

**STEPHENSON
HARWOOD**

Special Edition 2024

Well Heeled – LCO₂

**The bulletin for the LNG and gas transportation,
trading and offshore production industry**



Introduction

Welcome to this special edition of Well Heeled, Stephenson Harwood's bulletin for clients engaged in LNG and gas transportation, trading and offshore production. This is the first in a series of bulletins on use of liquified gas in maritime trade, both as cargoes and as marine fuel. Obviously, we are concerned here only with LCO₂ as cargo – if it could be used as fuel all our troubles would be over.

Carbon Capture and Storage (CCS) is seen as a vital tool in combatting climate change. The executive director of the International Energy Agency Maria van der Hoeven says it is “essential”. Former UK chief scientist David King has CCS “the only hope for mankind”.

CCS projects are being developed at a rapid rate and many are now starting to become operational. The carriage of LCO₂ by ship will be essential to guarantee full-scale operation of these projects, as well as enabling nations that do not have storage sites locally, particularly in the Asia-Pacific Region, to carry CO₂ produced by domestic emitters long distances to off-shore storage sites.

In this special edition, our global team describe Carbon Capture and Storage as a concept, design risk in LCO₂ new buildings, contracts for the shipping of LCO₂ and the evolving regulations governing CO₂ carriage storage projects.

We hope this edition finds you well; if you have comments or would like to learn more on any topic please do not hesitate to get in touch.

Kirsty MacHardy



Kirsty MacHardy

Partner and Chief Editor

T: +44 20 7809 2440

M: +44 7798 635 760

E: kirsty.machardy@shlegal.com

Carbon Capture and Storage – Start to Finish

Carbon capture and storage (CCS) and carbon capture, utilisation and storage (CCUS) are key elements of numerous national and global strategies to tackle carbon emissions – but, to date, most carbon capture projects have remained in the early stages.

As the first few projects now get the green light to go ahead, the key question is whether the infrastructure and supply chain is in place to keep up with the demand that carbon capture projects may bring to the multitude of industries involved in getting a carbon capture project up and running.

In particular, what role does the shipping industry play in bringing these projects to fruition – we would say a significant one, across multiple parts of the value chain.

In this article, we provide a brief overview of the carbon capture value chain from start to finish, from the perspective of the shipping industry – and consider some of the challenges still to be overcome and the gaps in the value chain that must be filled.

First - what is carbon capture, utilisation and storage?

It is the process of capturing carbon dioxide (CO₂) at an emission source, preventing it from entering the atmosphere. The captured carbon dioxide is then transported by pipeline, ship, rail or truck. If it is to be transported by ship, the captured CO₂ must first be compressed into a liquid form (LCO₂). It can then either be used for various commercial products and services, or stored in an underground location, such as depleted oil and gas reservoirs.

Capture - what is an emission source?

An emission source is anything that produces high volumes of carbon dioxide – traditionally, this would refer to industrial facilities like cement and steel production plants or power plants that rely on fossil fuels.

However, the scope of what may be classed as an emitter is broadening – the shipping industry is increasingly investigating the use of carbon capture on board ships.

By way of just one recent example, Mitsui OSK Lines has recently announced that it is to install a carbon capture system on board one of its tankers, the Nexus Victoria. The system has been manufactured by Value Maritime, a Dutch maritime cleantech firm, and should be able to capture 10% of the ship's CO₂ emissions with the possibility to be scaled up to 30%.

Mitsui OSK Lines is not the only shipowner investigating this option for their vessels as the shipping industry looks for more ways to reduce carbon emissions and hit the various carbon reduction targets in place for the shipping industry.

However, fitting vessels with carbon capture technology is not a simple process or a quick fix.

As with other types of new green technology, carbon capture onboard vessels will require existing vessels to be retrofitted with the relevant carbon capture equipment – not only does the vessel need to be retrofitted with the technology to capture the carbon, but there also needs to be onboard temporary storage for the captured carbon.

The shipping industry is well aware that retrofitting older vessels with newer technology can be a tricky process – what if the technology does not work as intended at the end of the retrofit? Who is bearing the design risk – the designer, the owner or the shipyard?



The other issue to consider is what happens when the onboard storage tank is full? In March 2024, the Global Centre for Maritime Decarbonisation, in collaboration with Lloyd's Register and ARUP, published a report which concluded that one of the key hurdles to onboard carbon capture is a lack of port readiness – most of the ports that have the infrastructure to offload LCO₂ are primarily designed to handle food-grade CO₂.

Ports will need to invest in infrastructure in due course to support large scale carbon capture projects - but as most of these projects remain in concept phase, or have not reached a final investment decision, ports have not yet proceeded with such investment. This "chicken and egg" problem is a recurring issue in the carbon capture value chain.

Transport - the carbon dioxide has been captured and liquified – now what?

Next, the captured CO₂ needs to be transported from the emission site to the permanent storage site – as above, the CO₂ will need to be liquified first if it is to be transported by ship. The method of transport will depend on where the emitter is located, and importantly, where the storage site is located.

Offshore storage locations, like depleted oil and gas reservoirs, can be reached by pipeline or vessel – or, as with the Northern Lights project (a JV between Equinor, Shell and TotalEnergies, backed by the Norwegian government), the LCO₂ may travel by ship to an onshore storage facility before travelling by pipeline to an offshore storage location.

As such, once projects leave the concept phase and/or reach FID, LCO₂ carrier vessels will likely be in high demand. The properties of LCO₂ make it a difficult cargo to carry and it therefore requires bespoke LCO₂ carriers (existing vessels that transport other types of liquid gas are likely unsuitable).

DNV reported in March 2024 that the only LCO₂ carriers already in operation are four small vessels that carry food-grade CO₂ and, to date, there have only been a few firm orders for larger LCO₂ carriers.

The Northern Lights project, one the first large scale carbon capture projects confirmed to be going ahead, has three LCO₂ vessels on order at Dalian Shipbuilding Offshore in China. And, most recently, in June 2024, Capital Gas signed a letter of intent to install carbon capture on board the four LCO₂ carriers that it has on order with Hyundai Mipo Dockyard.

That said, other than the above examples, there are only a handful of other LCO₂ carriers delivered or on order at present. The "chicken and egg" issue is once again a problem – most shipowners are waiting to know the size of the storage requirements for particular LCO₂ carriers before placing an order.

As such, the current global fleet of LCO₂ carriers is likely nowhere near enough - ECOLOG's CCO, Jasper Heikens, estimates that, when CCS takes off, the market could require 800-900 vessels by 2050.

If the other potential carbon capture projects are to get off the ground, many more newbuild orders will need to be placed for LCO₂ carriers – which presents some important questions for the shipbuilding industry, such as:

- How many slots will realistically be available at yards given the current, busy newbuild market?
- How will buyers deal with the uncertainty that comes with new and novel designs – not only are small scale designs now being scaled up to provide larger LCO₂ carriers, but the market is already grappling with difficult technical questions.
- For example, high pressure and low temperature requirements combined with the fact that LCO₂ is a heavy cargo means research is ongoing to identify a suitably strong tank material. In addition, the lack of regulation surrounding impurities in the CO₂ creates a significant risk of corrosion – buyers and shipyards alike will be keen to mitigate against these issues.



See Stuart Beadnall's article on LCO₂ newbuildings for further commentary on the newbuild design risks for LCO₂ carriers.

Storage – what permanent storage solutions are available?

Once the LCO₂ has been transported to the storage site, it then needs to be injected into the permanent storage site – if this is an offshore depleted oil and gas reservoir and the LCO₂ has been transported by way of LCO₂ carrier, there is likely once again to be a need for maritime infrastructure.

The traditional offshore oil and gas contractors look set to play a key role in this particular element of carbon capture infrastructure. This is because the injection assets, and their operation, are not dissimilar to traditional oil and gas assets like FPSOs. There is therefore wide scope to utilise existing knowledge and apply it to the storage of captured carbon. For example, Alterra Infrastructure intends to utilise its existing shuttle tanker knowledge, gained from its operations in the oil and gas industry, and apply that knowledge to delivering LCO₂ to the injection site for the Stella Maris carbon capture project.

Further, the oil and gas industry has already started investing time and resources in exploring different types of offshore injection solution, including direct injection by the LCO₂ carriers, and both fixed and floating offshore direct injection units which allow for continuous injection. A recent example is the approval in principle from ABS received by Bumi Armada in September 2023 for its floating carbon storage and injection unit. The AIP is applicable to either a new build or a converted carrier.

So, when the newbuild yards are busy building LCO₂ carriers, it seems likely that owners or potential owners of injection assets have a decision to make:

- Convert and upgrade an existing asset at a conversion yard for injection purposes – this is likely a quicker option than building from scratch, particularly when yards are busy; or
- Place an order for a newbuild asset – this may take longer but is likely to allow owners to build assets with a much bigger storage capacity.

Conclusion

As we watch the first of the large-scale carbon capture projects leave the starting blocks, the shipping and maritime industry has a key role to play in supporting these projects, not least given the immense amount of existing knowledge that can be applied. We expect that the industry will be using familiar shipping, shipbuilding and offshore contracts, adapted and reimaged to address the special and novel requirements associated with carbon capture as outlined in this article.



Hayley Broome

Associate

T: +44 20 7809 2126

M: +44 7595 461 084

E: hayley.broome@shlegal.com

Hayley is an associate in the marine and international trade team specialising in shipping and offshore energy. Within the offshore energy sector, Hayley acts for, amongst others, clients engaged in floating production, assisting on cases including conversion/refurbishment project disputes and FPSO, FLNG and FSRU operational disputes, as well as contract negotiation.



LCO₂ new buildings

LCO₂ is not an easy cargo to carry. Both refrigeration and pressurisation are needed in insulated tanks to maintain the liquid at a temperature of a minimum -55°C. If this is not achieved, the cargo will change to its solid state, usually described as "dry ice".

Construction of LCO₂ ships is not new, but previous vessels have been relatively small and used for short-haul fixtures for the food and drinks industry. The new era sees much larger vessels being planned, capable of carrying substantial volumes of LCO₂ over long distances. To that extent, the new industry appears to have similarities with the carriage of LNG, but LNG carriers would not be suitable for LCO₂. It is unlikely also that the cargo tanks of LPG vessels would be able to handle LCO₂ – dedicated LCO₂ vessels are required.

Existing technology for small scale LCO₂ ships is relevant, but successfully applying such technology for substantially larger vessels carries obvious risks. Neither a shipyard nor the ship owner ordering the vessels would wish to take full liability for the consequences of the novel design failing to achieve the performance specifications, but if a standard ship building contract is used (invariably an adaptation of the standard Japanese form) the builder would, under English law, take responsibility for all design, even if a preliminary design has been provided by the owners. Notwithstanding, if the novel design proves to be inadequate in practice, the builder is protected under the wording of the standard form in a number of ways.

The ship owner's remedies for loss caused by any defect are usually excluded under a shipbuilding contract and replaced by the contractual warranty in relation to such defects. This warranty is available for owner's claims only for defects discovered (usually) within one year after delivery. For a novel design, deficiencies may not become apparent until much later. Most importantly, the warranty will usually limit the builder's responsibility only to rectify or to pay for the cost of rectifying the defects. Thus, if substantial rework is needed to meet the specification performance, the builder is not usually obliged to compensate the ship owner for the value of lost time or other commercial consequences. For LNG newbuilds, the efficiency of the cargo containment system is verified not during sea-trials but through performance recorded during the first 10 laden voyages. If under-performance is substantial, the owner has the right to terminate.

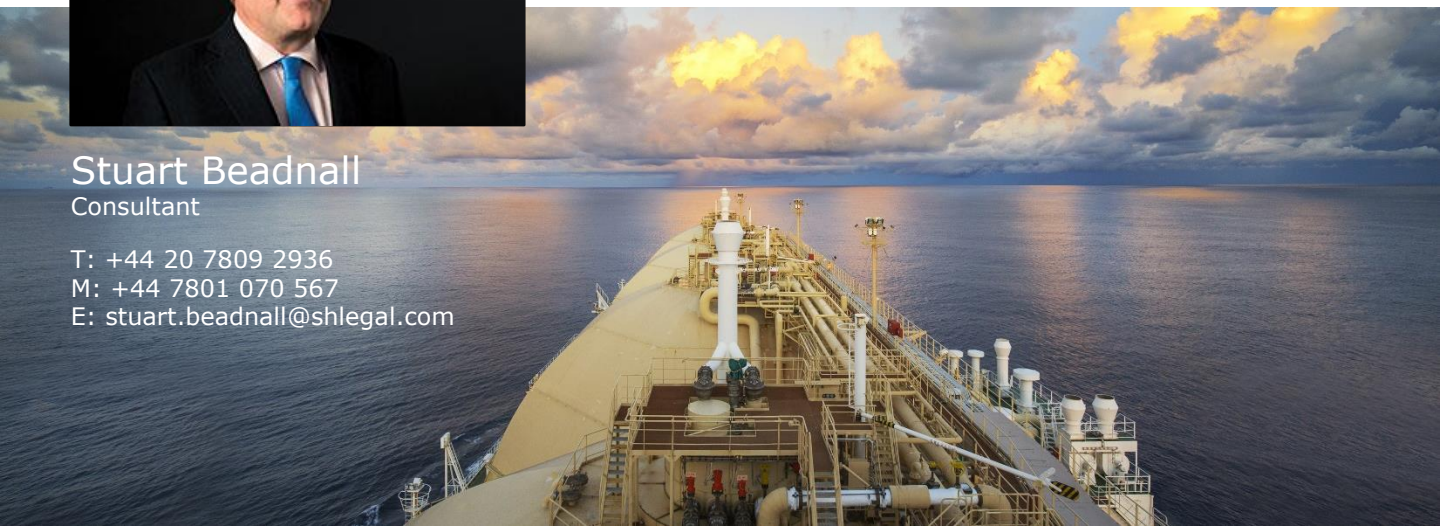
Owners may wish to consider enhancing their rights under a standard ship building contract relating to inspection and rework. If a builder/yard has little previous experience of building such specialist vessels, owners may wish to reserve the right to insist that construction and testing work, particularly on the crucial cargo containment system, be performed according to their standards, or those imposed by the design sub-contractor. If, in the opinion of the owners' superintendent, rework is needed, including redesign, the shipyard would be obliged to perform that work at their time and cost. Clauses of this nature are not popular with shipyards and may be resisted, particularly now where the commercial bargaining power lies with the shipyards due to the limited availability of berths. However, for the reasons mentioned above, these types of clause may be needed to avoid the potential difficulties (and losses) of owners taking delivery of a substandard vessel.



Stuart is a leading specialist in shipping and energy, with particular expertise in dispute resolution and negotiating contracts relating to offshore oil and gas, shipbuilding, shipping, floating production and LNG/FLNG.

Stuart Beadnall
Consultant

T: +44 20 7809 2936
M: +44 7801 070 567
E: stuart.beadnall@shlegal.com



Carriage of LCO₂ – considerations for contracts of carriage

As highlighted in the earlier article by Hayley Broome, once projects leave the concept phase and/or reach FID, there is unlikely to be sufficient tonnage on the water to meet the rising demand. LCO₂ carriers will be in high demand. Further, nations, such as Japan, South Korea and Singapore, which do not have the access to local CO₂ storage sites, will have to hire in sufficient tonnage to transport CO₂, produced by domestic emitters, to storage sites in Europe, Australia or the USA. Like in the LNG market, funding of LCO₂ carrier projects will be by way of long-term project contracts. We have looked already at the potential issues that may arise for owners at the concept and build phase of any project for a LCO₂ carrier. However, the nature of LCO₂ also presents unique challenges when considering the appropriate clauses to be included in any contract of carriage for the shipment of LCO₂. This article will consider some of the types of issues/provisions that may arise.

No standard form

There is, presently, no standard form charterparty for the carriage of LCO₂. Attempts have been made to modify the Shell LNG charters, but they are not suitable for cargoes which are not used to provide fuel for propulsion. Amendments could be made to standard tanker charters such as Shelltime4, but some owners prefer to have bespoke charters addressing the specific characteristics of LCO₂ carriage. Where parties are having to grapple with new concepts and clauses, it also opens up the possibility for shipowners to address the imbalance in favour of charterers often seen under a standard form LNG charterparty.

Potential considerations

As in the LNG trade, as discussed by Stuart Beadnall, the novel designs for large-scale LCO₂ carriers brings with them design risks. As between the owners and charterers, there will also be provisions whereby the charterers (who may well be involved in the concept stage of the project) will have rights prior to and after delivery of the vessel.

Given the potential design risks for these concept vessels, in any newbuild clause under the charterparty, owners will likely wish to include more detailed clauses on the inspection process, including pre-delivery ship to shore interface testing and post-delivery ship to shore interface testing to ensure the vessel is fully compatible with its primary terminals. This will be particularly important if primary terminals include offshore locations such as an FPSO reconfigured to receive and inject LCO₂. If the newbuild has been ordered for a specific project, owners (and their financiers) would wish to ensure a charterer's rights of rejection operate "back to back" with owner's rights under the newbuild contract. Conversely, if the charterer requires post-delivery performance tests, as in the case of LNG charters, the owners would wish to impose an equivalent obligation into the newbuild contract.

One of the key challenges when considering the suitability of the location of any CSU/CSSU project is the regulatory environment. As will be considered by Glynnis Lee in our final article, the regulatory environment is evolving rapidly, particularly in relation to the shipping of LCO₂, and it is likely that new regulations, particularly in relation to safety/toxicity levels on board vessels will be implemented in the not-too-distant future. An owner would therefore be wise to consider as to which party will bear the costs of any regulatory changes and/or changes in port/terminal rules and and/or HAZIF/HAZOP and/or compatibility studies for the vessel to obtain approval to carry the cargo and cargo operations. In addition, owners will need to consider carefully the cost of any compatibility changes if the vessel ceases to be compatible with primary receiving terminals as a result of changes made to a terminal (for regulatory reasons or otherwise).



The limited availability of LCO₂ carriers will also likely bring scheduling pressures on owners and charterers and the ability of the vessel to load in a timely fashion, in accordance with the terminal's schedule. Similar to provisions for the carriage of LNG or LPG, consideration will need to be given as to the time and cost of gas-up, cool-down and, importantly, who pays for the LCO₂ for cooling the vessel's tanks. The cost impact here may be less than under a LNG charterparty where LCO₂ is, effectively, a waste product, but nonetheless, careful thought needs to be taken when considering the obligation on the owner to cool down the tanks and who bears the time and cost for such operations and/or delay.

The nature of LCO₂ as a waste product raises interesting questions in relation to bills of lading. It is likely that any contract will either be on FOB at the export terminal or DPU at the store receiving terminal. The expectation, however, is that ownership/title in the CO₂ will remain with the shipper until delivery at the relevant off-shore site. If there is cargo loss during the voyage, it is unclear how the market will deal with such loss under bills of lading, where it is, effectively, a waste product.

Finally, owners will also need to give thought as to bunker clauses and performance warranties in any charterparty particularly as new fuels are added to the roster of marine fuels. Unlike LNG, LCO₂ cannot be burnt as fuel (well it can, but doing so will not result in any form of propulsion). The fact that LCO₂ cannot be used as fuel highlights again why many of the clauses relating to performance and fuel under an LNG charterparty are unlikely to be of any real relevance under a charterparty for a LCO₂ carrier.

Summary

As with any new trade and technology, it is likely that bespoke agreements for the carriage of LCO₂ will be a feature of this nascent industry for a number of years. However, as the fleet size increases to keep up with demand, in much the same way as standard contracts have evolved in the bulk, tanker and gas trades, the carriage of LCO₂ is likely to benefit from the standardisation of the contracts of carriage in the CCS/CCUS value chain.



Kirsty is an experienced shipping and off-shore energy specialist, with expertise in disputes and negotiating contracts relating to off-shore oil and gas, shipbuilding, charterparties, LNG, FLNG and FSRU projects.

Kirsty MacHardy

Partner

T: +44 20 7809 2440

M: +44 7798 635 760

E: kirsty.machardy@shlegal.com



Regulations governing CO₂ carriage

Offshore Carbon Capture and Storage (CCS) is entering a transformative phase. Northern Lights, Norway's first full-scale, fully integrated CCS project, is set to become operational in the coming years, with Phase 1 installations scheduled to commence in 2024. Once fully operational, the storage site will receive CO₂ from various sources, both domestic and international. Regardless of the CO₂ source, shipping will play a crucial role in its transportation, as highlighted in Hayley Broome's article above.

However, the existing legal framework is currently insufficient to accommodate and properly regulate the carriage of CO₂ for CCS purposes. Below we will take a closer look at the current regulations that are relevant to CO₂ transportation, and how the international regulatory regime is expected to change in the coming months and years in order to "catch up" with developments taking place on the technical side..

First, we discuss the legality of CO₂ transport with reference to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention) and its 1996 Protocol (the London Protocol). The second section of the article deals with the international liability framework that applies in the context of risks associated with CO₂ carriage, focusing on the Convention on Limitation of Liability for Maritime Claims 1976 (the LLMC Convention) as amended by its 1996 Protocol (the LLMC Protocol), as well as the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea and its 2020 Protocol (HNS Convention).

1. Legality of CO₂ transport under the London Protocol

The London Convention and London Protocol are international treaties aimed at limiting and eventually eliminating marine pollution by regulating the dumping of wastes at sea. The London Protocol, which entered into force in 2006, was intended to modernise and enhance the original Convention by adopting a more precautionary and comprehensive approach to marine pollution prevention.

Offshore Carbon Capture and Storage (CCS) includes the disposal of CO₂ beneath the seabed. This raised the question of whether offshore CCS constitutes "dumping" in the restricted sense.

Following the Protocol's entry into force and various legal and technical reviews, Australia, co-sponsored by France, Norway and the United Kingdom, submitted a proposal to amend Annex 1 in order to allow the storage of CO₂ in sub-seabed geological formations.

The resolution was adopted, adding an eighth category to the Annex 1 list of permissible wastes for dumping. This new category covers "carbon dioxide streams from carbon dioxide capture processes for sequestration," provided they meet the following criteria:

- (1) Disposal is into a sub-seabed geological formation; and
- (2) They consist overwhelmingly of carbon dioxide (they may contain incidental associated substances derived from the source material and the capture and sequestration processes used); and
- (3) No wastes or other matter are added for the purpose of disposing of those wastes or other matter.

Since the amendment's adoption, offshore CCS has largely been regarded as problematic from an international regulatory standpoint. However, the legality of CO₂ transportation, particularly in light of Article 6 of the London Protocol, as remained a point of contention. Article 6 states, "Contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea," which seemingly prohibits the export of CO₂ for CCS.



To address this, in 2009, the Contracting Parties adopted Resolution LP.3(4), which proposed an amendment to Article 6. If ratified, the amended Article 6 would state:

1. *"Contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea.*

2. *Notwithstanding paragraph 1, the export of carbon dioxide streams for disposal in accordance with annex 1 may occur, provided that an agreement or arrangement has been entered into by the countries concerned. Such an agreement or arrangement shall include:*

2.1 confirmation and allocation of permitting responsibilities between the exporting and receiving countries, consistent with the provisions of this Protocol and other applicable international law; and

2.2 in the case of export to non-Contracting Parties, provisions at a minimum equivalent to those contained in this Protocol, including those relating to the issuance of permits and permit conditions for complying with the provisions of annex 2, to ensure that the agreement or arrangement does not derogate from the obligations of Contracting Parties under this Protocol to protect and preserve the marine environment.

A Contracting Party entering into such an agreement or arrangement shall notify it to the Organisation [The International Maritime Organisation]."

Under this amendment, exporting CO₂ for CCS would require an agreement between the involved states, ensuring adherence to the Protocol's environmental protection standards. However, this amendment requires ratification by two-thirds of the Contracting Parties to take effect. To date, only ten parties have ratified it: Norway, the United Kingdom, the Netherlands, Iran, Finland, Estonia, Sweden, Denmark, Belgium, and the Republic of Korea.

Due to the slow ratification process, in 2019, Norway and the Netherlands proposed a resolution for the provisional application of the amendment. This provisional application allows any party to implement the Article 6 amendment before its formal entry into force. The resolution was adopted in 2019.

There has been some criticism of this approach - it has been suggested that issuing an interpretative resolution clarifying that Article 6 does not apply to CO₂ transport for CCS operations would have been more straightforward. Critics argue that provisional application could undermine the coherence of the London Protocol, send mixed signals about the importance of CCS, and unnecessarily complicate the legal framework.

Despite these criticisms, the international transport of CO₂ for CCS is now understood to be permitted, effectively removing the last major legal obstacle to exporting and receiving CO₂ for offshore storage. Following the provisional application of the amendment, Belgium and Denmark signed a pioneering bilateral agreement under the revised Article 6 on September 26, 2022. Other nations, including Belgium and Norway, Norway and Sweden, and the United Kingdom and Norway, have also expressed intentions to formalise similar bilateral arrangements.

2. The LLMC Convention

The Convention on Limitation of Liability for Maritime Claims 1976 (the LLMC Convention), as amended by its 1996 Protocol (the LLMC Protocol), provides a mechanism for shipowners to limit their liability for a wide range of maritime claims. However, this framework has not yet been tested in the context of CO₂ leakage events.

Article 2 paragraph 1 of the LLMC Convention. sets out the categories of claims to which the LLMC Convention's limitation applies, which include claims for loss of life, personal injury, loss of or damage to property and consequential losses, provided they occur either on board or in direct connection with the operation of the ship.



Article 4 stipulates that shipowners cannot limit their liability in case where they have intentionally or recklessly and with knowledge caused damage. The applicable maximum limits per incident are calculated in bands, based of tonnage of ship and type of claim, and the shipowners are required to form a collective limitation fund via deposits or financial guarantees. The LLMC Protocol increased the limits of liability from the original limits imposed by the LLMC Convention, which, in turn, were increased even further by amendments in 2012.

A notable issue with the LLMC Convention is that not all countries are signatories. The LLMC Convention has 55 contracting states and the Protocol has been ratified by 63 states. Exceptions include USA, China and the Republic of Korea, where they have their own domestic liability regimes for maritime claims. In addition, some states such as Egypt have only ratified the original LLMC Convention and not the LLMC Protocol, which means that the limits of liability may be significantly lower in those states. Other states, such as the United Kingdom and Australia, which have ratified the 1996 LLMC Protocol, have sometimes chosen to exclude certain categories of claims, such as the costs of wreck removal, from limitation.

3. HNS Convention

The 2010 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea ("HNS Convention") was designed to establish an international liability framework for spillage of hazardous and noxious substances, akin to the regime applicable to the carriage of oil.

Currently, six states including Canada, Denmark, Norway, South Africa, Turkey and Estonia have ratified the agreement to bring HNS Convention into force 18 months after the date on which it is ratified by at least 12 states. As such, this convention is not yet in force, but the International Maritime Organisation anticipates that several additional states will ratify the agreement in the near future. Once in force, the HNS Convention will also apply to CO₂ carriers and replace the LLMC Convention where the latter is applicable.

A key feature of the HNS Convention is that liability is channelled to the shipowner. In the event of an accident, the shipowner bears liability for the damage even if the fault lies with third parties. This liability arises regardless of the shipowner's fault, subject to certain exceptions. It should be noted that the Convention only applies when the cargo is on board; thus, it would not cover an accident while the CO₂ is waiting in storage tanks or after it has been discharged.

Claimants will have access to a two-tier system of liability. The first tier is covered by the shipowner, with liability depending on the size of the ship. The second tier is covered by an international body, the HNS Fund, with limited liability available to claimants. The Fund is financed by "receivers" of "contributing HNS cargo." A "receiver" is defined as a person who physically receives or on whose behalf the cargo was physically received. "Contributing cargo" is defined by the Convention as "any bulk HNS which is carried by sea as cargo to a port or terminal in the territory of a State Party and discharged in that State."

The Fund is financed by contributions from traders or importers of various hazardous and noxious substances. The HNS Convention establishes a general account, which is divided into sectors for bulk solids and other hazardous and noxious substances, as well as separate accounts for oil, LNG and LPG. These separate accounts exist because safer industries do not want to subsidise the damages caused by riskier ones. Once the HNS Convention is active, bulk CO₂ will be included as a contributing cargo to the general account.

A potential issue of this framework is that, at least during the early stage of CCS, CO₂ carriage is likely to be non-profit-making and dependent on public funding. The nature of CO₂ carriage is therefore distinct from other hazardous and noxious substances. Furthermore, given the "safe" characteristics of CO₂ as a cargo – being non-flammable and unlikely to cause significant environment pollution – there is an argument that CO₂ should have its own dedicated account. Otherwise the receivers of CO₂ cargo would be paying in excess of what they should, for the damages caused by receivers of more riskier cargo.



The emerging CCS industry faces a complex legal landscape as operators try to navigate the existing international regulatory frameworks. While significant progress has been made, gaps and uncertainties remain. The LLMC Convention provides some guidance on limiting liability, but its applicability to potential CO₂ leakage events and accidents has yet to be tested. The forthcoming HNS Convention offers a more comprehensive liability regime, though its suitability in the context of CO₂ transportation remains to be evaluated. As CCS projects advance globally, continued collaboration among nations is crucial to harmonise regulations, address liability concerns and establish frameworks tailored to the specific risks and requirements of CCS technologies. Proactive efforts to refine and adapt the legal infrastructure will be essential in facilitating the safe, efficient and equitable deployment of CCS as a vital tool in mitigating climate change.



Glynnis Lee

Associate

T: +82 2 6138 4834

M: +82 10 5172 8789

E: glynnis.lee@shlegal.com

As a native Korean speaker, Glynnis's experience includes acting for major Korean shipbuilders, ship owners, charterers, insurers and construction and engineering companies. She has a broad experience in acting for clients on both contentious and non-contentious matters.



Additional information

For more information on the team and Stephenson Harwood’s capabilities, visit our offshore energy hub by scanning the QR code below:





