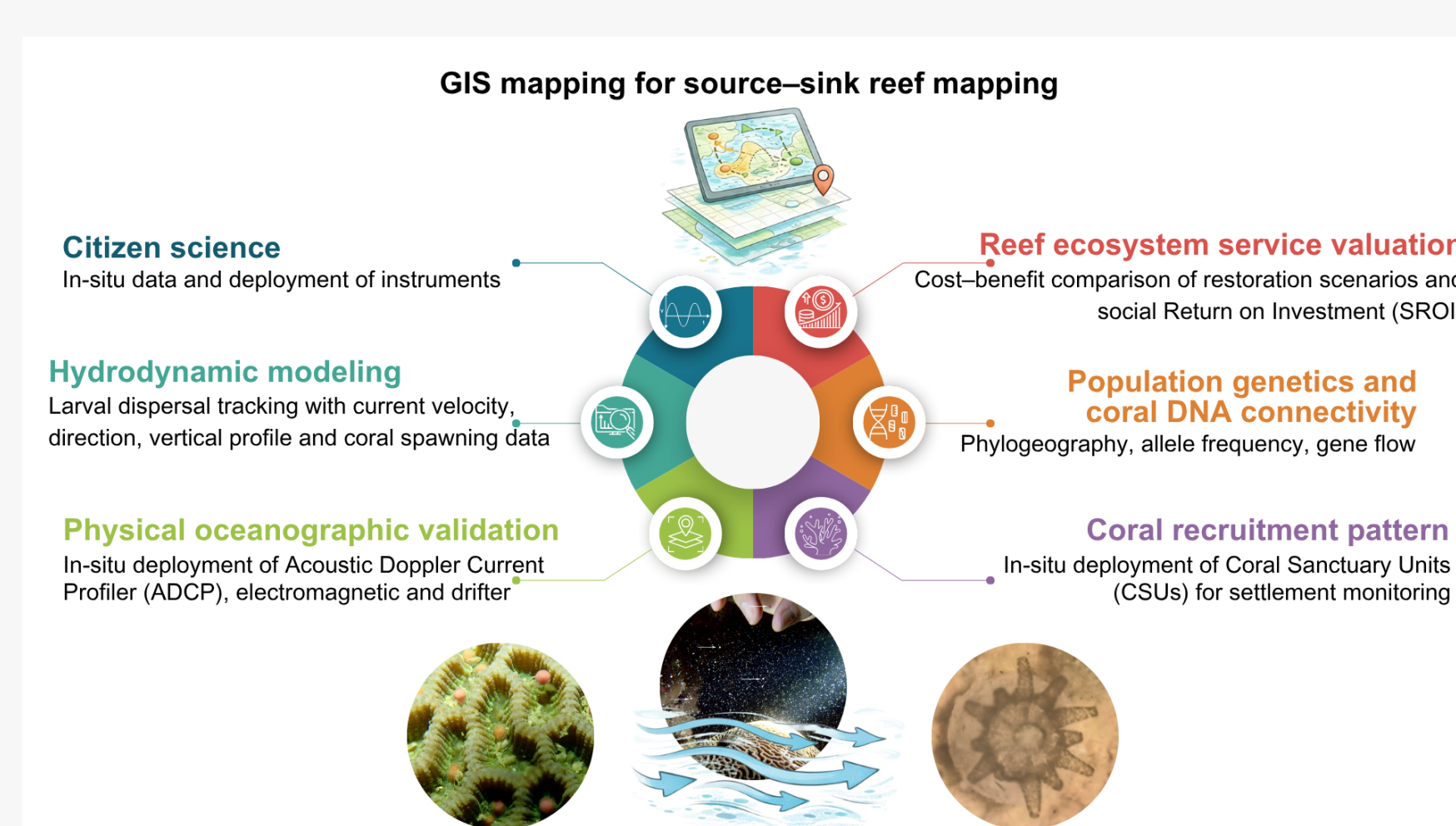


Figure 3. Initiative integrating six interdisciplinary components, aimed to guide evidence-based coral reef restoration and conservation.

Coastal hypoxia and early warning development: Scientists, resource managers and policymakers collaborated to address coastal hypoxia in the Upper Gulf of Thailand, under the UN Ocean Decade COASTAL-SOS project (Dai et al., 2023). The initiative focused on understanding drivers of oxygen depletion, strengthening monitoring efforts and supporting management strategies for climate resilient coastal ecosystems.

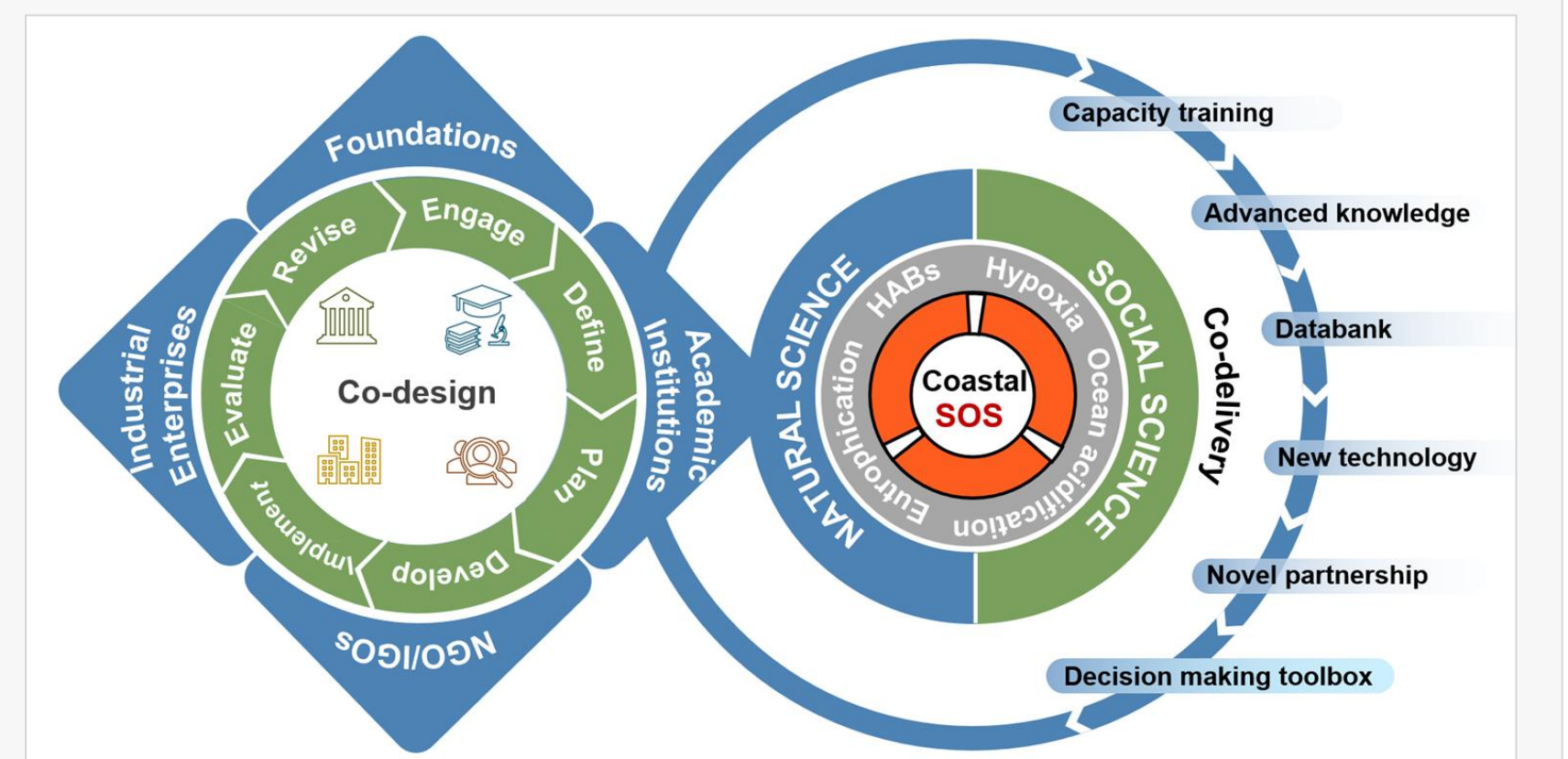


Figure 4. Conceptual framework of COASTAL-SOS (<https://coastal-sos.xmu.edu.cn/index.htm>)

Conclusion

Between 2024 and 2026, ECOP Thailand established itself as a critical interdisciplinary platform, bridging the gap between early-career researchers, practitioners, policymakers, and community stakeholders. Through the execution of 10 public webinar series, participation in 13 national and international scientific forums, and extensive outreach initiatives, the network successfully engaged over 1,000 participants in targeted knowledge exchange and capacity building activities. The thematic priorities and case studies on coral reef connectivity and coastal hypoxia underscore the imperative for integrated, science informed approaches to address complex environmental degradation. Ultimately, the ECOP Thailand model offers a scalable, robust framework for mobilizing emerging professionals to advance climate adaptation, sustainable ocean governance, and the resilience of coastal ecosystems.

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Reference:

- Satterthwaite, E. V., Robbins, M., Crespo, G. O., et al. (2025). Global priorities for ocean sustainability from Early Career Ocean Professionals. *ICES Journal of Marine Science*, 82(1): fsae201. <https://doi.org/10.1093/icesjms/fsae201>
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