

Good afternoon, ladies and gentlemen.

I am excited to be here at this year's ONS Conference and, in particular, to be participating on today's panel about LNG, the most dynamic part of the world energy picture today.

I can't think of any part of the energy supply chain that is more literally linked to the theme of this conference, "Bridging the Energy Gap", than LNG shipping. I would like to thank the ONS organizing committee for inviting me to speak here today about the very topical issue of how shipping is adding value in the LNG supply chain.



For the benefit of those of you not familiar with Teekay Shipping, I'll begin with a brief background on Teekay and its strategy on the first couple of slides.

Teekay was founded some 33 years ago by the late Torben Karlshoej and has grown into a global company with over 5,000 employees, transporting more than 10% of the world's seaborne oil.

Over the years, we have established leading franchises in the shuttle tanker and conventional tanker trades; we are the fastest growing independent LNG shipping company with close to \$2 billion worth of LNG ships on order; and we have an increasing involvement in the offshore sector through our floating storage business and through our FPSO joint venture with Petrojarl.

Our focus on safety, quality and service has been a key building block in Teekay's growth.



This slide illustrates "The Teekay Marine Midstream Concept", which refers to Teekay's strategy of helping our oil and gas customers efficiently link their upstream production with their downstream processing and distribution. With a fleet of close to 150 ships and over 700 shore-based staff, we offer our customers a broad range of tailored marine services, including production, storage, transportation, trans-shipment, consulting and so on.



Turning to the topic of my presentation, the key components of the LNG supply chain are shown here.

Where natural gas cannot be transported by fixed pipelines due to distances or other factors, gas can be exported in liquid form onboard LNG carriers and delivered to regasification terminals in import countries.

Two things make LNG shipping very different from most other types of shipping:

Due to the large cost of putting together a complete supply chain – more than \$5 billion – and the long-term nature of the projects, the sponsors would typically not rely on the almost non-existent spot market for LNG ships to be able to provide regular transportation. Instead, they induce owners to build ships to trade on dedicated routes under long-term contracts. This is why LNG carriers are often referred to as "floating pipelines".

Secondly, due to the high cost of building LNG carriers, transportation represents a much higher percentage of the landed cost of LNG than in other parts of bulk shipping, typically around 20-30% compared to less than 5% in the crude oil business.

Given the boom in the LNG business, you can see that it is hard to optimize the overall value chain without optimizing LNG shipping.



I expect that many of you here today are well familiar with the LNG shipping but, even so, you might be interested in these notable facts and figures.

In order to facilitate transportation, natural gas is super-cooled to -163°C, shrinking it 600 times and turning it into a liquid. I like to describe LNG carriers as the world's largest 'thermos flasks' because they don't actually cool the cargo during transit but rely on their tank insulation to keep the gas liquefied.

The first seaborne LNG cargo of 5,000m³ was carried in 1959. Since then, more than 33,000 LNG cargoes have been shipped with no significant accidents occurring, so LNG shipping has proven to be safe and reliable.

Much has happened to LNG shipping since 1959. Today, the largest LNG carrier on order has an enormous capacity of 265,000m³! And, in the USA where Teekay conducts most of its investor relations, all large structures seem to be expressed in football field equivalents; so, as you can see here, the Q-Max LNG carrier will be three football fields long.



I found this statistic to be fascinating when I was preparing my notes for today: a full cargo delivered by a Q-Max LNG carrier can heat every one of the UK's 26 million homes for one day!



Even though we've all heard that LNG is growing fast, some of you might be surprised by just <u>how</u> fast it is growing.

During the past five years, one of the fastest-growing areas of expansion within the soaring Chinese economy has been the sale of cars, which has been rising by an average of 19% annually.

Based on the already locked-in orderbook for new LNG carriers for delivery over the next three years, LNG shipping capacity is expected to grow by a massive 22% per year!

Who said that shipping was a mature industry!



Given the significant developments in the LNG sector overall, you would expect the role of shipping in the supply chain to be quite dynamic.

On the following slides I will offer you my perspective on the evolving role of LNG shipping to date, seen in the context of changing LNG markets. I will also venture into some predictions on how future changes in LNG trade might drive profound changes to the traditional LNG shipping model and, in the process, change the key success factors of the future.

Along the way I will attempt to illustrate my points with examples of how at Teekay we, in some cases, have leveraged our existing strengths while, in other situations, have adjusted our strategy in our pursuit of a place at the LNG table.



I will start by looking back on the past.

It is hard to believe that not all that long ago, many people regarded gas as an unwanted by-product of oil production.

With domestic or regional availability of natural gas plentiful in many larger consuming areas, early LNG trade only developed to serve countries that lacked indigenous gas reserves. At a relatively early stage, as shown on the right-hand side of the slide, dedicated supply lines were created from Southeast Asia to Japan and Korea.

While LNG import facilities were built in a couple of other areas, gas prices of around \$2 per million Btu discouraged growth in LNG trade, and facilities were mothballed. Cargo trading was therefore limited, if not non-existent.

During this phase, LNG can be best described as a slow-growing niche trade.



The early supply chain picture looked like this. The dominant trades involved liquefaction terminals in Southeast Asia, indicated by the grey and black circles, regasification terminals in Japan and Korea, shown with light circles in the red countries, and the corresponding shipping lanes, the yellow lines.

During the first 40 years of LNG shipping, global LNG trade did develop into a number of other areas, as shown here, although the cargo volumes on some of these routes were much smaller than the main Asian trades.



For almost a quarter century, stable trading patterns and slow demand growth caused little change in the standard LNG carrier in terms of size and equipment.

Almost all ships were used in liner-type trades, sailing loaded in one direction and going back empty on dedicated routes.

During this period, on average, only 4 ships were built per year.

There was a small 'club' of LNG shipping companies dominating the marketplace, and these companies mostly only built ships against 20-25 year charters.



In this first, relatively long phase of LNG shipping, through until quite recently, the key success factors companies needed to show in order to gain contracts from customers were:

- LNG experience;
- A proven record in health, safety and environment;
- A reputation for customer service; and
- Competitive operating costs

Customers were mainly seeking ship owners with a proven track record. The shipping theme during this period could be best described as "Tried and Tested".

When Teekay Shipping looked to enter LNG shipping a couple of years ago, we felt that we three of the four competencies:

• In addition to having a proven HSE record, we had also become the first shipping company to obtain certification for integrating ISO 9001, ISO 14001, OSHAS 18001 and ISM into one comprehensive management system;

- We had strong customer ties; and
- The scale of our 150-ship fleet provided us with cost advantages.

However, as a company, we were missing LNG experience. So, while we might have ultimately succeeded in securing our first LNG project purely on the merits of our tanker business, we decided that there was value in gaining practical LNG experience. This led to our 2004 acquisition of Naviera Tapias with its four new LNG carriers.





Today, we are in the midst of a period of huge growth in LNG demand. It is important to note that this growth is not the result of a 'bubble'. On the contrary, global demand for natural gas is expected to continue to grow at its long-term, relatively modest pace of around 3% per year.

What is driving the LNG market is the growing shortfall in key markets, including the US (shown here), between demand for gas and the amount of domestic gas production. This shortfall can only be covered by LNG.

This supply and demand imbalance is driving the price of natural gas higher on a systemic basis. This, in turn, has created a strong incentive to invest in LNG infrastructure, driving expected growth in global LNG trade of 10% annually over the next decade and beyond.



With LNG being the fastest growing sector in global energy trade, the number of countries becoming involved in LNG exports is growing rapidly, while at the same time more and more energy companies and utility companies are looking to become involved.

Interestingly, most projects still seem to be developed based on an integrated supply chain model, that is, the decision to invest in costly liquefaction equipment is made only after plans are in place for the sale and transportation of the gas. So, in the base case, LNG will move in dedicated, liner-type trades and cargo trading will remain limited.

Therefore, while we are experiencing rapid growth in LNG, the business model remains largely unchanged.



Here again is the map of the logistics chain I showed a few slides back. When I set the animation in motion you should get a sense of the many new export and import projects now underway or approved, as well as the growing complexity of the shipping network.

It is also worth noting that not only is the number of routes growing, the average distance of the new routes is becoming longer and, thereby, more ton-mile intensive per unit of LNG demand growth.



With these dynamics in mind, customers have been focused on driving down the unit transportation costs in order to import LNG at the lowest price possible, enabling gas producers to maximize their margins. Suddenly the conventional LNG carriers has been pushed aside and replaced with a drive towards bigger ships, more economic propulsion systems and alternative containment systems.



Currently, new investment in LNG ships is averaging \$10-15 billion per year, thanks to a jump in the number of annual ship deliveries. This has created a greater need for capital. The high growth rate is also leading to bottlenecks and capacity constraint among even the biggest shipyards.

In the meantime, owners of LNG ships are facing shortages of experienced crews.

Financial risks to owners remain relatively low because long-term, fixed-rate charter contracts remain the norm. This, coupled with the large growth potential of the market place, is attracting a lot of new players to the shipping scene at this time, and the increased competition has put downward pressure on the economic returns of new LNG charter contracts.



Today's market dynamics create a number of new key success factors for today's LNG shipping:

- Access to large amounts of low cost capital in order to be able to compete and still be profitable;
- Close ties with shipyards to gain preferential access to a limited number of slots;
- Mastering the technical challenges of building and operating the latest ship designs, and;
- The availability of experienced sea and shore staff.

The current shipping theme can be characterized as "Expanding the Boundaries", adjusting the traditional LNG shipping parameters to react to all the changes in the LNG industry.

This list should be seen as being in addition to, not instead of, the original success factors I mentioned a few slides back.

During the present market phase, Teekay has combined its financial, technical and operational skills to become the fastest growing independent LNG shipping company:

• In 2005 we launched the first Master Limited Partnership, or MLP, for LNG shipping. This publicly listed financing vehicle gives Teekay a competitive advantage in its cost of capital.

• Currently, we are the only company to have LNGs on order at all three major Korean yards.

• As far as technical capability goes, we are building ships with three different propulsion systems and ranging in size from 152,000 to 217,000m³.

• And, when it comes to experienced manpower, on top of mandatory training, Teekay conducts a fulltime, in-house LNG training program for its future senior LNG officers, combining theoretical and practical elements over a six-month curriculum.





Looking into our crystal ball, we see two sets of factors shaping the LNG industry in the future.

Political and social factors such as:

- Concerns regarding energy security which will drive countries to seek flexible access to energy;
- The growing role of national energy companies in the LNG space;
- And resistance from the public, i.e. NIMBY ("not in my back yard!") and BANANA ("built absolutely nothing anywhere near anything!").

New logistics factors will also develop:

- Projects will be developed opportunistically; with for example liquefaction plants being undertaken independently of the other elements in the chain.
- There will be further proliferation in the trading patterns.
- Trading of LNG cargoes will grow, driven both by systemic and ad hoc gas market imbalances.
- And more challenging environments will be explored, for example the Arctic.

There will probably be many more factors contributing to pulling the LNG markets further away from today's orderly model.

We predict that a key dynamic in the LNG market of the future will involve maximizing value in the global LNG supply chain via flexible and creative solutions that connect the many dots that have shown up on the map during the current massive infrastructure expansion phase.



Reverting to the last version of our logistics map, the final animation indicates notional changes in the future. These include a greater degree of cargo trading, shown by the flashing shipping routes, the broader use of floating storage and regasification units (FSRUs) and other creative distribution methods.



This brings us to what we think is likely to be required of the shipping in the future. While there will still be many conventional shipping requirements, we expect to see new concepts emerging and gaining ground as shipping is called upon to help customers gain competitive advantage. New concepts might include:

- FSRU's serving in more permanent roles
- LNGs with regasification capability

•Ship-to-ship LNG transfer services similar to today's crude oil lightering business, allowing the use of large LNG ships to perform long-haul transportation of cargo, even if destined for size restricted locations.

• etc.

Some of these concepts are already in the early stages of exploration by a small number of innovative companies in the LNG shipping space.

We also foresee changes in the financial risk picture as the average length of term-charter contracts erodes, driven by traders and other factors. Ultimately, we see the potential emergence of a true spot LNG charter market, although this is probably still 10 years away.



In the future, we believe that there will be even more key competencies required to be successful in LNG shipping, including:

- Delivering innovation in solutions, often in small but successive incremental steps;
- Earning the trust of customers to involve you in strategic relationships;
- Having the risk appetite to sink money into new unproven concepts;
- The financial strength to withstand the greater risks from shorter charters and new technology;
- And, very strong project management skills to make ideas become reality.

We believe that the future theme of LNG shipping will be about "Creating Optionality" for customers.

At Teekay, we are excited about these developments because we believe they play to our strengths. A number of key customers have entrusted Teekay with a strategic shipping role on the oil side of their business; we have one of the strongest balance sheets in the industry and we have a global organisation able to mobilise the manpower and skills to create and deliver solutions.



So, summing up, the challenge for LNG shipping is to successfully move from the simple picture on the left to the much more complex model on the right.



..or put differently, the LNG shipping industry was, until recently, enjoying the equivalent of a tranquil Sunday boat trip on the lake. LNG shipping has recently received a major injection of steroids, but the real challenge lies ahead, namely to successfully navigate the complex waters of the future LNG markets, relying on strength, agility and good judgment.

You could say that we are in the middle of moving from THIS.... to THIS!



In my view, the truly successful LNG shipping companies of the future will demonstrate all of the attributes I have covered here today. In order to differentiate ourselves we must climb the steps of "tried and tested", "expanding the boundaries" and "creating optionality".

Many of you have visited the beautiful local landmark shown here so you know how beautiful the view is from the top of the "Prekestolen" rock. At Teekay, we are definitely reaching for the top, and it sure looks like a beautiful place to be!

Thank you for listening.

