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GLOBAL PORTS, LOGISTICS AND TRADE

Realising Reserves and Realising Capital

by Michael Harrison, Richard Guit, Stuart James, Daniel Reinbott, Peter Vaughan and Matthew Wood

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Welcome to the fifth article in the Ashurst Global Ports, Logistics and Trade series from the Ashurst Global Ports, Logistics and Trade team. The first four articles have been combined into an Ashurst Global Ports, Logistics and Trade Compendium in chapter format. The subject matter of the articles is wide ranging. While each article is standalone, a number of narrative threads run through the articles, hence the compilation into chapter format.

This article deals with infrastructure use to Realise Reserves and Realise Capital, and in this context key port interfaces. This article is as much about progress towards Net Zero GHG emissions (***NZE***), as it is about anything else: the progress to ***NZE*** is providing impetus for Realisation of Reserves and Capital.

In this article, members of the Ashurst Global Ports, Logistics and Trade team provide commentary and insights in respect of the use of tolling services agreements (***TSAs***) and terminal use agreements (***TUAs***), (generally and specifically), and international oil companies (***IOCs*** or, increasingly international energy companies or ***IECs***) and national oil companies (***NOCs***) to ***Realise Reserves*** and ***Realise Capital*** and the key interfaces at the sea ports at which loading and unloading activities take place[2].

Also, this article places "front-and-centre" a trend across the oil and gas industry of selling down interests in existing infrastructure, and in some cases both existing and under-development infrastructure, and outlines the circumstances in which an infrastructure services agreement (***ISA***) or infrastructure use agreement (***IUA***) may be used.

1. While the primary author of this article is Michael Harrison (Senior Partner, Energy, Resources and Infrastructure), the final form of the article is the result of collaborative input from each co-author. Each co-author is entirely literate in respect of ***TSAs***, ***TUAs*** and ***ISAs*** and ***IUAs***, and all activities from field to ultimate use.
2. In this regard, the subject matter of this article ties back to that of Chapters 2, 3 and 4 in the Ashurst Global Ports, Logistics World Trade series contained in the Ashurst Global Ports, Logistics and Trade Compendium.

ASHURST SUITE:

As progress towards net zero greenhouse gas (***GHG***) emissions (***NZE***) has gained momentum, the Ashurst Global Towards Net-Zero Emissions team has developed a number of initiatives, including the publication of Low Carbon Pulse (***LCP***) (published every other week), The Shift to Hydrogen (***S2H2***): Elemental Change (published quarterly or so) and Hydrogen for Industry (***H24I***) (published every other month or so).

LCP covers significant developments in progress towards net zero across all industries, including ports (and transport and logistics generally, including shipping)[3]. Articles in the ***S2H2*** series cover, in a general way, the shift to hydrogen and hydrogen based fuels[4]. Features in the ***H24I*** series cover the role of hydrogen in industries in the context of the reduction in ***GHG*** emissions to ***NZE***[5].

The next ***S2H2*** article will cover carbon capture and storage[6] in its broadest sense (in all its forms and each facet) that is relevant in the context of many ports. The next two ***H24I*** features will cover passenger and freight transport (including how the greening of ports is occurring and the role of ports as hydrogen hubs).

The next three articles in the Ashurst Global Ports, Logistics and Trade series will be: Part 2 of the Liability Regimes series; Hydrogen Hubs, and Use of Hydrogen at Port; and Hydrogen and Hydrogen-based fuels – Handling and Storage at Port.

OVERVIEW OF THIS ARTICLE:

This article is divided into five sections:

- **Section 1 – Background:** providing background on current dynamics informing why ***IOCs*** and ***NOCs*** are ***Realising Reserves*** and ***Realising Capital***, and how ***TSAs*** and ***TUAs*** may play a role in ***Realising Reserves*** (and in so doing maximising use, both current and whole-of-life) and ***Realising Capital***[7], and how ***ISAs*** / ***IUAs*** have a role in ***Realising Capital***[8];
- **Section 2 – Use of *TSAs* and *TUAs*, *ISAs* and *IUAs*:** providing background on:
  - the circumstances in which ***TSAs*** and ***TUAs*** are used and the structures that may be used (and an explanation as to when ***TSAs*** and ***TUAs*** are not required, and why),
  - the structures and contractual arrangements that existing upstream and downstream assets and infrastructure owners and operators use to provide tolling services and terminal use services, and
  - infrastructure use and throughput services in the context of ***ISAs*** and ***IUAs***;
- **Section 3 – Loading and Unloading Ports: *TSAs* and *TUAs*:** providing detail about the interface between facilities and infrastructure used to provide tolling services (under the applicable ***TSA***) and terminal services (under the applicable ***TUA***) in the context of the loading port (in respect of the applicable ***TSA***) and the unloading and reloading (in respect of the applicable ***TUA***)[9]. Whereas port interfaces are relevant in the context of both ***TSAs*** and ***TUAs***, port interfaces are less likely to be relevant in the context of ***ISAs*** / ***IUAs***, and as such for the purposes of this article, possible interfaces in this context are not covered;
- **Section 4 – Key Risk allocation under *TSAs* and *TUAs*, *ISAs* and *IUAs*:** providing background to the key risks that arise under any ***TSA*** or ***TUA*** or ***ISAs*** / ***IUAs***: note that different circumstances, including different shippers (i.e., customer or users) and whether or not the facilities and infrastructure are being equity or debt financed, can inform different risk allocation[10]; and
- **Section 5 – Conclusion:** providing the perspective of the co-authors in respect of the likely continuation of ***Realising Reserves*** and ***Realising Capital***, in particular in the context of progress towards ***NZE***.

3. Low Carbon Pulse (***LCP***): Edition 1, Edition 2, Edition 3, Edition 4, Edition 5, Edition 6, Edition 7, Edition 8, Edition 9, Edition 10, Edition 11, Edition 12, Edition 13, Edition 14, Edition 15, Edition 16, Edition 17, Edition 18, Edition 19, Edition 20, Edition 21, Edition 22
4. The Shift to Hydrogen (***S2H2***): Elemental Change series: Article 1: Why H2? Why now? and Article 2: What needs to be decarbonized? And what role can hydrogen play?
5. The Hydrogen for Industry (***H24I***) series: Feature 1: Hydrogen from Waste
6. The term **CCS** connotes carbon-dioxide capture and storage. The term **CCUS** connotes carbon-dioxide capture storage and use or utilisation, being a term coined by the International Energy Agency (***IEA***). **CCUS** is becoming the more commonly used term, but both terms tend to be used interchangeably.
7. In this context, a broader perspective is taken in respect of the structural and contractual arrangements that underpin ***Realising Capital*** on the sale of the entire or part of the interest in an asset that is going to continue to be used by seller to enable continued transport or processing of hydrocarbons: for example, if a pipeline is sold for the purposes of ***Realising Capital***, unless the investor in the pipeline is prepared to take demand risk, the shippers of hydrocarbons (i.e., the customer for, and user of infrastructure services) through the pipeline will do so on the basis that an availability charge / capacity charge will be payable.
8. Three of the co-authors of this article, Peter Vaughan, Dan Reinbott, and Michael Harrison co-authored a publication in August, 2020 that provided their perspective on the natural gas and LNG industry (The Future of LNG and Natural Gas Infrastructure – An Asia-Pacific Perspective). As will be seen, their perspective has not changed, and the development since the publication of that article are entirely consistent with it.
9. And in this context, which party to the ***TSA*** or, as the case may be, the ***TUA*** is responsible for procuring services from the port and port service providers, including pilotage and towage, and procuring access to the facilities loading LNG from storage to LNG carrier consistent with the *TSA* and facilities unloading LNG from LNG carrier into storage consistent with the ***TUA***.
10. For example, a shipper provided with tolling services from an existing liquefaction facility that is making use of ullage as a result of existing production coming off plateau that has been equity financed, or debt finance has been repaid, is likely to have to accept a different risk allocation than a shipper that is agreeing to pay an availability charge/ capacity charge to allow the development of an additional train that will be used to process and to liquefy natural gas from a new source and from which existing shippers of natural gas will obtain a benefit.

What are Tolling Services, Terminal Use Services and Infrastructure Services and what is Infrastructure Use?

Tolling Services* (for natural gas):** are services provided by the owner and operator, or operator, of assets and infrastructure that receive natural gas delivered to a delivery point, process and treat that natural gas (if it has not already been processed and treated upstream of the delivery point), liquefies that natural gas to produce liquified natural gas (LNG***), stores that ***LNG***, and then delivers that ***LNG*** to the loading arm from which that ***LNG*** is loaded (***Tolling Service Facilities*** or ***TSF***) on to an ***LNG*** carrier.

Terminal Services* (for LNG):** are services provided by the owner and operator, or operator, of assets and infrastructure that receive ***LNG delivered to a delivery point, store that LNG, re-gasify that LNG to derive natural gas, and then send-out that natural gas (***Terminal Facilities*** or ***TFS***), either to the point of use (typically, to a gas-fired power station) or along the tail pipe and lateral pipeline to connect to the trunk line from which the natural gas will be hauled and distributed to the point of use. In addition to terminal services for through-put, there are non-throughput services, including storage and re-load services, and, typically, by agreement, gassing-up and cool-down services.

Infrastructure Services and Use: refers to infrastructure services provided, or use permitted, following a sell-down in respect of infrastructure involving the transfer of any interest, right or title in respect of the infrastructure by a vendor, or an affiliate of a vendor, that is to continue to make use of the infrastructure, either by being provided with a service or continuing the operation and use. At one end of the spectrum is the sale of sole legal title, and the entire beneficial interest, in the infrastructure and the transfer of related estates or interests in land and licenses relating to it. At the other end, is the sale of an interest or right (or simply the ceation of a chose in action) that confers a right to receive consideration related to the ongoing use of the infrastructure. However structured, the vendor, as the off-taker of the infrastructure services, or as the user (and typically the operator) of the infrastructure, will want to ensure that the infrastructure is operated and maintained (and repaired and replaced) to ensure the continued use or like operation and maintenance following sell-down in the same way as pre-sell down.

In the case of ***Tolling Services***, ***Terminal Services*** or ***Infrastructure Services*** or ***Infrastructure Use***, an agreement is required in respect of the provision of, and the payment for, the applicable Services or Use, including to address demand risk for the Services provided by the infrastructure or for the Use of the infrastructure.

It is important to understand that the nature of Services can be different: liquefaction and re-gasification services may be regarded as dedicated services, requiring the service provider to dedicate capacity to be able to provide those Services, and in the case of infrastructure service provision or use, it is most likely that the infrastructure will be dedicated to one user.

Section 1 – Background

1.1 REALISING RESERVES AND REALISING CAPITAL:

Context and time define: Against the backdrop of progress towards ***NZE***, among other things, ***IOCs*** and ***NOCs*** are considering:

- whether, and, if so, how best, to develop hydrocarbon reserves, including to facilitate the development of reserves that might not be developed if not developed before the projected demand for hydrocarbon products becomes too uncertain to justify development and to allow debt and equity funding (***Realising Reserves***); and
- how best to fund the transition of their businesses (some may say to fund the transformation of their businesses) to lower, low and no carbon businesses over time (with a long-stop date of 2050 for many). This includes the possible sale of interests, in whole or in part, in existing infrastructure and new infrastructure that might be developed to augment existing infrastructure so as to realise value, to allow for the recycling of capital, and to maximise the rate of return (including through maximising use, both current and whole of life) on capital invested in existing infrastructure (***Realising Capital***).

Whether ***Realising Reserves*** or ***Realising Capital***, there needs to be a clear line of sight to market to allow the *return of capital* invested, and an appropriate *rate of return* on capital invested. The line of sight may be regarded as likely to start to get less clear in the mid-to-late 2030s (possibly sooner), as progress to ***NZE*** is made, and inevitably occurs at a faster rate than is predicted currently. **Narrative Box 1** provides an assessment of **What *NZE* might mean for Natural Gas (and *LNG*)**.

Each co-author is working on projects and transactions that are ***Realising Reserves*** and ***Realising Capital***, globally, but with particular emphasis in the last 12 months on projects and transactions in Gulf Cooperation Council (***GCC***) Countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates), and across Asia Pacific (including East Asia, South East Asia, North Asia, and Australasia and the South Pacific). The co-author's are anticipating a continuation of projects and transactions of this kind, and a likely acceleration of them.

Defined context, changing times: In the context of ***NZE***, ***IOCs*** and ***NOCs*** are under scrutiny from many directions.

For ***IOCs***, this scrutiny is from the courts and from their customers, their shareholders / stockholders, and both private, and policy, finance providers. In short, the operating environment in which ***IOCs*** are working requires them to balance competing, and changing needs, including responding to the requirements of:

(a) ***NZE*** to achieve business transformation;

(b) firming and tightening policy settings, which are anticipated to become mandatory over time; and

(c) firming perspectives, and best practice perspectives, of debt and equity capital markets, and the financial sector generally.

For ***NOCs***, the scrutiny is primarily internal – from their leadership and ultimately their controlling governments, as the realities of ***NZE***, and the transition (or transformation) required, raises confronting assessments as to continued existing revenue streams, and the need to develop new revenue streams. In short, the operating environment in which ***NOCs*** are working requires them to assess and adapt, including responding to the requirements of:

(a) ***NZE*** to ensure continuing operations, including use of offset mechanisms to enable continued operation and growth of core businesses, while at the same time planning for a ***NZE*** environment;

(b) changing markets, and the allocation of capital among different (including new) hydrocarbon businesses and products; and

(c) firming perspectives, and best practice perspectives, of the debt and equity capital markets as ***NOCs*** seek to access new sources of capital.

Ultimately, there is a new "ABC", a lexicon and model, if you will, overlaying an already highly complex business environment. **Narrative Box 2** provides an assessment of **What *NZE* might mean for *IOCs* and *NOCs***.

Narrative Box 1 – What *NZE* might mean for Natural Gas (and *LNG*)

In an article published in August 2020, Peter Vaughan, Dan Reinbott and Michael Harrison (three of the co-authors of this article) expressed the view that natural gas, in the form of liquefied natural gas (***LNG***), was likely to continue to have a clear line of sight to market, if not every market, critically in a number of growing markets as a transition fuel as part of the mix of energy carriers on the road to ***NZE***. The perspective giving rise to this view was, and continues to be informed by the continued need for electrification globally, the apparent foreclosing on the development of new coal-fired stations, the projected increase in population (and increased urbanization and prosperity that arises because of it), the ability of the producers and users of natural gas to respond to ***GHG*** emissions arising at extraction, production, transportation and at the point of ultimate use, and the ability of natural gas to address the intermittent and variable nature of the dispatch of electrical energy from solar and wind generation.

While the longevity of the clear line of sight to market may be less well-defined than it was, and despite the increasingly well-defined role of battery electrical energy systems (***BESSs***) to respond to the intermittent and varied nature of some sources of renewable electrical energy, Peter, Dan and Michael remain of the view that natural gas will be around for a while yet, including as an energy carrier that will assist in energy transition, and indeed that natural gas itself will transition from energy carrier to feedstock.

IOCs and ***NOCs*** have the ability to transition from natural gas processing and liquefaction to produce ***LNG*** to the production of Blue Hydrogen and Blue Ammonia, and ***IOCs*** and ***NOCs*** with existing liquefaction capacity have the ability to do both. Some may go straight to the production of Blue Hydrogen: it has been reported that Saudi Aramco has transitioned from original plans to develop its shale gas reserves at Jafurah Saudi Arabia to produce ***LNG***, to allow the use of that shale gas as a feedstock for the production of Blue Hydrogen, with that Blue Hydrogen serving as feedstock for the combination with nitrogen to produce Blue Ammonia. This transition reflects the broader flexibility, and understanding of the trade-offs, in the mix of energy carriers, and the use of natural gas, in the medium to longer term.

While a number of commentators regard the window for ***Realising Reserves*** and ***Realising Capital*** as one that is closing or is likely to start to close soon, not all of those commentators appear to have factored into their thinking the ability to produce Blue Hydrogen and Blue Ammonia from the same natural gas reserves from which feed-gas is extracted to produce ***LNG***. As is clear from the cost equation, this is a matter of cost, nothing more, nothing less. Within the question of cost is an existing or latent carbon price issue (the need or obligation to cost the negative externality of ***GHG*** emissions so as to change activities to avoid or to mitigate the effects of increased average global temperatures).

Given that it is possible to use natural gas as both an energy carrier and a feedstock to produce Blue Hydrogen, natural gas itself is integral to progress towards ***NZE***, with CCS (and possibly CCUS) being a key area requiring significant development. For existing ***LNG*** liquefaction facilities with, or with the ability to develop, CCS (or CCUS), there is likely to come a point at which natural gas can be used as a feedstock to produce ***LNG*** or to produce Blue Hydrogen (which is combined by nitrogen to produce Blue Ammonia), or both, with existing ports able to accommodate the loading of both ***LNG*** and Blue Hydrogen (or Blue Ammonia).

If CCS (and CCUS) develops at the expected rate, natural gas will continue to be used as either an energy carrier in the form of LNG or as a feedstock to produce Blue Hydrogen (and Blue Ammonia) as progress is made towards to ***NZE*** by 2050, and it seems likely to continue beyond 2050[11] until sufficient renewable electrical energy and ***BESS*** capacity (i.e., Battery Energy Storage System capacity) has been developed to allow Green Hydrogen (and Green Ammonia) to displace Blue Hydrogen (and Blue Ammonia).

11. The IEA special report *Net Zero by 2050 – A Roadmap for the Global Energy Sector* published on May 18, 2021 contemplates that by 2050 520 mtpa of hydrogen will be produced globally, with around 198 mtpa (or 38% of total hydrogen production) being produced using CCS / CCUS technologies, i.e., Blue. The IRENA *World Energy Transitions Outlook* contemplates that by 2050 614 mtpa of hydrogen will be produced globally, with around 204 mtpa (or 33% of total hydrogen production) being Blue.

Narrative Box 2 – What *NZE* might mean for *IOC*s and *NOC*s

Background:

International oil companies (***IOCs***) are under ever increasing scrutiny in respect of the decarbonization of their businesses, including in the law courts (LCP Edition 17) and in the court of public opinion, and, as was seen in late May 2021, in the court of shareholder / stockholder opinion (LCP Edition 18). ***IOCs*** (now more accurately regarded as international energy companies, i.e., ***IECs***) are being forced to respond, acutely aware of the imperatives of ensuring that the expectations of shareholder / stockholder are met in the form of distributions, and that capital value is maintained, while at the same time progressing to ***NZE***.

This has necessitated most ***IOCs*** formulating ***NZE*** strategies and investing in lower, low and no carbon technologies to define a pathway, and in due course to enable progress, to ***NZE***.

In late May 2021, the Dutch District Court in The Hague, the Netherlands handed down judgment, the effect of which is to require Royal Dutch Shell Group (***RDS***) to reduce its net CO_2 emissions arising in the Netherlands by at least 45% by 2030, compared to 2019 (***RDS Case***). In late July 2021, ***RDS*** announced that it would appeal the decision in the ***RDS Case***. If the ***RDS Case*** stands, there is a risk of biting the hand that is going to feed the beast that is the capital investment required to achieve ***NZE***: ***IOCs*** have possibly the most important role to play in progress to ***NZE***, not least because their progress to ***NZE*** is existential[12].

***IOC*s are of course not the only players:**

In any event, ***IOCs*** appear destined to have to accelerate their progress to ***NZE***, and in the absence of greater coherence and consistency in policy settings in developing countries, this will be in a more litigious environment. Whatever one's perspective may be on these dynamics, these dynamics are with us, and do not appear likely to slow let alone cease. Mr Larry Fink, CEO of BlackRock, is someone with a good feel for the calibration for these dynamics, providing a consistently balanced perspective on them.

In responding to the ***RDS Case*** (soon after the decision was handed down in May 2021), Mr Fink's trademark common sense and pragmatism was evident:

> "[The ***RDS Case***] doesn't change the global footprint, that's not a solution. We[13] are doing a lot of greenwashing because we're not changing the carbon footprint of the world. We may change the carbon footprint of a company. What I worry about is that we're going to put all [the] pressure on public [bourse / stock exchange listed] companies and very little on the private [companies]."

Mr Fink went on to state that: "It's not about running away from the current hydrocarbon companies, it's working with them as they navigate the move forward".

Ultimately, governments must ensure that all corporations act in a way that is consistent with achievement of the Paris Agreement[14]. This requires countries to legislate rather than to leave existential policy settings to the courts to determine. This, together with a sufficient degree of transparency, is required to avoid greenwashing[15], and ensuring that each Scope of GHG emission is being reduced, ultimately to ***NZE***.

Voluntary and mandatory GHG reduction commitments:

Voluntary commitments: Well before the ***RDS Case***, many ***IOCs*** had committed to achieving ***NZE*** by 2050. For any organisation that has committed to reduce ***GHG*** emissions and to achieve ***NZE***, this is not simply a matter of decarbonizing the activities undertaken by that organisation directly. Rather, it extends to all of the activities undertaken to provide that organisation with goods or services, and all other activities in that organisation's supply chain that give rise to ***GHG*** emissions to enable it to provide goods or services to its customers.

Scope 1	Scope 2 [16]	Scope 3 [17]
Direct ***GHG*** emissions arising from any activity and source that are controlled or owned by an organization.	Indirect ***GHG*** emissions arising from any activity and source not controlled or owned by an organization but used by it.	***GHG*** emissions arising from any activity that is not controlled or owned by an organization, but is part of the supply chain of that organization.

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12. One of the sources of increased average global temperatures, fossil fuels, is going to help fund the investment required to achieve ***NZE***.
13. The use of "we" is taken to include the developed countries.
14. On November 4, 2016, the Paris Agreement entered into force. The Paris Agreement recognises that to respond to the effects of increased ***GHG*** in the atmosphere, it is necessary to commit to hold: "the increase in global average temperature to well below 2°C above pre-industrial levels [Stabilisation Goal] and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels [Stretch Goal] ..." (Article 2).
15. **Greenwashing** is a phrase used to describe any means by which a corporation or government (indeed any organisation) intentionally or not, leaves the impression that it is addressing ***GHG*** emission reductions (or any other environmental or social responsibility matter, or the degree to which it is addressing that matter), when not the case.
16. For example, Scope 2 emissions arising from the production of any good or the provision of any service to an organisation to enable it to undertake its activities, including the generation of electrical energy (as a service), the provision of heat or steam.
17. For example, Scope 3 emissions arise on the oxidation / use of any energy carrier supplied by an ***IOC***, arising from the processing or treatment or disposal of any waste (gaseous, liquid or solid) or any waste water and arising from distribution or transmission of electrical energy.

Measurement, calculation and reporting of emissions: Typically, ***GHG*** emissions are measured and calculated in accordance with the GHG Protocol, unless the law of any country in which an organization undertakes activities requires the use of another basis of measurement, calculation or reporting. While some countries have specific energy and carbon reporting requirements, it is reported that over 1,000 organizations globally use the GHG Protocol.

Mandatory commitments: While a number of countries have committed themselves to achieve ***GHG*** emission reductions (including by enshrining those commitments on their laws), countries have yet to impose mandatory ***GHG*** emission reduction requirements on corporations, choosing instead to price carbon.

Emissions Trading Schemes and Carbon Taxes (each a Carbon Price)

While there is no hard and fast rule, carbon emissions trading schemes work on the basis that ***GHG*** emissions arising from a particular activity are limited (or capped), with the businesses undertaking those activities permitted to emit a capped mass (expressed in tonnes) of ***GHG*** emissions. Looking at this another way: each permit (PTE) allows the holder to emit one tonne of CO_2-e (t-CO_2-e), and each business must hold a number of PTEs equal to the mass of ***GHG*** emissions emitted by it. Ordinarily, the PTEs may be traded, hence "emissions trading scheme". Under an ETS supply and demand determines the price of each PTE. This is a so called "cap and trade" ETS. As a policy setting, ETSs provide for a reduction in the number of PTE's over time, and as such the mass of ***GHG*** permitted over time. The theory being that the fewer the PTEs', the higher the price, and the more likely businesses emitting ***GHGs*** will cease to undertake activities giving rise to the ***GHG*** emissions. ETS's allow the market to set a Carbon Price.

From a policy setting perspective, an ETS, covering a proportion of the ***GHG*** emissions arising, is normally accompanied by a Carbon Use or an Energy Use Impost (Carbon Tax), covering ***GHG*** emissions arising that are not covered by the ETS. A Carbon Tax relates to the purchase of goods derived from carbon that has given, or will give, rise to ***GHG*** emissions, or both. Also Carbon Taxes can relate to the use of electricity or heat that is generated from a non-renewable source. The imposition of a Carbon Tax allows government to set policies that encourage lower, low, or no, ***GHG*** emission outcomes. The Carbon Tax structure may provide that lower or low ***GHG*** emission outcomes are exempt from, or are subject to a lower rate of Carbon Tax. As with an ETS, a Carbon Tax sets a Carbon Price.

In theory, an effective ETS results in a reduction in ***GHG*** emissions in the most efficient way, while at the same time encouraging lower, low or no carbon emissions. For example, in theory, an effective Carbon Tax sends a cost signal to the buyer of goods or electricity or heat from a non-renewable source not to purchase those goods or that electricity or heat, and to purchase a lower, low or no carbon option or options.

If an ETS is working as intended, the unit cost of the good or electricity or heat from a non-renewable source will increase, and as such the combined effect of the ETS and the Carbon Tax is to signal a purchasing decision. This relies on there being a lower, low or no carbon option or options, and other policy settings need to allow these options to become viable and sustainable. A Carbon Tax allows investment decisions to be taken on the basis that a renewable option is, or renewable options are, able to compete with the non-renewable / carbon intensive options.

Section 2 – Use of *TSA*s, *TUA*s, *ISA*s and *IUA*s to *Realise Reserves* and *Capital*

2.1 WHEN IS IT APPROPRIATE TO USE A *TSA* OR A *TUA*?:

2.1.1 Follow the flow for a *TSA*:

(a) Offshore project:

In the ordinary course, if natural gas is extracted from an off-shore field, it will be: (i) collected and processed and liquefied by a floating LNG facility; or (ii) collected and processed ex-field, and piped for liquefaction, or collected, piped and processed and liquefied onshore, with the LNG produced being made available for off-take at a delivery point.

(b) Onshore project:

If natural gas is extracted from an on-shore field, it will be collected and processed and liquefied at, or within the vicinity of the field, or it will be collected and processed ex-field, and piped for liquefaction, or collected, piped and processed and liquefied. While not unknown for on-shore fields to be located within the vicinity of a port, it is more usual for the natural gas to have to be piped to a liquefaction facility that is proximate to, or within the area of, a port. This allows the loading of LNG produced at the liquefaction facilities. All large-scale liquefaction facilities are located close to an ocean or to a waterway leading to an ocean.

(c) Structure of projects:

LNG projects are structured in a number of different ways, detailed in this **section 2.1.1(c)**. For completeness, this **section 2.1.1(c)** includes the most typical structures used for LNG projects, and explains when ***Tolling Services*** are not required. **Section 2.1.1(d)** details structures used involving ***Tolling Services***:

- **Sole Ownership Project:** All assets and infrastructure from field to liquefaction facility are owned by one entity. After natural gas has been liquefied, it is delivered to a delivery point, at which point risk and title in the LNG passes to the person entitled to the LNG[18]. If each part of the project is owned by one entity (***Sole Project***), that one entity will have risk and title in the natural gas and, on its liquefaction, in the LNG, and will be entitled to all the LNG produced.
- **Joint ownership of integrated Project, i.e., being a fully integrated unincorporated JV:** All assets and infrastructure from field to liquefaction facility are owned in undivided shares by participants in the integrated project (***Integrated Project***), with the terms of the arrangements among the participants governed by one or more joint operating agreements (***JOA*s**) forming the basis of the unincorporated joint venture among the participants and its governance: the ***JOA*** or ***JOA*s** may cover all activities of the joint venture (from field to LNG delivery) or they may cover the upstream only, with the downstream and marketing to be covered by other contractual documentation, often referred to as "separate arrangements" in ***JOA*s**.

  After natural gas has been liquefied, it is delivered to the delivery point, at which point risk and title in the LNG passes to the person entitled to the LNG[19].
- **Joint ownership of each part of a Project, i.e., being an aligned, but not integrated JV (typically unincorporated in the upstream and sometimes incorporated in the downstream):** Assets and infrastructure at field (including extraction, collection and any processing at field), assets and infrastructure from field to any processing and treatment and the liquefaction facilities, or to the liquefaction facilities, and assets and infrastructure from field to any processing and treatment and the liquefaction facilities, are owned in undivided interests by participants, in distinct unincorporated joint ventures, covered by different ***JOA*s** (each a ***Separate Project***) or possibly both unincorporated and incorporated. Each different ***JOA*** forms the basis of the unincorporated joint venture among the participants to each distinct ***Separate Project***, and the governance among the participants to that ***Separate Project***.

  After natural gas has been liquified, it is delivered to the delivery point, at which point risk and title in the LNG passes to the person entitled to the LNG[20].

18. If there is one shipper, to that shipper or, if that shipper has sold that LNG free-on-board, to the buyer of that LNG.
19. If LNG is delivered as a common stream to be marketed / sold jointly by each shipper, to each shipper or if they have sold the LNG free on board to the buyer of that LNG. If LNG is delivered to each shipper to lift that LNG separately, to the applicable shipper or if the shipper has sold the LNG free on board to the buyer of that LNG.
20. Who is entitled to LNG will be a function of the arrangements among each ***Separate Project***, governed by contracts among joint venturers in each ***Separate Project***. It is possible that the arrangements among each ***Separate Project*** may be structured as a pass-through, or sometimes referred to as a "tolling arrangement": a pass-through or tolling arrangement in these circumstances tends to provide for the acceptance of natural gas from one ***Separate Project*** to another. (The economics of each ***Separate Project*** will tend to net-back from the revenue received on the sale of LNG, but this is not always the case.) For the purposes of this article, a pass through or a tolling arrangement in these circumstances is not treated as a tolling services agreement.

- **Integrated Project using single purpose vehicle, i.e., a fully incorporated JV structure (*IJV* or *Project SPV*):** All assets and infrastructure from field to delivery point of LNG after liquefaction are owned by a single ***Project SPV***, with participants in the project arranging debt and equity or equity funding to that single ***Project SPV***, with ***Project SPV*** selling the LNG, possibly directly to buyers, or possibly to a marketing company that will sell to buyers.
- **Separate Projects using single purpose vehicles, i.e., a separate or unintegrated JV structure (each entity in the JV structure, being a *Project SPV*):** Assets and infrastructure at field (including extraction, collection and any processing at field), assets and infrastructure from field to any processing and treatment and the liquefaction facilities, or to the liquefaction facilities, and assets and infrastructure from field to any processing and treatment and the liquefaction facilities, are owned by separate ***Project SPVs***, with equity participation under a shareholder / stockholder agreements. As with undivided interests by participants in different joint ventures, if each part of the project is owned by a single purpose vehicle (***Project SPV***), the ***Project SPV*** will have risk and title in the natural gas and on its liquefaction, will be entitled to all the LNG produced.

(d) Structures involving Tolling Services:

(i) ***US Tolling Structures*:**

In the late noughties through 2011 and 2012, in the US a number of liquefaction facilities were developed to toll feed-gas hauled through the natural gas pipeline network in the US taking advantage of Henry Hub pricing, with LNG produced from that natural gas marketed / sold under long term LNG SPAs to creditworthy buyers of that LNG. Typically, the quantity of LNG marketed / sold was tied to an LNG liquefaction train that was project financed. In many ways, a project financiers dream.

(ii) ***Ullage Tolling Structures*:**

As LNG projects come off plateau, there is spare capacity in liquefaction facilities (***ullage***). Reserves of natural gas relatively proximate to those liquefaction facilities (on-shore or off-shore) previously not economic (otherwise ***Sub-E Projects***) may become economic if it is possible to secure the agreement of the owner, or the owners, of liquefaction facilities that have ***ullage*** to allow the use of that ***ullage***, and to be provided with services to allow use of that ***ullage***, including to allow processing and treatment (if not processed and treated upstream of the delivery point) and to liquefy feed-gas delivered to a delivery point. (In each case ***Tolling Services***.)

The provision of ***Tolling Services*** is a good thing:

(1) for the owner (or owners) of the liquefaction facilities with the ***ullage*** used to provide the ***Tolling Services***, the provision of those ***Tolling Services*** lengthens the anticipated life of the facilities, and increases the rate of return for the owner (or owners);

(2) for a shipper or shippers of natural gas as feed-gas (each a ***Shipper***) (as the customer for / user of ***Tolling Services***), the provision of those ***Tolling Services*** allows ***Realisation of Reserves*** that would not have been developed from otherwise ***Sub-E Projects***; and

(3) for host governments, the provision of ***Tolling Services*** allows hydrocarbon reserves to be developed that would not have been developed from otherwise ***Sub-E Projects***, and in so doing producing LNG (to be shared under PSC and hybrid fiscal and regulatory regimes) and from which royalty and tax revenue will be received from what would otherwise have been stranded reserves.

(iii) **Sufficient Ullage:**

For an Ullage Tolling Structure to work there has to be sufficient ***ullage*** in the existing liquefaction facilities (and related facilities, including processing and treatment if the feed-gas is not processed and treated upstream).

Sufficient ***ullage*** is a threshold issue.

(1) **Sufficient Ullage:** If there is sufficient ***ullage*** available, it is likely that the operator of an ***Integrated Project*** or ***Separate Project*** or ***Project SPV*** will contract for the provision of ***Tolling Services*** with the ***Shipper*** as the customer for / user of the ***Tolling Services***.

In these circumstances, the operator will be the operator of the existing facilities.

(2) **Insufficient Ullage:** If there is not sufficient ***ullage*** available to allow sufficient feed-gas to be liquefied so as to make the upstream project economic, participants in an existing ***Integrated Project*** or ***Separate Project*** that participate or have affiliates that participate in the otherwise ***Sub-E Project*** may determine to expand the capacity of existing facilities to ensure that there is sufficient ***ullage***, or build new facilities, to be able to make use of ***ullage*** in the existing facilities and to use the capacity in the new facilities.

In these circumstances, the operator will be the operator of the existing or the existing and new facilities. It is most unlikely that there will be two operators.

(iv) **True Tolling Structures:**

Both the ***US Tolling Structures*** and the ***Ullage Tolling Structures*** are true tolling structures. While they are true tolling structures, the terms on which ***Tolling Services*** are provided will differ under each structure, and for that matter each project.

The terms of ***US True Tolling Structures*** are beyond the scope of this article, and have been well-canvassed overtime in any event.

The terms of ***Ullage Tolling Structures*** are considered at a high level in this article, and it is noted that the terms on which the ***Tolling Services*** will be provide is likely to

depend on the identify of ***Shippers*** and the owner (or owners) of the liquefaction facilities.

If existing facilities are being used to provide ***Tolling Services***, there will be a trade-off between the amount of the charges payable for the provision of the ***Tolling Services*** and the firmness of the ***Tolling Services*** and liability that the owner or owners of those existing facilities are prepared to take:

(1) the ***Shipper*** will want the lowest charges and the firmest supply obligation, backed by liability of the ***Service Provider*** (or each ***Service Provider***) if ***Tolling Services*** are not provided in accordance with the ***TSA***; and

(2) the ***Service Provider*** (each ***Service Provider***) will want the highest charges, with an obligation to provide ***Tolling Services*** on "as is, where is" basis, with liability excluded and limited to minimize the risk to the owner (or owners) if the ***Tolling Services*** are not provided in accordance with the ***TSA***.

The co-authors of this article have acted for both ***Service Providers*** and for ***Shippers*** (and for their respective financiers) on all forms of tolling structures, including ***Ullage Tolling Services***. The arguments for each position are many and varied, and the length of this article does not allow them to be canvassed in any detail.

Suffice it to say that the following perspectives should be expected:

(1) ***Service Provider*** will have a clear perspective: while the use of ullage and the provision of ***Tolling Services*** increases the rate of return, it must do so with a risk profile that is capped at the amount of the benefit to the owner (or the owners): why would they assume risk that they do not have to enable the participant or participants in an otherwise ***Sub-E Project*** to develop that Project?

(2) ***Shipper*** will have a clear perspective, the use of the ***ullage*** and the provision of ***Tolling Services*** increases the rate of return of the owner (or the owners), and for this the ***Shipper*** requires a level of firmness in the obligations of the owner (or owners) so that the ***Shipper*** or ***Shippers*** will be able to take a final investment decision to develop an otherwise ***Sub-E Project***.

As is invariably the case with the apparently irreconcilable, there is no basis to reconcile. While as a general statement this may be considered correct, there are ways to ensure that there is "a meeting of minds" in the assessment and means of mitigating the risks. As is the case with all natural gas (and oil) projects and transactions, the basis for liability of an operator is well-known, and any variation on this will mean that the ***Service Provider*** is the "meat in the sandwich", and may be liable for the performance of the operator to the extent of any mismatch. This offers a way forward.

If you have any questions, feel free to contact any of the co-authors.

(v) **Structured Tolling / Pass-through Tolling Arrangements:**

As will be apparent from **Section 2.1(d)(i)**, while the terms of contracting under ***True Tolling Structures*** may be different, all the terms under any ***True Tolling Structure*** are on arm's length terms in the sense of being negotiated by each party to the ***TSA*** to achieve the best outcome for that party in the circumstances (recognizing of course the perspectives outlined in **Section 2.1(d)(iv)**).

Tolling structures are used in other natural gas and LNG projects, typically, in ***Separate Projects***. As explained below, the tolling structures used in ***Separate Projects*** are unlikely to be on arm's length terms. Rather than being an arm's length terms, the tolling of natural gas as feed-gas and entitlement to LNG based on the mass, volume and specification of the natural gas delivered for tolling (processing, treatment and liquefaction), on an cost pass-through basis (typically without margin, but if with margin a margin that is agreed and in accordance with advice as to the amount of those costs and that margin), and on "a without liability basis", other than the usual risk allocation in respect of any operator under an oil and gas project. (Even here, a well-advised operator may seek to narrow still further any risk of liability.)

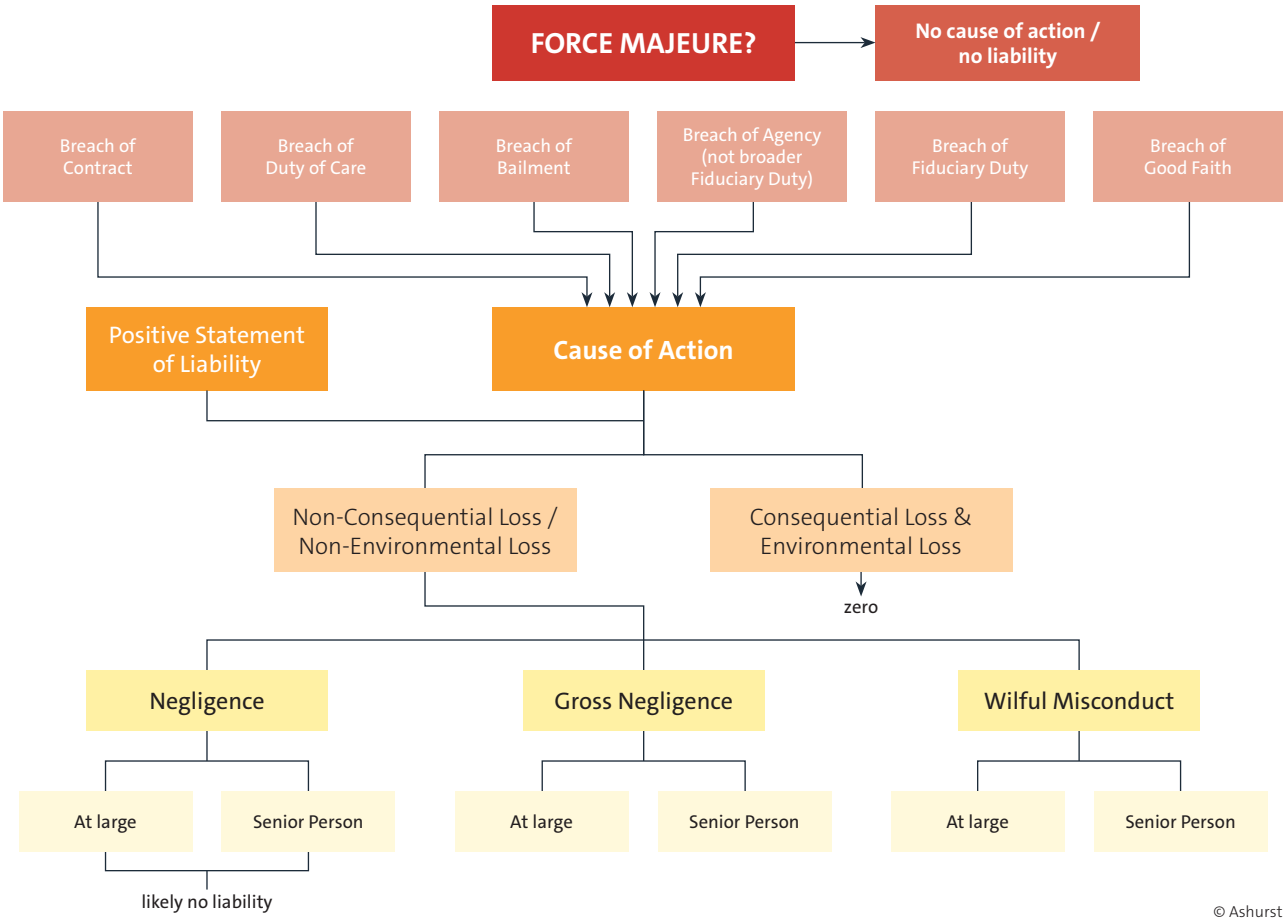
For the purposes of this article, a Structured Tolling or a Pass-Through Tolling Arrangements in these circumstances is not a True Tolling Arrangement.

(e) Common theme of each project structure:

(i) **Operator role and responsibility:**

While the structures may be different, in an ***Integrated Project*** structure and in a ***Separate Project*** structure one of the participants in each unincorporated joint venture will be the operator, and in the case of a ***Separate Project*** structure it is likely that one entity (each a participant in each joint venture) will be the operator across each ***Separate Project***.

Figure 1: Usual basis of liability under *JOAs*[21]



21. Under a ***JOA*** the operator is not liable to the other participants other than in well-defined terms, but never for failing to act as a reasonable and prudent operator, short of that failure amounting to gross negligence or wilful misconduct. In the context of contracting with third parties for the purposes of undertaking activities as operator, the operator may seek to carry forward this approach. In the context of the sale of LNG, the operator is not involved, the participants together, as a common stream, or each participant, on the basis of equity / separate lifting, will be liable for non-delivery and short-delivery. A well-advised service provider will be clear: this is a risk that participants as sellers under LNG SPAs take on a daily basis, knowing that there is a mismatch between the liability for non-delivery or short delivery that it cannot recover from the operator. The fact that a service provider is providing tolling services to a shipper under a ***TSA***, should not result in a different outcome: effectively the shipper will take the same risk as it would take if it were a participant, and in effect the recipient of a service from the operator.

The obligations of the operator will be governed by the ***JOA*** or each ***JOA***, and will follow a well-known form, critically, the duties and obligations of the operator, and the liability of the operator. **Figure 1** outlines the usual basis of liability under ***JOAs***.

In the context of a single and multiple ***Project SPV*** structure, it is likely that one of the shareholders / stockholders in the incorporated joint venture or each incorporated joint venture will contract with the ***Project SPV*** or each ***Project SPV*** to operate and to maintain the underlying assets and infrastructure. The terms of these arrangements will reflect the arrangements in respect of an operator under an ***Integrated Project*** structure and in a ***Separate Project*** structure, critically, as to liability of the operator (or the applicable operator).

There are some circumstances in which assets and infrastructure are going to be used for the purposes of distinct projects, most relevantly, where there are existing liquefaction facilities that are going to be used to process, treat and liquefy natural gas from different off-shore or on-shore fields in circumstances in which their capacity is to be augmented or a liquefaction facility is to be developed to provide sufficient ***ullage***.

This is typically the case if there are a number of participants in one project that have related corporations that are participants in another project, typically the one that is to be developed. In these circumstances, common use of liquefaction facilities may realize an economic benefit across projects[22].

In these circumstances, it is likely that the existing operator or the liquefaction facilities will be the operator of the augmented or new liquefaction facilities, and the terms on which the operator operates and maintains the liquefaction facilities will not impose any different, or increase the extent of any, duty and obligation.

(ii) **Extent of services that are Tolling Services:**

Well-advised ***Service Providers*** and ***Shippers*** will have a clear perspective on the scope and extent of the ***Tolling Services***. This perspective will be informed by the underlying ***JOA*** or ***JOAs***, any existing common use facilities and agreements governing those common use facilities, and the extent to which it may be appropriate for the ***Shippers*** to develop infrastructure downstream of the delivery point for LNG.

Clearly these are case-by-case (project-by-project, transaction-by-transaction) issues, but they need to be considered early on in the scoping of the ***Tolling Services***.

(f) ***TSAs*** **considered for the purposes of this article:**

A liquefaction tolling services agreement is likely to be used, in circumstances in which:

(i) an existing liquefaction facility wishes to use ullage to allow the development of a new and separate field;

(ii) an existing liquefaction facility wishes to use ullage, and to increase capacity through a augmentation or the development of a new liquefaction train to enable the development of a new field, typically, one in which a related corporation has a participating interest (being a related corporation of an entity with a participating interest in the existing liquefaction facility); or

(iii) existing sources of natural gas are available and the value of that natural gas could be increased on its liquefaction and sale into a new market, with a single purpose vehicle developing a liquefaction facility on the basis of revenues from a creditworthy off-taker of LNG under a term LNG SPA.

While this article considers each circumstance, it focuses on the first and second circumstance, noting that the third circumstance tends to have less variability, with the key commercial and legal issues well-understood if the liquefaction train is to be project financed using senior debt.

Key issues in respect ***TSAs*** are identified in **Table 1**.

22. For the purposes of this article, the assessment of those economic benefits and the terms upon which they are realised for each participant is not covered, but it is critical that they are understood by all sides. Depending on the form of the fiscal regime applied, for the host government, the terms upon which the benefits may be relevant to royalty and tax revenue received, and may need close scrutiny.

(g) LNG lifted as common stream or as equity entitlement:

Once natural gas has been tolled to produce ***LNG***, the ***LNG*** will be delivered into storage and from there loaded onto an LNG carrier.

LNG may be lifted:

(i) as a common stream, with the ***LNG*** lifted jointly by each participant entitled to it, and sold by those entitled to it (in proportion to their respective participating interests) as a common stream to the buyer of that ***LNG***, with the ***LNG*** then sold jointly; or

(ii) as an equity lifting, with the ***LNG*** lifted separately (as opposed to jointly) by each participant entitled to lift it, and sold separately by that participant to the buyer of that ***LNG***.

(As noted above, storage and lifting of ***LNG*** will be a function of the applicable equity agreements (***JOA*** or otherwise), and any common use facilities, and as such the activities to deliver into storage, from storage, use of common facilities to load ***LNG***, and actual loading need to be considered in the context of the definition of ***Tolling Services***, but are unlikely to be within the scope of the ***Services***.)

(h) Transportation of LNG:

While it may seem obvious, the transportation of LNG will not be within the scope of the ***Tolling Services***. The critical point for both ***Service Provider*** and ***Shipper***, critically, the ***Shipper*** is to ensure that the ***TSA*** and lifting arrangements are capable of being aligned with the LNG sale arrangements and the underlying LNG SPA, together with the transportation obligations under that LNG SPA.

The LNG carrier will have been arranged by the seller of the LNG if the LNG is being sold ex-ship (i.e., under the LNG SPA, the seller has agreed to arrange transportation and to make delivery of the LNG to a receiving terminal at an unloading port (***Ex-Ship LNG SPA***) or by the buyer if the ***LNG*** is being sold free on board (i.e., under the LNG SPA, the buyer has agreed to arrange transportation, and to take delivery of the ***LNG*** at the loading port (***FOB LNG SPA***).

Under an ***Ex-ship LNG SPA***, the seller will be concerned to ensure the port and receiving terminal to which it is to transport, and to make ***LNG*** available for off-take, is understood and in this regarded will want to understand, amongst other things, the conditions of use and the liability regime applicable at that unloading port (or any unloading port to which it may be required to transit), and at the receiving terminal (or any receiving terminal) to which it may be required to make delivery.

Under an ***FOB LNG SPA***, the buyer will be concerned to understand, amongst other things, the conditions of use and the liability regime applicable at the loading port.

(i) Unloading Port and Receiving Terminal:

On an ***Ex-ship LNG SPA***, the unloading port and the receiving terminal are likely to be identified under the scheduling procedure (in the case of a term LNG SPA) and in the confirmation notice (in the case of a spot sale), and the seller will want to be assured that it can access the port, and that the buyer is able to take delivery of ***LNG*** at a or the receiving terminal within the port.

On an ***FOB LNG SPA***, the buyer will typically take title at the loading port. While the unloading port and the receiving terminal may not be identified in the LNG SPA, the buyer will want to know that the LNG carrier can enter the unloading port, and either owns and operates or owns or operates the terminal receiving terminal or is contracted for the provision of terminal use services at a, or the, receiving terminal within the port.

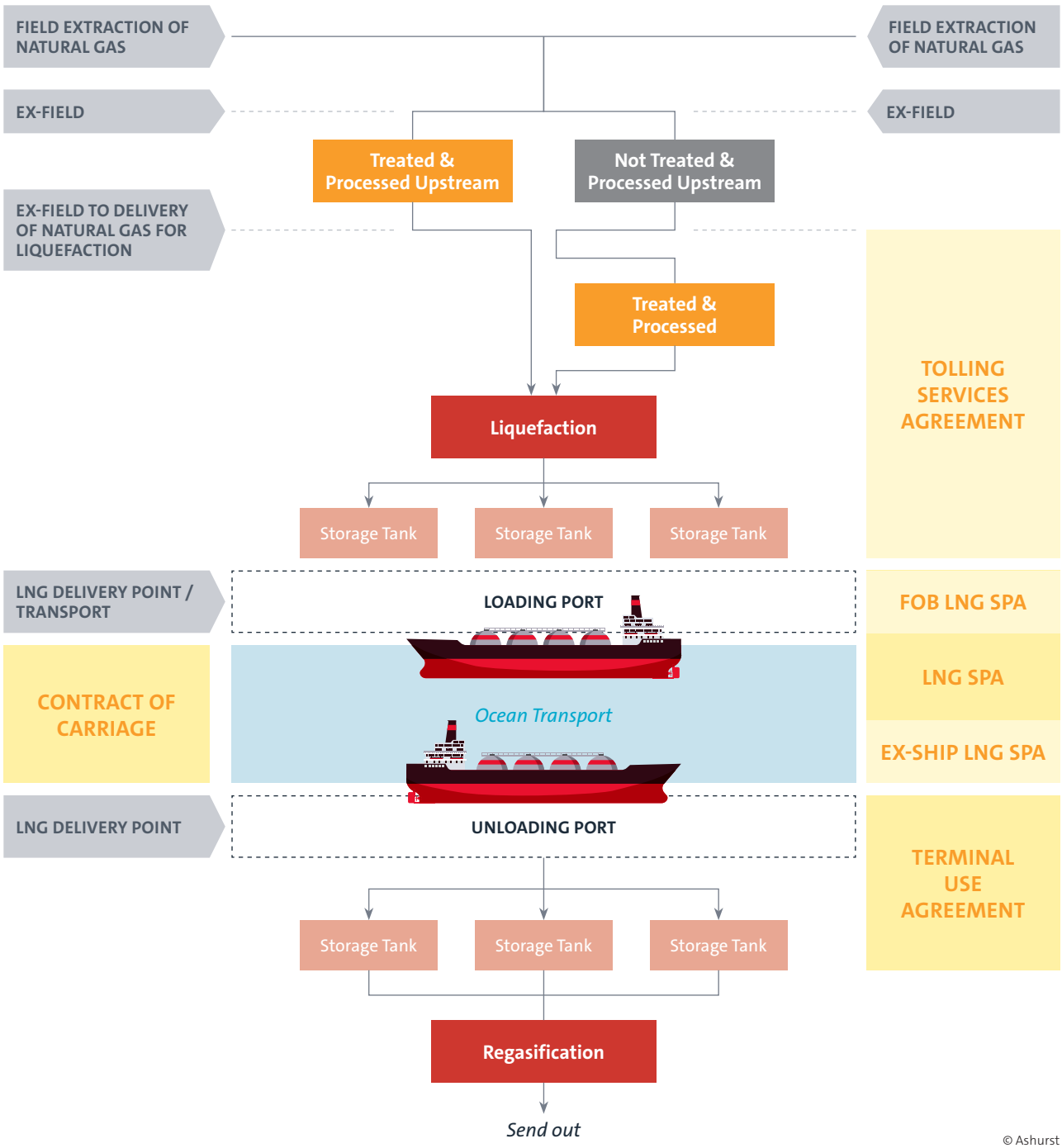
(j) Parties to *TSA*s:

The parties to a ***TSA*** are likely to be the ***Service Providers*** being the party that owns and operates or operates the ***Tolling Services Facilities*** (being the facilities used to provider the ***Tolling Services***), and, if different, each owner of the ***Tolling Service Facilities***, and the ***Shipper***, being the party that procures the delivery of natural gas to the delivery point at which point the ***Service Provider*** is required to receive natural gas within specification, and the party that takes LNG or that procures that LNG is taken at the delivery point on loading onto an LNG carrier.

(k) Contractual matrix presented diagrammatically:

Figure 2 provides a diagrammatic representation to illustrate how the ***TSA***, LNG SPA (and the associated contract of carriage) and ***TUA*** fit together.

Figure 2:



2.1.2 Follow the flow of molecules … for a *TUA*:

(a) Land based receiving, storage and regasification facilities:

Traditionally receiving terminals have been located within ports to allow unloading of LNG from ship to shore, with the LNG stored on shore, taken from storage for regasification and sent-out, with the send-out occurring from the receiving terminal (over a relatively short distance) to point of use, typically, a gas-fired power station, or a short distance, from the tail-pipe to a point of connection into the gas transmission and distribution network in-country to the point of use. (Typically, the LNG being regasified was owned by the owner of the receiving terminal, regasification facility and the trunk and distribution network.)

Typically, the receiving, storage and regasification facilities are:

(i) owned by the buyer of LNG, (including as described above);

(ii) developed by two or more importers of LNG and project financed, possibly directly or using a BOO or BOOT structure;

(iii) developed by government as third party use terminals to provide ***Terminal Services*** on a non-discriminatory basis to those entitled to import LNG; or

(iv) developed as a merchant facility and project financed, on the basis of long-term ***TUA*s** entered into by ***LNG*** importers for "own use" in country.

(b) Floating Storage Regasification Units:

Over the last 12 years or so[23], floating storage and regasification units (***FSRUs***) have been used to allow increased flexibility (economic and operational), in the import of ***LNG*** both for gas-to-power projects (with the ***FSRU*** dedicated) and for the import of ***LNG*** which is then to be regasified for transmission and distribution to the point of use.

FSRUs are moored within a port, with the ***LNG*** unloaded from the LNG carrier stored on the ***FSRU*** (rather than on shore) until regasification and send-out.

Typically, the ***FSRU*** will be under a long-term charter party, operated and maintained by the owner of the ***FSRU*** (***FSRU Owner***). While it is possible to provide for use of an ***FSRU*** by multiple importers of ***LNG***, this does not tend to be the norm, but if this is the case a terminal use agreement will be entered into between the terminal operator and each importer (as user).

(c) Open and negotiated access:

Well-advised ***Shippers*** and owners of receiving, storage and regasification facilities (land based or floating) will understand whether there is any risk of a third party being able to seek access to the facilities under any essential services, or other infrastructure doctrine. This needs to be understood.

(d) Structure of land-based projects:

LNG receiving terminal projects are structured in a number of different ways (detailed below), and in the context of the provision of ***Terminal Services*** (and as such in which a ***TUA*** is required) tend to be structured as outlined in ***Service Provider Vehicle*** and ***Merchant Projects***.

For the sake of completeness, this **Section 2.1.2(c)** explains all structures that might be encountered in relation to any land-based regasification terminal, including structures that do not require ***Terminal Services*** (and as such in which a ***TUA*** is not required).

- **Dedicated own use:** All assets and infrastructure from receipt to send-out, or connection to main trunk gas transmission infrastructure, are owned by one entity, and that entity is also the sole user of the facility (***Sole Use Project***). ***Sole Use Projects*** tended to be used by state-owned companies and enterprises, typically, with a statutory duty to procure and to supply natural gas for use in country. The ***Sole Use Project*** is the traditional large-scale utility company (electrical energy company or natural gas company) model, used in Japan and South Korea. For many years, this tended to be the norm. No terminal use agreement is required in the case of these projects. It may be that a ***Sole Use Project*** will grant access and provide services to a third party (typically, with an own use import licence), but this will tend to be on an ad-hoc basis.
- ***Sole Use Project* structured as a BOO or BOOT:** This is a variation on the **dedicated own use** structure, where the importer of LNG contracts with another entity, typically, experienced in the development and operation of LNG receiving, storage and regasification facilities, to develop the facilities (and to finance them), invariably using a single purpose vehicle (funded as to equity and debt), with the single purpose vehicle (***BOO / BOOT Contractor***) contracting with the importer of LNG to provide receipt, storage, regasification and send-out services under a terminal use agreement. Typically, this approach may be used on a gas-to-power project or where the importer is a state-owned company or authority. The ***BOO / BOOT Contractor*** is likely to be restricted in the ability to import LNG for itself or for any other person, or, if permitted to use for own import or for any other person, it is likely to be with the approval or on strict terms that ensure that such use does not have an adverse impact on the operation of the facilities.
- **Joint use:** All assets and infrastructure from receipt to send-out, or connection to main trunk gas transmission infrastructure, are owned and operated by a special purpose vehicle (***Service Provider Vehicle*** or ***SPV***), in which importers of LNG are shareholders / stockholders, and are also importers of LNG, typically for own use or possibly for the purposes of third party supply of natural gas derived from the regasification of the LNG (***Joint Use Project***),

23. The co-authors take as their reference point the first Excelerate Energy Project in 2008 / 2009.

with each LNG importer contracting with the *SPV* for the provision of receipt, storage, regasification and send-out services under a terminal use agreement. It may be that a ***Joint Use Project*** will grant access and provide services to a third party (typically, with an own use import licence), but this will be on an ad-hoc basis, normally contemplated in the ***TUA*** and normally on terms favourable to the ***SPV***.

- **Third party use:** Assets and infrastructure from receipt to send-out, or connection to main trunk gas transmission infrastructure, are owned and operated by one special purpose vehicle (***Third-Party Service Provider*** or ***TSP***), possibly established and owned by a state-owned company or enterprise or by a private sector entity (***Merchant Project***), and depending on the patronage of the ***Merchant Project***, project financed, with LNG importer or other user contracting with the ***TSP*** for the provision of storage, regasification and send-out services, possibly on negotiated access terms or on open access standard terms. (Article 3 in the Ashurst Global Ports, Logistic and Trade series (link) explains the difference between negotiated access and open access.)

(e) Structure of *FSRU* projects:

FSRUs have become a widely accepted and proven alternative to land-based regasification terminals, particularly if demand for regasified LNG does not justify the scale of a typical land based terminal or if project development and operation timeframes, capital expense limitations and land footprint constraints do not support a land based regasification terminal option.

There are currently over 20 *FSRU*s in operation acting as LNG regasification facilities globally, and close to the same number on the drawing board.

FSRUs are typically financed, constructed, owned and operated by a specialist vessel owner (or its affiliate) (***FSRU Owner***) and chartered to the user (***charterer***) under a time charter party or a bareboat charter. The ***charterer*** will normally be the LNG importer of record and the buyer under the LNG SPA.

If:

- a time charter party is used, the ***FSRU Owner*** will maintain and operate the ***FSRU*** and provide regasification services to the ***charterer*** in exchange for the payment of hire under the time charter party.
- a bareboat charter is used, a separate ***FSRU*** services or an operation and maintenance (***O&M***) agreement is often entered into between the charterer and by the ***FSRU Owner*** or an affiliate of it, under which regasification services are provided as part of the operation and maintenance of the ***FSRU***.

In this respect, ***FSRU*** charter party structures could be described as a form of tolling structure, given that the ***FSRU Owner*** provides regasification services to the ***charterer*** (as the LNG importer of record and buyer under the LNG SPA).

While each ***FSRU*** is typically owned and operated by a specialist vessel company, the mooring or jetty, natural gas send-out pipeline, and other balance of plant, typically, will be financed, constructed, owned and operated by the ***charterer***, or leased by the ***charterer*** in some circumstances.

While not common practice, but perhaps an emerging trend as more ***FSRUs*** are being deployed, there are a number of instances in which the ***charterer*** sub-lets capacity (effectively allow usage of capacity) in the ***FSRU*** to third party users under back-to-back terminal use agreements, resulting in a multi-user ***FSRU*** based LNG regasification terminal.

(f) Common themes of each project structure:

Operator role and responsibility under each scenario:

(i) ***Sole Use Project*:**

If receipt, storage, regasification and send-out services are provided under an ad-hoc arrangement, the services will often be non-firm and fully interruptible and, and under "an all care, no responsibility" construct.

(ii) ***Sole Use Project* structured as a BOO or BOOT:**

If receipt, storage, regasification and send-out services are provided under ***BOO / BOOT*** arrangement, the services will be firm, and under a typical risk allocation, critically, the ***BOO / BOOT Contractor*** will not take risk in any upstream or downstream event, or the consequence of it, most importantly, the availability charges or capacity charges will be payable "come hell or high water".

(iii) **Joint use:**

If receipt, storage, regasification and send-out services are provided to ***LNG*** importers under a ***Joint Use*** structure, the services will be firm, and under a typical risk allocation, but if any ***LNG*** importer causes an adverse impact on the operation of the facilities that importer will be responsible for the consequences. As is the case with a ***Sole Use Project structured as a BOO or BOOT***, the single purpose project vehicle will not take risk in any upstream or downstream event, and the availability charges or capacity charges will be payable "come hell or high water".

(iv) **Third Party Service Provider:**

If receipt, storage, regasification and send-out services to LNG importers are provided on a term basis, the services will be firm, and under a typical risk allocation, with services being provided under non-discriminatory and equitable treatment principles. If the ***TSP*** is a government owned and the facilities are not fully utilized the terms of service provision are likely to encourage use. As is the case with a ***Sole Use Project structured as a BOO or BOOT***, the ***TSP*** will not take risk in any upstream or downstream event, and the availability charge or capacity charges will be payable "come hell or high water".

(v) ***FSRU*s Charter Parties:**

In the case of an ***FSRU*** charter party structure, the ***FSRU Owner*** provides, maintains and operates a dedicated vessel which it uses to provide LNG receipt, storage, regasification and send-out services on behalf of the charterer (as the LNG importer of record and the buyer under the LNG SPA).

Accordingly, ***FSRU*** charter parties adopt many of the key features of ***TUA*s** for land-based regasification terminals, specifically in relation to the provision regasification services. However, the use of a vessel (as opposed to land-based infrastructure), the applicable vessel specific requirements and provisions, as well as the ownership of the balance of plant by the ***charterer***, means that ***FSRU*** charter party structures represent something of a hybrid between land-based ***TUA*s** and other vessel charter parties under which services are provided, although a discrete market practice has emerged in relation to the risk allocation under these structures as the ***FSRU*** market has matured.

(g) *TUA*s considered for the purposes of this article:

For the purposes of this article, the following ***TUA*s** are considered:

(i) ***Sole Use Project* structured as a BOO or BOOT**;

(ii) ***Joint Use***;

(iii) ***Third Party Service Provider***;

(iv) ***FSRU*** joint users or multiple users.

Key issues in respect of ***TUA*s** are identified in **Section 4**.

(h) Parties to *TUA*s:

If the ***Terminal Services Facilities*** (being the facilities used to provide the ***Terminal Services***) are owned by a ***Project SPV*** or otherwise owned by a single owner, the parties to the ***TUA*** will be ***Project SPV*** or that single owner (as the ***Terminal Service Provider*** (***TSP***)), and the ***Shipper*** (as the customer for or user of terminal services), as the importer of record for ***LNG*** and the buyer under the LNG SPA.

If the ***Terminal Services Facilities*** are owned by more than one person, each owner of or the operator (acting as agent for each of those owners) the ***Terminal Service Provider*** (***TSP***) and the ***Shipper*** will be party to the ***TUA***.

Under any ***TUA***, the ***Shipper*** will be obliged to procure the delivery of ***LNG*** to the delivery point at which the ***Terminal Service Provider*** is obliged to receive ***LNG*** within specification, and to procure that natural gas is taken at the delivery point for use (for example for use as fuel for a gas-fired power station or for a high-heat temperature processes, for example, pig iron production to provide feedstock for blast furnace steel production) or to connect to the gas-transmission system / trunk-line in which the ***Shipper*** must have secured firm haulage rights under a gas haulage or transportation contract.

2.2 SELL DOWN OF INTERESTS IN INFRASTRUCTURE:

2.2.1 Background to sell-downs of interests in infrastructure:

Infrastructure has long been an attractive asset class for investment. Driven by the fundamental importance of the asset class, both to the businesses that own relevant infrastructure and the broader economy, infrastructure arrangements can be structured to generate relatively stable, long-term returns, with limited exposure to cyclical economic conditions, and as such is compelling for many financial investors.

The sale of infrastructure by infrastructure owners that will continue to use that infrastructure enables ***Realisation of Capital*** i.e., liberating value and freeing up capital. Freed up capital can be used for investment in other assets or businesses, or to realise value for shareholders / stockholders in distributions, or a mix of each. As noted above, in the natural gas (and oil) industry, the ***Realisation of Capital*** will allow ***IOCs*** and ***NOCs*** to transform their existing businesses to low, lower or no carbon businesses as progress is made towards ***NZE***.

2.2.2 Is an ISA or IUA required on a sell-down?

(a) The short answer is… it depends:

If the ***Realisation of Capital*** arises:

(i) on an outright sale of infrastructure that is not going to be needed for the continuing business of the vendor, neither an ***ISA*** nor an ***IUA*** will be required; and

(ii) on an outright sale of infrastructure or a structured sale of infrastructure, if that infrastructure is going to be needed for the continuing business of the vendor following the sell-down, either an ***ISA*** or an ***IUA*** may be needed depending on the structure of the sell-down and the post sell-down use or service provision requirements of the vendor (***Continuing Use Requirement*** or ***CUR***).

Note that if the vendor has a ***Continuing Use Requirement***, the sale of infrastructure in this context typically takes the form of a sell-down of an interest in that infrastructure, rather than an outright sale (i.e., a complete "sell-off") of all of the assets. Because of the critical importance of the infrastructure to the vendor's ongoing business (or that of a related entity), there is generally a reluctance to alienate any legal (or equitable) interest in the infrastructure to any a third party notwithstanding the contractual protection that can be put in place under an ***ISA*** or ***IUA***.

(b) Spread of sell-down structures if *CUR*:

The spread of sell-down structures to allow ***CUR*** are many and varied, but they may be best described as from light to heavy:

(i) **Light:** a structured sell-down under which the investor does not acquire any title or interest in the underlying infrastructure (or any estate or title in land on which it is located or that it traverses) rather the investor acquires a contractual right to be paid an availability or capacity charge in consideration for having paid a sum of money for that right, in which case an ***IUA*** is needed. The parties to the ***IUA*** will be the investor and the vendor (or an affiliate of the vendor) that is credit worthy.

(ii) **Light to Medium:** a structured sell-down under which the investor does not acquire any title in the underlying infrastructure (or any estate or title in land on which it is located or that it traverses), but rather a leasehold or similar interest in the infrastructure. Use and operation rights for the infrastructure are then granted by the investor to the vendor under an ***IUA***, and in return the investor is paid for usage. The "investor" in this case is often a newly incorporated subsidiary of the vendor in which the third party investor has a minority shareholding.

The charging regime for the use of the infrastructure, typically structured to achieve higher gearing, is likely to be complex. Critically, the complexity of the charging regime in this context is to address which party to the ***IUA*** has demand risk, i.e., the extent to which the charging regime ensures that, irrespective of the level of use of the infrastructure, charges continue to be payable.

(iii) **Medium:** sell down of part of an undivided interest (participating interest) in the infrastructure assets themselves or a minority equity stake in a corporate entity (or possibly a synthetic equity stake) that owns the infrastructure, with operation of the infrastructure continuing without any change at all, in which case terms of the participation or minority equity stake (or synthetic equity stake) will govern the return of, and return on, investment.

No ***ISA*** or ***IUA*** is needed in this context given that there is no change in the majority ownership and the operatorship of the assets. However, to separate ownership and operatorship of the assets, the owners(s) of the infrastructure will often enter into an agreement with the vendor (or an affiliate of the vendor) to operate and maintain the infrastructure for all of the owners.

(iv) **Medium to heavy:** a sale and lease back arrangement under which the investor in the infrastructure acquires the sole legal title and the entire beneficial interest in the infrastructure assets and leases the infrastructure back to the vendor (or an affiliate of the vendor that is credit worthy), and the vendor pays a rental amount for the right to use the infrastructure under the terms of an ***IUA***.

(v) **Heavy:** the sale by the vendor to the investor of sole legal title and entire beneficial interest in the infrastructure (and the estate or title in land which it is located or that it traverses and each licence or permit that enables the operation of that infrastructure).

The investor then contracts with the vendor (or an affiliate of the vendor that is creditworthy) on a long-term basis under an ***ISA***:

(1) to provide infrastructure services to the vendor, including with respect to asset operation and maintenance; or

(2) more likely to provide infrastructure services to the vendor, but enters into a contract with an affiliate of the vendor, under which the affiliate of the vendor operates and maintains the infrastructure so at to deliver the infrastructure services to the vendor in accordance with the ***ISA***.

(c) Key features and themes:

(i) **Fundamental issue:** A vendor with a ***CUR*** will want to ensure that, whichever structure is used, the sell-down does not affect the operation (or maintenance) of the infrastructure. It is imperative for the vendor that its use and the operation of the infrastructure continues on a "business as usual" basis, and therefore maintaining operational control of infrastructure is fundamental for the vendor selling down.

(ii) **Sell-down structure confers no right to operate:** Given the vendor's ***CUR*** and the desire to ensure that "business is usual" is maintained, the rights to control operation and use are generally entirely separate from the investment i.e., the ownership of any title or interest in the infrastructure, any participating or equity interest, or any right to receive any payment or rental will not confer any right to operate (and to maintain) the infrastructure.

(iii) **Supply of services:** If the sell-down is structured as a sale of sole legal and entire beneficial interest in the infrastructure then the performance of the infrastructure services will typically be sub-contracted by the investor to an affiliate of the vendor under an ***ISA***. The scope of the services will be determined by the vendor. At a minimum, the services will encompass day-to-day operations of the existing infrastructure. But often, depending on the extent and nature of the sell-down, the services will extend to infrastructure replacement and enhancement, i.e., decisions of a capital nature, reflecting the vendor's requirement to ensure continued operation. While the vendor may make decisions as to capital investment, the basis on which the investor may make that investment will be detailed, and if the investor makes an additional capital investment, the charges will be adjusted to allow the return of, and a return on, that capital.

(iv) **No right against the investor or the owner:** If the condition of the infrastructure is such that it cannot be used or the service cannot be provided, this is a vendor (or affiliate of vendor) risk, and the investor to whom the infrastructure or rights were sold will not be liable, and will continue to have a right to be paid.

(v) **No right to alienate interest and no right to terminate:** The investor will not be able to realise the value of their interest other than in a pre-agreed way, and the investor will not be able to terminate the ***ISA*** or ***IUA*** or enforce any security at an asset level (indeed will not be granted any security at an asset level).

(d) *ISA*s and *IUA*s considered for the purposes of this article:

For the purposes of this article, the key issues arising under ***ISA*s** and ***IUA*s** are identified in **Section 4**.

Narrative Box 3 – Definitions

BOO and BOOT	build, own and operate (***BOO***) or build, own, operate and transfer (***BOOT***): under a ***BOO*** or ***BOOT*** arrangement the concessionaire / service provider agrees to develop a facility (the build), to own (and to finance) it, and to operate it so as to provide a service to a ***Shipper*** in accordance with the terms of the ***BOO / BOOT*** contract or concession
Contract of Carriage	the contract between the carrier of ***LNG*** and in the importer of ***LNG*** if the ***LNG*** is being delivered on a ***FOB Basis*** or between the carrier of ***LNG*** and the exporter of ***LNG*** if the LNG is being delivered on an ***Ex-ship Basis***. The carrier of ***LNG*** will have to contract for the provision of ***Port Services***
Ex-ship Basis	the seller under the ***LNG SPA*** (being an Ex-Ship LNG SPA) is responsible for arranging transportation from the loading port to the unloading port
FOB Basis	the buyer under the ***LNG SPA*** (being a FOB LNG SPA) is responsible for arranging transportation from the loading port to the unloading port
LNG SPA (being a Sale of Goods Contract)	the contract between the buyer and seller of ***LNG*** under which the seller agrees to deliver ***LNG*** to the seller, at the point of loading if the ***LNG*** is being delivered on a ***FOB Basis*** or at the point of unloading if ***LNG*** is delivered on an ***Ex-ship Basis***
Pilot	a ***Port Service Provider*** required to pilot each LNG carrier to and from a designated pilot boarding station or anchorage, and moor or berth to load / unload
Pilotage	the provision of a ***Pilot*** and the provision of services by that ***Pilot***
Port	the port at which the Tolling Services Facilities (***TSF***) or Terminal Facilities (***TFS***) are located: the ***Port*** may be a closed, as a private port, or open, as a public port
Port Area	the area of the ***Port*** as prescribed by the terms of access or law or regulation, within which the terms of access / entry / use and exit / egress apply
Port Facility Owner or Operator or **Port Facility Owner and Operator**	means an entity that provides services using a facility (or other infrastructure) located within a ***Port***, in the case a ***TUA*** the owner or operator or the owner and operator of the ***TFS*** and in the case of a ***TSA*** the owner or operator or the owner and operator of the ***TSF***
Port Service Agreement	a contract between any ***Port Service Provider*** and a ***Port User***, for the provision of services within the precincts of a ***Port***
Port Service Provider	each provider of services to a ***Port User***, including any ***Pilotage*** and ***Towage***
Port User	a person to which services are provided by a ***Port*** or ***Port Operator*** or ***Port Service Provider*** to enter and to leave a port. The buyer of LNG will be a ***Port User*** if the LNG is being delivered on an ***FOB Basis***, i.e., the buyer has organised the ***Contract of Carriage*** to transport ***LNG*** from the port of loading to the port of unloading at which the ***TFS*** is located, and the seller of LNG will be a ***Port User*** if the LNG is being delivered on an ***Ex-ship Basis***, i.e., the seller has organised the ***Contract of Carriage*** to transport the LNG form the port of loading to the port of unloading at which the ***TFS*** is located
Terminal Use Agreement (*TUA*)	an agreement under which a ***Service Provider*** agrees to provide a service to a ***Shipper*** (noting that use of "customer" or "user" has now become more typical than ***Shipper***) or to each ***Shipper*** in respect of ***LNG*** delivered by the ***Shipper*** or that ***Shipper*** in accordance with the terms of the ***TUA***, principally to accept a stated volume or mass, or both, of ***LNG*** within stated periods of time (***Contract Quantity***), which ***LNG*** must be of a stated specification (***Contract Quality***), and temporarily to store that ***LNG*** and to regasify and to send out natural gas arising on regasification of that ***LNG***
Tolling Services Agreement (*TSA*)	an agreement under which a service provider agrees to provide a service to a ***Shipper*** or to each ***Shipper*** of feed-gas (which may be raw or may have been processed upstream, for example, if the feed-gas is pipeline gas) in accordance with the terms of the ***TSA***, principally to accept a stated mass or volume, or both, of feed-gas within stated periods of time (***Contract Quantity***), which feed-gas must be of a stated specification (***Contract Quality***), that feed-gas to be liquefied, and the ***Shipper*** or each ***Shipper*** entitled to lift a stated quantity of ***LNG***
Towage	a ***Port Service*** provided under a ***Port Service Agreement*** under which a ***Port Service Provider*** tows each LNG carrier to and from a designated pilot boarding station or anchorage within the ***Port Area***

Section 3 – Ports and Tolling Services and Terminal Use Services provision

3.1 BACKGROUND ON PORTS:

As noted above, ***Tolling Services*** or ***Terminal Services*** will be provided using facilities that are located at, or proximate, to Ports. At the Loading Port, the ***LNG*** produced will be loaded onto an LNG carrier, that will then transport the ***LNG*** to the Unloading Port. At the unloading port, the ***LNG*** will be unloaded from the LNG carrier.

If the ***LNG*** is sold on an ***Ex-ship Basis*** (i.e., the ***LNG*** is delivered by the seller to the buyer at the Unloading Port), the seller of ***LNG*** will take delivery of ***LNG*** at the Loading Port, or contract with the LNG carrier to take delivery of ***LNG*** at the Loading Port, and transport the ***LNG*** to the Unloading Port. For these purposes, the seller of the ***LNG*** or the LNG carrier, will contract the Port and with ***Port Service Providers*** at both the Loading Port and the Unloading Port. On a sale on an ***Ex-ship Basis***, the seller must make delivery of ***LNG*** at the Unloading Port, and the buyer must take delivery at the Unloading Port.

If LNG is sold on an ***FOB Basis*** (i.e., the LNG is delivery by the seller to the buyer at the Loading Port), the buyer of the LNG will take delivery of ***LNG*** at the Loading port, or contract with the LNG carrier to take delivery of ***LNG*** at the Loading Port, and transport the ***LNG*** to the Unloading Port. For these purposes, the buyer of the ***LNG***, or the LNG carrier, will contract with the ***Port*** and with ***Port Service Providers*** at both the Loading Port and the Unloading Port. On a sale on an ***FOB Basis***, the buyer must take delivery of LNG at the Loading Port, and will deliver ***LNG*** at the Unloading Port.

Each ***Port*** will have a liability regime that governs the liability for damage caused, and liability for that damage, within the precincts of that ***Port***. Chapter 4 of the Ashurst Global Ports, Logistics and Trade Compendium (link) provides an Introductory outline to matters of which any ***Port User*** needs to be aware.

For the purposes of this article, building on the principles outlined above, **Sections 3.2** and **3.3** provide an overview of what each of the seller or the buyer need to arrange, at the Loading Port and the Unloading Port.

3.2 LOADING PORT: IF THE LNG BEING SOLD UNDER THE LNG SPA IS SOLD ON AN:

(a) ***Ex-ship Basis*:**

The seller (under the LNG SPA) must take delivery or procure that delivery is taken of LNG at the point of delivery from the ***Tolling Services Facilities***. Under the terms of the ***TSA***, the seller will be the ***Shipper*** or a ***Shipper***, and must pay the charges of the ***Tolling Service Provider***.

To enable the LNG to be loaded, the seller must contract with an LNG carrier to load the LNG, and then transport the LNG to the Unloading Port. The LNG carrier must in turn contract, or have contracted, with the Loading Port to enter and exit, and to move within the Port. To move within the Port, the LNG carrier must have contracted, or must contract, for the provision of Pilotage and Towage by ***Port Service Providers***.

The seller must pay the ***Tolling Service Provider*** under the ***TSA*** and the LNG carrier (including for the costs of LNG carrier incurred in paying the ***Port*** and ***Port Service Providers*** for entry and exit and to move within the Loading Port).

(b) ***FOB Basis*:**

The buyer (under the LNG SPA) must take delivery or procure that delivery is taken of LNG at the point of delivery stated in the LNG SPA (between the buyer and the seller). Under the terms of the ***TSA*** the seller will be the ***Shipper*** or a ***Shipper***, and must ensure that the LNG SPA is consistent with the ***TSA***.

To enable the LNG to be loaded, the buyer must contract with an LNG carrier to allow loading of the LNG, and then to transport the LNG to the Unloading Port. The LNG carrier must in turn contract, or have contracted with, the Loading Port to enter and exit, and to move within the Port. To move within the Port, the LNG carrier must have contracted, or must contract, for the provision of Pilotage and Towage by Port Service Providers.

The seller must pay the ***Tolling Service Provider*** under the ***TSA***, and the buyer must pay for the LNG carrier, including for the costs of LNG carrier incurred in paying the Port and Port Service Providers for entry to and exit from, and to move within, the Loading Port.

3.3 UNLOADING PORT: IF THE LNG BEING SOLD UNDER THE LNG SPA IS SOLD ON AN:

(a) ***Ex-ship Basis*:**

The seller (under the LNG SPA) must make delivery, or procure that delivery is made, of the LNG at the delivery point, which will be consistent with the receipt point at the ***Terminal Services Facilities***. Under the terms of the ***TUA***, the buyer will be the ***Shipper*** or a ***Shipper***, and the buyer must pay the charges of the ***Terminal Services Provider***.

To enable unloading of LNG at the Unloading Port, the seller must ensure that the LNG carrier contracts, or has contracted, with the Unloading Port for entry to and exit from, and movement within, the Port. To move within the Port, the LNG carrier must have contracted, or must contract, for the provision of ***Pilotage*** and ***Towage*** by ***Port Service Providers***.

At the Unloading Port, the seller must pay the charges incurred by the LNG carrier in contracting with the Unloading ***Port*** and ***Port Service Providers***, and the buyer must procure that the seller, or the LNG carrier, has rights of access to the re-gasification terminal, and the buyer must pay for receipt and storage of the LNG (and, of course, its regasification and send-out).

(b) ***FOB Basis*:**

The buyer (under the LNG SPA) will have taken delivery of LNG at the point of delivery from the ***Tolling Services Facilities***, and must deliver LNG under the terms of the ***TUA***.

To enable unloading of LNG at the Unloading Port, the buyer must ensure that the LNG carrier contracts, or has contracted, with the Unloading Port to enter and exit, and to move within, the ***Port***. To move within the ***Port***, the LNG carrier must have contracted, or must contract, for the provision of ***Pilotage*** and ***Towage*** by ***Port Service Providers***.

At the Unloading Port, the buyer must pay the charges incurred by the LNG carrier in contracting with the Unloading Port and ***Port Service Providers*** at the Unloading Port, and the buyer must ensure that the LNG carrier has right of access to the regasification terminal.

Section 4 – Key Risk Allocation under *TSA*s, *TUA*s and *ISA*s and *IUA*s

4.1 GENERAL STATEMENT OF PRINCIPLES ACROSS *TSA*s, *TUA*s AND *ISA*s / *IUA*s

(a) **Risk Upstream and Downstream of the Facility or Infrastructure:**

If by reason of any risk upstream or downstream of the facility, the ***Shipper*** under a:

(i) ***TSA*** is unable to deliver natural gas as feed-gas to the feed-gas delivery point or to off-take LNG from the LNG delivery point;

(ii) ***TUA*** is unable to deliver LNG to the LNG receipt point or to off-take natural gas from the delivery point following send out;

(iii) ***ISA*** or ***IUA*** is not able to ship product for any reason,

the applicable service provider (under the ***TSA*** or ***TUA***) or owner (under the ***ISA*** or ***IUA***) will expect to be paid an availability charge or capacity charge on a "hell or high water basis", and will not assume any liability.

(b) **Risk of Facility:**

The applicable service provider will assume risk in respect of the operation and maintenance and the availability of the Facilities only. The owner of the infrastructure under the ***ISA*** or ***IUA*** will not assume any risk upstream or midstream and is most unlikely to assume any risk on the infrastructure itself.

(c) **Liability Limited:**

In any event, typically liability will be limited:

(i) to the abatement of the availability charge or capacity charge if using existing infrastructure; and

(ii) to the abatement of the availability charge or capacity charge if augmented or new infrastructure, but obligation to address or to cure the cause of shortfall in mass or volume throughput, with ultimate recalibration of the availability charge or capacity charge to reflect the actual capacity of the Facilities and ultimately possibly to allow termination of the ***TSA*** or ***TUA***.

Table 1 provides a summary of the typical approach to the allocation of risks across each of a ***TSA***, ***TUA*** and ***ISA / IUA***. (*Note: There may be exceptions to this typical allocation of risk on a specific project / transaction basis.*) The use of a "✓" connotes the party taking the risk, a "✗" connotes the party not taking the risk, and "**shared**" connotes that the application of the risk will "lie where it falls" if the risk arises, and "**NA**" means not applicable.

Table 1:

Issue / Risk	Tolling Services Agreement (*TSA*)		Terminal Use Agreement (*TUA*)		Infrastructure Services Agreement (*ISA*)		Infrastructure Use Agreement (*IUA*)	
	Service Provider (*SP*)	Shipper (*S*)	Service Provider (*SP*)	Shipper (*S*)	Infrastructure Owner (*IO*)	Shipper (*S*)	Infrastructure Owner (IO)	Users (*U*)
Condition of existing infrastructure:								
• Initial	shared	shared	✓	✗	✗	✓	✗	✓
• Ongoing	✓ but charges abated	✗	✓	✗	✗	✓	✗	✓
New existing infrastructure:								
• Delay	✓ but capped	✗	✓	✗	NA	✓	NA	✓
• Functionality	✓ but capped	✗	✓	✗	NA	✓	NA	✓
• Defects	✓ but capped	✗	✓	✗	NA	✓	NA	✓
Available Capacity (*AC*):	***SP*** will determine ***AC***		***SP*** will determine ***AC***		***IO*** will determine ***AC***		***IO*** will determine ***AC***	
• Annual	charges abated if service not available		charges abated if service not available		NA	✓	NA	✓
• Monthly					NA	✓	NA	✓
• Weekly					NA	✓	NA	✓
• Daily					NA	✓	NA	✓
• Hourly					NA	✓	NA	✓
Scheduled Capacity (*SC*):	***SP*** will determine ***SC***		***SP*** will determine ***SC***		***IO*** will determine ***SC***		***IO*** will determine ***SC***	
• Annual	charges abated if service not available		charges abated if service not available		NA	✓	NA	✓
• Monthly					NA	✓	NA	✓
• Weekly					NA	✓	NA	✓
• Daily					NA	✓	NA	✓
• Hourly					NA	✓	NA	✓

Issue / Risk	Tolling Services Agreement (*TSA*)		Terminal Use Agreement (*TUA*)		Infrastructure Services Agreement (*ISA*)		Infrastructure Use Agreement (*IUA*)	
	Service Provider (*SP*)	Shipper (*S*)	Service Provider (*SP*)	Shipper (*S*)	Infrastructure Owner (*IO*)	Shipper (*S*)	Infrastructure Owner (IO)	Users (*U*)
Spec at receipt point (*RP*):	Spec of feed-gas stated in ***TSA***		Spec of LNG stated in ***TUA***		Spec may be stated in ***ISA***		Spec may be stated in ***IUA***	
• ***S*** to deliver within spec	✗	✓	✗	✓	NA	✓	NA	✓
• ***SP*** to accept if in spec	✓	✗	✓	✗	NA	✓	NA	✓
Quantity to receipt point (*RP*):								
• Hourly	✗	✓	✗	✓	NA	✓	NA	✓
• Daily	✗	✓	✗	✓	NA	✓	NA	✓
• Weekly	✗	✓	NA	NA	NA	✓	NA	✓
• Monthly Annual	✗	✓	NA	NA	NA	✓	NA	✓
Title and Risk at *RP*:								
• Title	✓	✗	✓	✗	NA	✓	NA	✓
• Risk	✓	✗	✓	✗	NA	✓	NA	✓
Loss of feedstock (LoF):								
• ***LoF*** before ***RP***	✗	✓	✗	✓	NA	✓	NA	✓
• ***LoF*** after ***RP***	✓	✗	✓	✗	NA	✓	NA	✓
Loss of product (*LoP*):								
• ***LoP*** before Delivery	✓	✗	✓	✗	NA	✓	NA	✓
• ***LoP*** after Delivery	✗	✓	✗	✓	NA	✓	NA	✓
Service Provision / Use:								
• Quanity	✓ but capped	✗	✓ but capped	✗	NA	✓	NA	✓
• RPO	✓ but capped	✗	✓ but capped	✗	NA	✓	NA	✓
Non provision / Shortfall:								
• Fault of ***SP***	✓ but capped	✗	✓ but capped	✗	NA	✓	NA	✓
• Non-fault of ***SP***	shared	shared	shared	shared	NA	✓	NA	✓
Curtailment / Interruption:								
• Upstream	✗	✓	✗	✓	NA	✓	NA	✓
• Infrastructure (non FM)	✓	✗	✓	✗	NA	✓	NA	✓
• Downstream	✗	✓	✗	✓	NA	✓	NA	✓
Force Majeure upstream:	***SP*** excused performance		***SP*** excused performance		***IO*** excused performance		***IO*** excused performance	
• Shipper / User	✗	✓	✗	✓	NA	✓	NA	✓
• Service Provider	✗	✓	✗	✓	NA	✓	NA	✓
Force Majeure Infrastructure:	***SP*** excused performance		***SP*** excused performance		***IO*** excused performance		***IO*** excused performance	
• Shipper / User	shared	shared	shared	shared	NA	✓	NA	✓
• Service Provider	shared	shared	shared	shared	NA	✓	NA	✓
Force Majeure downstream:								
• Shipper / User	✗	✓	✗	✓	NA	✓	NA	✓
• Service Provider	✗	✓	✗	✓	NA	✓	NA	✓
Charges / Fees:								
• Availability / Capacity	✓ abated	✓	✓ abated	✓	NA	✓	NA	✓
• Throughput / Usage	✓ abated	✓	✓ abated	✓	NA	✓	NA	✓
Make-up:								
• Service provision	✓	✗	✓	✗	NA	✓	NA	✓
• Not product provision	✗	✗	✗	✗	NA	✓	NA	✓
Liability / Exclusion:	***SP*** liable if Wilful Misconduct		***SP*** liable if Wilful Misconduct		***IO*** liable if Wilful Misconduct		***IO*** not liable	
Termination:	Limited rights of termination				No rights of termination			

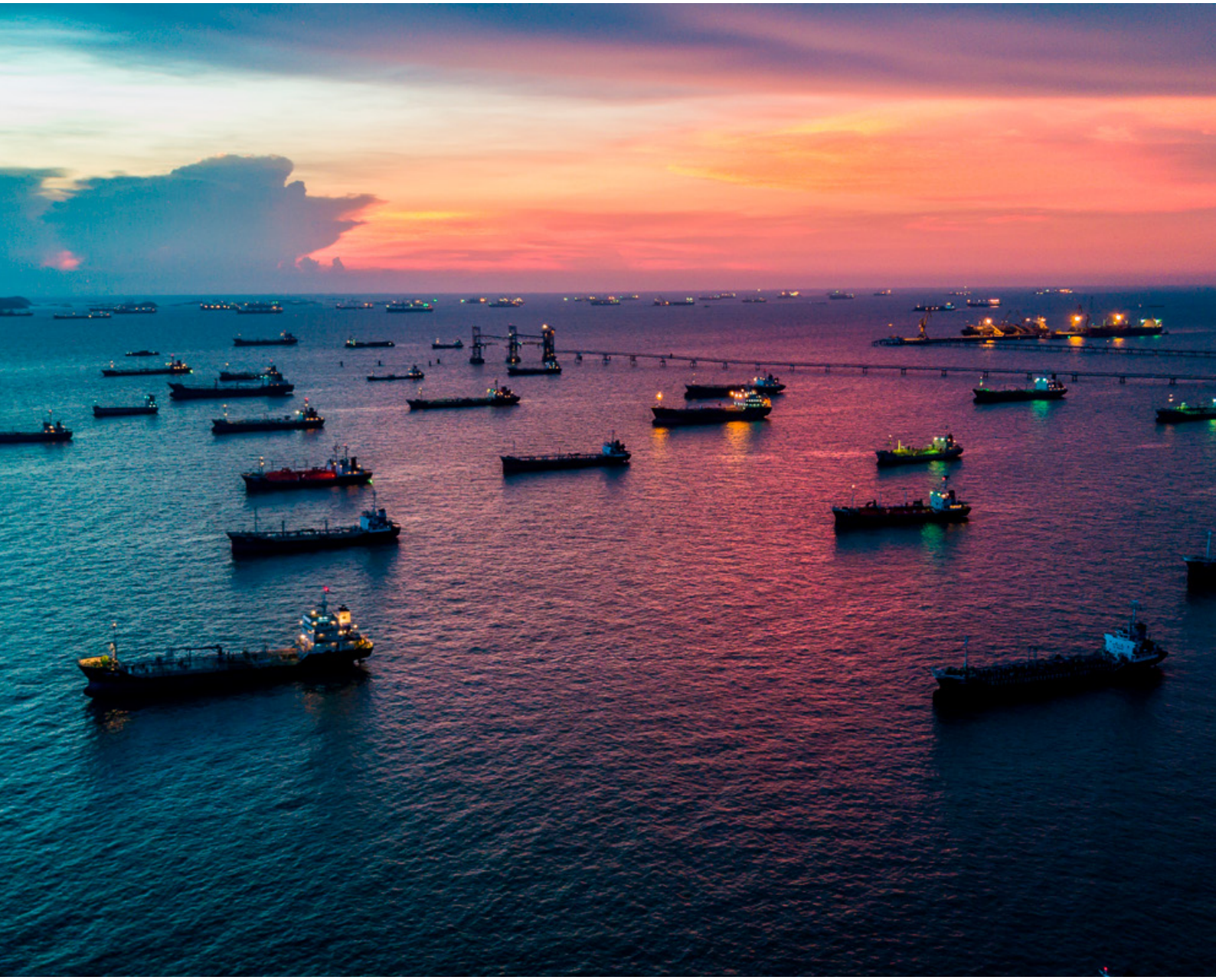
Section 5 – Likely progress

As progress is made towards ***NZE***, it is to be expected that organisations with fossil fuel oriented businesses will seek to ***Realise Reserves*** and ***Realise Capital*** as they transition (transform) their businesses to prosper and thrive in a ***NZE*** environment. In this environment, ***TSAs***, ***TUAs***, ***ISAs*** and ***IUAs*** will be used increasingly, and provide a well-accepted means of ***Realising Reserves*** and ***Capital***. This is likely to be the case in respect of the ***GCC*** countries, Africa and Asia Pacific.

It is to be expected that Realisation of Reserves and Capital will facilitate and allow the development of hydrogen and ammonia (and other hydrogen-based fuel) production capacity, and as such, fund progress towards ***NZE***.

This dynamic may be regarded as a paradox by many: ***IOCs*** and ***NOCs*** need to ***Realise Reserves*** and ***Realise Capital*** to transition to ***NZE***: maximise to minimise.

While this may be seen as a paradox, it is a reality: there is an alignment of interests for ***IOCs*** and ***NOCs*** to progress to ***NZE*** to survive, that will be integral to achieving ***NZE***. There is an existential symbiosis, between decarbonising and achieving ***NZE***.



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THE ASHURST GLOBAL PORTS, LOGISTICS AND TRADE COMPENDIUM

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