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News and Highlights

Advancing regional cooperation—The IOC WESTPAC project on methane fluxes in the Indo-Pacific region

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From 2021 to 2024, the WESTPAC Working Group “Complex Study of Gas Hydrates and Methane Fluxes in the Indo-Pacific Region” (CoSGas) advanced regional cooperation through multiple workshops and an expert network (Fig. 1).

On 13th March 2025, the international project “Methane Fluxes and their Impacts on Climate and Ecosystem in the Indo-Pacific Region (MeFIE, 2025–2029)” was launched by the IOC Sub-Commission for the Western Pacific (WESTPAC). Aligning with the UN Decade of Ocean Science, this collaboration unites scientists from 10 nations to address critical gaps in ocean-climate interactions (Fig. 2).

Key CoSGas outcomes included: (1) Improved understanding of gas hydrate distribution and origin; (2) assessment of their energy and ecological potential; and (3) insights into their evolution under climate change.

While methane fluxes across the seafloor and ocean-atmosphere interface play crucial roles in climate regulation, they remain insufficiently constrained. A lack of comprehensive observations limits the ability to assess regional methane budgets. Coordinated international efforts are thus needed to evaluate marine ecosystem responses to environmental changes.

Consequently, MeFIE fosters collaboration among scientists and policymakers to quantify and understand the effects of methane fluxes on climate, ecosystems, and socio-economic development.

1. Proposed actions of the MeFIE Project

1.1. Advance science on methane fluxes

- (i) Generate new knowledge on methane fluxes and



Fig. 1. Participants of the CoSGas Working Group at the 2nd UN Ocean Decade Regional Conference and the 11th WESTPAC International Marine Science.

publish at least four peer-reviewed open-access papers.

(ii) Strengthen education through at least two specialized programs on new analytical techniques.

(iii) Promote long-term interdisciplinary interaction among early-career scientists and students.

1.2. Increase scientific knowledge through collaboration

(i) Organize thematic scientific sessions at key symposia (e.g., WESTPAC, North Pacific Marine Science Organization-PICES).

(ii) Encourage core projects and propose special issues in scientific journals.

(iii) Promote joint cruises and comparative studies on methane measurement methodologies.

1.3. Disseminate knowledge and raise awareness

- (i) Compile regional reports and launch an accessible

website for methane inventories.

(ii) Facilitate the exchange of information and national experiences among participating countries.

(iii) Provide cruise reports and symposium outputs for free public access.

1.4. Capacity building

(i) Initiate targeted lectures for early-career ocean professionals (ECOPs) and students.

(ii) Promote ECOP and student participation in research cruises for hands-on training.

2. Next steps

(i) Align future activities with UN Ocean Decade priorities and the development of WESTPAC marine research capacity.

(ii) Expand data and method exchanges related to methane fluxes and marine geology.

(iii) Strengthen capacity building through specialized

training and ecosystem-based adaptation.

(iv) Support long-term international cooperation among young scientists and students.

3. Further initiatives and collaboration

MeFIE seeks synergies with related initiatives to broaden scientific coverage and enhance ocean-climate solutions, including: COESS (Japan); a cold seep program by the Guangdong Laboratory (China); the global CliMetS program; and GasMEO (Russia and China).

4. Summary

Building on the CoSGas legacy, MeFIE provides a vital platform for coordinated research on methane fluxes in the Indo-Pacific. By enhancing regional cooperation, it supports climate resilience and sustainable development. The project engages stakeholders through open-access publications, conferences, and public outreach, fostering capacity building via international academic exchanges.



Fig. 2. Participants at the Fifteenth Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-XV) in Tokyo, Japan.