

CTCN Technical Assistance

*Pre-feasibility Study on Ocean Energy focusing on Salinity Gradient Energy Technology and
Electrochemical Ocean Thermal Energy Conversion in Papua New Guinea*

Final In-Person Workshop Report

*Korea–PNG Wrap-up Program and
CTCN TA cRD&D Marine Energy Specialist Workshop
8–13 March 2026 | Jeju · Seoul · Incheon, Republic of Korea*

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Implementer / Host: **Korea Institute of Energy Research (KIER)** –Distributed Energy Team, Jeju Global Research
Center

Output 3 / Activity 3.2 –In-person workshop and project wrap-up

Submitted to: UNEP-CTCN

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1. Executive Summary

This report documents the final in-person workshop program conducted under the CTCN Technical Assistance to Papua New Guinea on the pre-feasibility study of Salinity Gradient Energy (SGE), Electrochemical Ocean Thermal Energy Conversion (e-OTEC), and Blue Battery Technology (CTCN Request ID# 2024000020 / PCA Reference CTCN 24-017). The program was held from 8 to 13 March 2026 across Jeju, Seoul, and Incheon in the Republic of Korea, hosted by the Korea Institute of Energy Research (KIER), and combined PSC governance activities, Jeju site visits, technical tours, the centerpiece CTCN TA cRD&D Marine Energy Specialist Workshop, and a cultural program.

The program delivered on the substantive scope of Activity 4.2 of the Response Plan: final dissemination workshop and project wrap-up, through four distinct elements: (i) site visits to Jeju agricultural and organic-waste facilities on Day 2 morning, followed by the final PSC meeting in the afternoon including the Concept Note review with Ecosian; (ii) the Jeju Provincial Government visit and KIER / CFI / Lava Seawater technical tours on Day 3; (iii) the CTCN TA cRD&D Marine Energy Specialist Workshop on Day 4 afternoon at GLAD Yeouido, Seoul, with three keynote speeches and five capacity-building sessions led by Korean academic and industry experts; and (iv) a cultural program on Day 5. A joint visit to the Green Climate Fund planned for Day 6 was cancelled. The Response Plan foresaw the final workshop being held in PNG; its relocation to Korea is reported as a deviation in the Closure Report.

Key outcomes:

- Final results of the pre-feasibility study presented to the PSC, including the headline findings of approximately 1.2 GW gross and 360–368 MW technically feasible Salinity Gradient Energy potential from four Central Province rivers, and e-OTEC laboratory efficiencies of ~13–20% of the Carnot limit (~1% absolute). The PSC endorsed finalization and submission of the deliverables, subject to NDE validation.
- GCF Concept Note reviewed during the Day 2 PSC meeting in collaboration with Ecosian (Concept Note advisory partner).
- CTCN TA cRD&D Marine Energy Specialist Workshop held on 11 March 2026, convening UN CTCN representatives, the PNG delegation, KIER, and 13 invited Korean academic and industry experts from 10 institutions covering marine energy system development, energy materials, energy potential investigation, and system integration.
- Follow-on financing pathways and alignment with potential funding sources (MSIT, GCF, ADB, AIIB) articulated. The joint GCF visit planned for Day 6 was cancelled; the Concept Note is delivered as a TA deliverable and will be submitted to the GCF once an Accredited Entity is identified.
- Knowledge sharing across PNG delegation and the Korean marine renewable energy research community (Hanyang University, Korea University, Pusan National University, Korea Maritime & Ocean University, Catholic University, Korea Testing Laboratory, Toray, Prione, KEITI, Drive Force).

This report is submitted as a deliverable under Output 4 of the Response Plan and supports CTCN closure and NDE validation. It complements the Consolidated PSC Meeting Reports (which contain a more detailed record of the final PSC meeting on Day 2) and the Closure and Data Collection Report (which documents the cumulative impact of the technical assistance).

2. Introduction and Purpose

2.1 Project context

The CTCN Technical Assistance to Papua New Guinea was implemented from August 2024 to May 2026 to support the Government of PNG, represented by the National Energy Authority (NEA) as Proponent and the Climate Change and Development Authority (CCDA) as National Designated Entity in assessing the feasibility of three frontier marine renewable energy technologies under PNG conditions: Salinity Gradient Energy (SGE), Electrochemical Ocean Thermal Energy Conversion (e-OTEC), and Blue Battery Technology (seawater-based energy storage).

The technical assistance was implemented by the Korea Institute of Energy Research (KIER), a leading institution on marine renewable energy and operator of Korea's first 5 kW Reverse Electrodialysis plant in Jeju, South Korea (operational since 2018, with net energy efficiency 29.2% and availability 20/24 hours).

2.2 Purpose of this report

This report consolidates the records of the final in-person workshop program into a single submission package for CTCN review and NDE validation. It fulfills the deliverable requirement under Output 4 / Activity 4.2 of the Response Plan.

The report covers:

- The full program of the Korea wrap-up activities (8–13 March 2026);
- Day-by-day records of the site visits, technical tours, final PSC meeting, the CTCN TA cRD&D Marine Energy Specialist Workshop;
- Workshop outcomes, deliverables, and lessons learned;
- Follow-up action items linking the wrap-up program to post-TA activities.

2.3 Reference to the Response Plan

Activity 4.2 of the Response Plan was scoped to deliver:

- In-person workshop in PNG, with the implementer traveling to the country, to disseminate findings of the pre-feasibility study;
- Final consolidated report combining outputs from the technical assistance;
- Workshop materials and outcome documentation for follow-up planning.

The Korea wrap-up program delivers on this scope through an integrated activity structure that combines site visits, the dissemination workshop, and the Marine Energy Specialist Workshop (a GCF submission visit planned for Day 6 was canceled), maximizing the strategic impact of the wrap-up phase. Holding the workshop in Korea rather than PNG allowed the PNG delegation to see KIER's operating pilots, but limited participation to eight PNG representatives; wider in-country dissemination of the findings is recommended. The specialist workshop on 11 March 2026 explicitly aimed at promoting collaborative Research, Development, and Demonstration (RD&D) for the implementation of marine renewable energy in Papua New Guinea and the Pacific region, and at seeking funding from MSIT (Ministry of Science and ICT), the GCF, and Multilateral Development Banks (ADB, AIIB).

3. Program Overview

3.1 Program structure

The Korea wrap-up program was structured as a six-day integrated program combining governance, site visits, technical tours, the specialist workshop, cultural, and financing elements. The program was designed to build cumulatively from the initial site visits and PSC governance meeting on Day 2 through the Jeju Provincial Government visit and KIER technical tours on Day 3, the Seoul transfer and CTCN TA cRD&D Marine Energy Specialist Workshop on Day 4,; the GCF Concept Note submission visit planned for Day 6 was canceled.

3.2 Program summary

Day	Location / Accommodation	Principal activities
Day 1 –8 March (Sun)	POM → SIN → Jeju / Glad Jeju	Travel of PNG delegation from Port Moresby via Singapore to Jeju Island. Arrival 07:20 AM on TR812. Dinner at Samdajeong (Jeju black pork)
Day 2 –9 March (Mon)	Jeju / Glad Jeju	AM: Jeju Agricultural Research Institute (Gangjeong) and Seogwipo Organic Waste Recycling Facility. Lunch in Jungmun area (galchijorim – braised cutlassfish). PM: Final PSC meeting 13:30–17:00 at Maison Glad (seminar room) including Concept Note review with Ecosian. Dinner Heukdwaegui (Jeju black pork)
Day 3 –10 March (Tue)	Jeju / Glad Jeju	AM: 09:00 Jeju Provincial Government visit (meeting with Governor; coordination with Mr Kim Gwang-ho); Dongmun Market visit. Lunch near Dongmun Market (Jeju mom-guk, haejang-guk, sundae-guk, gogi-guksu). PM: 13:00 Departure; 14:00–15:00 KIER Jeju Global Research Center; 15:00–16:00 CFI Promotion Hall; 16:00–17:00 Jeju Technopark Lava Seawater Business Division. Dinner at Maison Glad –networking reception with Jeju-based renewable energy companies, research institutes, and university experts
Day 4 –11 March (Wed)	Jeju → Seoul / Glad Yeouido	AM: 07:30 Checkout and transfer to Jeju Airport; 09:25 Jeju → Seoul on Korean Air KE1158. Lunch in Yeouido. PM: 13:00–18:00 CTCN TA cRD&D Marine Energy Specialist Workshop at GLAD Yeouido (Project A Room) – three keynote speeches and five capacity-building sessions; followed by banquet at GLAD Yeouido
Day 5 –12 March (Thu)	Seoul / Glad Yeouido	AM: 09:00 Culture tour –Gyeongbokgung Palace, Namdaemun. Lunch traditional Korean (royal court cuisine, galbi-jjim). PM: 13:00 Culture tour –Myeongdong, Yongsan. Dinner at GLAD Yeouido
Day 6 –13 March (Fri)	Seoul → Incheon → HK → POM	GCF meeting canceled. PM: 13:45 Incheon → Hong Kong → Port Moresby –departure

3.3 PNG delegation

The PNG delegation comprised 8 PSC representatives, confirmed through CCDA:

Name	Affiliation	Role
Mr. Danny Nekitel	Climate Change and Development Authority (CCDA)	NDE / Delegation lead
Ms. Emily Pomoh	Climate Change and Development Authority (CCDA)	CCDA technical lead
Mr. Larsen Daboyan	National Energy Authority (NEA)	Proponent representative
Mr. Francis Sakato	Independent Consumer and Competition Commission (ICCC)	Regulator
Mr. Russell Kilalema	National Institute of Standards and Industrial Technology (NISIT)	Standards / Technology
Prof. Chalapan Kaluwin	University of Papua New Guinea (UPNG)	Academic / Capacity-building partner
Dr. Dapsy Olatona	PNG University of Technology (Unitech)	Academic / Capacity-building partner
Dr. Shoeb Ahmed Syed	PNG University of Technology (Unitech)	Academic / Capacity-building partner

3.4 UN CTCN representatives

- Dr. Suil Kang –UN CTCN
- Mr. Hoyoung Jo –UN CTCN

3.5 KIER hosting team

- Dr. Hanki Kim –Project lead, Chief of Distributed Energy Team, KIER Jeju Global Research Center
- KIER Distributed Energy Team senior researchers
- KIER Global Strategy Team –international cooperation support (Dr. Woonho Baek)
- KIER Jeju Global Research Center facility staff –technical tour support

3.6 Logistics arrangements

- Travel agency: Yeogi Eottae–flights and accommodation
- Event management: Yeogi Eottae–Day 4 workshop logistics
- Interpreters: arranged separately for Days 1–4
- Bus reservation and culture tour coordination

4. Day 1 –Travel and Arrival (8 March 2026)

4.1 Travel itinerary

The PNG delegation traveled from Port Moresby to Jeju Island via Singapore. KIER coordinated travel logistics (in cooperation with the Korean Embassy in Port Moresby for visa processing), and CCDA (Mr. Danny Nekitel) handled the PNG side.

Departure	Port Moresby (POM)
Transit	Singapore (SIN)
Arrival	Jeju International Airport (CJU), Republic of Korea –07:20 AM on TR812
Reception at Jeju	KIER hosting team welcome reception at Jeju Airport; transfer to accommodation; check-in at 08:30. Orientation briefing on the program
Accommodation	Glad Jeju (Days 1–3)
Dinner	Samdajeong, Jeju –welcome dinner; opportunity for the PNG delegation, KIER team, and CTCN representatives to begin substantive discussions in an informal setting

4.2 Visa and logistics

Visa processing was facilitated through coordination with the Korean Embassy in Port Moresby and KIER's Global Strategy Team. KIER bore the costs of accommodation, in-country transport, and meals in line with the project budget allocation.

5. Day 2 –Jeju Site Visits and Final PSC Meeting (9 March 2026)

5.1 Day 2 overview

Date	9 March 2026 (Monday)
Locations	Jeju Agricultural Research Institute (Gangjeong); Seogwipo Organic Waste Recycling Facility; Maison Glad Jeju (PSC meeting)

5.2 Morning site visits

5.2.1 Jeju Agricultural Research Institute (Gangjeong)

09:00. The PNG delegation visited the Jeju Agricultural Research Institute in Gangjeong, examining renewable energy applications in agricultural and rural development contexts. The visit provided context for the water–energy–food nexus considerations relevant to PNG coastal community deployment.

5.2.2 Seogwipo Organic Waste Recycling Facility

10:30. The delegation visited the Seogwipo Organic Waste Recycling Facility, observing applications of organic waste valorization and resource recovery, relevant to the circular economy and water-energy nexus elements of the proposed PNG pilot/demonstration project, particularly in the context of co-located desalination and aquaculture co-benefits.

5.3 Lunch

12:00. Lunch in the Jungmun area; Jeju local cuisine including galchijorim (braised cutlassfish).

5.4 Afternoon –Final PSC meeting and Concept Note review (13:30–17:00)

5.4.1 Venue and attendance

The final PSC meeting was held in the seminar room at Maison Glad Jeju, the delegation's accommodation. Total attendance: PNG delegation (8 PSC representatives), KIER team (Prof. Hanki Kim and senior researchers), UN CTCN representatives (Dr. Suil Kang and Mr. Hoyoung Jo), and an Ecosian representative – 13 participants, around 15% women invited for the Concept Note review session.

5.4.2 Final PSC meeting –review of TA deliverables

The PSC reviewed the status of the TA deliverables:

- Output 1 – work plan, M&E plan and impact statement, Gender Assessment & Action Plan, Closure and Data Collection Report (draft), Consolidated PSC Meeting Reports, Inception Workshop Report;
- Output 2 deliverables: site selection report, inception workshop materials, lab-scale RED installation at UPNG;
- Output 3 deliverables: pre-feasibility study (technical, socio-economic and financial analyses) with Multi-Criteria Decision Analysis (draft), stakeholder consultation report;
- Output 4 deliverables: GCF Concept Note with supporting documents, final compiled report, in-person workshop materials.

5.4.3 GCF Concept Note review with Ecosian

A dedicated session within the PSC meeting was held with an Ecosian representative (Concept Note advisory partner) to review the GCF Concept Note prepared under Activity 4.1 of the Response Plan. The review covered:

- Alignment of the Concept Note with GCF strategic plan priorities (T1, T6, T7);
- Quantification of Core Indicators 1–4 (CO₂e avoided, resilience, beneficiaries, funding leveraged);
- Accredited Entity selection considerations (UNDP, ADB, or other Pacific-active AE);
- Pathway to the full Funding Proposal, including PNG NDA Non-Objection Letter (NOL) coordination through CCDA;
- Refinements to the Executing Entity structure (NEA as Executing Entity with CCDA NDE/NDA oversight, CEPA safeguards, ICCC regulation, PPL utility partnership, and KIER as technology partner).inements to the Executing Entity structure (NEA-led EE with CCDA NDE oversight, CEPA safeguards, ICCC regulation, PPL utility partnership).

5.5 Dinner

18:30. Dinner of Jeju black pork (heukdwaeji-gui), a Jeju regional specialty, providing an informal setting for continued discussion of the day's outcomes.

6. Day 3 –Jeju Provincial Government and KIER Technical Tours (10 March 2026)

6.1 Day 3 overview

Day 3 combined provincial government engagement (morning) with in-depth technical tours of KIER's Jeju Global Research Center and complementary Jeju renewable energy facilities (afternoon). The day strengthened both the policy-dialogue and technical-exposure dimensions of the wrap-up program.

6.2 Morning –Jeju Provincial Government visit (09:00)

6.2.1 Meeting with the Provincial Governor

09:00. The PNG delegation visited the Jeju Provincial Government, with a courtesy meeting with the Governor of Jeju Special Self-Governing Province. The visit included a progress review of the Jeju–PNG renewable energy cooperation context, coordinated by Mr. Kim Gwang-ho (provincial government coordinator).

6.2.2 Dongmun Market visit

Following the provincial government meeting, the delegation visited Dongmun Market, Jeju's principal traditional market, providing informal cultural exposure during the Jeju portion of the program.

6.3 Lunch

12:00. Lunch near Dongmun Market with Jeju regional specialties –Jeju mom-guk (seaweed soup), haejang-guk (hangover soup), sundae-guk (blood sausage soup), gogi-guksu (pork noodle soup).

6.4 Afternoon –KIER and Jeju Technopark Lava Seawater technical tours

6.4.1 13:00 Departure for technical tours

Departure from Maison Glad for an integrated afternoon of technical tours covering KIER's Jeju Global Research Center, the CFI Promotion Hall, and the Jeju Technopark Lava Seawater Business Division.

6.4.2 14:00–15:00 KIER Jeju Global Research Center

The PNG delegation toured KIER's Jeju Global Research Center, providing direct hands-on exposure to operational marine renewable energy demonstration installations. This was a critical capacity-building element of the wrap-up program: PNG counterparts had previously seen these technologies only at lab scale (the RED equipment installed at UPNG during the May 2025 mission).

Institutional overview: The KIER Jeju Global Research Center was established on 20 September 2011 to integrate onshore and offshore renewable energy research and demonstration projects in Jeju Special Self-Governing Province. Three pillars of activity:

- Wind energy: including 5 MW offshore wind power and 3 MW onshore wind power demonstrations, low-frequency noise detection and propagation analysis, floating marine weather measurement systems;
- Power (grid) systems: energy-independent EV charging infrastructure, virtual power plant (VPP) technology for grid flexibility, renewable grid operation simulators;
- Distributed energy systems: water-energy nexus, long-duration energy storage (LDES), marine renewable energy, distributed energy resources (DER), green hydrogen for curtailment management.

Key demonstrations toured:

- Korea's first 5 kW Reverse Electrodialysis (RED) pilot plant: operational since 2018; net energy efficiency 29.2%; availability 20/24 hours; stability 80% over 60 days continuous operation. Co-located with municipal wastewater treatment plant on Jeju coastline, drawing treated wastewater (15,000 TPD) and seawater (15,000–30,000 TPD) at 10 m depth via 350 m subsea pipeline;
- KIER 10 kWh Blue Battery pilot: seawater-based energy storage with non-flammable design, LCOS <0.2 USD/kWh (commercial-scale target), volumetric energy density 5–7 Wh/L, operational with PV + grid input (3:7 ratio) for 30 days continuous operation;
- Sector Coupling and Integration Convergence Research Center –water-energy-food nexus demonstrations including RED + RO desalination hybrid, SEACUS for CO₂ utilisation as Ca/Mg carbonates.

6.4.3 15:00–16:00 CFI Promotion Hall

Visit to the CFI (Clean Future Initiative) Promotion Hall, providing context on Jeju Special Self-Governing Province's clean energy transition strategy and the integrated approach to renewable energy demonstrations in Jeju.

6.4.4 16:00–17:00 Jeju Technopark Lava Seawater Business Division

Visit to the Jeju Technopark Lava Seawater Business Division, observing applications of Jeju's distinctive lava seawater resource; seawater that has been naturally filtered through volcanic rock layers. The visit illustrated value-added applications of mineral-rich seawater in cosmetics, food and beverage, and aquaculture industries, providing context for potential co-benefit applications of marine renewable energy intake/discharge water in PNG coastal communities.

6.5 Evening –Renewable energy networking dinner

18:30. Dinner at Maison Glad Jeju: networking reception with Jeju-based renewable energy companies, research institutes, and university experts. The reception extended the day's exposure beyond the formal KIER program to the wider Jeju renewable energy ecosystem, supporting potential follow-on technology supplier and academic engagement for PNG.

6.6 Day 3 outcomes

- Strengthened Jeju provincial government engagement with PNG counterparts, supporting potential sub-national cooperation arrangements.
- PNG delegation gained direct exposure to operational SGE (RED) and Blue Battery pilots; e-OTEC was presented at laboratory scale; a substantial enhancement over the lab-scale RED at UPNG.
- Technical questions raised by PNG counterparts addressed by KIER researchers, providing inputs to the final pre-feasibility study findings.
- Operational protocols and best practices identified for application at potential PNG sites.
- Foundation laid for technology supplier discussions ahead of the Day 4 specialist workshop.

7. Day 4 –Transfer to Seoul and CTCN TA cRD&D Marine Energy Specialist Workshop (11 March 2026)

7.1 Day 4 overview

Date	11 March 2026 (Wednesday)
Morning	07:30 Check-out from Glad Jeju and transfer to Jeju Airport; 09:25 Jeju → Seoul on Korean Air KE1158
Lunch	Yeouido area (Seoul); Korean cuisine (kimchi-jjigae or similar)
Afternoon	13:00–18:00 CTCN TA cRD&D Marine Energy Specialist Workshop at GLAD Yeouido (Project A Room)
Evening	18:30 Banquet at GLAD Yeouido
Accommodation	Glad Yeouido (Days 4–5)

7.2 CTCN TA cRD&D Marine Energy Specialist Workshop –overview

The afternoon specialist workshop was the centrepiece of the wrap-up program. Hosted by KIER and convened in cooperation with UN CTCN, the workshop brought together UN CTCN representatives, the PNG delegation, KIER, and 13 invited Korean academic and industry experts from 10 Korean institutions across the marine renewable energy ecosystem.

7.2.1 Workshop details

Date	11 March 2026 (Wednesday)
Time	13:00 – 18:00 KST
Location	GLAD Yeouido, Seoul (Project A Room)
Host/Organiser	Korea Institute of Energy Research (KIER)
Total attendance	24

7.2.2 Workshop purpose

The workshop had a dual purpose:

- To promote collaborative Research, Development, and Demonstration (RD&D) for the implementation of marine renewable energy in Papua New Guinea and the Pacific region, with specific focus on Salinity Gradient Power, Electrochemical Ocean Thermal Energy Conversion (e-OTEC), and Seawater-based Energy Storage;
- To seek funding and project budgets from the Ministry of Science and ICT (MSIT, Republic of Korea), the Green Climate Fund (GCF), and Multilateral Development Banks (Asian Development Bank, Asian Infrastructure Investment Bank).

7.3 Workshop participants

7.3.1 UN CTCN

Name	Role
Dr. Suil Kang	UN CTCN
Mr. Hoyoung Jo	UN CTCN

7.3.2 PNG delegation

The full 8-person PNG delegation participated (see Section 3.3 for the complete list). The delegation included representatives of CCDA, NEA, ICC, NISIT, UPNG, and Unitech.

7.3.3 Korean experts

KIER convened 13 invited Korean academic and industry experts from 10 institutions, together with the KIER host, providing the wrap-up program with substantial breadth across the Korean marine renewable energy ecosystem:

Expert	Institution	Category
Dr. Hanki Kim	Korea Institute of Energy Research (KIER)	Host
Prof. Jong-Oh Kim	Hanyang University	Academic
Prof. Won-hee Lee	Hanyang University	Academic
Prof. Rhokyun Kwak	Hanyang University	Academic
Dr. Seungmin Park	Korea Testing Laboratory (KTL)	Standards
Dr. Kanghoon Lee	Catholic University	Academic
Assoc. Prof. Changhyun Jun	Korea University	Academic
Prof. Kyung Hwa Cho	Korea University	Academic
Prof. Helena	Pusan National University	Academic
Prof. Jun Kang	Korea Maritime & Ocean University	Academic
Dr. Sangwoo Jin	Toray Membrane	Industry
Mr. Sanghoon Lee	Prione Co., Ltd.	Industry
Mr. Hosung Yoo	Korea Environmental Industry & Technology Institute (KEITI)	Public
Mr. Eun Sang Jang	Drive Force	Industry

7.4 Workshop program

Time	Session	Subject	Speaker
13:00 – 13:30	<i>Networking time</i>	—	—
13:30 – 13:40	Welcome speech	Welcome remarks	Dr. Suil Kang (UN CTCN) and Mr. Danny Nekitel (CCDA)
13:40 – 14:00	Keynote (1)	Introduction of CTCN TA project in PNG	Mr. Danny Nekitel (CCDA)
14:00 – 14:30	Keynote (2)	Brief report of CTCN TA cRD&D in PNG	Dr. Hanki Kim (KIER)
14:30 – 15:00	Keynote (3)	Introduction of TA program	Mr. Hoyoung Jo (UN CTCN)
15:00 – 15:30	<i>Coffee break (30 min)</i>	—	—
15:30 – 16:00	Capacity building (1)	Subject 1: Marine energy system development	Prof. Rhokyun Kwak (Hanyang University)
16:00 – 16:30	Capacity building (2)	Subject 2: Energy Material (1)	Prof. Helena (Pusan National University)
16:30 – 17:00	Capacity building (3)	Subject 3: Energy potential investigation	Assoc. Prof. Changhyun Jun (Korea University)
17:00 – 17:30	Capacity building (4)	Subject 4: System integration	Prof. Kyung Hwa Cho (Korea University)
17:30 – 18:00	Capacity building (5)	Subject 5: Energy Material (2)	Prof. Jun Kang (Korea Maritime & Ocean University)
18:30 –	Banquet	GLAD Yeouido	All participants

7.5 Key workshop content

7.5.1 Keynote –CTCN TA project in PNG (Mr. Danny Nekitel, CCDA)

The CCDA presented the institutional and policy context of PNG's engagement with the CTCN technical assistance, including CCDA's role as the National Designated Entity (NDE), alignment with PNG's Second NDC and National Adaptation Plan, and the strategic rationale for marine renewable energy in PNG's coastal and island areas.

7.5.2 Keynote –Brief report of CTCN TA cRD&D in PNG (Dr. Hanki Kim, KIER)

KIER presented the substantive findings of the technical assistance, including:

- SGE: four target rivers with a combined mean flow of $\sim 455 \text{ m}^3/\text{s}$, $\sim 1.2 \text{ GW}$ gross and $\sim 368 \text{ MW}$ technically feasible at $\sim 30\%$ membrane efficiency; e-OTEC principles and KIER laboratory results (Seebeck coefficient $2.5\text{--}2.8 \text{ mV/K}$; $\sim 13\text{--}18\%$ of the Carnot limit, net $\sim 1\text{--}3\%$), with a 10 MW concept design for Port Moresby; Blue Battery storage ($1 \text{ kW} / 10 \text{ kWh}$ pilot)
- Port Moresby coastal waters: $\geq 10 \text{ m}$ intake depth specification based on halocline analysis ($\geq 34.4 \text{ PSU}$ stable salinity at 10 m)

- Methodology: HYCOM ocean-model data 2024–2025 + AI-based satellite interpretation + in-situ sampling at Kalo (May 2025)
- Lab-scale Reverse Electrodialysis equipment installed at UPNG, providing an ongoing platform for joint research and capacity-building
- Pathway to follow-on financing through the GCF Concept Note, to be submitted once an Accredited Entity is identified

7.5.3 Keynote –Introduction of TA program (Mr. Hoyoung Jo, UN CTCN)

UN CTCN presented the broader CTCN technical assistance program context, including programmatic alignment with the GCF, the Technology Executive Committee (TEC) under UNFCCC, and replication potential across Pacific Small Island Developing States.

7.5.4 Capacity building (1) –Marine energy system development (Prof. Rhokyun Kwak, Hanyang University)

7.5.5 Capacity building (2) –Energy Material (1) (Prof. Helena, Pusan National University) -

7.5.6 Capacity building (3) –Energy potential investigation (Assoc. Prof. Changhyun Jun, Korea University)

7.5.7 Capacity building (4) –System integration (Prof. Kyung Hwa Cho, Korea University)

7.5.8 Capacity building (5) –Energy Material (2) (Prof. Jun Kang, Korea Maritime & Ocean University)

7.6 Banquet (18:30, GLAD Yeouido)

The evening banquet at GLAD Yeouido extended the day's formal workshop program into an informal networking event. The banquet provided opportunity for direct engagement between the PNG delegation and the Korean academic and industry experts, supporting follow-on technology supplier discussions and academic cooperation arrangements.

7.7 Day 4 outcomes

- Substantive findings of the PNG pre-feasibility study disseminated to a broader Korean and international expert audience, supporting credibility of the GCF Concept Note.
- PNG counterparts gained exposure to leading Korean academic and industry expertise across the full marine renewable energy value chain.
- Foundation established for follow-on cooperation with Korean academic institutions (Hanyang, Korea, Pusan National, Korea Maritime & Ocean, Catholic) and industry providers (Toray Membrane, Prione, Drive Force).
- Strategic alignment with MSIT, GCF, ADB and AIIB funding channels articulated, supporting the GCF Concept Note submission strategy
- Wider Korean engagement discussed for the planned Pacific SIDS replication phase following PNG pilot/demonstration.

8. Day 5 –Cultural Program (12 March 2026, Seoul)

8.1 Cultural tour

Day 5 was dedicated to a cultural program allowing the PNG delegation to experience Korean cultural heritage and contemporary urban life. The program also served as an informal networking opportunity among the delegation members, KIER hosting team, and Day 4 workshop participants.

8.2 Program

Time / Stop	Description
09:00 –Gyeongbokgung Palace	The largest of the Five Grand Palaces of the Joseon dynasty (1395), historical and cultural heart of Seoul. The visit included viewing of the Changing of the Royal Guard ceremony
–Namdaemun	Historic Great South Gate; nearby Namdaemun Market –one of Korea's largest traditional markets
12:00 –Lunch	Traditional Korean cuisine –royal court cuisine (gungjung eumsik) and galbi-jjim (braised short ribs)
13:00 –Myeongdong	Central Seoul commercial and shopping district
–Yongsan	Yongsan electronics district / cultural centre
18:30 –Dinner	Dinner at GLAD Yeouido

8.3 Strategic value

Beyond the cultural element, Day 5 contributed to relationship-building between the KIER team, PNG delegation, and Korean academic and industry partners; strengthening the foundation for long-term cooperation.

9. Day 6 –Departure (13 March 2026)

The joint visit to Green Climate Fund headquarters in Songdo (Incheon), planned for 09:00 on 13 March 2026 with Ms. Bohyun Hwang (GCF), was cancelled. The GCF Concept Note was therefore not submitted during the program; it has been revised in response to the NDE comments and is delivered to CTCN as a TA deliverable. It will be submitted to the GCF once an Accredited Entity has been identified, in coordination with CCDA as NDA.

On 13 March 2026, the PNG delegation transferred to Incheon International Airport for departure. 13:45 Incheon → Hong Kong → Port Moresby. The wrap-up program concluded.

10. Outcomes and Deliverables

10.1 Outcomes

- Pre-feasibility study findings presented to the PSC, which endorsed finalization and submission of the deliverables subject to NDE validation.

- GCF Concept Note reviewed in detail with Ecosian advisory partner during the Day 2 PSC meeting; it is delivered as a TA deliverable, with GCF submission once an Accredited Entity is identified (the Day 6 visit was canceled).
- CTCN TA cRD&D Marine Energy Specialist Workshop delivered, convening UN CTCN, PNG delegation, KIER, and 13 invited Korean academic and industry experts from 10 institutions, with three keynote speeches and five capacity-building sessions.
- PNG counterparts gained direct exposure to operational marine renewable energy demonstration installations at KIER Jeju Global Research Center, the CFI Promotion Hall, and the Jeju Technopark Lava Seawater Business Division.
- Strategic alignment with funding sources articulated (MSIT, GCF, ADB, AIIB) supporting follow-on financing strategy.
- Foundation established for follow-on cooperation with Korean academic institutions and industry providers across the full marine renewable energy value chain.
- Jeju Provincial Government engagement supporting potential sub-national cooperation arrangements

10.2 Wrap-up program deliverables

Deliverable	Format	Status
Wrap-up program agenda and welcome materials	PowerPoint + Word	Available
CTCN TA cRD&D Marine Energy Specialist Workshop materials (Day 4)	Program + PowerPoint	Program finalized – presentations of Dr. Kim and Prof. Jun available;
Final compiled report combining Outputs 1–4 of the TA	Word document	<i>to be compiled – summary report combining the deliverables, to be made publicly available (Response Plan Deliverable 4.2)</i>
Wrap-up program attendance records	Word	Available
Wrap-up program photo documentation	JPG	Available

11. Lessons Learned

11.1 What worked well

- The integrated 6-day program structure, combining governance (Day 2), site visits (Days 2–3), technical tours (Day 3), specialist workshop (Day 4 PM), cultural (Day 5), and financing elements, maximized strategic impact within a feasible time frame for the PNG delegation.
- Hosting Days 1–3 at Glad Jeju with the final PSC meeting at the same venue (Maison Glad seminar room) on Day 2 provided an immersive and logistically efficient program structure.
- Convening the GCF Concept Note review with Ecosian advisory partner during the Day 2 PSC meeting, enabled substantive refinement of the Concept Note.
- Combining the Jeju Provincial Government visit with the technical tours on Day 3 strengthened both the policy-dialogue and technical-exposure dimensions of the program.
- Convening 13 Korean academic and industry experts from 10 institutions at the Day 4 specialist workshop substantially exceeded the wider engagement that a bilateral KIER–PNG workshop alone would have achieved, embedding the PNG project within the broader Korean marine renewable energy ecosystem.
- Including the cultural program on Day 5 between the specialist workshop (Day 4) and the GCF visit (Day 6) provided informal networking time and allowed the PNG delegation to refresh ahead of the strategically important final day.
- Working with established Korean event management partners (Yeogi Eottae) provided reliable travel, accommodation, and event logistics across the six-day program.

11.2 Challenges encountered

- Visa processing for the PNG delegation required substantial advance coordination with the Korean Embassy in Port Moresby; future similar programs should allow at least 8 weeks of lead time.
- The 6-day program required intensive logistical preparation over several months following the 3rd PSC meeting (December 2025); a single dedicated logistics coordinator on each side proved valuable.
- Coordinating travel for an 8-person delegation across multiple Korean cities (Jeju, Seoul, Incheon) required careful sequencing to optimize both content and travel time.
- The joint GCF visit planned for Day 6 was canceled, so the Concept Note could not be submitted during the program.
- Holding the final workshop outside PNG limited dissemination of the findings to eight PNG representatives, with one woman among them; the wider PNG stakeholder community did not take part.

11.3 Recommendations for future similar programs

- Allow at least 3 months between the planning PSC meeting (i.e., the 3rd PSC, December 2025) and the wrap-up program to accommodate visa, MOU drafting, and logistical preparation.
- Sequence wrap-up programs to build cumulatively from governance (PSC), to technical exposure (demonstration tours and site visits), to policy engagement (specialist workshop), to financing pathway (GCF visit); confirm external meetings such as the GCF visit well in advance and prepare an alternative submission route, with each day reinforcing the previous.

- Where possible, host the wrap-up program at a location with operational demonstration facilities (Jeju in this case), providing direct hands-on exposure that complements presentations, while also holding a dissemination event in the beneficiary country as foreseen in the Response Plan.
- Engage broader academic and industry stakeholders through a multi-institution specialist workshop element, supporting both knowledge dissemination and a longer-term cooperation framework.
- Include a Concept Note review session with the relevant advisory partner ahead of its submission, enabling substantive refinements based on expert input.
- Ask PSC institutions to consider gender balance when nominating delegates.

12. Action Items and Follow-Up

The wrap-up program generated a clear set of action items for post-TA follow-up. Status as at submission of this report:

Action item	Responsible	Deadline / Status
Submit all TA deliverables to CTCN for review and acceptance	KIER	By 31 May 2026 (TA contractual deadline)
Coordinate NDE validation of all deliverables prior to CTCN acceptance	CCDA (Mr. Danny Nekitel, Ms. Emily Pomoh) + KIER	By 31 May 2026
Address NDE comments on the pre-feasibility study and safeguards screening	KIER	Revised versions prepared
Coordinate Non-Objection Letter (NOL) for the GCF Concept Note	CCDA / PNG NDA	Q2 2026
Formal Accredited Entity selection for the GCF Concept Note	CCDA + KIER + GCF	Q2–Q3 2026
Engage MSIT, ADB, AIIB on potential complementary funding aligned with GCF Concept Note	KIER + CCDA	Q2–Q3 2026
Continue operation of lab-scale RED at UPNG; report monthly data summaries to KIER	UPNG (with KIER remote support)	Continuous
Identify an Accredited Entity and submit the GCF Concept Note, in coordination with CCDA (NDA)	KIER + CCDA	Post-TA
Develop full Funding Proposal based on the GCF Concept Note	KIER + AE + CCDA	Within 12–18 months
Compile the final summary report combining the deliverables (Response Plan Deliverable 4.2)	KIER	
Prepare the Stage 1 R&D proposal (NRF) for an e-OTEC (~10 kW) and Blue Battery (≤100 kWh) demonstration in PNG	KIER, with NEA/CCDA	For launch in 2027
Identify an Accredited Entity for the GCF Concept Note	KIER + CCDA	Post-TA

13. Annexes

The following annexes are submitted alongside this report:

Annex A –Wrap-up program full agenda (6-day daily program)

Annex B –CTCN TA cRD&D Marine Energy Specialist Workshop materials (Day 4)

Annex C –Wrap-up program photo documentation