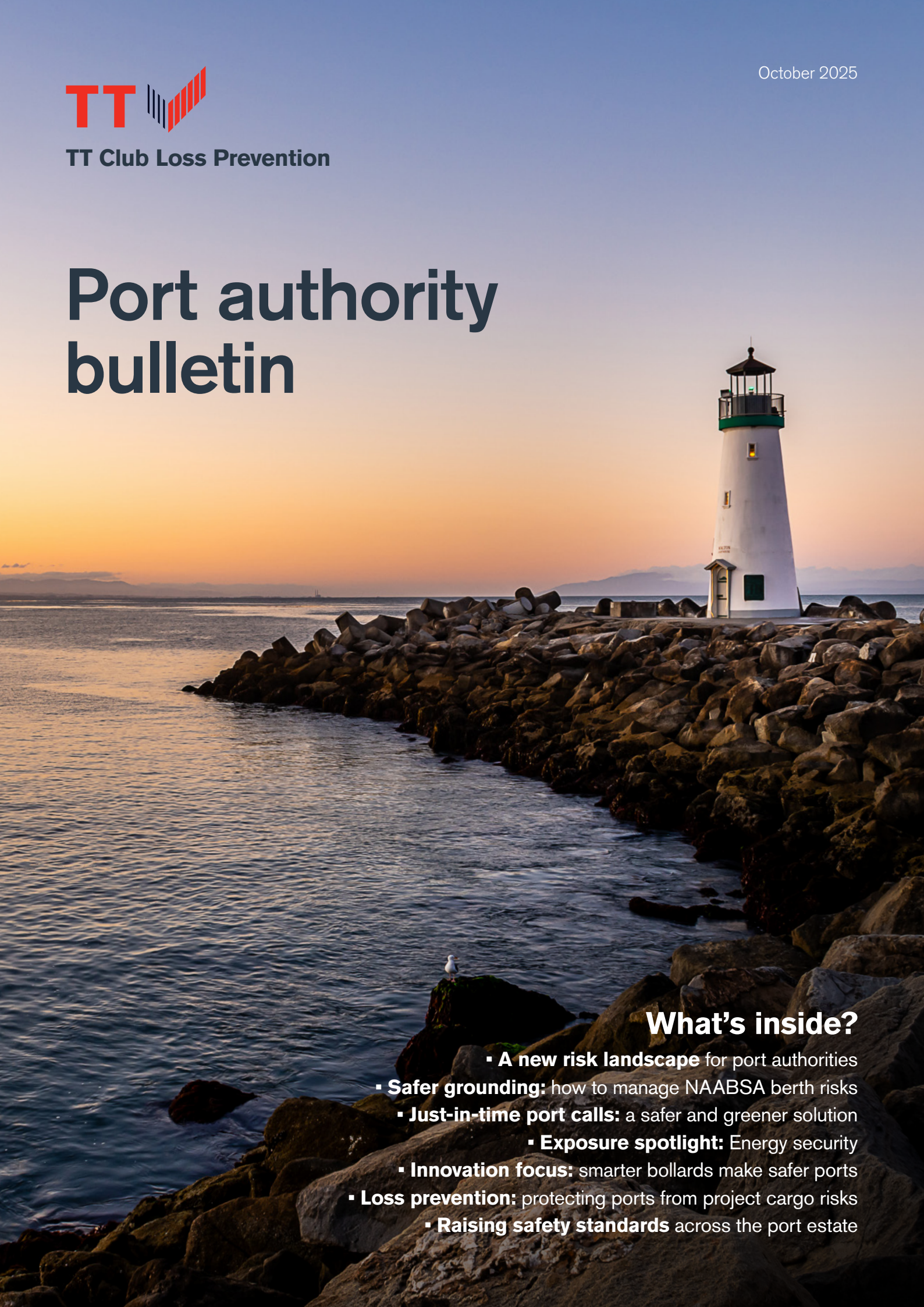
TT Club Loss Prevention

October 2025

Port authority bulletin



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Port authority bulletin

This bulletin aims to bring together the Club's port authority Members and the wider industry to share their insights and learning on all aspects of port authority risk. It includes TT Club claims experience and other industry data to provide an insight into the current risks facing those tasked with managing port authority activities.

The Club continually produces loss prevention reports and guidance related to port authority risk. This bulletin includes a selection of recent content as well as highlighting collaborative work with like-minded organisations.

All TT Club's loss prevention guidance can be found at www.ttclub.com/loss-prevention. Please email us at riskmanagement@ttclub.com or get in touch with your usual contact if you have any queries, ideas or suggestions

Foreword

The world's port authorities are fundamental to global trade. Their quays, jetties, docks, cranes, marshalling yards, warehouses and workboats provide the key link between the sea and land journeys that have always been undertaken by most international cargo shipments. But ports are facing unprecedented challenges, with unstable geopolitics, cleaner energy, larger ships, smarter technology and changing climate all reshaping their risk landscape.

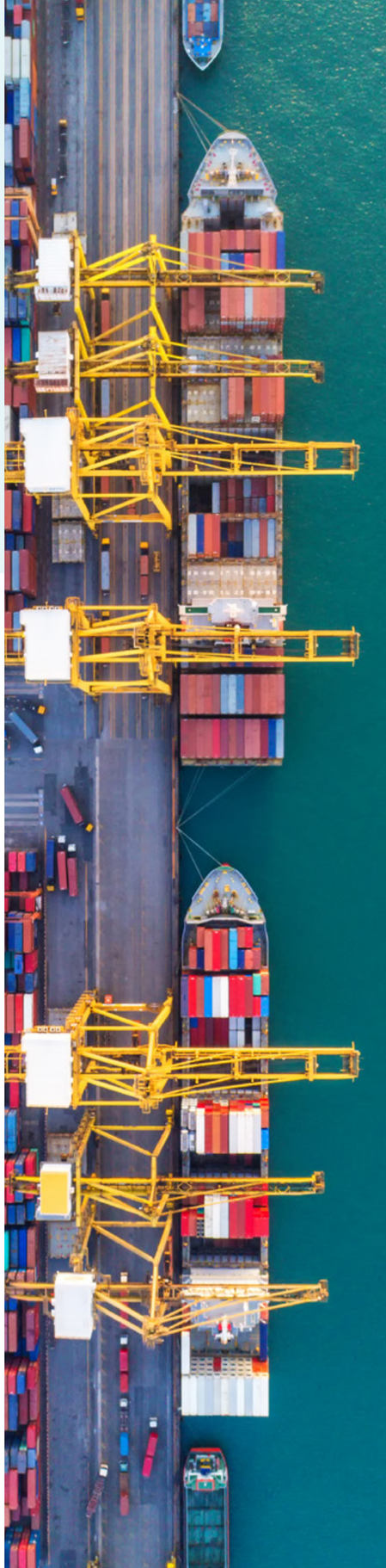
This first issue of TT Club's port authority bulletin starts by exploring these risks in more detail, before going on to report on potential solutions – including case studies from Sweden, the Netherlands and Ireland. Topics covered include managing the risks of NAABSA (not always afloat but safely aground) berths, the environmental benefits of just-in-time port call systems, how smarter bollards can improve mooring safety, protecting port infrastructure from project cargoes and a model for raising safety standards across the port estate.

The bulletin will bring to life a variety of risks identified by the Club through global claims experience. Where appropriate we have included anonymised examples of claims to illustrate the topics being discussed.

"Ports are facing unprecedented challenges, with unstable geopolitics, cleaner energy, larger ships, smarter technology and changing climate all reshaping their risk landscape."

Mike Yarwood
Managing Director
Loss Prevention,
TT Club, London

Mike Yarwood is a Chartered Fellow of the Institute of Logistics and Transport, a Technical Specialist Member of the Institute of Risk Management and a Member of the Chartered Insurance Institute.



A new risk landscape for port authorities

Port authorities are facing unprecedented challenges. Unstable geopolitics, cleaner energy, larger ships, smarter technology and changing climate are all reshaping the risk landscape for operators of the world's ports and terminals.

Geopolitical instability

Geopolitical unrest and changing trading patterns have resulted in cargo rerouting, congestion and increased operational risks, demanding greater adaptability from port authorities and operators. Additionally, the arrival of different ships and unfamiliar cargo types creates strain on port infrastructure and landside logistics, requiring careful resource management and strategic planning to ensure efficient operations.

The rise in tariffs is also driving up equipment and spare parts costs, which may disrupt maintenance schedules and extend asset lifecycles – potentially compromising reliability and safety. To mitigate these risks, ports and terminals should prioritise collaborative supply chain reviews, secure access to critical parts and proactively adapt contracts to changing market conditions.

Maintaining a robust safety culture and operational resilience will be essential as the industry navigates the evolving geopolitical landscape.

Energy transition

Ports, terminals and port authorities play a pivotal role in the transition from hydrocarbon-based fuels to cleaner, greener energy sources. Considering the high energy demanded from port operations and calling ships, there is a clear need to scale up the production and delivery of clean fuels.

"Maintaining a robust safety culture and operational resilience will be vital to survive these challenges."

But the roadmap for implementation is less obvious. Factors to consider include building more shore power facilities to reduce ship emissions, electrification of port equipment to reduce port emissions and building port facilities to service the green energy sector – including offshore wind, carbon capture, ammonia and green hydrogen.

Ship expansion

Ship size has increased dramatically over the last 25 years, especially in the container and cruise sectors. These larger ships are now needing to visit many ports that are decades old and restricted in terms of future development.

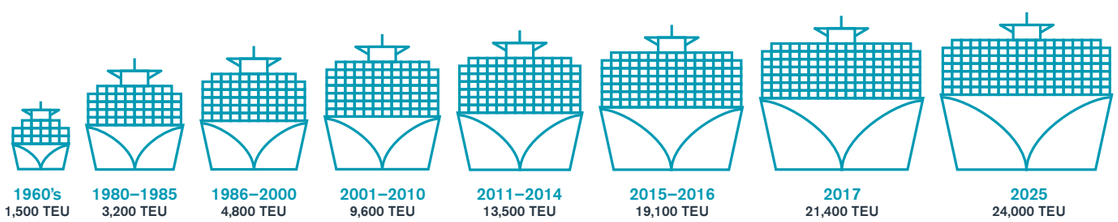
Digital transformation

Global ports and terminals are rapidly evolving through digital transformation, embracing the concept of Ports 4.0. This shift integrates technologies such as the internet of things, artificial intelligence and automation to enhance efficiency, sustainability and resilience across maritime operations.

Smart ports – representing the fifth generation of port development – enable real-time data exchange between ships, infrastructure and equipment, optimising cargo flow and berth usage. These advancements support cleaner, safer and more agile supply chains, while the adoption of semi-automated and fully automated systems can reduce fuel consumption, labour costs and maintenance overheads.

However, the transition demands significant investment, workforce upskilling and robust cybersecurity measures. Global collaboration among governments, port authorities and technology providers is essential to standardise systems and accelerate innovation.

As international trade continues to grow, smart ports will play a pivotal role in meeting demand while aligning with sustainability goals and improving operational performance across the maritime sector.



Growth in container ship size over the last 65 years

Sea levels and storm surge

- Reduced air draft for vessels (incl. under gantry cranes)
- Flooding due to sea level rise plus increased wave heights
- Operational downtime increased (vessel access etc.)

Windstorms

- Damage to containers, buildings and infrastructure
- Container stacks at risk of collapse – forcing reduced stack heights
- Mooring line failure and ship breakouts
- High winds stop crane movements (and other yard equipment) leading to increased downtime

Peak temperatures

- Buildings and warehouses overheating – risk of spoiling cargoes or working environment becomes unsafe
- Worker fatigue and dehydration
- Reduced employee productivity
- Increased demand for reefers
- Asphalt melts or rails buckle
- Power failures

Drier summers

- Subsidence caused by cracking clay under ground – damage to infrastructure
- Poor air quality impacts worker safety

Flash flooding

- Damage to infrastructure and equipment
- Access to site restricted and business interruption
- Employees and contractors unable to reach the site

General

- Increase in claims results in insurance premium increases
- Scheduling of vessels is impacted by transit or delays at other ports - business interruption
- Reputational damage

How climate change can increase risks across ports and terminals

Climate change

Climate change poses an escalating risk to global ports and terminals, with both extreme weather events and gradual environmental shifts threatening infrastructure and operations. Rising sea levels, intensified storm surges and heavier rainfall increase the likelihood of flooding, while high winds and temperatures challenge asset durability and workforce safety. These impacts are already being felt worldwide and are projected to intensify.

Ports must integrate flexibility into infrastructure design and asset management to accommodate evolving climate conditions. This includes reassessing drainage systems, operational wind thresholds and heat resilience. Climate models, though inherently uncertain, offer critical insights for port planning and adaptation – particularly at the ship–port interface, where any disruption can ripple across the global supply chain.

Conclusion

Port authorities are operating in a new risk landscape driven by geopolitical instability, the transition to cleaner energy, the ever-increasing size of ships, digital transformation and climate change.

Maintaining a robust safety culture and operational resilience will be vital to survive these challenges. Ports will also need to adapt to thrive, which will demand significant investment and workforce upskilling while aligning with sustainability goals.

TT Club will continue support its port authority Members throughout this time of upheaval with best-practice advice, expert guidance and bespoke liability insurance solutions.

"Maintaining a robust safety culture and operational resilience will be vital to survive these challenges."

Marcus John
Managing Director

Marcus is a qualified solicitor having worked in law firms in London and Sydney, in both transport and marine law. He has been with Thomas Miller since 1995 and worked as a claims handler on P&I, Defence, ITIC and TTC cases. He currently runs Thomas Miller's Sydney office.

Safer grounding: how to manage NAABSA berth risks

NAABSA (not always afloat but safely aground) berths are those where ships sit on the riverbed or seabed at low tide rather than staying afloat. The practice is common in ports with high tidal ranges, but there is a real risk to ships if the bed of the berth pocket is in any way obstructed or uneven.

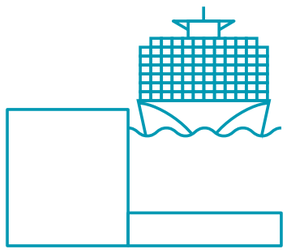
To avoid major liability claims for hull damage and subsequent disruption to port operations, port authorities need to ensure their NAABSA berths are regularly surveyed, dredged and levelled. In addition, any dropped cargo incidents need to be investigated and resolved without delay.

Advantages of NAABSA berths

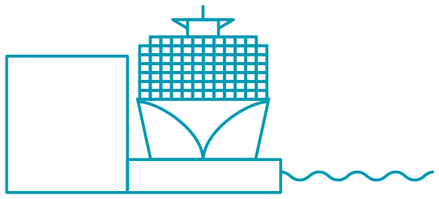
NAABSA berths are typically used in areas of high tidal fluctuation, with the tide frequency and range being unique to the geographical area. As such the management of each NAABSA berth tends to be unique to the port.

NAABSA berths are particularly valuable in ports with limited dredging capacity or where maintaining deepwater berths is impractical. They enable continued access for cargo operations, reduce port infrastructure costs and support flexible scheduling.

Nevertheless, for the port's asset managers and harbour masters, they require careful assessment of seabed conditions, ship suitability and operational procedures to ensure safety and compliance.



Ship arrives at high water



Safely aground at low water

Example of how a NAABSA berth works

Grounding risks

The most immediate risk of NAABSA berths is physical damage to a ship's hull when it grounds on the seabed or riverbed. Bed conditions can vary due to sedimentation, debris or changes following storms or dredging. If the bed is not uniformly soft or contains hidden obstructions, the ship may suffer structural damage.

Sediment movement can also alter the shape and depth of the berth pocket. This increases the risk of uneven grounding or unexpected contact points, which may compromise ship stability or cause damage.

In breakbulk operations, cargo dropped into the berth area can become a submerged hazard. These obstructions may not be visible during subsequent berthing, posing a serious threat to hull integrity.

Inadequate or outdated hydrographic surveys can lead to poor decision making around the suitability of NAABSA berths. Without high-resolution, up-to-date data, operators may not detect changes in bed profile or emerging risks.

NAABSA clauses in charter parties need to be carefully worded to allocate liability. If a ship is damaged while aground, disputes may arise over whether the grounding was customary, safe or properly indemnified. The absence of clear documentation or written confirmation from charterers can expose shipowners and port authorities to significant financial risk.

Finally grounding incidents, even when intentional, can lead to environmental scrutiny or operational delays, especially if the ship cannot refloat as scheduled due to unexpected bed conditions or mechanical failure.

Accurate surveys

The underwater surveying of the berth pocket is a vital part of the management of any berth, but the frequency and detail of surveys are even more critical for the management of NAABSA berths. For a port authority or terminal operator to declare a berth safe to use, they must have confidence that the condition of the berth pocket will not cause damage to the ship being berthed.

"NAABSA berths are more common in areas with high tidal ranges."

Not all bathymetric survey techniques provide the same level of detail. It is therefore important when choosing survey equipment for in-house surveys or when drawing up specifications for survey contractors that the survey data will give the level of detail needed to determine the berth is safe to use.

The required frequency of surveys is not a fixed duration. It should be considered for each berth based on the known bed sedimentation rate, the bed sediment behaviour during and after storm or flood conditions, and the type of cargo being handled – for example, breakbulk cargoes may pose a bigger risk if dropped into the water.

Ensuring survey data is up to date and with adequate resolution to make berth maintenance decisions is key to safe management of NAABSA berths. This data and the developed knowledge of the bed behaviour in changing sea and flow states provides the vital decision-making tools for maintenance dredging activities.

Dredging and levelling

As with surveys, the frequency of NAABSA berth maintenance cannot be fixed. Scheduling and planning of dredging and levelling work must be based on bed sedimentation characteristics and high-resolution survey data.

Using this knowledge and information, port operators can develop an appropriate berth-by-berth maintenance strategy.

Incident management

A significant risk when managing NAABSA berths is the potential for hull damage from dropped cargo in the berth pocket. It is therefore vital that a robust incident management plan is developed for each berth.

As soon as a dropped cargo is suspected or confirmed, the incident should be reported and the berth closed. The initial report should include the cargo's location in the berth pocket and its type, as certain cargo types present a higher risk of structural damage.

A bathymetric survey should then be undertaken urgently to assess obstructions and changes in the bed profile. The survey data together with photographs, video and witness statements should be included in the incident report to facilitate insurance or liability assessments.

Finally, the port authority should undertake any necessary dredging and removal of obstructions before confirming the berth is safe to use. The incident report should be logged in the berth maintenance and risk register for future reference and trend analysis.

Conclusion

NAABSA berths are a cost-effective solution for ports in areas with high tidal ranges or limited dredging capacity, but each berth needs to be carefully monitored and maintained to ensure it is safe for ships to ground. In particular, there must be a robust system for reporting and managing dropped cargo incidents.

"Port authorities need to ensure their NAABSA berths are regularly surveyed, dredged and levelled."

Neil Dalus
Risk Assessment Manager

Neil is a Risk Assessment Manager for TT Club's Loss Prevention Team. Neil joined TT Club in 2023 and has extensive experience managing port and port related infrastructure and assets, having 20+ years engineering experience, which includes Local Authority, Consultancy and 11 years in the Port Industry in various technical and engineering leadership roles.

Exposure spotlight: Energy security – Why ports need to plan for power outages

Power outages are not rare, isolated incidents. With the increasing complexity of ageing energy grids and growing reliance on electrical and digital systems, blackouts are becoming both more frequent and disruptive – with potentially severe commercial, safety and insurance implications. Ports should take steps now to make their operations more resilient to power failures, which should include the possibility of planning and rehearsing a safe shutdown.

A growing hazard

There are various and often unpredictable reasons for power failures, with a minor incident often triggering a major outage.

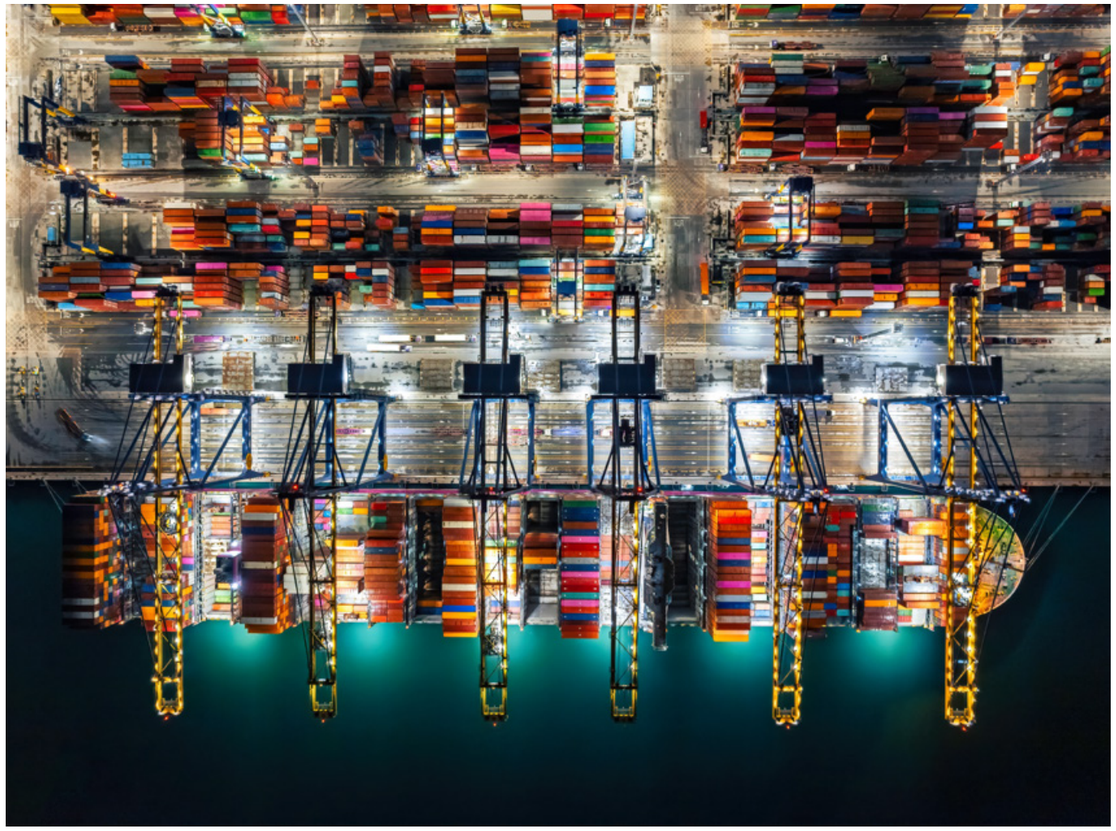
Certainly, the increasing mix of renewable and conventional energy sources is making balancing electricity grids more difficult. Synchronising intermittent sources such as wind and solar with baseload power from fossil fuel and nuclear generators is technically challenging and more prone to failure. Extreme weather is also becoming an issue: substations are often not designed for today's climate extremes and are vulnerable to surges and failures during storms or heatwaves.

Increasing exposure

In addition to the growing hazard of power failures, ports are increasingly vulnerable, not least due to their electrical and digital dependency. Port IT systems and communications now all digital so that, when the power goes, so does access to procedures, contact lists and operational data.

The expanding array of electrical equipment at ports also increases vulnerability. For example, high-voltage quay cranes are not always resilient to sudden shutdowns and improperly restarting them can cause cable faults and damage drives. Electrical vehicles and hand-held plant will stop working when their batteries run out, and water for drinking and firefighting will stop flowing when the pumps lose power.

Furthermore, in cases of regional power failures, resources to fix the problem will be in short supply. In a major outage, emergency services will get first refusal on a finite supply of generators, so hiring one in the immediate aftermath is likely to be difficult. Electrical contractors will also be in high demand, making repairs and recovery even slower.



"There are various and often unpredictable reasons for power failures, with a minor incident often triggering a major outage."

Reducing the risk

Ports should take the following crisis management steps now to mitigate the commercial and safety risks of a power failure. The first and most important step is a criticality assessment, in which operators find out which systems are essential and how long they can be offline before operations are adversely affected. For example, a one- or two-day outage might be manageable, but 10 days could be catastrophic.

The next step is to build redundancy into information technology infrastructure. The aim is to ensure that business-critical servers, websites and communication tools are resilient to power outages. For example, consider hosting critical documents behind a login page on a separate server estate. QR codes can also help, but only if mobile networks are still functioning.

Emergency power outage planning, including arrangements for back-up power sources such as generators or batteries, is also essential. For generators this includes maintaining appropriate stockpiles of fuel on site and potentially having hand pumps for fuel transfer from handling equipment if the outage persists.

Often the most realistic, responsible and safe response to a power failure might be a complete shutdown rather than scrambling to stay operational. It is therefore vital to have a safe shutdown protocol in place. Staff should be drilled to stop work as soon as it becomes unsafe to continue working, such as in a dark building with no ventilation, sprinkler or alarm systems. Outside, handling equipment may stop mid-lift, so ensure too that fail-safe braking and emergency lowering systems are in place and well-practiced. It also advisable to shut the gates to prevent a dangerous buildup of traffic on site, recognising the potential impact to the local hinterland.

Finally, consider how to increase the resilience of communications given there could be a total mobile telephone network failure in a national outage. For example, VHF radios and other non-centralised systems will continue working while the batteries hold out, and keeping paper copies of emergency plans and contact lists will ensure these can be quickly accessed when screens go dark.

Planning for recovery

As well as reducing the immediate impacts of a power failure, port and terminal operators also need to plan for the recovery phase. For example, restarting high-voltage systems is not simple – power surges can damage equipment, and older cables are especially vulnerable. Without regular drills, recovering from the first real outage is likely to be challenging.

Traffic management will be critical. There could be hundreds of trucks backed up at a gate, so it is important to have a protocol for communicating with drivers, customers and authorities about how soon they can enter and resume loading and unloading.

Staff welfare must also not be overlooked. In prolonged recoveries from an outage, access to food, water and salary payments may be disrupted. Keeping the workforce informed and supported is vital.

Case study: 2025 Iberian Peninsula power outage

On Monday, 28 April 2025, at 12:33 CEST, a major power outage occurred across the Iberian Peninsula affecting mainland Portugal and peninsular Spain, the power outage lasted about ten hours in most of the Peninsula and longer in some areas.

Timeline:

- 12:03hrs (CEST) – First issue detected and mitigated
- 12:33hrs (CEST) – Grid collapsed and the HVDC between France and Spain tripped
- 00:22hrs (CEST) – Grid fully restored in Portugal
- 04:00hrs (CEST) – Grid fully restored in Spain

At the time of the incident, there were reports of disruptions to major ports in Spain and Portugal, stating that they had experienced substantial impact as customs systems, container handling equipment, and tracking systems went offline. Once the power was restored the recovery was hampered by the lack of fuel that is crucial for the movement of cargo in and out of the ports, creating a bottleneck in the supply chain that services ports.

Conclusions

Blackouts are a real, present and growing challenge for ports, with potentially severe commercial, safety and insurance implications. The best way to ensure resilience is preparation, which includes reviewing and updating criticality assessments, ensuring communication channels are robust, planning for both local and national power outages, and conducting regular drills – including for safe shutdown.

"Blackouts are a real, present and growing challenge for ports, with potentially severe commercial, safety and insurance implications."

Josh Finch
Logistics Risk Manager

Josh is a Logistics Risk Manager for TT Club's Loss Prevention department. Josh joined TT Club in 2023 having 15 years of experience in the logistics industry in various operational and project management roles. He is an International CPC qualified Transport Manager.

Innovation focus: smarter bollards make safer ports

In the complex and high-stakes world of port operations, mooring remains one of the most risky yet under-monitored activities. The forces acting on mooring lines are dynamic and often unpredictable – especially in ports exposed to strong currents, high winds and heavy marine traffic – and the results of mooring line failures can be catastrophic.

Straatman Mooring Systems, in collaboration with the Port of Rotterdam in the Netherlands, has over recent years developed a solution that brings real-time visibility to mooring operations: the Smart Bollard. The innovation is not just a technological upgrade – it represents a fundamental shift in how ports can manage risk, improve safety and optimise efficiency.

Understanding the risk

Mooring line failures are not uncommon and their consequences can be severe. When loads exceed safe limits, lines can snap back injuring people, and ships can drift damaging infrastructure.

In 2007, a ship at the Port of Rotterdam broke free during a storm and caused €150 million in damages. More recently, a similar incident in Antwerp led to the collapse of a container crane. These events highlight the urgent need for better monitoring and control.

With climate change increasing the frequency of extreme weather events and ships growing in size, the risks associated with mooring are only set to increase. The ports sector needs to adapt by embracing technologies that provide real-time, actionable data.

Embedded sensors

Straatman's Smart Bollard is a permanently installed mooring fixture that looks like a standard bollard but is equipped with embedded sensors. These sensors continuously measure the load, direction and angle of mooring lines. The data is transmitted in real-time to a secure dashboard accessible by the port authority or terminal operator.

The system also logs contextual data such as tide levels, weather conditions and ship history. This comprehensive dataset allows the port to monitor mooring conditions live, set alarms for critical thresholds and integrate the information into broader port management systems via an application programming interface.

Trial applications

The development of the Smart Bollard was a multi-year effort involving rigorous testing and refinement. Straatman engineers used simulations and physical testing to ensure the system's durability and accuracy under real-world conditions.

The first trial installation took place at the ECT Delta terminal in Rotterdam in January 2021. This high-traffic location provided a robust environment for testing. The trial was supported by independent measurements from KRVE and BollardProof, confirming the system's reliability.

Following the successful trial, the technology was scaled up. Today, six Smart Bollards are operational at the ECT Delta terminal, with 107 more installed along the new Prinses Amaliahaven. The system has also been adopted by the Port of Valencia and the Port of Antwerp.

Operational benefits

The Smart Bollard offers a range of benefits that align closely with TT Club's focus on risk mitigation and operational resilience:

- Enhanced safety: real-time monitoring allows for immediate response to dangerous load conditions, reducing the risk of line failure and ship drift.
- Improved efficiency: with accurate data on mooring forces, ports can optimise berth usage, potentially accommodating larger ships and reducing reliance on tugs.
- Cost reduction: data-driven decision making can lead to more efficient resource allocation and lower operational costs.
- Predictive maintenance: historical data can inform maintenance schedules and infrastructure investment, reducing unplanned downtime.

Conclusion

The Smart Bollard exemplifies how digital innovation can address long-standing challenges in port operations. By transforming mooring from a reactive process into a proactive, data-informed activity, it enhances both safety and efficiency.

As the maritime industry continues to evolve, technologies like the Smart Bollard will play a crucial role in building more resilient and responsive port infrastructure. For operators, insurers and regulators alike, the message is clear: real-time data is no longer a luxury – it is a necessity.

Case study: Port of Rotterdam

Following the successful trial of one Smart Bollard along the quay of the Hutchison Ports ECT Delta terminal on the Maasvlakte, the Port of Rotterdam Authority announced it had installed six units in March 2023. They are positioned side by side at one berth for large container ships. In 2024 a further 107 units were installed along the expanded Prinses Amaliahaven, due to open in 2025.

According to the Port Authority, 'Since the bollards measure the strength of the mooring lines, more insight is gained about what the consequences of berthing, docking and idling container ships at the quay are. The installation of smart berths is in line with the Port Authority's policy of making the port safer and more efficient through digitalisation.'

The Port of Rotterdam Authority manages 80 km of quay wall and 200 km of bank shoring. Information obtained from sensors in the quays, including from Smart Bollards, has also shown that quay walls have a longer lifespan than commonly believed.

"The innovation is not just a technological upgrade – it represents a fundamental shift in how ports can manage risk, improve safety and optimise efficiency."

STRAATMAN
Mooring Systems

Straatman Mooring Systems is a Dutch company specializing in smart and safe mooring solutions for ports worldwide. We design and deliver innovative equipment such as quick release mooring hooks, Berthing Aid Systems, and Smart Bollards that improve safety, efficiency, and provide digital insight in port operations.

Contact details:

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Tel: +31 (0)78 6125300
More information: www.mfstraatman.com

TT Club Innovation in Safety Awards

Awards open for entries from 1 September 2025 until 14 November 2025.

The Innovation in Safety award was set up to celebrate safety innovation in the global freight supply chain and recognises creative health and safety professionals throughout the cargo industry. Award entrants are required to show that a product, idea, solution, process, scheme or other innovation has resulted in a demonstrable improvement to safety. It is open to anyone involved in cargo handling - individuals, businesses, consultants and innovators.

"Past winners have ranged from individual entrepreneurs and specialist suppliers to employee teams in major industry businesses. Entrants are required to show that a product, idea, solution, process, scheme or other innovation has resulted in a demonstrable improvement in safety."

Why being part of ICHCA is a strategic advantage

ICHCA INTERNATIONAL

ICHCA is an independent, not-for-profit, which exists to improve safety, productivity and efficiency of global cargo handling and movement worldwide.

Essential voice for our industry

Proudly recognised as an official Non-Governmental Organisation (NGO) at the International Maritime Organisation; ICHCA is the only NGO representing the cargo handling sector in consultation with United Nations bodies including the International Maritime Organisation and UNECE.

Best in field technical authors

Our library of over 90 world class bespoke technical publications provides go-to, pragmatic, health and safety knowledge and advice for cargo operations.

Learning from and with people who are passionate about safe and efficient cargo operations

Our technical advice panel has over 80 experts. If an answer to your cargo handling safety question exists... find it through us.

ICHCA is the voice of international cargo handling

Mission and values

- Create safer, healthier cargo handling workplaces
- Sustainability through safety
- Passion to do the right things right
- Future of safety is not beyond the horizon
- Can change the ways we work for the better

Why should you be a Member?

We understand that business priorities evolve.

ICHCA works with you to deliver value for your teams and reflect your strategic objectives.

Strategic Partner in Port Safety and Efficiency: ICHCA provides technical expertise, regulatory advocacy, and global best practices to enhance safety and operational performance in cargo handling and port operations

Global voice for safety and innovation: as an ICHCA member, you have a voice in discussions at the International Maritime Organization, shaping global safety policies that affect daily operations

Technical Expertise: benefit from ICHCA's deep well of cargo handling expertise to address operational challenges, safety improvements, and compliance strategies

Incident Learning & Prevention: learn from real-world safety incidents shared across the ICHCA network to prevent similar issues in your global operations

Networking and Collaboration: engage in working groups and international events that enable you to contribute thought leadership while gaining peer insight

Tailored Member Resources: access exclusive reports, safety digests, regulatory updates, and resources relevant to your workforce and business

Industry Challenges Require Unity: As industry evolves, collaboration becomes ever more important. Your membership strengthens collective representation on key global safety and operational issues.

"Everyone Goes Home Safe": supports your ongoing mission to protect people, property, and the environment

Contact us at: ichca.com | secretariat@ichca.com

Loss prevention: protecting ports from project cargo risks

Project cargoes, particularly offshore wind components, are a growing business opportunity for ports around the world. But the typically large size and weight of these unusual loads also expose port operators to unprecedented risks of infrastructure damage, business interruption, third party liabilities and personal injury claims. A detailed risk and engineering assessment needs to be carried out for each shipment, together with proper planning and a clear contractual definition of liabilities.

What are project cargoes?

Project cargoes refer to large, heavy, high-value or complex pieces of equipment or materials that are typically critical to specific projects. Handling project cargoes is generally considered to be an atypical commercial activity within a port, which may fall outside of the original facility design specification.

The largest growth in this area in recent years has come from the offshore wind industry, but project cargoes can also be those that are unusual for a port to handle and pose special challenges. The advent of innovative technologies and markets also means that new types of specialist cargoes might be required to be shipped through a new location or import hub.

Examples include offshore jacket structures and mono-piles, wind turbines and blades, power station turbines and generators, substation components, prefabricated bridge structures, and large breakbulk items such as steel billets, coils and pipes.

Risks to ports

Project cargoes may be lucrative for shipping companies but can be a high-risk and low-reward activity for port operators. One of the biggest dangers of project cargo logistics is overloading and damaging port infrastructure, particularly pavements, quays, culverts, buried utilities and bridge spans.

Often the loads from the cargo and its heavy-lift cranes and transporters are higher than the original design values and, if not, the infrastructure may have weakened through ageing. In addition, there is risk that the impact of the specialist equipment on the quay may be improperly assessed. Also, if specialist ships are involved with unusually large drafts or widths, or with limited mobility, these may be unsuited to navigating in the port and can put infrastructure and other ships at risk.

Another risk is the business interruption to port operations and traffic flows. Project cargoes are often carried to and from ships on large, slow-moving self-propelled modular transporters (SPMTs), which require extensive traffic management to move safely through the port and its approach roads. A large amount of space is usually required for project cargo laydown areas on the quayside, as well as for heavy-lift cranes and SPMTs.

Project cargoes can have an adverse impact on port safety. In addition to regular dock workers' lack of familiarity with the type of load and lifting operations, there could be a range of new third party contractors on site – such as the specialist lifting contractor and shipper – who will be unfamiliar with working in the port.

Lifting regulations and practice

Before agreeing to handle a project cargo that requires heavy lift operations, port operators need to understand the relevant national regulations and best practice for lifting operations. For example, in the UK they are L113: Safe use of lifting equipment: Lifting Operations and Lifting Equipment Regulations (LOLER) 1998. The UK Health and Safety Executive also publishes a free online guide to LOLER. Note the regulations do not apply to ship cranes unless they are operated by or endanger non-crewmembers. TT Club also publishes a free risk management guide to safe slinging.

The lifting contractor should provide the port with an assessment of the impact of its cranes on the quayside pavement and underlying ground. However, this should not be relied upon in isolation and the port should consider whether a further infrastructure assessment is required. The contractor should also produce a risk assessment and method statement for the main crane construction and dismantling, which may involve slave cranes. This should include the ground bearing pressures for all cranes and their outrigger mats, as well as for the main crane counterweight.

Other considerations include overhead obstructions – such as flight paths, power cables and bridges – and traffic management requirements both for the cranes and the oversized project cargo itself, which may need permissions from local highway authorities and the police. A complete outline of responsibilities should be drawn up.

Mitigating the risk

Once the port has decided to handle the cargo, a competent person should be appointed to have overall control of the lifting operation. This is a defined role in LOLER and BS 7121 but it would be sensible to have a similar designated person regardless of which local regulations apply. The competent person has to carefully plan the lifting operation, including selecting appropriate equipment, assessing tasks, devising precautions and supervising and overseeing activities. However, they will not necessarily focus on the impact on the ground.

A key element in the lifting plan development is the bearing pressure assessment and an engineering assessment of the quayside. As such a qualified civil engineer should also be appointed to calculate whether the ground pressures advised by the crane operator could be problematic for local and global stability. The crane operator's figures should be professionally verified and further structural and geotechnical investigations should be considered if there are any doubts.

Depending on the value of the cargo, a marine warranty surveyor may also be appointed to advise on the lifting operation and its impact on the contract of affreightment. Their role is to oversee the lift from a cargo insurer's perspective, ensuring that risks are mitigated and that the lift is carried out to the approved method.

"The lifting contractor should provide the port with an assessment of the impact of its cranes on the quayside pavement and underlying ground. However, this should not be relied upon and the port should consider whether a further infrastructure assessment is required."

A specialist lifting contract needs to be drawn up between the port and the shipper, which clearly defines relationships, responsibilities and liabilities, and holds the shipper and its contractors to the port's health, safety and environmental standards. Standard terms and conditions are unlikely to be suitable. The contract should spell out the limitations of the port's infrastructure and the requirements for the lifting contractor's equipment, including safe bearing pressures and use of appropriate and suitably stiff outrigger mats to spread the load. The contract should also hold the designated competent person accountable both before and during the lifting operation.

Conclusion

Project cargoes are unusual, outsized loads which a port might not be used to handling, resulting in higher risks. They have specific requirements beyond normal cargo logistics, including for lifting the cargo on and off the ship.

Before agreeing to handle a project cargo, particularly if it requires specialist cranes, port operators need to be aware of the regulations and practice for lifting operations, understand the crane bearing pressures and the impact these may have on port infrastructure and recognise the potential disruption to port operations and safety. A contract with the shippers should be drawn up which clearly defines all responsibilities and liabilities.

Harry Palmer
Risk Assessment Manager

Harry is a Risk Assessment Manager for TT Club's Loss Prevention Team. Harry joined TT Club in 2025 and has extensive experience in port engineering, with over a decade of experience in engineering consultancy, providing technical expertise on a broad range of matters within the ports and terminals sector. He has also provided casualty response and expert witness services with respect to port civil engineering and is a Chartered Civil Engineer.

Claim example: pavement damage from a heavy lift crane

A large power station component was being lifted ashore using a land-based heavy lift crane. The freight forwarder engaged a heavy-lift company to lift the component from the ship to the shore and transport it to site using a self-propelled modular transporter.

The port authority was not involved with the lift but insisted that the freight forwarder carry out a geotechnical assessment beforehand. This predicted significant local deflection of the quay pavement. The port then made the freight forwarder sign a contract which made the freight forwarder liable for any damage to the pavement or quay.

In the event there was just some localised pavement damage under the crane outriggers, due to the steel spreaders being less stiff than the concrete pavement panels. The damage was paid for by the freight forwarder's insurer.

Claim example: quay collapse from a massive cargo stack

A 7000 t cargo of steel coils was being loaded ashore from a regular breakbulk cargo ship using the ship's cranes. After being landed on the quay, the coils were lifted by a heavy forklift and stacked along a 100 m length of the quay.

There was no prior assessment of the quay condition or its bearing capacity.

The growing stack of coils eventually overloaded the quay structure, resulting in a catastrophic collapse of 100 m of the quay and its retaining wall. The cost of the damage was over US$12 million.

The port authority and its insurer were left carrying the cost of repairs despite not being responsible for the unloading or stacking operations.

Global Restricted Cargo Database

The National Cargo Bureau (NCB), a non-profit trusted by carriers and ports worldwide for its expertise in cargo inspection, compliance training, and its Hazcheck digital solutions, has unveiled the Global Restricted Cargo Database and is calling on industry stakeholders to help build a shared resource for safer, more efficient cargo management.

Today, rules, criteria, and documentation for restricted cargo – including dangerous, sensitive, and high-risk cargoes – vary widely across carriers, ports, and terminals worldwide.

This fragmented approach forces individual stakeholders to build their own records to remain compliant. NCB warns that this not only creates a heavy administrative burden, for both ports/terminals and carriers, but also increases the risk of oversights that could result in supply chain disruption, vessel arrests, fines, reputational damage, and, in the worst cases, unsafe container stowage on sea or land.

The Global Restricted Cargo Database offers a shared solution: a central platform that reduces risk, improves compliance, and strengthens supply chain resilience. Its objectives align closely with those of TT Club and UK P&I Club, long-time supporters of greater transparency and safety in cargo management.

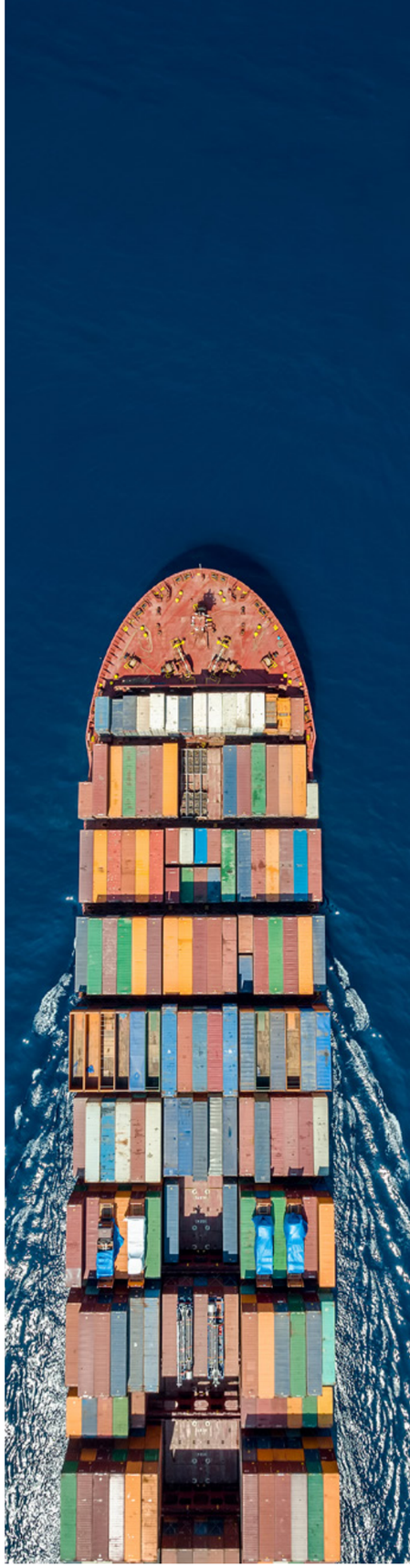
The initiative builds on NCB's Hazcheck validation and restrictions software, which already processes more than 44,000 restrictions daily and has been trusted by carriers worldwide to ensure the safe movement of goods. With global container volumes surpassing 183.2 million TEU in 2024 and continuing to grow, NCB says the need for a unified database has never been more urgent.

"This is about collaboration and safety, by contributing data and adopting the platform, the industry can work together to create a safer, more efficient future for restricted cargo management." – Ian Lennard, President & CEO of NCB.

Find out more

Organizations interested in participating or learning more can contact Erin Tasova at tasova@natcargo.org

NCB
SAFETY OF LIFE AND CARGO AT SEA



Raising safety standards across the port estate

A key role of port authorities is to drive safety across their ports for the benefit of both port users and workers. Dublin Port's SafePort initiative is a great example of a programme which has transformed safety culture across Ireland's busiest port.

Collective effort

Launched in July 2022, SafePort brings together Dublin Port Company and seven terminal operators – Dublin Ferryport Terminals, Doyle Shipping Group, Irish Ferries, P&O Ferries, Peel Ports Group (MTL), CLdN (formerly Seatruck Ferries) and Stena Line – which collectively represent around 75% of the port's workforce.

Dublin Port Company says its mission is 'to ensure the port is a safe and healthy environment, with a commitment to ensuring the safety of its employees and other persons affected by its activities'. The aim is to create a unified, port-wide safety culture that protects workers, visitors and operations across the 261 ha estate.

By aligning safety practices, standardising procedures and promoting shared responsibility, SafePort has significantly enhanced safety, operational resilience and reduced risk.

Unified approach

Historically, each terminal within Dublin Port operated under its own safety protocols. The fragmented approach posed challenges in consistency of operational and safety standards. SafePort addressed this by harmonising safety standards across all operators within the port, ensuring that every port user – regardless of the terminal visited – is held to the same expectations.

The alignment has led to improved hazard awareness, streamlined incident response and a reduction in near-miss events. The collaborative nature of the initiative has fostered a sense of shared accountability, where safety is not just a terminal or departmental concern but a collective priority for all.

Golden rules

At the heart of the initiative are the SafePort Golden Rules, which are ten clear, actionable guidelines designed to promote safe behaviour and prevent accidents. These rules were developed collaboratively by the Dublin SafePort working group, drawing on expertise from across the port community and lessons learned from global best practices.

Leadership driving culture

The Dublin SafePort initiative is founded on relationships and safety leadership. The SafePort working structure consists of an Executive Group of terminal senior management and a Working Group of EHS and managers. The most powerful forum is the peer to peer engagement workshops attended by stevedoring staff and an Executive or Work Group member. SafePort has trained a number of dockworkers to host these engagement workshops where dockworkers can share and understand common challenges. Through this forum the experience of the quayside is heard by the Executive Group. Equally the attendees can hear of the executive and management commitment to safety culture. All of the accomplishments of SafePort have come about through the deepening of our relationships across the Port estate. This in-turn has helped us all to work together on other initiatives such as Oil Spill response and industry challenges.

SafePort partners

DFT Dublin Ferryport Terminals – A division of Irish Ferries Limited

DSG Doyle Shipping Group

Comhlacht Chalafort Átha Cliath Dublin Port Company

Irish Ferries

Peel Ports Group

Seatruck

Stena Line

"By aligning safety practices, standardising procedures and promoting shared responsibility, SafePort has significantly enhanced safety, operational resilience and reduced risk."

SafePort Golden Rules

These rules are prominently displayed across the port estate and reinforced through signage, social media campaigns and educational materials. Their simplicity and clarity make them accessible to all port users, from long-serving staff to first-time visitors.

Training and awareness

SafePort places strong emphasis on training and awareness. Regular workshops, toolbox talks and induction sessions ensure that personnel are equipped with the knowledge and skills to operate safely. These sessions cover critical topics such as traffic management, working at height and emergency procedures.

The initiative also encourages open dialogue around safety, empowering workers to speak up about hazards and suggest improvements. This proactive approach has helped to foster a culture of continuous learning and vigilance.

In addition, Dublin Port has strengthened its collaboration with external agencies including An Garda Síochána, the Health and Safety Authority, and Customs and Revenue. These partnerships enhance the port's ability to respond to incidents and ensure compliance with national safety standards.

Conclusion

The success of SafePort offers a model for other port authorities seeking to elevate their safety performance. By demonstrating the power of collaboration, standardisation and proactive engagement, Dublin Port has shown that safety excellence is achievable in complex, high-risk environments.

As global trade continues to grow and operational demands intensify, initiatives like SafePort will be critical in ensuring that ports remain safe, efficient and resilient. Dublin Port's commitment to safety is not just a local achievement, it is a model for port authorities worldwide.

Just-in-time port calls: a safer and greener solution

Just-in-time port call systems can lead to a significant improvement in a port's operational efficiency by avoiding ships having to wait to berth. They can also have a positive environmental impact – and at no extra cost to the port authority. Gothenburg Port Authority in Sweden has realised both benefits through the Digital Port Call system.

PORT OF GOTHENBURG

Just-in-time scheduling

Quite often ships need to wait before entering a port due to various reasons, such as port restrictions, bad weather or the target berth being occupied by another ship. Waiting ships may need to sail to a designated anchorage area or move slowly near the port for extended periods.

In many cases, if the actual time when a ship could arrive at a berth was known in advance, the ship could travel more directly and at a slower, more economical speed, thus saving fuel and money while reducing greenhouse gas emissions.

Adopting such a just-in-time scheduling process requires a change in practices and contractual agreements from the first-come first-served process traditionally applied in the maritime industry. Just-in-time port call systems are seen by the International Maritime Organization as having a significant role to play in port optimisation.

Port of Gothenburg

Situated at the mouth of the Göta älv river, the Port of Gothenburg is a European hub for shortsea shipping. It is also at the intersection of the main roads between the European capital cities of Oslo, Stockholm and Copenhagen. Handling 38.4 Mt of goods in 2024, it is the largest port in Scandinavia.

The Gothenburg Port Authority is a municipal company which owns the port area, leases space to various transport and logistics businesses and manages the site. The actual handling of cargo, including loading and unloading of ships, is performed by the Authority's designated partners, over which it exercises strategic insight and control.

The Authority maintains and manages all infrastructure, land and properties based on the needs of customers and society. It is developing the port with a long-term perspective, building new facilities and working constantly on various initiatives to enhance the services provided.

Digital Port Call system

Each year, Port of Gothenburg handles about 6,000 port calls, and every extra hour that unloading and loading takes makes a difference to the competitiveness of both the port and its customers.

A ship's entire port call at Gothenburg, from open sea to unloading at the quay and out to sea again, involves around 20 different contact points. This previously required a lot of time-consuming communication and resulted in a high risk of misunderstandings and delays. Adoption of the Digital Port Call system in May 2024 has combined all those contacts into a single service.

The system makes relevant information immediately available to the parties involved, making it easier to make decisions, increasing predictability and security. Up to 36 hours before departure, everyone from the captain and pilot to the stevedores and crane operators knows where and when the ship will need something. Thanks to the virtual arrival communication in the platform, the captain can adjust the ship's speed to avoid anchoring while waiting for a berth, which means lower fuel consumption and greener transport.

Once on berth, everything is synchronised and prepared for the best possible service because all parties already know when their tasks are to be performed. The cargo is handled more efficiently and moves on to the customer more quickly, and the ship's time on berth is reduced.

According to the Authority's 2024 Sustainability Report, when Digital Port Call is in full use, more efficient calls to Gothenburg will reduce annual carbon dioxide emissions by 6,000 tonnes.

Conclusion

Just-in-time scheduling enhances efficiency by enabling ships to adjust speed based on berth availability. This also reduces fuel consumption, costs and greenhouse gas emissions.

Gothenburg's digitised system integrates all port call communications into a single platform, allowing stakeholders to access real-time information and plan operations more effectively, minimising delays, enhancing safety and delivering sustainability.

> "Adopting such a just-in-time scheduling process requires a change in practices and contractual agreements from the first-come first-served process traditionally applied in the maritime industry."

Oscar Egerström
Underwriter - UK & Ireland, Nordics and Benelux, Digital Lead

Oscar Egerström joined the TT Club in 2013 as Senior Claims Executive, transferring in 2018 to underwriting for UK, Ireland, Nordics and Benelux.

Oscar has worked in various maritime legal and marine insurance roles at Glencore (Legal Counsel), AIG (Marine Claims Manager) and Trafigura (Deputy Insurance Manager) since 2005. He speaks fluent Swedish.

IAPH World Ports Sustainability Program

The IAPH World Ports Sustainability Program was inaugurated in March 2018 by HRH Queen Mathilde of Belgium at Antwerp's dockside. It's aim is to demonstrate the global leadership of ports in contributing to the Sustainable Development Goals of the United Nations by integrating them into their businesses and operations.

IAPH members began to contribute information about their projects online to the WPSP website and since then it has become the world's most detailed and up-to-date global database of port- related projects on sustainable development. At the time of publication, it lists 516 projects from 195 ports in 71 countries.

Through the WPSP portfolio, ports and their partners worldwide are able to raise awareness of their ongoing work on sustainability, share their know-how and provide inspiration to other ports, many of whom have implemented similar projects based on fellow members' experiences.

This year, IAPH received a record number of projects to the annual IAPH Sustainability Awards which have been added to the program, with 112 eligible candidate submissions from 41 countries worldwide across all IAPH regions. Also as the WPSP has gained increasing recognition, IAPH has expanded their expert jury from eight to fifteen members to judge the entries.

Every year there are eighteen finalists in the six areas of interest, with each winner being recognised at the Gala Awards dinner during the annual IAPH World Ports Conference.

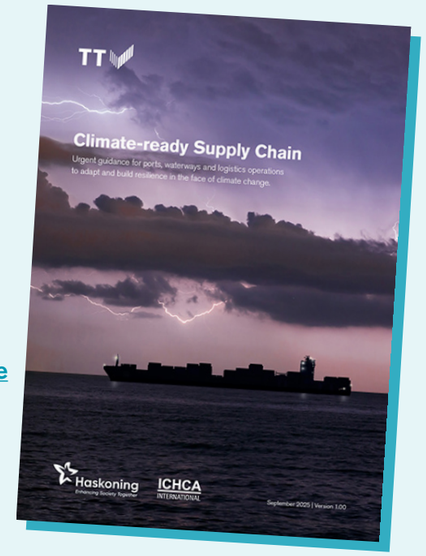
There is a further Akiyama Award prize awarded to the highest runner up from a develoing country or small island developing state.

Find out more

New Climate-ready Business white paper released

TT Club has released a pivotal white paper titled Climate-ready Supply Chain, offering strategic guidance for ports, terminals, and logistics operators to adapt to escalating climate risks and ensure business continuity and insurance compliance.

Download the white paper



Ports and transport networks face mounting threats from floods, storms, heatwaves, and rising sea levels, which are increasingly disrupting global trade. In 2024 alone, extreme weather events caused widespread shutdowns and economic losses across all continents.

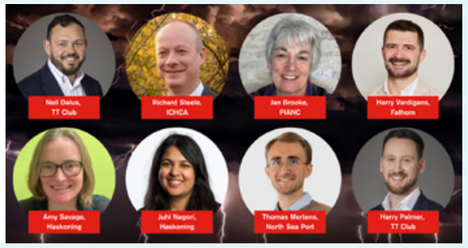
In-person seminar

Resilient ports, terminals & logistics operations in a changing climate

With Haskoning & ICHCA

13 November 2025 | 13:30–17:00
The Watermen's Hall, St. Mary At Hill, London

Register here



The TT Club team

Highlighting risk, reducing exposure, advising insureds, serving the industry.

TT Club is the established market-leading independent provider of mutual insurance and related risk management services to the international transport and logistics industry. TT Club's primary objective is to help make the industry safer and more secure. TT Club's Risk Management team is committed to the ongoing development of advice and information underpinning this objective.

This includes:

- Providing support to reduce the risk of claims occurence
- Promoting 'best practice' opportunities
- Helping to improve risk assessment, mitigation, and control

Find out more

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