

# IMPACT REPORT

## 2025

Advancing maritime decarbonisation  
through real-world action

GCMD | reports

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# Chairman's message

# Chairman's message

2025 marked a year of tangible progress for GCMD, as we advanced from early-stage trials to more scaled and integrated demonstrations across the maritime decarbonisation pathway. Building on the foundations laid in 2024, we expanded our work on alternative fuels, including ammonia and biofuels, and progressed onboard carbon capture from engineering study into pilot deployment. These efforts were complemented by a growing focus on energy efficiency solutions and the operational realities of implementation at sea.

Importantly, GCMD strengthened its role as a platform for industry collaboration. We deepened engagement with our partners, welcomed a new Strategic partner, and broadened the ecosystem required to move from concept to execution. The increasing level of participation across shipowners, energy providers, technology developers and financiers reflects a shared recognition that decarbonisation must be both collective and practical. The team's development of financing solutions for energy efficient technologies is noteworthy.

While meaningful progress has been made, the path forward remains complex. The pace of change will continue to depend on regulatory clarity, the development of viable fuel supply chains, and the

alignment of commercial incentives. 2025 saw some global initiatives stall, and recent concerns around energy security have led to some shift in attention. But with mounting signs of climate change, the long-term direction of travel remains a clear global necessity.

Against this backdrop, GCMD's role is becoming more defined. We are increasingly focused on bridging the gap between ambition and execution—identifying bottlenecks, testing solutions under real-world conditions, and providing the data and insights needed to support industry-wide adoption. In 2026, we will continue to scale our pilots, deepen analytical work, and support the translation of trials into deployable solutions.

We remain grateful for the hard work of the team and the continued support of our partners. This collaboration is essential to ensure that progress is sustained.

## Andreas SOHMEN-PAO

Chairman





**CEO's letter**

# CEO's letter

2025 was a year defined by heightened uncertainty. And that came with its share of highs and lows. In many ways, GCMD rode those same waves.

We celebrated in April, when the IMO's Net-Zero Framework (NZF) was approved. For the first time, a global carbon pricing mechanism felt within reach. We shared sample calculations and developed a simple calculator to help shipowners and operators make sense of what this could mean in practice. We saw how disruptions in the Red Sea forced vessels to reroute via the Cape of Good Hope. Longer voyages and higher fuel consumption, as the need to prioritise supply chain continuity and crew safety came with an emissions penalty. And we were disappointed when momentum around the NZF did not carry through later in the year.

But we carried on.

And in doing so, we continued to make progress where it mattered: working through common operational, technical and safety gaps across actors, and moving solutions into the real world.

With Project CAPTURED, we worked through the world's first onboard captured and liquefied CO<sub>2</sub> (LCO<sub>2</sub>) value chain, demonstrating safe offloading, transport, utilisation, and quality and quantity assurance.

With the launch of the Fund for Energy Efficiency Technologies (FEET), we introduced the industry's first fund that features a pay-as-you-save financing structure, sharing the risk of capital outlay for energy efficiency technology (EET) retrofits and the reward that comes from fuel savings.

Through our biofuels supply chain trials, our findings have made their way into domestic and international bunkering guidelines and biofuels standards.

2025 also saw the renewal of our Founding partners. The Maritime and Port Authority of Singapore (MPA) also reaffirmed its support for GCMD, underscoring that decarbonisation remains a priority, especially in a year like this.

At GCMD, we continue to spend time understanding why things are done the way they are, and what it takes for new solutions to work in practice. I am grateful to our partners for continuing to lean in, and to our team for doing the hard work behind the scenes.

We need to keep going. And together, we will.

**Professor Lynn LOO**  
Chief Executive Officer





**Our purpose**

# Our purpose

Decarbonising shipping requires a system-wide transition.

It requires new fuels, new technologies, new safety regimes, and renewed confidence across an industry that underpins global trade. Yet progress is often held back not by a lack of ambition, but by uncertainty: unclear standards, untested operational realities, fragmented demand signals, and the challenge of mobilising capital without credible proof.

## GCMD exists to close these gaps

As an international independent action tank, we convene the maritime value chain to de-risk decarbonisation solutions in operational and commercial settings, enabling industry-wide adoption by addressing barriers that no single actor can solve alone.

## Our goal is simple: to build confidence across the industry

Confidence that allows solutions to move beyond one-off demonstrations and pilot projects, and for their learnings to be embedded as repeatable practice in everyday maritime operations.



# How we advance decarbonisation

GCMD turns decarbonisation ambition into real-world progress through four core pillars of action.

## Shaping standards

We share learnings from our projects actively to assist and accelerate the drafting of guidelines and standards.

## Financing projects

We co-fund projects, especially those lacking immediate commercial viability, to generate knowledge for public benefit, so learnings may lower the barriers for adoption.

## Deploying solutions

We convene partners and execute projects together to demonstrate the viability of decarbonisation solutions.

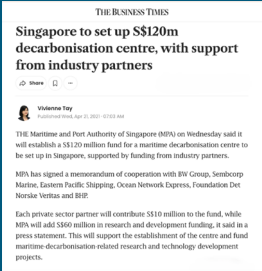
## Fostering collaboration

We provide a neutral ground for stakeholders across the value chain to cooperate, ensuring a diversity of inputs to operationalise pilots.



**2021**

Decarbonisation Pathways for the Global Maritime Industry



**2022**

GCMD's first centre-level partners' dinner



**2024**

GCMD members at a culture development workshop



**2025**

GCMD members in South Korea for a vessel visit and operational discussion with the ship crew



**2021**

GCMD's founding team members



**2023**

GCMD's first board strategy retreat



**2024**

GCMD members investigating a fuel sampling location for Project LOTUS



**2025**

GCMD members executing Project CAPTURED in China



**2022**

Prof Lynn LOO at GCMD's first participation in Singapore Maritime Week



**2023**

Launch of the first GCMD-BCG Maritime Decarbonisation Survey at Nor-Shipping



**2024**

Ammonia transfer pilot at Port Dampier, Pilbara - The Green Pioneer and the Navigator Global with Rio Tinto tugboats at the outer anchorage of Port Dampier



**2025**

Prof Lynn LOO at IMO's Technical Seminar on onboard carbon capture and storage (OCCS)

**Our journey**

# Our journey

## Five years of growth, action, and impact

### 2021 Laying the foundation

#### A mandate takes shape

In April 2021, the International Advisory Panel (IAP) on Maritime Decarbonisation recommended that the Singapore Government establish a global maritime decarbonisation centre to help the maritime sector reduce greenhouse gas (GHG) emissions.

#### GCMD is established with industry backing

The centre was formed on 1 August 2021 with support from MPA and six founding partners—BHP, BW Group, Eastern Pacific Shipping, Foundation Det Norske Veritas, Ocean Network Express, and Sembcorp Marine (now Seatrium).

Having been part of GCMD since its conceptualisation, I've had the privilege of seeing it grow from a recommendation on paper into an organisation capable of delivering large-scale trials to tackle key challenges in maritime decarbonisation. This journey would not have been possible without the strong support and collaboration of our stakeholders and partners.

**Employee #1, Wei Jie LAU**  
Director, Partnerships



### 2022 Mobilising the ecosystem

#### From concept to pilots

**Ammonia:** Commissioned an ammonia bunkering safety study by appointing a DNV-led consortium to define practicable safety and operational envelopes to enable an ammonia bunkering pilot

**Biofuels:** Launched an 18-partner drop-in biofuels pilot to establish an assurance framework ensuring the integrity of supply chain

**OCCS:** Initiated Project REMARCCABLE with OGCI and Stena Bulk, to demonstrate onboard carbon capture pilot at scale

#### Partnership momentum builds at the centre level

bp, Hapag-Lloyd, Chevron, BCG, Gard, GMF, IBIA, ICS, IWSA, Kpler, MMMCZCS, and SSA join as centre-level partners.

### 2023 Executing real-world pilots and trials

#### From pilots to operational readiness

**Biofuels:** Completed early end-to-end supply chain trials with sustainable biofuel blends under business-as-usual conditions

**Ammonia:** Published *Safety and Operational Guidelines for Piloting Ammonia Bunkering in Singapore*, establishing safe and practicable parameters for ship-to-ship ammonia transfer

#### Informed industry direction through survey findings

The GCMD-BCG Global Maritime Decarbonisation Survey provided data-driven insights on industry sentiment, barriers, and pathways.

#### Contributed to international policy discussions

Including submission to IMO MEPC 81 (INF.4)

#### Further expanded the centre-level partners ecosystem

NYK, MOL, MSC, OSM, GSBN, and SGMF join as centre-level partners.

### 2024 Generating real-world insights

#### From trials to system-level insights

**Ammonia:** Pilbara ship-to-ship transfers validated handling procedures, safety protocols, and emergency response for future bunkering operations.

**Biofuels:** FAME fingerprinting advances fraud detection and strengthens integrity in marine biofuel supply chains

**OCCS:** Studies on Project REMARCCABLE, CO<sub>2</sub> offloading, and CO<sub>2</sub> shipping insights advanced readiness of the onboard carbon capture value chain

**Energy efficiency technologies:** Explored pay-as-you-save financing structure to share risk and reward and enable financing for retrofit solutions

#### Deepened centre-level collaboration to scale solutions

Hanwha Ocean, Kiri Capital, OGCI, and SINTEF Ocean join as centre-level partners.

### 2025 Open and widespread sharing of learnings

#### From pilots to industry-wide application

**OCCS:** Project CAPTURED demonstrated the first end-to-end value chain for onboard captured LCO<sub>2</sub>

**Biofuels:** Tracer validation enables transparent, verifiable fuel supply chains, while Project LOTUS advances understanding of long-term continuous biofuel use on sustained deployment.

#### Turning policy signals into practical decision support

GCMD launched an IMO MEPC 83-aligned cost and compliance calculator to quantify the implications of NZF.

#### Scaling through finance and EET performance pilots

The world's first vessel retrofit fund using a pay-as-you-save model is closed at USD 35M, exceeding initial targets.

#### Scaling impact through partnerships


PSA, ADB, IAPH and INTERCARGO join as centre-level partners.

Founding partners renew 5-year commitment. MPA reaffirms support for GCMD.



**2025 highlights**

# 2025 highlights

GCMD	OCCS	EETs	Biofuels	Ammonia	
<p><b>130+</b> partners supported</p>	<p><b>1<sup>st</sup></b> ship-to-ship LCO<sub>2</sub> offloading with downstream utilisation</p>	<p><b>USD 35M</b> Fund for Energy Efficiency Technologies (FEET)</p>	<p><b>6</b> months of continuous B24 biofuels operations</p>	<p><b>8</b> ammonia release scenarios modelled under various weather conditions</p>	
<p><b>9</b> reports published</p>	<p><b>7.9%</b> GHG emissions savings achieved in Project CAPTURED (with 10.7% gross capture rate)</p>	<p><b>~2.2M</b> data points captured per hour through sensorising four vessels</p>	<p><b>2,888</b> main engine hours monitored with no adverse performance</p>	<p><b>23</b> medium-level risks identified and mitigated through operational controls</p>	
<p><b>&gt;90,000</b> hits on GCMD's GHG Fuel Intensity (GFI) calculator in the first two weeks of release</p>	<p><b>18%</b> Potential GHG emissions savings when the value chain is optimised, compared with HFO baseline</p>	<p><b>3</b> additional layers of capital crowded in to address financing gap</p>	<p><b>3</b> tracer technologies deployed in six supply chain trials, covering 10,400 MT of biofuels bunkered</p>	<p><b>33 m<sup>3</sup></b> Ammonia release simulated (4x worst-case scenario)</p>	



# Our impact framework

## Mobilise

Mobilising a global ecosystem across the maritime value chain, GCMD acts as a neutral convenor, bringing together partners—including nominal competitors—to enable first-of-a-kind trials that would not be undertaken independently.

## Scope

Scoping projects through engagement with stakeholders, GCMD builds a robust understanding of operational and technical gaps, assesses technical and commercial viability, and quantifies emissions abatement potential.

## Execute

Executing first-of-a-kind pilots under real-world operating conditions, GCMD works with industry partners to define safety and operational envelopes, generating empirical evidence and quantified risk insights that translate into scalable, repeatable industry practices.

## Enable

Enabling ecosystem-wide uptake through the open sharing of empirical data and project learnings, GCMD translates pilot insights into robust technical references that support harmonised standards, regulations, and operational practices.

# How we aim to create impact

At GCMD, we recognise that progress in maritime decarbonisation is incremental and system-wide, driven by closing critical gaps in knowledge, operations, and safety.

We evaluate our impact not by single breakthroughs, but by the ripples they create—how each project builds ecosystem confidence, reduces risk, and enables the next step forward.

Our approach is grounded in learning by doing. By working in real operating environments—boots on deck and alongside industry—we turn theoretical recommendations into actionable, de-risked solutions.

Each step creates momentum, allowing impact to compound and scale-up to follow.

# Our impact framework



**Our initiatives**

# Our initiatives

To help address key challenges that are bottlenecking maritime decarbonisation, we have launched four initiatives designed to address technical and operational gaps across timelines, supporting international shipping's transition to net zero by around 2050.

Each initiative comprises a portfolio of completed and ongoing projects, with each targeting specific gaps that constrain progress along the decarbonisation pathway.



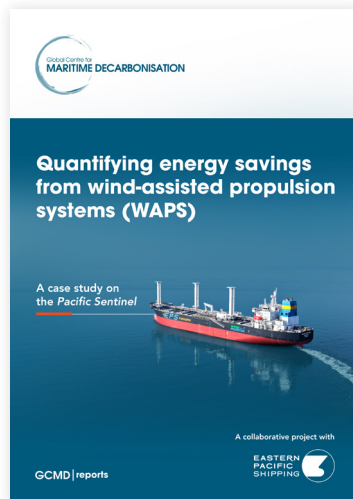
**OCCS**

Unlocking the carbon value chain



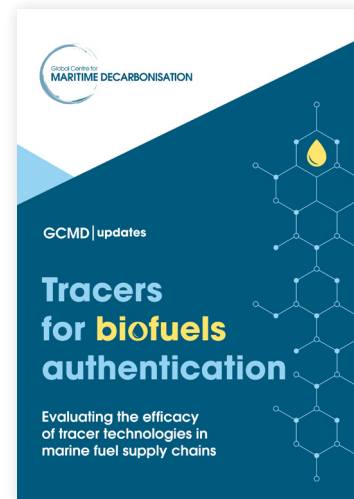
**EETs**

Scaling the adoption of energy efficiency technologies



**Biofuels**

Assuring the quality, quantity and emissions abatement of drop-in green fuels



**Ammonia**

Enabling ammonia as a marine fuel



# Unlocking the carbon value chain

## The challenge

Onboard carbon capture and storage (OCCS) is a critical mid-term solution for decarbonising vessels running on carbon-based fuels since the majority of the existing global fleet is unlikely to be retrofitted for zero-carbon fuels. Our 2025 Global Maritime Decarbonisation Survey revealed that 60% of respondents across all segments and fleet sizes see OCCS as important to achieving net-zero emissions.

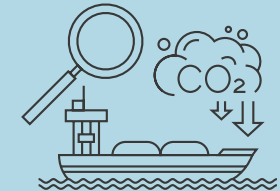
However, the adoption of OCCS faces significant challenges. These include high capital costs for shipboard-compatible systems within constrained onboard space, increased operating costs due to the additional fuel required to run energy-intensive capture processes, and uncertainty around the extent and verification of CO<sub>2</sub> captured. Compounding these issues is the absence of established guidelines for the safe offloading, handling, utilisation, and permanent storage of captured CO<sub>2</sub>.

## Bridging gaps

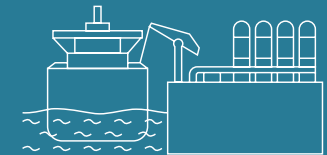
GCMD is addressing technical, operational, and value-chain gaps to advance OCCS as a viable decarbonisation pathway.

## Our work thus far

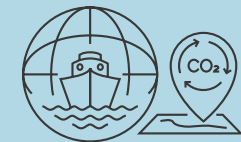
Conducted an engineering techno-economic analysis of an OCCS installation on a medium-range (MR) tanker



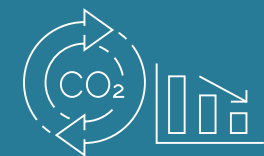
Explored conditions for storing and handling captured LCO<sub>2</sub> onboard ships, as well as its offloading onto reception facilities



Assessed the role of CO<sub>2</sub> shipping in enabling cross-border carbon capture, utilisation, and storage (CCUS) initiatives in the Asia Pacific region



Analysed the life cycle of GHG emissions and costs associated with OCCS across the entire carbon value chain



Demonstrated the world's first ship-to-ship LCO<sub>2</sub> offloading of onboard captured CO<sub>2</sub> and downstream utilisation with verified life cycle assessment (LCA) of the value chain



# Project spotlight: Project CAPTURED

Mobilised

11

partners including an OCCS provider, a shipowner, an LCO<sub>2</sub> receiving vessel operator, five regulators, and an industrial end-user

Scoped

3

carbon value chain scenarios evaluated through a full LCA, spanning onboard capture to industrial utilisation or permanent storage

Executed

25.4 MT

of captured LCO<sub>2</sub> was tracked over 3 custody transfer operations from Yangshan Deepwater Port, Shanghai to Baotou, Inner Mongolia, covering more than 2,200 km.

Enabled

GCMD insights highlight opportunities for current IMO GHG accounting frameworks to better recognise emissions avoided through CO<sub>2</sub> utilisation.

## Demonstrating a complete carbon value chain for onboard captured CO<sub>2</sub>

Project CAPTURED is the first end-to-end pilot of a complete verified carbon value chain for onboard captured CO<sub>2</sub>. The project successfully showed that **25.4 MT** of CO<sub>2</sub> captured on an ocean-going vessel can be safely offloaded, transported, and utilised as an industrial feedstock under real-world operating conditions.

## Validating downstream handling and utilisation of captured CO<sub>2</sub>

The project addressed critical downstream challenges for onboard carbon capture by demonstrating ship-to-ship and ship-to-truck offloading of LCO<sub>2</sub>, followed by overland transport and utilisation. Across the pilot, the quality and quantity of captured CO<sub>2</sub> exceeded 99.95 vol% purity, meeting downstream specifications to

produce 22.9 MT of precipitated calcium carbonate and 81.3 MT of post-carbonated slag. Safe and controlled operations were conducted throughout with no safety incidents recorded.

## Quantifying emissions outcomes across the value chain

The LCA of Project CAPTURED showed that at a gross capture rate of 10.7%, the pilot achieved 7.9% overall GHG emissions savings. The analysis showed that emissions savings can increase to 17.8% when first-of-a-kind operational and logistics inefficiencies—such as the 5% fuel penalty—are addressed.

The study also highlighted the role of CO<sub>2</sub> utilisation pathways in contributing to emissions reductions when avoided emissions from displaced carbon are taken into account.



GCMD with Project CAPTURED partners at Baorong, Inner Mongolia, to execute the offloading of LCO<sub>2</sub> from tank truck to onsite storage tank



GCMD and counterparts from SMDERI-QET

# Partner's perspective: Establishing a template that the entire industry can now follow for maritime carbon logistics



**Dr SU Yi,**  
General Manager, Shanghai Qiyao  
Environmental Protection Technology  
Co. Ltd. (SMDERI-QET)

## What motivated SMDERI-QET to participate in Project CAPTURED with GCMD, and how did your respective roles in the collaboration take shape?

By early 2024, we had already demonstrated the world's first full-process OCCS chain on a 14,000 TEU container vessel. The technology worked. What remained missing was an independent lifecycle-based validation of its net climate benefit across the entire value chain—from the stack to end use. That question cannot be answered by one actor alone. It demands collaboration: shipowners, technology providers, off-takers, class societies, and a trusted, science-driven convenor.

GCMD was that ideal partner. The collaboration took shape around comparative strength. GCMD brought the rigorous LCA framework, convened the ecosystem, and secured the downstream utilisation partner. SMDERI-QET contributed what we had pioneered: the OCCS device, the world's first proven ship-to-ship LCO<sub>2</sub> transfer, and the operational data to underpin the LCA modelling. This was not a vendor-client engagement. It was a co-led expedition—with shared objectives, transparent data exchange, and joint interpretation of results. The outcome, validated by DNV and published as a public-good reference, is proof that technology

and science, when combined through trust-based collaboration, can close the gap between innovation and systemic impact.

## As the OCCS technology provider and project co-lead, what were the most significant technical or operational insights you gained from executing Project CAPTURED under real-world conditions?

Three insights from Project CAPTURED are now embedded in our engineering and strategy.

First: Capture and downstream logistics must be co-optimised. The pilot confirmed that onboard efficiency gains can be negated by fragmented offloading, transport, or utilisation. Realising the reduction potential identified in GCMD's LCA requires treating the entire post-capture chain as a whole design domain.

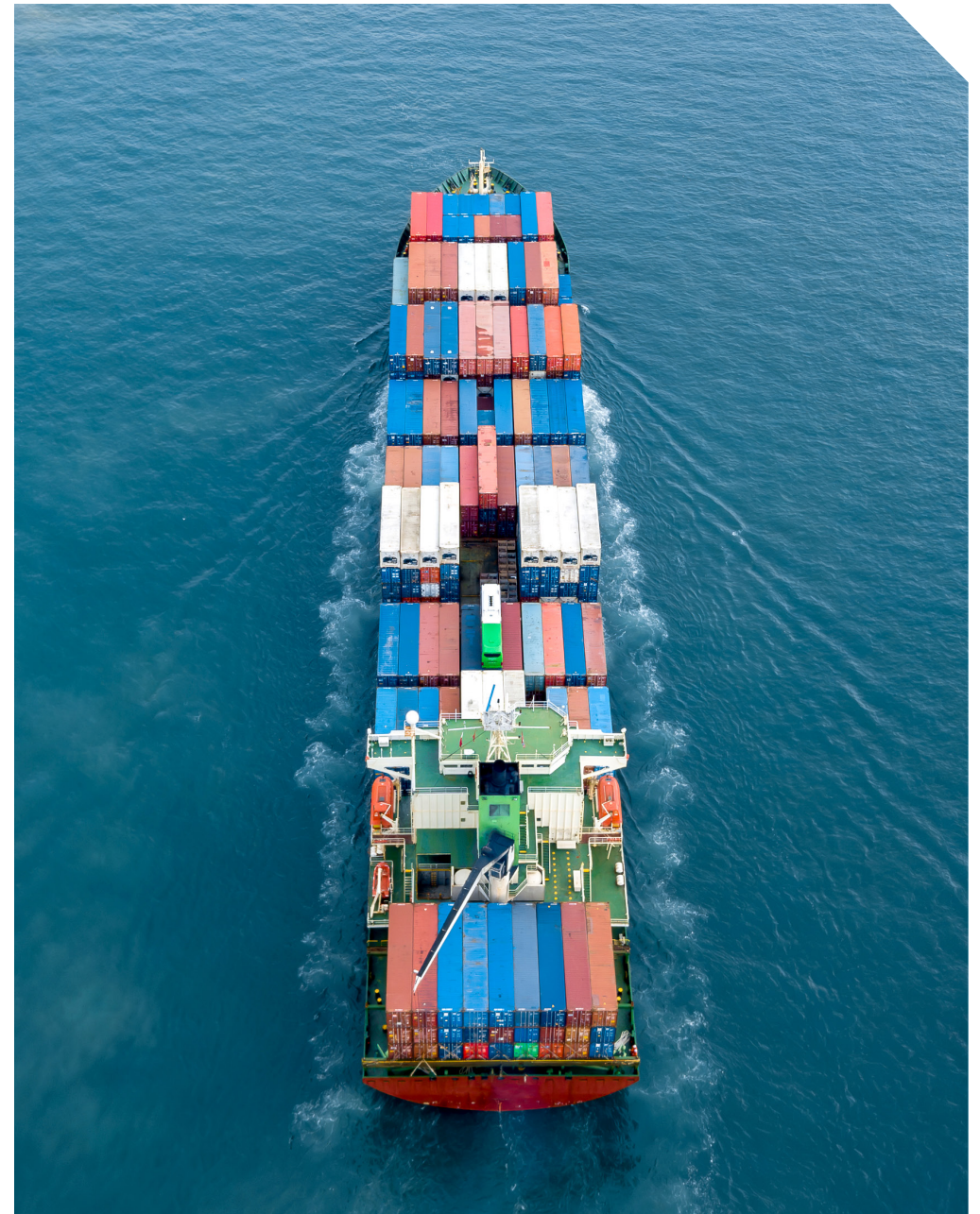
Second: Ship-to-ship LCO<sub>2</sub> transfer has been proven and is ready for replication. We created the operational template from zero. The protocols, safety cases, and handling procedures developed during Project CAPTURED are now in the public domain, lowering entry barriers for the entire industry.

Third: Utilisation is not just an endpoint—it is a lever for greater impact. The finding that mineralisation can outperform geological sequestration has reshaped our downstream roadmap. At SMDERI-QET, we have moved from demonstration to deployment: our systems are already at sea on two vessel types, and we are actively scaling integrated, certifiable solutions that close the loop from capture to utilisation. This is how we help build a durable, collaborative maritime carbon ecosystem.

### **Project CAPTURED extended beyond capture to offloading, transport, and utilisation. How important was this end-to-end approach in demonstrating the viability of OCCS?**

Project CAPTURED has done for maritime carbon logistics what early containerisation did for global trade: it established that a complex, multi-step process can work end-to-end, creating a template the entire industry can now follow. The demonstration that captured CO<sub>2</sub> can be transferred ship-to-ship, trucked ashore, and converted into construction materials under real operational conditions is not just a technical milestone. It is the first verified reference case for what a scalable maritime carbon value chain looks like.

For shipowners, it removes uncertainty: the downstream path exists. For ports, it provides a design basis for future reception facilities. For regulators, it offers verified data to inform policy. For SMDERI-QET, it reaffirms our strategic conviction that OCCS must be delivered not as equipment but as an integrated service spanning capture to end use. We are now scaling this model—together with partners across the value chain.



# Scaling the adoption of energy efficiency technologies

## The challenge

Energy efficiency technologies (EETs), such as wind-assisted propulsion systems (WAPS) and air-lubrication systems (ALS), are among the few emissions reduction solutions readily deployable on today's fleet. Yet adoption remains limited, despite a global retrofit market estimated at over USD 20B. The barriers are not technological, but structural.

First, performance uncertainty: fuel savings vary significantly with weather, routing, and vessel operations.

Second, the lack of a standardised method to isolate and verify a retrofit's contribution makes it challenging for shipowners and charterers to reliably predict returns.

Third, retrofit projects fall into a financing gap—typically too small for traditional ship mortgages, yet too large for unsecured lending.

## Bridging gaps

GCMD is tackling long-standing technical and financing barriers to scale the adoption of EETs.

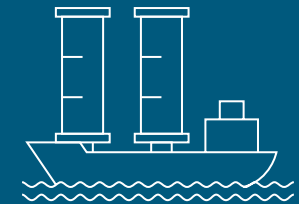
## Our work thus far



Photo credit: Norse Shipholding

### EET performance pilots

Equipped vessels with additional sensors to collect high-resolution operational data and applied rigorous analytics, underpinned by a transparent method, to quantify fuel savings with statistical confidence



### Fund for Energy Efficiency Technologies (FEET)

Successfully closed FEET with commitments of up to USD 35M. FEET is the world's first vessel-retrofit fund that provides unsecured leases with payments linked to verified fuel and regulatory savings



# Project spotlight: Fund for Energy Efficiency Technologies (FEET)

Mobilised

18

parties from FEET initiative and EET performance pilots coming together to contribute maritime, technical, industrial, and financial expertise

Scoped

USD 35M

First-of-its-kind vessel retrofit fund capable of sharing risks and rewards

Executed

>200M

data points collected from an MR tanker under the EET performance pilot to quantify energy savings from WAPS

Enabled

100%

upfront, unsecured financing, with payments tied to measured fuel and regulatory savings

## Performance-linked financing for energy efficiency retrofits

FEET is a first-of-its-kind blended finance fund that applies a pay-as-you-save payment mechanism to EETs. It provides 100% upfront, unsecured financing for retrofits, enabling shipowners to deploy EETs without bearing the full upfront capital expenditure.

## EET performance pilots

At the core of the pay-as-you-save mechanism is quantified and verified fuel and regulatory savings. To this end, GCMD has undertaken EET performance pilots by equipping vessels with additional sensors to capture high-resolution data and applying rigorous data analytics to quantify fuel savings with statistical confidence.

## Addressing financing risks

With payments linked directly to quantified savings, FEET then leverage a blended financing structure and invests in a diversified portfolio of projects to address commercial risks and align stakeholders.

## Aspiration to scale

FEET closed its initial funding round at USD 35M, exceeding its target and demonstrating strong market interest. With the ability to crowd in third-party capital and deploy it across a diversified project portfolio, FEET is positioned to scale to USD 500M by 2030, supporting retrofits across approximately 200 vessels.



Industry participants gathered at the Temasek Shophouse for an event on energy efficiency in shipping, organised by GCMD, AIM Horizon Investments, and the Development Bank of Japan Inc. (DBJ)



Team members from GCMD, AIM Horizon Investments, DBJ, DBS, and ING

# Partner's perspective: Rethinking what “investable” means in maritime retrofits



**Rajbir TALWAR**  
Chief Investment Officer,  
AIM Horizon Investments

## What motivated AIM Horizon Investments to partner with GCMD on FEET, and how did your respective roles in the partnership form?

AIM Horizon Investments is a Singapore-based fund manager focused on maritime and aviation. In 2024, we met GCMD around a ship finance fund concept. At the time, GCMD was already developing a pay-as-you-save approach for maritime energy-efficiency retrofits, built on transparent data sharing so that fuel savings can be verified and attributed to a specific technology. Data integrity and the ability to attribute savings to a particular EET are key to financing via a pay-as-you-save structure. Both AIM Horizon Investments and GCMD felt the same way. If pay-as-you-save were to scale in shipping, it would have to be structured like a financeable platform, with clear contracts, credible measurement, and risk-sharing terms that shipowners would actually accept. GCMD brings together technical engineering and the data and measurement discipline. AIM Horizon Investments brings the financial engineering, fund structuring, and execution. FEET is what happens when you combine those strengths into one platform.

## How has the partnership with GCMD influenced AIM Horizon Investments' perspective on risk and financing in the energy efficiency retrofit space?

It pushed us to think beyond traditional “steel-focused” ship finance. Many of us in maritime finance come from a world where risk is managed through mortgages, and that mindset is well-ingrained. At AIM Horizon Investments, we come from this same world but also believe that, in a smaller, entrepreneurial setup like ours, we have what it takes to think and act differently. GCMD works in the world of first-of-a-kind pilots and solving problems that are not yet standardised, and that can-do approach forced us to rethink what “investable” means in the context of retrofits.

GCMD, through its advisory role to the fund, helps us turn real ship data into a financeable business case. A practical example is that FEET projects are underwritten based on the savings a ship actually achieves in service, not just what is forecast. That means modelling the technology's impact, the vessel's expected trading patterns and utilisation, and then stress-testing the outcomes so we can size the fixed payments and the pay-as-you-save component.

To give a concrete illustration, GCMD has published results from wind-assisted propulsion work where savings were quantified using operational data. That measurement methodology and rigour improve risk modelling and make performance-linked financing credible. This data-driven measurement of fuel savings also directly links to emissions savings and credible impact reporting, strengthening FEET's thesis for investors focused on measurable impact.

**Do you see the FEET partnership setting a new benchmark for how private capital and catalytic organisations like GCMD can work together to unlock decarbonisation spend?**

This is absolutely the case in my view. We need more templates, and FEET offers one. The role of catalytic capital, including first-loss-style commitments, cannot be overstated because it allows other investors and lenders to feel comfortable within their existing risk-return frameworks without overstretching their boundaries. FEET is a blended structure that brings together catalytic capital alongside commercial and preferred equity, and senior debt; that mix is what makes risk sharing work in practice. That is why we need more catalytic capital in the industry, not as a subsidy, but as a bridge to scale.



Photo credit: Eastern Pacific Shipping

# Assuring the quality, quantity and emissions abatement of drop-in green fuels

## The challenge

Biofuels offer a compelling near-term decarbonisation pathway for shipping, yet adoption remains constrained by fundamental assurance gaps across the marine fuel supply chain.

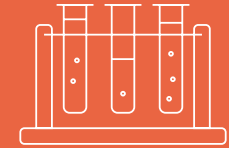
Unlike conventional fuels, biofuels introduce greater variability in composition, quality, and lifecycle emissions, while relying on supply chains that span multiple actors, jurisdictions, and custody-transfer points. In the absence of consistent, end-to-end verification, stakeholders lack confidence that the fuel delivered matches what was contracted—both in terms of physical quantity and declared bio-content—exposing buyers and sellers to commercial disputes, compliance risks, and operational uncertainty.

## Bridging gaps

To address these barriers, GCMD is developing a comprehensive assurance framework to safeguard the integrity of biofuels use across three critical dimensions: quantity, quality, and GHG emissions abatement.

## Our work thus far

Conducted six trials tracking biofuel blends (B20, B24, and B30) from production to consumption across global routes and bunkering locations



Tracked the propensity of biofuels degradation across the supply chain



Identified methods to quantify bio-components as a fraud detection tool



Evaluated the efficiency of tracer technologies in marine fuel supply chains



Trialled the continuous use of biofuels to assess its long-term impacts on engine performance and fuel delivery system operations onboard



# Project spotlight: Using tracers to combat biofuels fraud

Mobilised

28

partners including marine fuel suppliers, end-users, and testing laboratories

Scoped

3

different tracer technologies were tested across 6 real-world marine supply chains

Executed

10,400 MT

of biofuel blends was bunkered across six trials, realising 24% of GHG emissions reduction compared to using conventional fuels

Enabled

An actionable comparative benchmarking framework to guide stakeholders in tracer deployment developed

## Field validation of tracer technologies

GCMD's tracer trials represent the world's first field validation of tracer technologies within commercial marine biofuel supply chains.

Conducted across major bunkering hubs under real-world operating conditions, the trials demonstrate that physical tracers can be integrated into existing commercial practices without disrupting operations or compromising fuel quality.

This work addresses a critical gap in current sustainability certification schemes, which rely largely on retrospective audits and mass-balance accounting and lack field verification methods to authenticate biofuels and substantiate claims.

## Key findings and implications for biofuel assurance

Across six supply chain trials involving 10,400 MT of biofuel blends, GCMD evaluated three tracer candidates to verify fuel authenticity and quantify biofuel content.

The trials showed that non-fluorescent organic tracers offer the most practical solution for industry deployment, combining high detection accuracy, cost-effectiveness, and scalability using existing laboratory infrastructure.

These findings highlight the role of tracers as a critical enabler of supply chain integrity, supporting credible carbon accounting and strengthening confidence in the scalable adoption of marine biofuels.



GCMD member overseeing the tracer dosing into the manhole of a biofuel transport truck



Cans containing organic tracers

## Partner's perspective: Ensuring the fuel used is exactly what it claims to be



**Emma ROBERTS**

Vice President,  
Maritime & Supply Chain Excellence,  
BHP

### What motivated BHP to partner with GCMD on the biofuels trials. What gaps or uncertainties were you hoping to address through this collaboration?

Biofuels form an important part of BHP's maritime decarbonisation strategy because they have potential to enable real and measurable greenhouse gas emissions abatement on vessels that we charter to move our products, with positive early signs from trials and selective voyages to date. As one of the largest dry bulk charterers, we want to help accelerate the adoption of more sustainable marine fuels, including the development of new feedstocks that can scale over time.

Our collaboration with GCMD provides the scientific rigour, independence and industry-wide perspective that is essential when exploring new fuel pathways. GCMD's structured trial methodology and research expertise enable a thorough assessment of the technical performance, operational behaviour and emissions profile of emerging biofuel blends under real-world operating conditions.

GCMD plays a unique convening role across fuel producers, academics, shipowners and regulators, which helps to ensure that the results of these trials are credible, transparent and relevant far

beyond BHP's own fleet. By working together, we're helping de-risk new fuel pathways not only for BHP's operations, but also for the wider maritime industry – supporting a practical and scalable transition to lower-carbon shipping.

### From BHP's perspective, what are the biggest challenges today in scaling the use of biofuels in maritime operations?

Feedstock availability remains a fundamental constraint. Today's options for more sustainable feedstocks—such as used cooking oil—are limited in volume and cannot meet long-term marine demand at scale. The industry needs to bring new, credible feedstocks to market responsibly, with clear sustainability safeguards.

Biofuels continue to carry a cost premium, and market readiness varies significantly by region. Price structures, supplier capabilities and contract models are still evolving, which affects adoption at scale.

Operational readiness across the value chain is still developing. As new feedstocks emerge, stronger consistency in fuel quality, logistics, blending practices and engine compatibility is required to give ship operators confidence in performance and reliability.

Ensuring chain-of-custody integrity is non-negotiable. Certification frameworks like ISCC provide a strong basis today, but as marine supply chains involve blending, transport and multiple handover points, traceability systems must mature to ensure that the lifecycle greenhouse gas reductions being claimed are credible and verifiable.

Scaling biofuels will require coordinated progress across supply, cost, operational readiness and traceability.

### How important is traceability to BHP when it comes to alternative marine fuels?

Traceability is fundamental because it provides confidence that the fuel used is exactly what it is claimed to be.

In practice, robust traceability delivers three important outcomes.

It safeguards integrity of supply. Marine biofuels often pass through multiple handlers and storage systems before bunkering. Physical tracers or equivalent verification

systems—provide assurance that the fuel delivered to the ships we charter is the exact product that was originally produced.

It underpins the credibility of emissions abatement claims. Without physical verification, there is a risk of unintentional fuel mixing or substitution, which could compromise the actual lifecycle greenhouse gas reductions being achieved. Traceability ensures that the emissions benefit being reported is real and measurable.

It strengthens confidence in a developing market. As new feedstocks and production pathways emerge, transparent and verifiable chain-of-custody systems are essential for buyers, auditors and regulators to trust that the product's original attributes have been preserved from end to end.

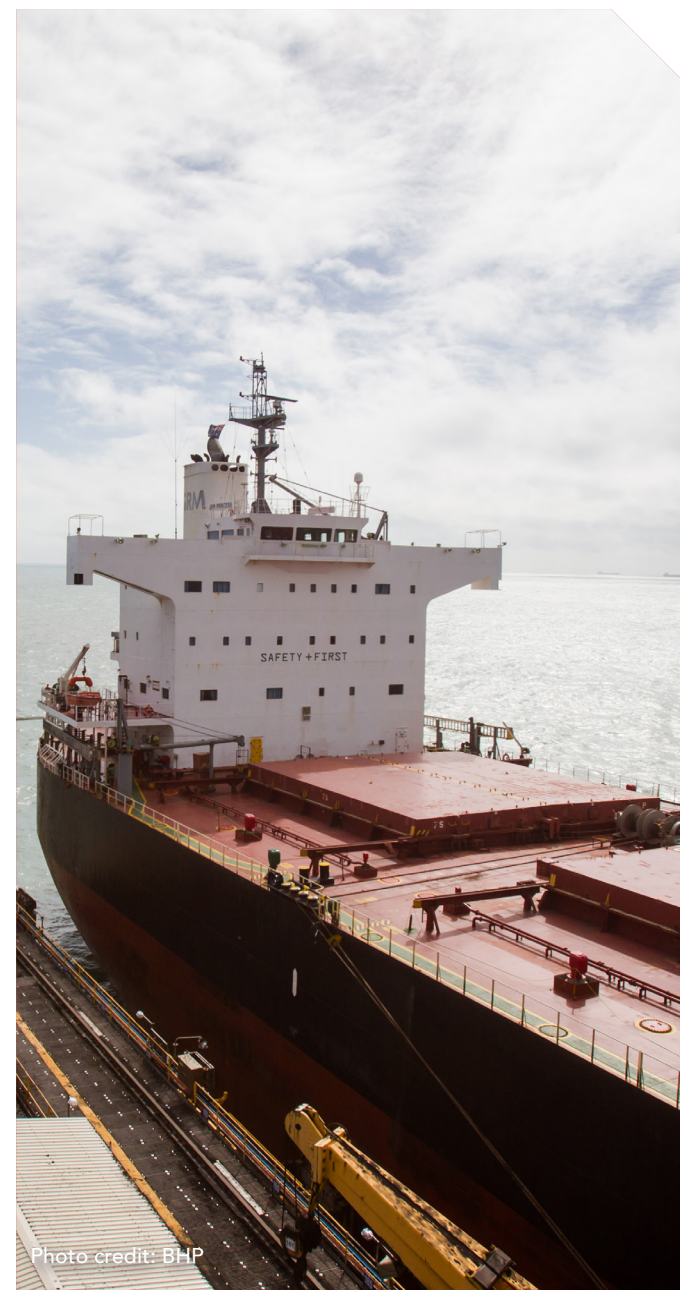


Photo credit: BHP

# Enabling ammonia as a marine fuel

## The challenge

Ammonia is widely recognised as a promising zero-carbon fuel for shipping when produced from renewable energy sources. However, in addition to fuel availability, operational and safety uncertainties constraint adoption.

Ammonia is toxic and necessitates additional infrastructure, new supply chains, comprehensive safety standards, enhanced crew competency and operational guidelines for safe handling. These challenges are compounded by the need for coordinated readiness across vessels, ports, regulators, and emergency services. Together, these safety, operational, and regulatory uncertainties have slowed the transition from pilots to commercial deployment of ammonia as a marine fuel.

## Bridging gaps

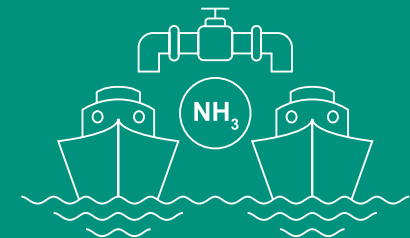
GCMD has adopted a phased approach to close technical and operational gaps in safety procedures, operational protocols, and emergency response measures, to build ecosystem confidence in the use of ammonia as a marine fuel.

## Our work thus far

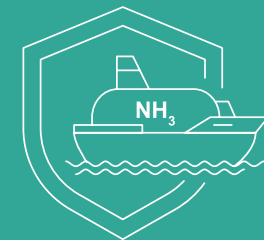
Assessed the safe bunkering of ammonia in Singapore and defined the associated safety and operational envelopes

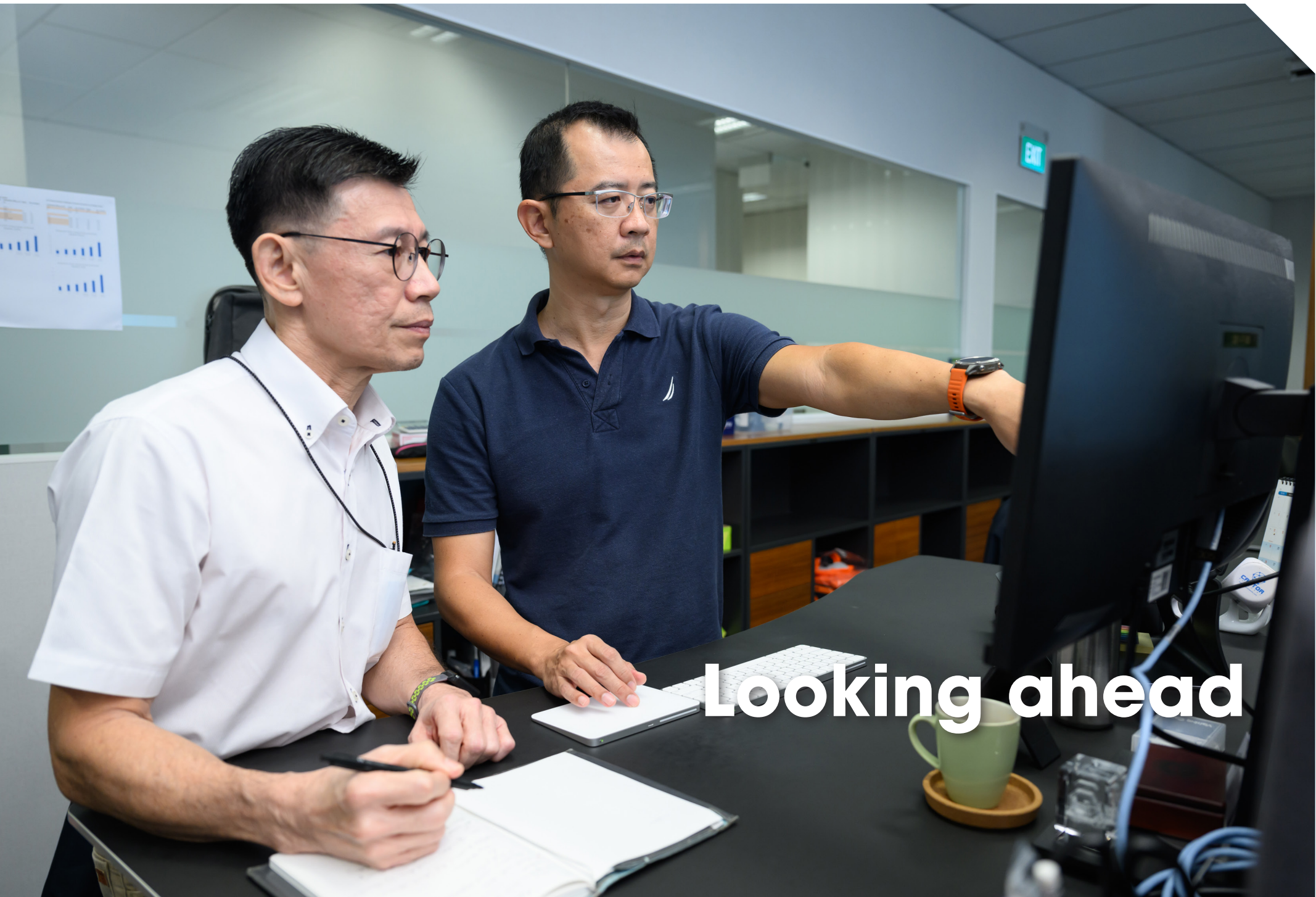


Conducted a vessel-, location- and operations-specific safety study for a ship-to-ship transfer of ammonia in Singapore's port waters



Showcased lightering and simulated bunkering operations in preparation for the introduction of ammonia-fuelled vessels





Looking ahead

# Looking ahead

## Initiatives



### OCCS

Unlocking the carbon value chain

Enable ports to offload LCO<sub>2</sub> to either utilisation or permanent storage in APAC



### EETs

Scaling the adoption of energy efficiency technologies

Scale FEET to USD 500M by 2030, capable of supporting retrofit deployments across approximately 200 vessels

Carry out more EET performance pilots covering different technologies and vessel types



### Biofuels

Assuring the quality, quantity and emissions abatement of drop-in green fuels

Evaluate emerging marine biofuel feedstocks, including crude algae oil, tallow-derived FAME, and cashew nut shell liquid



### Ammonia

Enabling ammonia as a marine fuel

Understand ammonia dispersion in engine rooms

Assess the feasibility of ammonia bunkering with ammonia-fuelled vessels

## Pathfinder projects

Develop a scenario-based model to assess how new fuel bunkering demand, supply, and potential bunkering locations may evolve

Understand the allocation of green attributes along the marine fuels and carbon value chain



**Partnerships  
and reach**

# Partnerships and reach

Partners are fundamental to GCMD's mission. Maritime decarbonisation is a system-wide challenge that cannot be addressed by any single stakeholder or segment of the industry. By convening partners across the full value chain, GCMD enables diversity of inputs, collaborative action, real-world validation, and knowledge-sharing.

## Renewal of Strategic and Founding partnerships

BHP, BW Group, Foundation Det Norske Veritas, Ocean Network Express, and Seatrrium have renewed their partnerships with GCMD, while MPA has reaffirmed its support—collectively signalling the importance of advancing practical pathways for maritime decarbonisation.

## Strategic partner PSA International comes onboard

PSA International (PSA) joins GCMD as a Strategic partner, marking the Centre's first partnership with a global port operator. PSA's involvement significantly strengthens GCMD's ability to validate decarbonisation solutions in operational port environments, bridging the gap between vessel-side innovation and port-side readiness.

## Strategy retreat: charting the course for the next five years

GCMD convened its strategy and board retreat to align on priorities and execution pathways for 2025-2030. The discussions were framed by a shared recognition that the maritime decarbonisation transition is entering a more complex phase—one characterised by rising costs, political headwinds, and uneven regulatory progress.

Overall, the strategy retreat reinforced the need for GCMD to remain focused on execution, evidence generation, and coordination at a time when uncertainty risks slowing industry momentum.



GCMD Board members and team members



GCMD board strategy retreat with morning presentations, facilitated brainstorming sessions, and a concluding dinner

### Other partners come on board

GCMD also strengthened its coalition by welcoming new partners across the maritime value chain. In 2025, GCMD entered into partnerships with IAPH and INTERCARGO, expanding collaboration with port authorities and the dry bulk shipping sector. GCMD further partnered with the Asian Development Bank to facilitate knowledge exchange to advance sustainable financing. Together, these partnerships broaden GCMD’s reach and expertise, enabling closer engagement with industry stakeholders to co-develop solutions that address both technical and financial barriers to maritime decarbonisation.

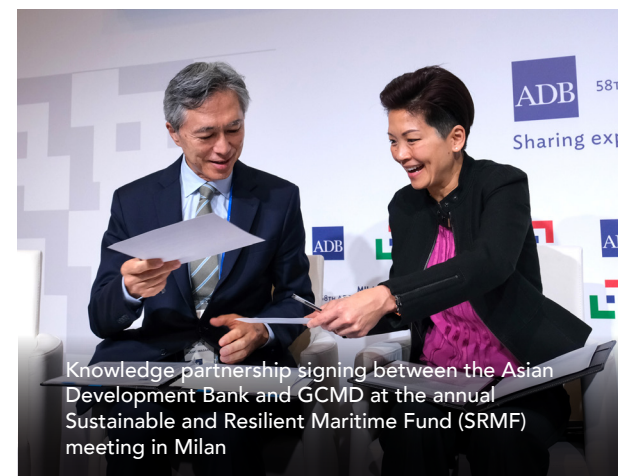
### Forging relationships with government stakeholders and partners

In parallel with industry engagement, GCMD has actively strengthened relationships with government stakeholders across key maritime and energy-transition jurisdictions, including Australia, China, Denmark, Germany, Norway, Spain, and the United Kingdom.

These engagements reflect GCMD’s recognition that regulatory alignment, policy clarity, and public-sector collaboration are essential enablers of maritime decarbonisation.

Through targeted dialogues and workshops, GCMD has engaged interested partners to take part in early conversations on project execution.

Notably, workshops on cashew nut shell liquid provided a platform for potential partners to align technical, safety, and operational considerations at an early stage.



Knowledge partnership signing between the Asian Development Bank and GCMD at the annual Sustainable and Resilient Maritime Fund (SRMF) meeting in Milan



Coalition partnership signing between IAPH and GCMD at the IAPH 2025 World Ports Conference, Kobe

# Partner's perspective: Ports at the centre of the maritime energy transition



**Eddy NG**

Group Head of Operations, Technology & Sustainability, PSA International

## What motivated PSA International to join GCMD as a Strategic partner at this point in the maritime energy transition?

PSA recognises that ports not only serve as essential facilitators of the global economy but also as stewards for long-term supply chain sustainability. We are committed to the decarbonisation of our operations and supply chain ecosystem through the safe and efficient adoption of new fuels and technologies, which is critical to maintain resilient and competitive trade flows. Innovation and partnerships are key enablers towards our net-zero target, and they are the motivation for PSA joining GCMD. This Strategic partnership with GCMD will position us at the forefront of industry efforts to accelerate maritime decarbonisation across the value chain. We hope to contribute operational expertise and work alongside GCMD to uphold the highest standards of safety and operational excellence in the maritime energy transition.

## How do you see ports shaping the safe and scalable adoption of alternative fuels and other decarbonisation solutions?

The maritime energy transition is fundamentally a system-level transformation, and ports sit at the centre of this shift as critical enablers. The safe and scalable adoption of alternative fuels hinges not only on vessel readiness, but also on the availability of supporting infrastructure—such as onshore power supply, storage and handling facilities, and bunkering systems for new fuels.

The readiness of infrastructure within and around ports, along with its downstream logistics and distribution networks, also plays an important role in unlocking alternative fuel supply chains. Port operators like PSA serve as aggregation and coordination nodes, bringing together ecosystem stakeholders such as fuel producers, shipping lines, and cargo owners to enable the adoption of clean marine fuels.

## What would success look like for PSA in this partnership, and how might those learnings be scaled across other ports globally?

The transition towards low-carbon marine fuels to support shipping's fuel and energy transition will only gain momentum through coordinated action across ports, shipping lines and cargo owners. Working with GCMD and leveraging their global network and expertise, PSA aims to translate pilot trials and studies into operational outcomes, enabling simultaneous bunkering operations while minimising disruptions to cargo operations. This would help to build industry confidence that alternative fuels can be handled at scale without compromising safety, reliability, and productivity.

We also aim to scale these learnings globally to catalyse the transformation of our nodes around the world into energy hubs. The focus would be on standardisation and knowledge transfer through the sharing of best practices and the harmonisation of procedures across PSA's global network of ports. This would ensure successful models can be adapted and deployed across diverse geographies, while safeguarding the efficiency of global trade flows.

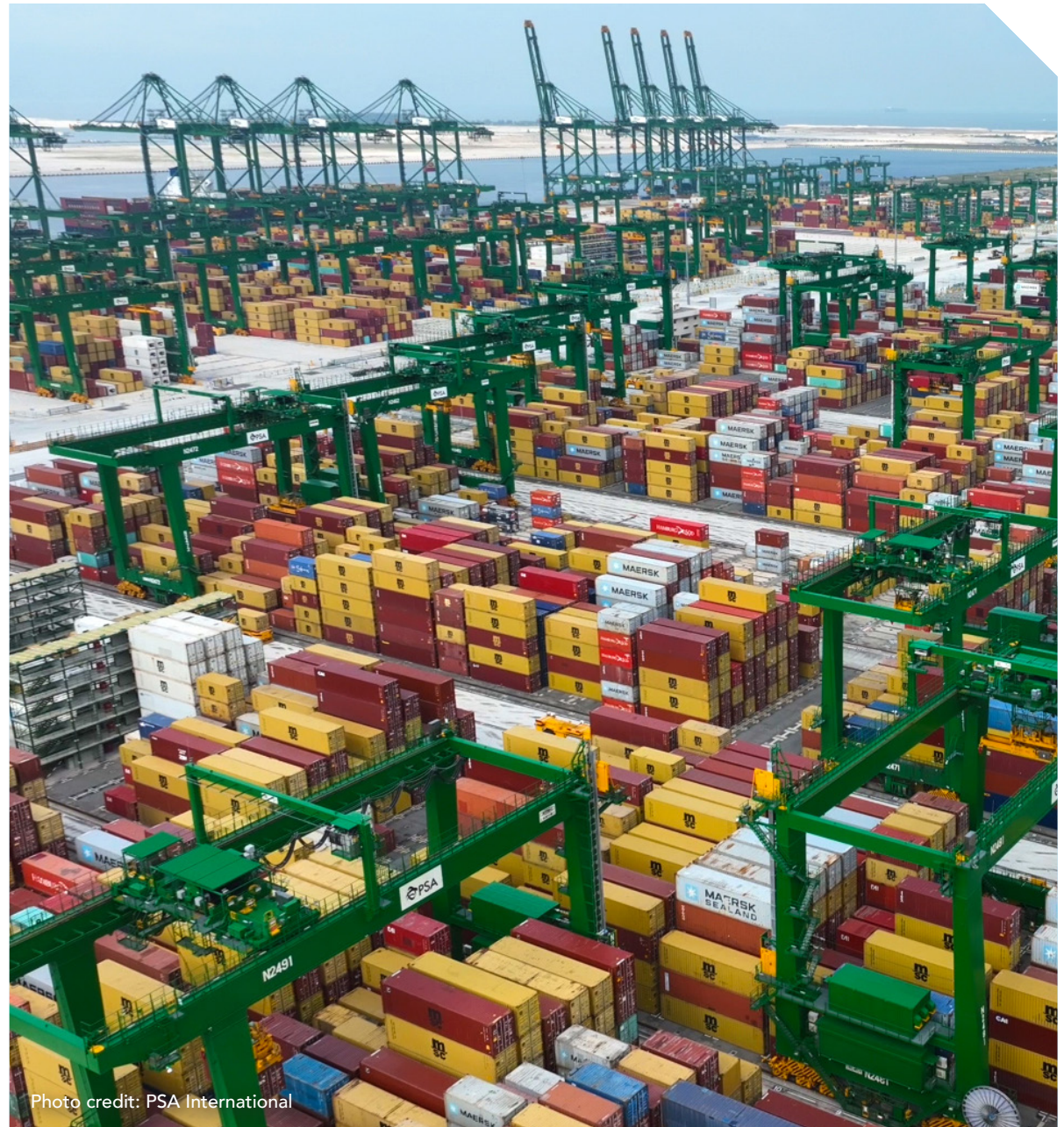


Photo credit: PSA International

# GCMD's centre-level partners

## Founders/ Strategic partners

Shape strategic direction, participate in project ideation, and contribute to financial resource pool



## Coalition partners

Shed light on industry challenges, collaborate to shape standards, and share findings from other relevant projects that they are involved in



## Impact partners

Take part in early project conversations, fund cash and in-kind contributions, and provide domain expertise for pilots



## Enabling partner

Provide resources or assistance to our back-end operations



## Knowledge partners

Enrich understanding of subject matter to build on the work of our peers



# Project partnerships

Established in 2021 with seven founding partners, GCMD has since expanded its partnership network over 130 centre- and project-level partners, spanning shipowners, ports, energy companies, financial institutions, technology providers, industry associations, governments, and knowledge organisations.

 <h2>OCSS</h2>	 <h2>EETs</h2>	 <h2>Biofuels</h2>	 <h2>Ammonia</h2>
<h3>Unlocking the carbon value chain</h3>	<h3>Scaling the adoption of energy efficiency technologies</h3>	<h3>Assuring the quality, quantity and emissions abatement of drop-in green fuels</h3>	<h3>Enabling ammonia as a marine fuel</h3>
			

# Our reach

Through pilots, trials, and partnerships, GCMD engages stakeholders across major ports and trade routes to deliver system-wide impact.





**Our people**

# Our people

GCMD is anchored by a lean, highly committed team, each mission-driven and intentional about advancing climate action through maritime decarbonisation. Guided by values of action, collaboration, and excellence, GCMD has cultivated a pragmatic culture that combines academic rigour with industry realism to curate and demonstrate viable decarbonisation solutions.

## A high-alignment “action tank” culture

GCMD positions itself as a practical “action tank,” focused on translating theory into operational reality. This is enabled by an execution-led, hands-on approach and a strong collaborative culture that brings together expertise across disciplines to address real-world operational constraints.

This way of working has enabled GCMD, despite its lean size, to deliver significant outputs in 2025, executing ten projects across geographies, publishing nine reports, and participating in multiple fora to disseminate findings and learnings from its pilots and projects.

## Investing in talent and future leaders

GCMD invests deliberately in its people. We believe a culture of continuous learning is important and enables the team to operate credibly at the intersection of policy, technology, and real-world implementation.

In 2025, GCMD organised a series of workshops and learning sessions on CCUS, MEPC 83 regulatory developments, cybersecurity, scientific writing, and presentation skills, with a clear focus on strengthening technical capability and enhancing the team’s ability to operate effectively in a rapidly evolving industry landscape.

## Connection and wellbeing

The work environment at GCMD is fast-paced, demanding, and results-driven, reflecting the urgency and complexity of advancing maritime decarbonisation.

Alongside periods of intense delivery, GCMD intentionally creates space for the team to step back, reconnect, and recharge. Initiatives such as DISC® profiling to understand different working styles, forest bathing therapy, and outdoor-based retreats help foster an inclusive

culture that supports connection, resilience, and sustained contribution alongside performance.



GCMD member in action, leaping 20 m off the Canopy Jump at Rainforest Wild Asia

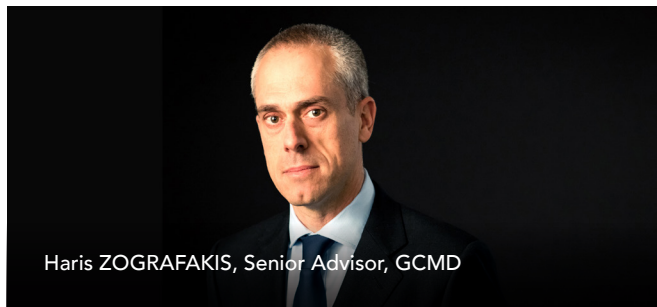
## Strengthening strategic perspective

GCMD's Senior Advisors bring deep insights and expertise, playing an important role in shaping and guiding the organisation's initiatives. Dr Sanjay C KUTTAN, who previously served as GCMD's Chief Strategy Officer, stepped down from his executive role in August 2025 and continues to support the organisation in the capacity of Senior Advisor.



Dr Sanjay C KUTTAN, Senior Advisor, GCMD

GCMD also welcomed Haris ZOGRAFAKIS as Senior Advisor. With extensive experience as a maritime lawyer, Haris brings valuable insight into the legal and contractual aspects of maritime decarbonisation, complementing GCMD's existing expertise and strengthening its engagement with the wider maritime community.



Haris ZOGRAFAKIS, Senior Advisor, GCMD



Undergoing a culture workshop to understand different working styles



A fun-filled GCMD team go-karting session



Getting closer to nature with a forest therapy session at the Singapore Botanic Gardens



A moment of fun and camaraderie during a GCMD team-building bowling session



First-time visit to Rainforest Wild Asia for many colleagues



GCMD's team bonding activity in Batam, Indonesia



# Governance and risk management

# Governance and risk management



## Board governance

GCMD operates under a robust governance framework that ensures strategic oversight, accountability, and transparency. The Board, which convenes at least three times a year, provides independent oversight of organisational strategy, financial stewardship, and risk management, while the management team is responsible for execution and day-to-day operations.

GCMD's Board comprises leaders representing key nodes of the maritime value chain—from ship owners to energy producers and classification societies. This diverse and cross-sectorial representation is intentional and ensures that our strategic oversight is grounded in operational realities of the ecosystem.

## Financial governance

Financial governance at GCMD is underpinned by clear accountability and strong internal

controls. A Board-approved Delegation of Authority framework defines approval thresholds and decision rights for financial commitments, ensuring appropriate oversight and segregation of duties. GCMD's financial statements are subject to annual external audit in accordance with applicable requirements under the Companies Act and relevant accounting standards. To date, these audits have resulted in unqualified audit opinions, providing assurance on the integrity of the Centre's financial reporting and stewardship of resources.

## Pilots and projects oversight

Pilots and collaborative projects are central to GCMD's approach to delivering impact. The management team has established a robust project management framework that spans the full project life cycle, from ideation through to scoping, approval, execution, and dissemination of outcomes. Risk considerations are embedded at the project level, with both external and internal risks identified and managed throughout delivery.

The management team regularly reviews the progress of pilots and collaborative projects against defined objectives, milestones, and learning outcomes. These reviews inform go/ no-go decisions, course corrections, and the scaling and/ or replication of successful approaches. Periodic ad hoc audits are also conducted to identify gaps, strengthen controls, and support continuous improvement.

## Ethical conduct and whistleblowing

GCMD is committed to a values-based culture rooted in integrity and openness. To uphold these standards, the Centre maintains a Whistleblowing Policy. This policy provides a secure channel for employees, vendors, and partners to report concerns regarding unethical behaviour, fraud, or safety and environmental risks without fear of reprisal. To ensure impartial adjudication, reports are managed by the Chief Corporate Development Officer, with matters involving senior leadership escalated directly to the Chairman of the Board. The Board will receive updates on all whistleblowing matters, both internal and external, ensuring that GCMD remains a safe, trusted, and impartial environment for employees and industry stakeholders alike.

Governance and risk management practices are reviewed periodically to ensure they remain fit-for-purpose as GCMD's portfolio, partnerships, and ambitions evolve.





# Resources

# Resources

The resources grid includes the following items:

- Vessel, location- and operations-specific safety assessments for a ship-to-ship ammonia transfer in Singapore's port waters** (GCMD reports)
- Project CAPTURED PART 2**: Quantifying the life cycle emissions of the world's first onboard captured CO<sub>2</sub> value chain: From ship-to-ship offloading and transport to utilisation (GCMD reports)
- Quantifying energy savings from wind-assisted propulsion systems (WAPS)**: A case study on the Pacific Sentinel (GCMD reports)
- Project CAPTURED PART 1**: Technical, operational, and regulatory learnings from the first end-to-end demonstration of onboard captured CO<sub>2</sub> utilisation (GCMD reports)
- Project LOTUS**: Long-term impact of continuous use of biofuels on vessel operations. Confirming operational feasibility of B2A (FAME-VLSFO) (GCMD reports)
- Tracers for biofuels authentication**: Evaluating the efficacy of tracer technologies in marine fuel supply chains (GCMD updates)
- Path to Zero-Carbon Shipping**: Insights from ammonia transfer trial in the Pilbara (GCMD reports)
- Advancing Maritime Decarbonization: Insights from the GCMD-BCG Global Maritime Decarbonization Survey (2<sup>nd</sup> edition)** (BCG)
- 新加坡 氨燃料加注试点 安全及作业指南** (Singapore Ammonia Fuel Bunkering Pilot Safety and Operation Guidelines) (SPMA, SJ, DNV)
- Project COLOSSUS**: Carbon Capture, Offloading Onshore, Storage, Utilisation and Permanent Storage. Life cycle assessment of GHG emissions and cost analysis of OCCS across the carbon value chain (GCMD reports)
- Recommendations for Competency Standards Ensuring Safe Handling of Onboard Captured Liquid Carbon Dioxide and Offloading to Shore** (GCMD reports)
- Opportunities for Shipping to Enable Cross-Border CCUS Initiatives** (GCMD reports)
- Rapid forensic analysis of FAME-based biofuels: Potential use of its fingerprint as a fraud detection tool** (GCMD updates)
- PROJECT REMARCCABLE**: A Case Study for Onboard Carbon Capture Based on the MR Tanker Stena Impero (GCMD updates)
- Recommendations for a Competency Framework Ensuring Safe Ammonia Bunkering Operations** (SPMA, SJ, DNV)
- シンガポールのアンモニアバunkering試験運用に関する安全なオペレーションガイドライン (抜粋)** (Singapore Ammonia Bunkering Pilot Safe Operation Guidelines (Excerpt)) (SPMA, SJ, DNV)
- TRACKING THE PROPENSITY OF BIOFUELS DEGRADATION ACROSS THE MARITIME SUPPLY CHAIN** (GCMD updates)
- Pay-As-You-Save**: Closing the data-financing gap to turbocharge maritime Energy Efficiency Technologies (EET) retrofits (GCMD scopes)
- Voyaging toward a greener future: Insights from the GCMD-BCG Global Maritime Decarbonization Survey** (BCG)
- Safety and Operational Guidelines for Piloting Ammonia Bunkering in Singapore** (SPMA, SJ, DNV)



Download GCMD reports and papers



# Acknowledgments

# Acknowledgments

## BOARD MEMBERS

**Cyril DUCAU**, CEO, Eastern Pacific Shipping  
**Sang Don KANG**, Executive Vice President & Chief Operating Officer, Hanwha Ocean (w.e.f Feb 2026)

**Nobuhiro KASHIMA**, Senior Managing Executive Officer, Chief Executive of Technical Headquarters, Nippon Yusen Kabushiki Kaisha

**Professor Lynn LOO**, CEO, GCMD

**Aziz MERCHANT**, Executive Vice-President, Engineering, Technology & New Product Development, Seatrium Limited

**Eddy NG**, Group Head of Operations, Technology & Sustainability, PSA International (w.e.f Feb 2026)

**Jeremy NIXON**, CEO, Ocean Network Express

**Knut ØRBECK-NILSSEN**, Interim Group President & CEO, DNV (w.e.f Feb 2026)

**Emma ROBERTS**, Vice President, Maritime & Supply Chain Excellence, BHP

**Ulf SCHAWOHL**, Senior Managing Director, Regulatory Affairs & Sustainability, Hapag-Lloyd AG,

**Andreas SOHMEN-PAO**

Chairman of the Board & Chairman, BW Group

## PAST BOARD MEMBERS

**Nick RYAN** (Apr 2024-Dec 2025), Vice President Shipping Assurance, bp

**Remi ERIKSEN** (Feb 2024-Feb 2026), Group President & CEO, DNV

**Dong Kwan KIM** (Oct 2024-Feb 2026), Vice Chairman, Hanwha Group

**Kim Pong ONG** (Jun 2025-Feb 2026), Group CEO, PSA International

**Sarah GREENOUGH** (Sep 2024-Jun 2025), Head of Maritime, BHP

## GCMD TEAM

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**Zheng Yang CHENG**, Manager, Projects

**Wan Ni GOH**, Senior Manager, Projects

**Eng Kiong KOH**, Director, Projects

**Christine KOK**, Senior Manager, Communications

**Reuben KWAN**, Chief Corporate Development Officer

**Wei Jie LAU**, Director, Partnerships

**Rex LEE**, Manager, Projects

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**Grace LIAN**, Manager, Partnerships

**Xingti LIU**, Director, Communications

**Professor Lynn LOO**, CEO

**Edmond OW**, Director, Projects

**Victor PANG**, Senior Manager, Projects

**Elincia SIM**, Corporate Services Manager

**Dr Elaine SUN**, Senior Manager, Projects

**Simin TAI**, Senior Manager, Operations

**Kenneth TAN**, Senior Manager, Projects

**Soo Ching TAN**, Senior Executive Assistant to CEO and Office Manager

**Wee Meng TAN**, Chief Projects Officer

**Claudia TAN**, Manager, Communications

**Dr Bhushan TASKAR**, Director, Projects

**Dr Prapisala THEPSITHAR**, Director, Projects

**Vibin CHANDRABOSE** (Oct 2023-Oct 2025), Director, Projects

**Long Lit CHEW** (Apr 2024-Mar 2026), Manager, Projects

**Dr Sanjay C KUTTAN** (Sep 2021-Aug 2025), Chief Strategy Officer

**Jina TAN** (Sep 2024-Jan 2026), Projects Support Specialist

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**Su Yin ANAND**, Co-founder of Ship Shape Strategies

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