

# GOVERNANCE AND ECONOMIC

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As of end 2024, PSA has met our target to implement 10 projects that provide sustainable logistics and transport solutions, impacting at least 3,000 TEUs of cargo volume per project and more than 470,000 TEUs in total.

Optimisation of global supply chains remains a clear strategy and opportunity for PSA, an overarching ambition across all our business decisions and global operations. More than ever, we are shaping supply chains and enhancing levels of efficiency, resiliency and sustainability at our port and port adjacent nodes, for our customers and partners.

By 2030, we aim to transport at least 10 million TEUs of cargo through sustainable transportation services and terminal operations enabled by digital tools. This broader commitment aligns with our N2N strategy to reduce carbon footprint across our global network, delivering carbon savings and operational efficiencies to our customers.

INNOVATING TOWARDS SUSTAINABLE SUPPLY CHAINS AND ENHANCED NODE TO NETWORK EFFICIENCY

Across our global portfolio, we continue to identify, invest in and implement initiatives to build strong networks and advance our positioning as a leading port ecosystem operator.

REGION	INITIATIVES
	<p>Supplementing our OptEVoyage solution, PSA Singapore introduced the concept of “Agreed Berthing Time” (ABT) to our customers in 2024. The introduction of ABT facilitates the planning of vessel arrivals in Singapore for liners, enabling just-in-time at an optimised speed when the berth is available. This not only contributes to bunker savings and reduction of carbon emissions, but also optimises anchorage space and marine resources.</p> <p>PSA Singapore continues to strategically expand our Jurong Island Terminal (JIT), which offers barge sailings that connect beneficial cargo owners (BCOs) on Jurong Island with PSA’s main hubs across Singapore. Barging is less labour intensive, does not contribute to road congestion, and generates about 30% less carbon emissions as compared to trucking. Demand for barging has grown steadily in recent years, with JIT volumes recording a year-on-year growth of 19% in 2024, to reach a record-breaking 175,889 twenty-foot equivalent units (TEUs). To support increasing demand, PSA will work in partnership with JTC to expand its services by doubling its annual handling capacity to 300,000 TEUs, and enhancing new Dangerous Goods (DG) handling and cargo transloading facilities. The expansion of JIT will support the transformation of the Jurong Island Ecosystem into a sustainable Energy and Chemicals Park, in line with Singapore’s Green Plan 2030.</p> <p>Eastern Sea Laem Chabang Terminal (ESCO) continued to pursue and develop solutions for green transportation. Through a dedicated Green Transport Lane, ESCO utilises Electric Vehicle (EV) trucks for shuttle services between Laem Chabang Port and Lat Krabang Dryport, achieving a first of its kind in Thailand.</p>



## REGION

## INITIATIVES

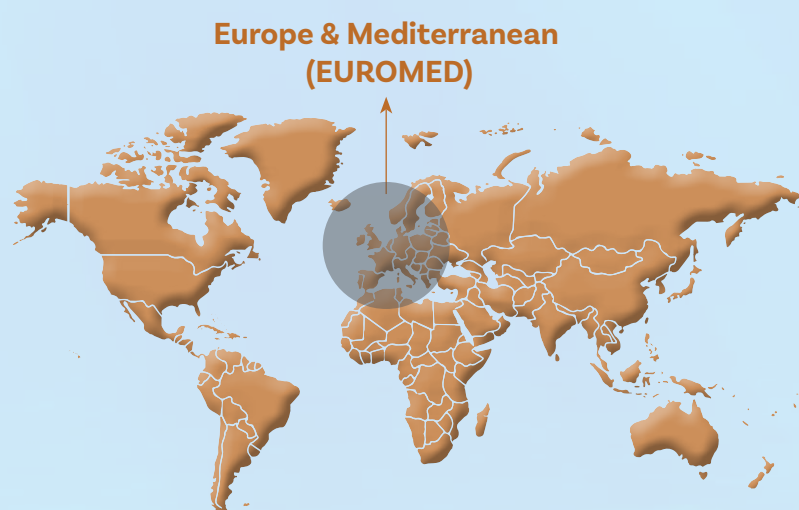


Consolidated management across PSA Fuzhou's logistics, digital, and marine arms further strengthened Fuzhou as a strategic connectivity node in the region. Fuzhou Container Terminals (FCT) continued its drive for sustainability and operational efficiency by adding 20 electric prime movers and enhancing direct delivery routes between external depots and the port. Self-developed digital tools, including patented systems for automobile handling and fumigation, further enhanced data insights and streamlined specialised cargo handling.

In a strategic move to facilitate trade along the Middle Corridor, PSA extended its digital and railway capabilities into Kazakhstan. KPMC, a joint venture with Kazakhstan Railways (KTZ), advanced development of this critical trade route, optimising logistics networks and reducing transit times between Asia-Pacific and Europe. Global DTC (GDTC), a joint venture with Pegasus Logistics, streamlined multimodal processes through the Digital Trade Corridor (DTC) platform, connecting key markets that include Kazakhstan, Uzbekistan, Azerbaijan, Georgia, and Türkiye. With the goal of establishing a sustainable Middle Corridor, a Statement of Collaboration (SoC) was established at COP29 where GDTC will work with "Trans-Caspian International Transport Route" (TITR) Association and key stakeholders to facilitate the tracking of overall Greenhouse Gas (GHG) emissions using PSA's OptETracker tool. This will enhance transparency and accountability in emissions reporting along the Middle Corridor.

## REGION

## INITIATIVES



We are heavily investing in facilitating a modal shift from road to rail and enhancing our connectivity to the European hinterland. To this end, we acquired one of Poland's leading intermodal operators – Loconi Intermodal S.A. in 2024. With this strategic move, PSA will be able to tap upon the rail expertise of Loconi Intermodel to support the rail growth of our European container hubs, thereby offering our customers more sustainable options besides road transportation.

In September 2024, we celebrated the opening of Europe's largest inland container terminal Duisburg Gateway Terminal (DGT). When fully completed, DGT will be the largest climate-neutral trimodal terminal with rail and barge connections to the ports in the Rhine delta and onwards rail connectivity to Eastern and Central Europe. The terminal will be hooked-up to an intelligent local energy network, which features local generation and storage of electricity and heat – utilising a blend of renewable and advanced hydrogen technologies, including a photovoltaic system, fuel cell systems and hydrogen engines.

As part of PSA's efforts to reduce PSA BDP customers' emissions by developing end-to-end green corridors, PSA BDP and PSA Antwerp teamed up to test cutting-edge container transport solutions, utilising the innovative electric trucks from Volvo Trucks Belgium & Luxembourg. During the test drives, a mix of inter-terminal transports between PSA Antwerp terminals to and from PSA Zeebrugge were successfully completed, as well as multiple trips to different warehouses in Belgium and Germany.

## REGION

## INITIATIVES



In 2024, Ashcroft Terminal completed construction of a new cross-dock facility that significantly increases its capacity, whilst enhancing overall efficiency and sustainability of the supply chain for containers imported and exported through the Port of Vancouver. The shift from road to rail and the consequent reduction in unproductive container trucking will contribute towards the reduction of carbon emissions. The cross-dock facility was also built with sustainability in mind, featuring environmental considerations to reduce the building's overall carbon footprint and the use of geothermal power to provide energy for the building's heating and cooling as well as operation of its electric equipment.

## REGION

## INITIATIVES



Extending inland from Saudi Global Ports (SGP), SGP Riyadh achieved new successes in encouraging more sustainable container movements. This was done through the promotion of exports as well as the facilitation of empty containers' re-positioning to Jubail for exports via rail. In 2024, SGP Riyadh reached a historical high of 5,169 TEUs for exports through rail.

## INTEGRATION AND COLLABORATION THROUGH INDUSTRY-WIDE COOPERATION

To drive transformative change, collective action with industry partners and global associations is essential. PSA actively seeks to lead and collaborate on projects and dialogues with the international community through relevant forums and associations in the port and logistics industry.

PSA endorses the Global Maritime Forum's commitment to adopt vessel optimisation strategies as a signatory of its ambition statement for collective action. This collective agreement seeks to improve the operational efficiency of vessels and bring operational efficiency to the forefront of the sustainable shipping agenda. Among other collectives, PSA is a founding member of the Global Shipping Business Network (GSBN), SGTruDex and the Global Sustainable Transport Innovation Alliance (GSTIA). GSBN is a not-for-profit organisation that manages a secure and trusted data exchange platform to power global shipping trade. SGTruDex focuses on the adoption of digital solutions and fosters data connectivity within the maritime and logistics ecosystem.

PSA is one of GSTIA's 42 founding members across the land, marine, and air transportation sectors globally, and aims to collaborate closely with industry leaders and policymakers to advance logistics efficiency and sustainable transport solutions.

In 2024, PSA and the National University of Singapore (NUS) jointly announced the launch of the PSA-NUS Supply Chain Living Lab. The PSA-NUS Supply Chain Living Lab will strengthen collaboration between industry and academic expertise to address critical supply chain challenges. It will provide a sandbox to foster the development of community-centric solutions for supply chain optimisation, with a focus on enhancing agility, resilience and sustainability for supply chain operations both regionally and globally.



# INNOVATION AND TECHNOLOGY

Innovation is the cornerstone of PSA's success. As a global leader in port operations and supply chain solutions, we leverage technology and innovation to continuously improve our operations. Our leadership team embodies this culture of innovation, propelling our continuous pursuit of excellence and fuelling the spirit of innovation in everything we do.

## WHY IT IS IMPORTANT

PSA actively seeks innovative approaches to advance our corporate and business agenda. Our leading position in the ports and logistics industry has afforded us unique and valuable opportunities to spearhead innovative initiatives and foster collaborative actions within and beyond our sector. Our initiatives, from galvanising internal engagement on new ideas, to collaborating with external partners, drive innovative solutions that support our sustainability goals. These efforts also help to reduce and manage risks such as safety concerns, cybersecurity breaches and potential disruptions of our port operations.

## OUR APPROACH

### INSPIRING INNOVATION FROM WITHIN

PSA strives to foster a vibrant organisational culture that inspires innovation and creativity among our employees. The INNOVISION@PSA framework, launched in 2022, is rooted in the belief that every employee possesses the capacity for innovation. This mindset encourages a culture where our employees "Dare to innovate", "Never stop trying" and "Accept failure as learning". Coupled with our FISH! and FISH+ Principles, these frameworks aim to create a collaborative work environment where our employees feel empowered to take risks to drive breakthroughs.

PSA's innovation strategy is driven by the Innovation for Excellence team at PSA International, further supported by a global network of over 100 innovation catalysts. To assess the effectiveness of our innovation initiatives, we conduct annual INNOVISION@PSA surveys. This survey gauges employee attitudes towards innovation and evaluates the adequacy of leadership support in this area. The survey results also enable business units to benchmark their performance against the global average score. Our latest results demonstrated strong leadership support, which meant that employees felt empowered to experiment with or implement innovative ideas to drive business objectives.

Building on these insights from the INNOVISION@PSA survey, PSA continues to actively promote and steer its innovation journey across the organisation. One such initiative was the Group Innovation Webcast 2024, which brought together employees globally to discuss and showcase how innovation is shaping the future of PSA. Broadcast live from both Singapore and Türkiye, the event featured discussions on PSA's ongoing efforts to foster innovation. Several innovative in-house projects were highlighted, covering areas such as green energy and sustainability, Artificial Intelligence, and cybersecurity incident management. Additionally, PSA senior leaders shared insights on the sources of inspiration that lead to their best ideas and how they mentor staff throughout their innovation journeys.

PSA tracks key metrics to evaluate the effectiveness of our innovation initiatives. These metrics include KHPIA submissions, iCAN participation, PSA Group Innovation Fund deployment, and results from the INNOVISION@PSA survey. We share these insights at the Group Innovation Webcast to keep our employees informed and motivated.





## NURTURING INNOVATION THROUGH COLLABORATION AND RECOGNITION

### iCAN

iCAN, PSA's innovation portal, has been instrumental in cultivating innovation and collaboration. As an online platform, iCAN enables seamless knowledge sharing between business units across the world. Launched in 2016, iCAN has onboarded over 15,000 members and generated more than 700 new ideas in 2024 alone. We recognise the most impactful contributors through annual awards, celebrating those who have made notable progress towards INNOVISION@PSA.

### GLOBAL DATA STORY CHALLENGE

The PSA Global Data Story Challenge held its fifth edition in 2024, focusing on the topic of harnessing data and Artificial Intelligence (AI) for positive change. The winning teams presented groundbreaking solutions that enhanced port efficiency, improved cargo visibility and promoted environmental sustainability.

### KUA HONG PAK INNOVATION AWARDS (KHPIA)

PSA hosts the Kua Hong Pak Innovation Awards (KHPIA) annually to recognise innovative projects that have been implemented and innovative ideas from employees. Covering six tracks – Supply Chain Solutions, Climate Response, Engineering, Finance, HR and IT, Health and Safety, and Operations – these projects address operational and strategic challenges in port and supply chain management. The projects and ideas, submitted by staff across the global PSA family, are evaluated based on their novelty and positive impact on the business or environment, measured in cost, manpower, or carbon savings. 2024 marked the 12th run of the KHPIA and achieved strong participation: a total of 669 submissions were received from over 50 different business and functional units.

## INVESTING IN INNOVATION

### Group Innovation Fund

The PSA Group Innovation Fund allocates USD 1 million annually to support innovative solutions and applications across the organisation. This fund has supported impactful projects, such as a fleet management system for autonomous prime movers, an electric prime mover charging scheduler, and a wearable device to detect driver fatigue. The diversity of these projects underscores the breadth and creativity of innovation within the PSA Group.

### PSA Ventures

In 2024, PSA unboXed began its transition into PSA Ventures, a dedicated corporate venture capital arm committed to driving innovation across global supply chains and port operations. Building on the innovative groundwork of PSA unboXed, PSA Ventures focuses on fostering transformative solutions that address critical sustainability challenges.

With strategic investments in sustainable supply chain technologies and next-generation energy solutions, PSA Ventures plays a pivotal role in advancing the green energy transition. By nurturing groundbreaking innovations and harnessing PSA's extensive global network, the venture arm empowers the logistics industry to achieve new levels of operational efficiency, environmental responsibility, and long-term resilience.

## STREAMLINING OPERATIONS AND ENHANCING SERVICES WITH TECHNOLOGY

### Robotic Process Automation (RPA)

PSA's adoption of Robotic Process Automation (RPA) began in 2018. Through dedicated training initiatives and practical application, we have achieved significant results. As of 2024, 706 RPA projects have been successfully implemented cumulatively over the six years, which translates to substantial estimated time savings equivalent to 290 man-years.

To further embed RPA expertise within PSA, we have introduced the Robofish RPA e-learning program, which has been completed by over 3,000 employees globally. Other in-house programs such as IMPACT and RPA Boot Camp have equipped employees with practical RPA skills, enabling them to develop RPA solutions.

### PSA BDP's Digital Solutions

Through close collaborations with customers and business partners, PSA BDP continues to design and deploy digital applications that enhance both internal operations and market offerings. By delivering optimised freight and transport routes and improving supply chain processes, this facilitates more agile, responsive and sustainable network operations. Notable achievements include the development of Smart Navigator, a global supply chain visibility platform; and Risk Monitor, an innovative platform that provides timely and verified data on supply chain risks.

In 2024, PSA BDP rolled out the Carbon Dashboard data service for shippers, equipping them with a tool to measure their freight carbon emissions accurately using an industry-leading methodology. This enables them to make more informed decisions that support sustainable shipping.

# ETHICAL BUSINESS CONDUCT

Maintaining the highest levels of trust and integrity within our operations and in all our business activities is vital for sustainable growth and is our basic responsibility as a global corporate citizen.

## WHY IT IS IMPORTANT

As a leading global port operator and supply chain solutions provider, PSA interacts with diverse stakeholders across our value chain worldwide. Upholding strong business ethics and integrity is fundamental to our reputation as a trusted organisation. By maintaining an uncompromising stance towards bribery, corruption, and fraud, we model the ethical conduct that we expect from PSA’s employees and partners. These efforts strengthen global supply chain resilience and protect the interests of our stakeholders.

## OUR APPROACH

### KEY GROUP POLICIES ON BUSINESS ETHICS

PSA’s ethical framework is anchored in our [Code of Business Ethics and Conduct \(The Code\)](#) which is reviewed annually. Reflecting our core principles, the Code provides employees with clear guidance on ethical decision-making and reinforces our zero-tolerance stance on corruption. All policies within The Code are reviewed and endorsed by PSA’s Senior Management Council for consistency and adherence across PSA.



### OUR COMMITMENT

We conduct our business with the highest standards of ethics and integrity, and ensure full compliance with anti-bribery and anti-corruption laws.

#### The Code addresses essential areas of our operations, including:



The ethical foundations upon which our business is built, including our Core Values and Business Principles



Respectful workplace culture based on responsibility to one another and teamwork



Ethical behaviour when doing business, including fair and open competition, anti-bribery and corruption, anti-fraud, and anti-money laundering



Prohibition of conflicts of interest



Prohibition of improper behaviour or any conduct that would otherwise bring PSA into disrepute, such as money-lending and illegal possession of drugs



Assurance of a healthy, safe and secure work environment



Respect for the environment and compliance with all local environmental laws



Prohibition of discrimination against employees based on race, gender, religion, age, disability, family status, sexual orientation, pregnancy or any other similar attribute or conditions



Treatment of information and social media



Relationships with stakeholders



Whistleblowing



The Code also covers fundamental human rights for our workforce, such as providing a safe working environment and supporting the health and welfare of our people. Respecting our employees' right to equality, PSA strictly upholds a zero-tolerance attitude to discrimination and enshrines these values within The Code. Upholding these principles, PSA BDP has reaffirmed its pledge to the United Nations Global Compact (UNGC) and the Sustainable Development Goals (SDGs) to maintain human rights, labour standards, environmental protection, and anti-corruption.

## ETHICAL EXPECTATIONS FOR BUSINESS PARTNERS

PSA extends its commitment to ethics through the [Supplier Code of Conduct \(SCC\)](#) and [Customer and Partner Business Principles \(CP Principles\)](#). The SCC applies to all suppliers, contractors, service providers, and business partners, including their subsidiaries, affiliates, subcontractors, and agents. PSA ensures policies and procedures within the SCC are communicated transparently by incorporating relevant clauses into contracts and making the SCC readily available on our corporate website for all stakeholders.

In 2024, we developed the CP Principles, outlining standards of behaviour expected from customers, business partners, and other third parties. They cover a range of topics including, and not limited to bribery, corruption, anti-money laundering, health and safety, and data privacy. To complement the new CP Principles, The Code and SCC were refreshed to include expanded guidelines on customers and third parties, in addition to their existing focus on employees and suppliers.

### Mechanisms for Raising Concerns

PSA's Whistle Blowing policy provides a channel for employees, business partners and others to raise issues of misconduct or non-compliance. We have established a dedicated hotline and email for employees to report concerns without fear of retaliation, and each report will be thoroughly investigated. Serious cases may also be escalated to a Review Panel led by PSA's Group CEO, Group CFO, and Group Head of Human Resource. Should wrongdoing be found, we would implement preventive measures as well as the appropriate disciplinary actions.

For more details, refer to The Code's [section on whistleblowing](#).

### Communication and Training

Our Board Members, employees and business partners around the world are kept informed about The Code, the SCC, and the CP Principles.

PSA employees Group-wide are expected to comply with The Code. To facilitate this, new hires are required to understand and acknowledge The Code as part of their onboarding process, while current employees will participate in regular reinforcement of PSA's policies via various internal channels. Updates to The Code are also promptly communicated to staff. Additionally, anti-corruption policies and procedures are shared in Board and Committee meetings.

Training via e-learning – such as through “The Code Refresher” program developed by PSA University and Group HR – is also provided as a supplement to strengthen employees' understanding and help them navigate ethical challenges in various types of situations. 27% of employees have received training on anti-corruption in 2024.

## ETHICS AND COMPLIANCE IN BUSINESS OPERATIONS

### Upholding Corporate Governance

Effective governance is integral to maintaining transparency and accountability. PSA conducts regular risk reviews throughout the year, addressing violations or non-conformance with laws, regulations, internal policies, and ethical standards. The Audit, Risk and Finance Committee carries out these reviews, meeting at least three times a year to evaluate the effectiveness and adequacy of risk management controls, and procedures. For further information, see [Our Approach to Sustainability](#).

### Ensuring Compliance with Laws and Regulations

PSA adheres strictly to local laws, collaborates with authorities and respects cultural and environmental norms. In 2024, there were no significant\* instances of non-compliance with laws and regulations.

\* PSA defines significant instances of non-compliance as cases amounting to more than SGD 1 million.



# SUSTAINABLE PROCUREMENT

Maximising our impact requires collaboration with ecosystem partners and setting high standards for our supply chain, extending beyond our own operations. By fostering partnerships and encouraging our suppliers to enhance their sustainability practices, we can create a significant positive impact for the community and planet.

## WHY IT IS IMPORTANT

As a global organisation with operations worldwide, PSA collaborates with an extensive network of over 10,000 partners and suppliers. These partnerships present a significant opportunity to strategically influence and enhance supply chains. By setting higher standards, we aim to foster more ethical and environmentally responsible practices across our supply chain. PSA endeavours to lead by example, encouraging our procurement partners to integrate ESG considerations into their products and services. Through these efforts, we strive to build a more sustainable and responsible future.

## OUR APPROACH

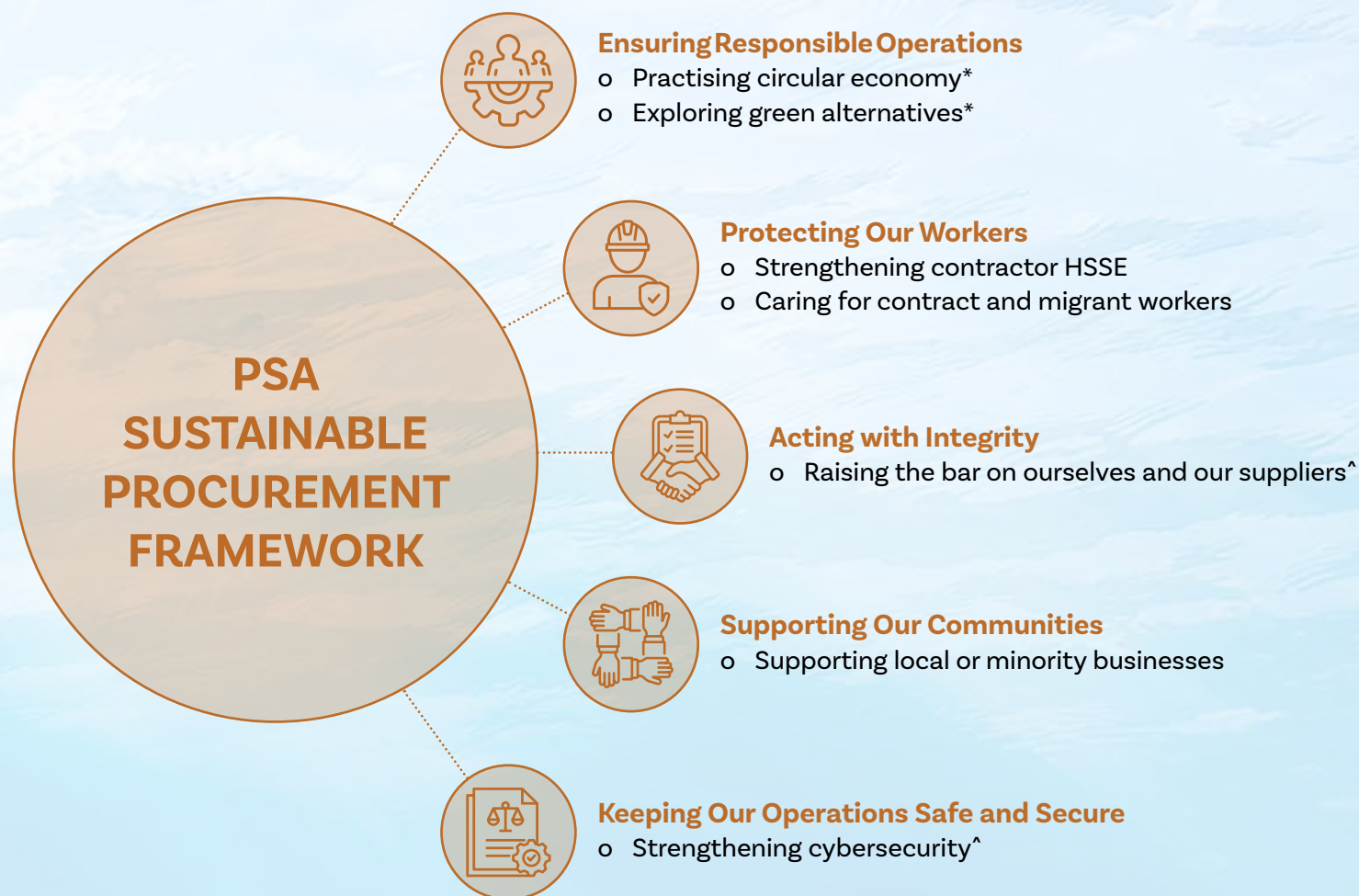
PSA predominantly sources goods and services within the regions of its business units, utilising regional and group procurement if needed. Most expenditures stem from indirect procurement supporting daily operations. Key operational costs include energy (fuel and electricity), manpower (labour, logistics, and services), maintenance (spare parts and services), and consumables (wire-ropes, lubricants, tyres and Personal Protective Equipment). For capital expenditures, the primary categories are port construction (design, dredging and civil works), port equipment (cranes) and IT infrastructure, network, and software development.

### PSA SUSTAINABLE PROCUREMENT FRAMEWORK

PSA’s sustainable procurement framework, launched in 2022 by Group Procurement, applies a risk-based approach to manage procurement practices across PSA. This framework complements our Sustainability Strategy Framework, reinforcing our ESG commitments when procurement decisions are being made. It sets mandatory requirements for ethics, health and safety, environmental protection and cybersecurity for all suppliers. Additionally, we encourage and empower business units to prioritise ESG aspects according to their specific local conditions and practices. This approach ensures the framework remains adaptable and flexible, enhancing its effectiveness in practical application.







\* Focus area.

^ Compliance requirement.

Business units have discretion to prioritise other elements, taking into consideration local stakeholders' needs.

## ACTIVELY ENGAGING OUR SUPPLIERS

PSA has implemented a Supplier Code of Conduct (SCC), outlining our business principles and key expectations for suppliers and tenderers. The SCC provides clear guidelines on areas such as anti-corruption, health and safety, cybersecurity and data security, ensuring high standards of sustainable and ethical practices throughout our value chain.

Going beyond, PSA has further established a supply chain sustainability platform to assess the ESG maturity of our suppliers and tenderers. A key feature is a targeted ESG survey covering topics such as compliance, health, safety and environment, labour rights and cybersecurity. Suppliers are also required to report their carbon footprint – covering their Scope 1, 2 and 3 carbon emissions, thereby encouraging our suppliers to engage with their own value chains. For each of the surveyed suppliers, a score is derived from their survey responses and used for benchmarking purposes by Group Procurement. Initially piloted with select key suppliers, the survey is now embedded in major tenders, enabling Group Procurement to evaluate ESG performance alongside technical and commercial criteria. Continuous tracking and benchmarking motivate suppliers to improve and strive for higher sustainability standards.

In addition, PSA incorporates ESG assessments into all building, civil, and construction tenders, ensuring that sustainability criteria are systematically applied across operations. Tenderers are encouraged to propose greener alternatives, such as energy-efficient building designs and the use of sustainable concrete for PSA's consideration. Additionally, stringent cybersecurity requirements are enforced across operational and IT platforms, with a thorough screening process for new suppliers needing IT connectivity or data exchange with PSA.

PSA has also developed an IT Sustainability scorecard for its IT-related tenders, mainly in the areas of software, cloud, hardware and IT services. Both sustainability and cybersecurity dimensions are being evaluated and scored in IT tenders.

Since the second half of 2023, and the full year of 2024, PSA Singapore screened and scored 100% of newly awarded suppliers of major tenders\* against environmental and social criteria, engaging 65 local and international partners in 2024. Our global business units such as those in Italy, Portugal, Türkiye and Indonesia have also been screening suppliers in their major tenders. We monitor the percentage of reviewed suppliers that provide significant products and services, such as port equipment, IT and port labour, to our major business units. These efforts align with PSA's goal of collaborating with suppliers who share our vision of upholding ESG principles. This proactive approach ensures that PSA continues to promote sustainability across its supply chain.

\* Major tenders defined as at least SGD 10 million in value.



## UPLIFTING CAPABILITIES AND INCREASING ENGAGEMENT ON ETHICAL AND SUSTAINABLE PROCUREMENT

To continuously upgrade skills and expertise, PSA Singapore's entire procurement team successfully earned the Chartered Institute of Procurement & Supply (CIPS) Ethical Procurement and Supply certificate of achievement. This course complements PSA's integration of the [PSA Code of Business Ethics and Conduct \(The Code\)](#) and the Group's sustainable procurement framework into its operational practices. By offering valuable external insights on ethics, environmental sustainability and labour rights, the certification enhances the Procurement team's ability to evaluate and engage suppliers, with a strong focus on ethical and sustainable procurement.

In November 2024, Group Procurement and the PSA Singapore Procurement team jointly organised the PSA Suppliers Forum – ESG Xchange. This forum, focusing on suppliers and contractors providing labour and logistics services for PSA Singapore's operations, was timely given Singapore's upcoming climate-related disclosure regulations and the increasing emphasis on human rights under the Fair Employment Act. Over 60 leaders from 24 companies attended, sharing their perspectives and expertise on business operations, sustainability and human resources. PSA also presented an overview of the community's progress and readiness, highlighting specific expectations for suppliers lagging in areas such as labour rights policies and Scope 1 and 2 emissions tracking. With the aim of fostering continued improvement, PSA reaffirmed its dedication to supporting its partners' sustainability journeys, with further initiatives planned for 2025 and beyond.





# SUSTAINABLE PORT DEVELOPMENT

We integrate sustainability principles into the planning, design and development of our port infrastructure to ensure the climate resilience of our global assets and align with PSA's sustainability ambition.

## WHY IT IS IMPORTANT

Our operations play a key role in facilitating global trade and economic development. It is essential that PSA's port infrastructure remains resilient against potential physical risks posed by a changing climate that can cause operational and supply chain disruptions. By putting in place measures for climate mitigation and adaptation, we safeguard the long-term viability of our ports, while achieving more sustainable ways of operations.

## OUR APPROACH

As PSA prepares for the future, we go beyond compliance with local regulations and standards by embedding sustainability and environmental considerations into the development and enhancement of our port infrastructure. This approach will be key to reducing emissions, managing climate change risks, and minimising ecological impacts and pollution in our surrounding environment.

PSA is committed to adopting emerging best practices and progressively implementing initiatives that keep us future-ready and at the forefront of innovation. We actively monitor our progress and performance, setting ambitious yet achievable targets, such as increasing the use of sustainable concrete. Furthermore, we collaborate closely with governments and port authorities to develop and implement sustainable and innovative initiatives across our ports.

## STEERING SUSTAINABLE INFRASTRUCTURE DEVELOPMENT

PSA's Civil Infrastructure Sustainability Roadmap provides PSA business units with a framework of requirements and considerations to adhere to when implementing civil infrastructure projects and guides their sustainability programs. It has comprehensive coverage, including the integration of sustainability in the design, construction and management of civil infrastructure, the incorporation of sustainable features in existing and new buildings, use of durable and sustainable concrete, and climate risk assessment and adaptation.

Specifically, the Managing Sustainable Civil Infrastructure Projects Framework, which forms part of the Roadmap, manages sustainability risks in major projects over USD 10 million, to ensure alignment with PSA's sustainability goals and [Equator Principles](#). The Framework guides projects from the planning and design stages through to completion, ensuring that sustainability considerations are integrated throughout the entire process. Based on the Framework, there are ten areas of focus for the construction stage of our civil infrastructure projects.

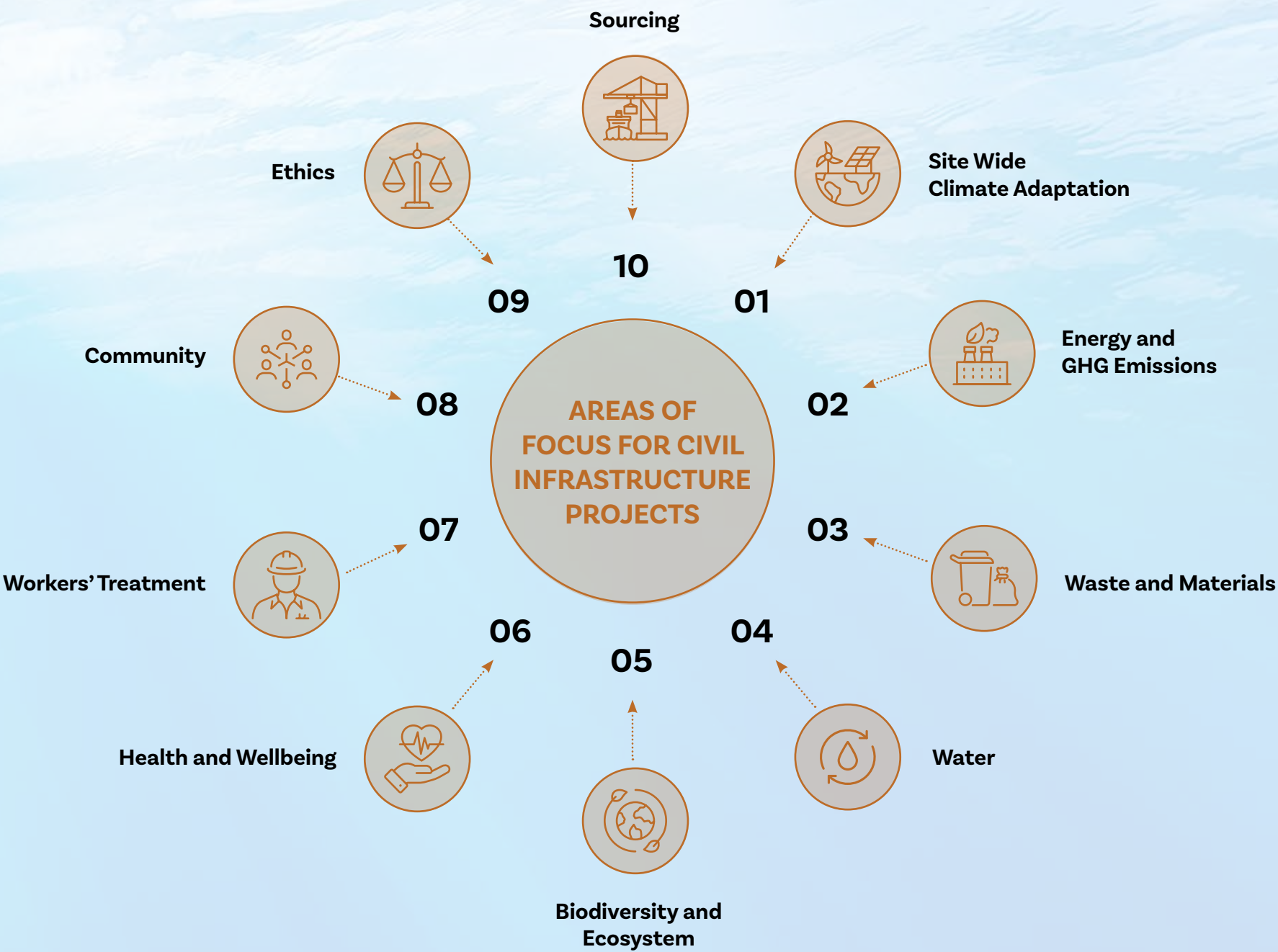
Tuas Port, for example, is a civil infrastructure project embedding sustainability principles. From the onset, the Maritime & Port Authority of Singapore (MPA), together with PSA Singapore, took measures to minimise environmental damage arising from the Tuas Reclamation,





Wharf Construction & Dredging Project by implementing a coral relocation program, and re-using dredged material and excavated earth from other land-based construction projects. Upon its full completion in the 2040s, the mega port will be the world’s largest automated container terminal and the nexus of a well-integrated Tuas Ecosystem, supporting

the synergistic flow of industrial and supply chain activities. With its automated guided vehicles (AGVs) and electrified automated yard cranes, coupled with smart engineering, power management platforms, and other technologies, Tuas Port will be a game-changer in greening and digitalising port operations.



**PSA ANTWERP’S EUROPA TERMINAL RECEIVES AN UPGRADE FOCUSED ON SUSTAINABILITY**

In 2022, PSA Antwerp commenced a widescale redevelopment of its Europa terminal to increase capacity, enhance operational efficiency, and prepare for a sustainable future transitioning towards a climate-neutral port. Some of its sustainable features include:

- Sustainable Design and Construction**  
 Throughout the refurbishment of Europa terminal, the project has adhered to responsible construction practices. This includes ecological assessments, the use of recycled concrete to reduce carbon emissions, and the avoidance of SF<sub>6</sub> gas in switchgears where possible. The local community was also engaged to ensure they remained unaffected by construction activities.
- Electrification and Renewable Energy**  
 When completed, Europa terminal would have transformed to a new operating model with the use of new electric Automated Stacking Cranes (ASCs) that will enable the terminal to stack containers more densely, resulting in a significant increase in capacity. With the investment in new electric-powered equipment instead of diesel cranes and straddle carriers, the terminal’s carbon footprint is expected to be reduced significantly. To increase the generation of renewable energy, PSA Antwerp is also exploring the installation of Photovoltaic systems on buildings and reefer racks, as well as the setting up of wind turbines.



ADVANCING THE USE OF GREEN CONCRETE TO REDUCE EMBODIED CARBON

Construction is responsible for a significant proportion of global emissions, with cement production being a key contributor due to its energy intensive manufacturing process and byproduct emissions. PSA's recommendations for the use of sustainable concrete require our major civil projects to incorporate a "Sustainable Concrete Plan" to address embodied carbon.

Our current major port development works, including those in Singapore, Mumbai, Türkiye, Saudi Arabia and Antwerp, are using sustainable substitutes such as Ground Granulated Blast Furnace Slag (GGBS) in place of Ordinary Portland Cement at varying replacement ratios. The use of GGBS, when maximised in the concrete mix, can yield carbon emissions reduction of up to 70% compared with using a traditional concrete mix. Additionally, GGBS has been found to enhance concrete durability.

Overall, we have made significant progress in implementing PSA requirements for sustainable concrete, incorporating it into 100% of our major new civil infrastructure projects in 2024. This proactive approach ensures that PSA continues to promote sustainability across its supply chain.

FLEXIBLE GREEN CONCRETE STUDY AT PSA SINGAPORE

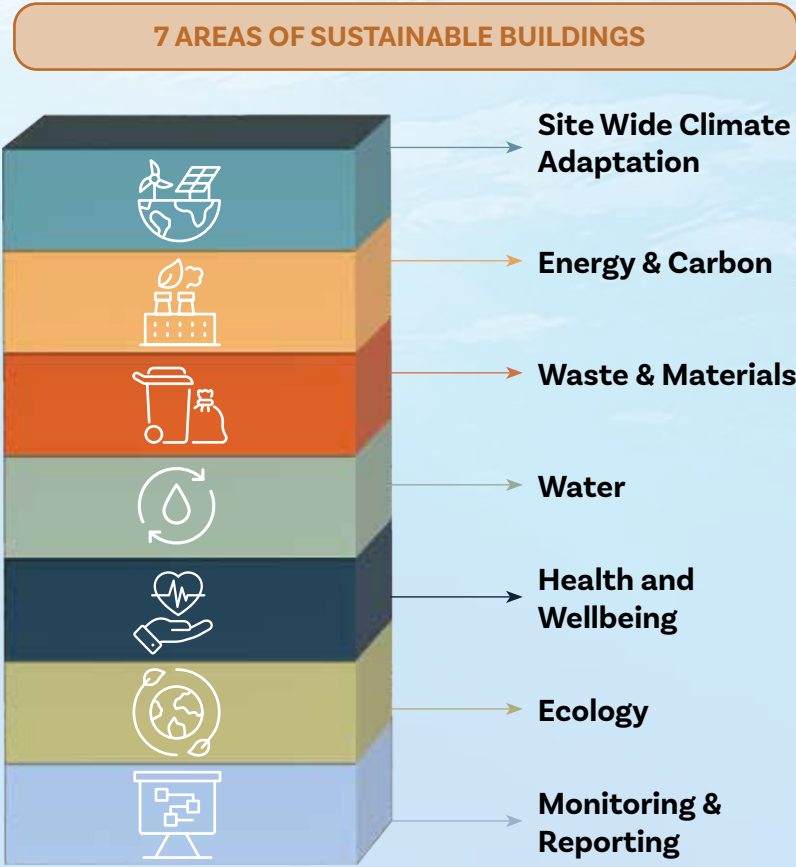
In collaboration with an Institute of Higher Learning, PSA Singapore embarked on a multi-year proof-of-concept (POC) study on the implementation of flexible green concrete, ConFlexPave. With the addition of polymer microfibres, this novel mix allows the concrete to flex rather than break under pressure.

Based on preliminary findings, ConFlexPave has displayed greater strength and increased flexibility, compared to standard concrete; potentially leading to longer expected lifespan and cost savings. Carbon emissions savings are also reaped through reduced thickness of the pavement and the removal of steel reinforcement. The team is currently exploring the use of GGBS in the ConFlexPave mix to improve potential carbon emissions savings.



DESIGNING SUSTAINABLE BUILDINGS

Our approach to sustainable buildings is guided by PSA's building sustainability framework, which provides governing principles and guidelines in addressing the seven key areas of sustainable buildings. This applies to both the development of new buildings and retrofitting of existing buildings. Apart from energy efficiency considerations which reap cost savings, other holistic social factors are integrated as well to ensure buildings are conducive for work and prioritise human health and wellbeing.



PSA aims to design and construct buildings which are aligned with green building best practices and standards. For example, Tuas Maintenance Base Administrative Building is certified by the Building and Construction Authority (BCA) as a Green Mark Platinum Super Low Energy Building (SLEB). By incorporating four key aspects – passive design features, efficient air-conditioning, integration of Artificial Intelligence (AI) and Internet of Things (IoT) to the building management system and Building Applied Photovoltaic systems, the building uses 58% less energy compared to other similar-sized buildings.

Moving forward, the construction of the PSA Supply Chain Hub @ Tuas (PSCH) is expected to be PSA Singapore's second SLEB. Upon completion by 2027, the building will feature energy-efficient designs, renewable energy sources and sustainable drainage systems. Besides boosting environmentally friendly features, the PSCH will be equipped with cutting-edge technologies such as advanced robotics and automation systems, including the Automated Storage and Retrieval Systems (ASRS) and the Intelligent Warehouse eXchange (iWX), designed to create supply chain synergies and provide customers with enhanced visibility, streamlined processes and the agility needed to adapt to an ever-changing global market.



# PORT SECURITY

PSA strives to uphold the safety of the global trade network by implementing stringent port security measures. Our commitment to working closely with the local authorities to prevent illegal transnational activities promotes a safe environment for all stakeholders.

## WHY IT IS IMPORTANT

Port security is paramount in the fight against criminal and terrorist activities. Given the critical role of ports in global trade, any security breaches can have far-reaching detrimental consequences. We consistently work to identify and address potential threats, such as drug trafficking, dangerous goods transport, and other illegal activities. By collaborating with relevant authorities, we proactively prevent and swiftly respond to these risks as they arise.

## OUR APPROACH

Beyond ensuring regulatory compliance, PSA has implemented multiple layers of safeguards to enhance the security of its operations. To ensure the effectiveness of our security measures, PSA tracks each of our business units' physical security indicators.

### UNIFYING OUR APPROACH TOWARDS GLOBAL PORT SECURITY

PSA's port security is managed through the Group Health, Safety and Security Management System (HSS MS). These directives ensure robust governance and strict security measures across all business units.

Each business unit has a Port Facilities Security Plan, aligned with the International Ship and Port Facility Security (ISPS) Code, and tailored to its specific and unique operations. These plans are approved by relevant authorities or Recognised Security Organisation and implemented by specialised security teams. Serving as a repository of security controls, these plans ensure that employees are well-positioned to execute critical port security functions.

In addition, in accordance with HSS MS requirements, business units track and report physical security incidents, including contraband, smuggling, stowaways, theft and unauthorised access. Group HSS closely monitors these indicators during internal reviews. Tracking port security performance through such indicators helps PSA further refine its strategies and improve its responses to future incidents.

### COMPREHENSIVE SECURITY TRAINING FOR OUR WORKFORCE

Strengthening our employees' understanding of the importance of port safety and their responsibilities is crucial for maintaining high standards of port security. As such, PSA focuses on enhancing workforce cooperation and competence in this area. Our security management staff receive regular training

and updates on the latest security developments. This includes ISPS compliance, counterterrorism, dangerous cargo management, and general security awareness.

To ensure that our employees are able to apply their knowledge in real life situations, PSA also conducts regular port security exercises. These drills help familiarise employees with key procedures, while providing a platform for sharing insights or identifying potential enhancements to our Port Facility Security Plans.

### PROACTIVE THREAT DETECTION AND PREVENTION

PSA collaborates with external accredited security experts to conduct comprehensive Threat, Vulnerability, and Risk Assessments (TVRAs). These assessments identify potential security vulnerabilities, evaluate the preparedness of our assets and locations to withstand various scenarios and glean actionable insights. By leveraging TVRAs, PSA's business units anticipate emerging risks and implement targeted measures to enhance security.





## PARTNERING WITH LOCAL AUTHORITIES TO UPHOLD PORT SECURITY

Given PSA's global operations, maintaining strong partnerships with local authorities at its various ports is paramount. All business units are mandated to work closely with local customs authorities to prevent the entry of undeclared dangerous goods and the occurrence of any illicit activities. Should a security breach occur, PSA immediately activates its incident investigation procedure and notifies the relevant local authorities.

PSA Singapore actively engages stakeholders and takes a proactive approach towards port security vigilance. Joint drills and exercises are conducted in collaboration with key agencies such as the Immigration and Checkpoints Authority, Singapore Customs, Singapore Police Force and Singapore Civil Defence Force to validate response plans and escalation processes, enhance communication protocols and strengthen ties in incident management. Regular forums with relevant national agencies are also held to share about the security climate, best practices, and learnings from incidents across industries for a sustainable security culture.

In other parts of the world, for example in Argentina, annual validation exercises of the national contingency plan (known as PLANACON) are conducted to test Exolgan Container Terminal's emergency systems. Personnel from the Dock Sud Port Authority also participate in these exercises. At the Baltic Hub Container Terminal in Poland, a security exercise was conducted in collaboration with the Polish Border Guard to detect drugs and explosive substances. These collaborative efforts underscore PSA's dedication to maintaining the highest safety standards and compliance with local regulations across its global operations.



### OUR COMMITMENT

**We ensure the highest security standards wherever we operate.**





# CYBERSECURITY AND DATA PRIVACY

As port and supply chain operations become increasingly digitalised, it is essential for PSA to continually enhance its cybersecurity and data privacy measures to protect stakeholder information and prevent data breaches to avoid disruptions to operations. We recognise this as a key focus for the business.

## WHY IT IS IMPORTANT

In recent years, there has been an increase in large-scale cyberattacks that have significantly impacted both businesses and stakeholders, highlighting the importance of protecting against cyber risks alongside our physical assets and infrastructure. As PSA embraces innovation through automation and technology, the proper management of cybersecurity will become increasingly crucial to safeguard critical infrastructure facilitating global trade flows. Hence, we ensure robust governance and security processes are put in place to maintain the integrity of PSA's operations.



### OUR COMMITMENT

**We seek to adopt cybersecurity best practices and ensure full compliance with all applicable laws.**

## OUR APPROACH

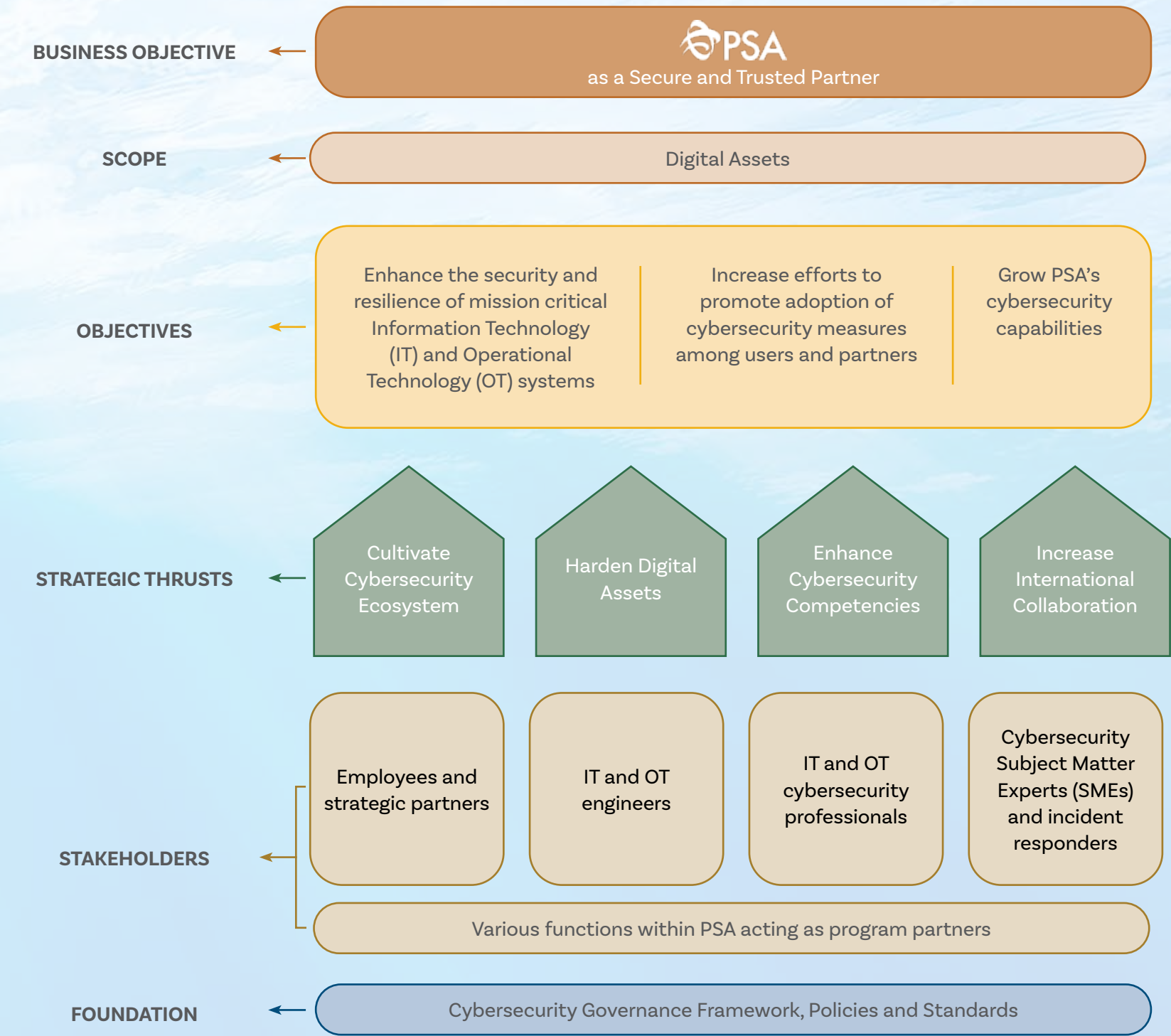
PSA's Group Data Policy and Group Data Governance Standards (DGS) detail our comprehensive approach to maintaining data governance, covering the five key governance principles of data accountability, data access, data usage, data integrity and data retention. All PSA entities, including subsidiaries and joint ventures, are expected to comply with the Group Data Policy and DGS. In addition, the Group Personal Data Protection Policy ensures adherence to relevant data protection laws where business units operate, such as the General Data Protection Regulation in Europe, and the Personal Data Protection Act in Singapore.

### PSA'S CYBERSECURITY MASTER PLAN

To manage the increasing complexity of cybersecurity and digital issues, the PSA Cybersecurity Master Plan (CSMP) was launched in 2021 to secure Group-wide digital assets and services. The CSMP provides a systematic framework of programs and initiatives across four strategic thrusts and is built on key Group-wide policies and standards including the Cybersecurity Management System, Information Technology Security Standards, Operational Technology Security Standards as well as the corresponding Acceptable Use Policies. Adherence to these policies and standards by all employees, external contractors and services providers ensures that PSA remains safe and minimises exposure to potential cybersecurity risks.









UPHOLDING GOVERNANCE THROUGH TECHNOLOGY AND ACTIVE MONITORING

To continue enhancing our cybersecurity capabilities and strengthening our efforts to safeguard our businesses on the digital front, in 2024, PSA appointed a Group Chief Information Security Officer (CISO) to focus on the robust protection of PSA’s digital resources.



**CYBERSECURITY  
RESILIENCE**

**PSA Business Enabler**



**High and Repeatable Cyber Maturity**  
*Process, Technology and People*



Continuous elevation of  
**PSA Cybersecurity Posture**



**Trust but Verify DNA**  
*Zero Trust & Assumed Breach mindset*



**Technology Driven** defence mechanism



Available pool of **Skilled Cyber Defenders**



Assurance on the  
**Effectiveness of Cyber Defences**

Aligned with internationally recognised standards and best practices such as the ISO 27001 standard and the NIST Cybersecurity Framework, PSA has implemented cybersecurity initiatives across our business units. These initiatives ensure we monitor digital processes and possess the vital tools and infrastructure to address potential breaches and attacks. PSA Group regularly conducts assessments on business units to evaluate the robustness of cybersecurity systems and processes. On a monthly basis, key indicators reported by PSA’s business units – such as the number of cybersecurity breaches – are consolidated into a report and submitted to our Group CEO. The reports track our progress and the effectiveness of our policies and procedures.

Where possible, we have also leveraged technology to defend our systems. This includes advanced security software on our computers, which stops attacks through the detection of unusual behaviour, intrusion detection systems to monitor our networks and a bridge attack simulation tool which can verify the effectiveness of security controls in an automated and continuous manner.

FOSTERING VIGILANCE THROUGH EDUCATION AND AWARENESS

To foster a culture of vigilance and ensure all staff are well-versed in cybersecurity best practices, all new hires are required to complete the PSA Swordfish e-learning modules as part of their onboarding process. Aimed at equipping employees with essential cybersecurity knowledge and skills, the Swordfish program also provides critical steps to help navigate the cyberspace safely and securely at work and at home. Additionally, PSA hosts a dedicated Cybersecurity Day to raise awareness and discuss evolving trends and strategies for elevating PSA’s cyber posture and resilience.

On 17 July 2024, our Group CEO kicked off the Group Cybersecurity Campaign, in tandem with our Cybersecurity Day 2024, with an opening address highlighting the rise of cybersecurity threats faced by PSA, such as phishing, third-party vendor attack and Operational Technology (OT) vulnerabilities, as well as the need to embrace a “Trust but Verify” mindset.

Every two years, Group Cybersecurity organises the PSA Group Cybersecurity Crisis Management Table-Top Exercise (TTX) involving one of PSA’s regions or major business units. In 2024, a Senior Management Council TTX was conducted with PSA BDP. This cyber exercise reinforced the readiness of PSA Group and PSA BDP in the areas of incident response and crisis management, as well as business continuity management.

In 2024, there were no complaints concerning breaches of customer privacy. Additionally, there were no breaches to the organisation’s IT or OT systems that resulted in leaks, theft, or loss of customer data.