



Management Discussion and Analysis Yearly Ending 31 December 2019 (Annual Review 2019)

Freight Markets and the Baltic Dry Index (BDI):

2019 was a year characterized by severe volatility caused by weather disruptions, manmade disasters and trade wars. However, **despite all the above, the market rallied significantly in the second half of 2019.** It would, therefore, appear that the secular recovery started in 2017 hit a bump in the road, but otherwise is set to continue for the next few years provided shipowners do not repeat the sins of the past and order more new ships from shipyards desperate for business.

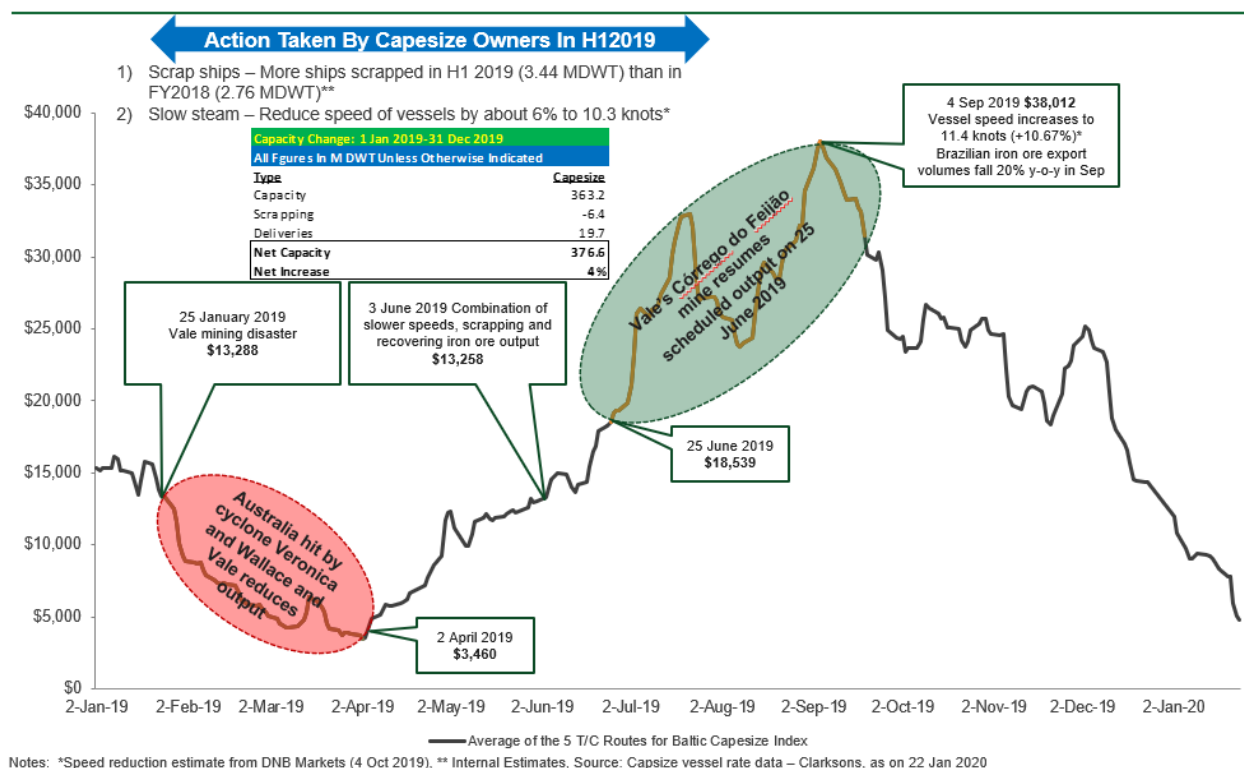
There are two factors that drive the BDI - supply of vessels and the demand for tonnage. In the years since 2008, the industry has struggled with excess supply, but **following 2016 the orderbook for new vessels has fallen considerably and by the end of 2019 it was just 9.31% (orderbook till end of 2023) of the global fleet.** Additionally, despite news headlines and recessionary fears, the global macroeconomic situation remains remarkably stable, with **global dry bulk tonne-miles growing by 1.09% in 2019 according to Clarksons Research Services.**

The collapse in the BDI during the first half of 2019 had little to do with fundamentals, but a confluence of events that impacted the world's iron ore production. In January 2019 Brazil's iron ore exporting capabilities were severely affected by the disaster at the Córrego do Feijão iron ore mine. **It was estimated that approximately 20-25% of Brazil's iron ore exporting capacity was affected.** Simultaneously, two hurricanes also struck Australia's iron ore mining regions, halting production significantly. As a result, **the BDI fell from 1,282 at the start of January to 595 in February 2019.** Thereafter, Cape owners began to slow down the speed of their vessels and increase recycling. As a result, **the BDI increased to 1,354 by the end of Q2** and as production and exports resumed, **the BDI spiked to reach 2,518 in Q3.** However, by the end of Q3 it became evident that the **recovery began to sputter as scrapping ground to a halt and Cape ship speeds increased.**

To understand the Dry Bulk Freight Market during 2019 we looked at the average daily Time Charter rates of the Capes that started the year at USD 15,344 per day on 2nd of January 2019. **On the 25th of January 2019, the day that the infamous Brumadinho mining disaster took place in Southern Brazil, Capes were averaging USD 13,288.** This incident which resulted in the **loss of more than 250 lives, effectively shut down all mines in Southern Brazil** that annually exported approximately 90 MMT of iron ore out of an annual total export volume of about 390 MMT. **At the same time, there were two major back-to-back tropical storms, Veronica and Wallace starting on 18th March and ending on 16th April, in Australia that further reduced Iron Ore availability.** As a result, the **daily Cape rates collapsed to USD 3,460 by the 2nd of**

April. Cape owners then took two steps. **More Capes were scrapped in the FH of 2019 (3.44 MDWT) than in all of 2018 (2.76 MDWT).** Secondly, **Cape owners reduced their ship speeds by 6% to about 10.3 knots an hour.** Due to these two steps, despite the lack of Iron Ore cargoes being available in 'normal' volumes from either Brazil or Australia, supply of Capes tightened enough so that **these ships were earning USD 13,258 per day by the 3rd of June!** Cape rates stood at USD 18,539 on 25th June, which is when Brazil's Brumadinho mine recommenced normal operations. The storm impact in Australia had reversed by this time as well. Cape time charter rates **went up like a rocket**, thereafter, resulting in daily rates **reaching USD 38,012 by the 4th of September!** Of course, by then owners of Capes increased the speed of their ships to 11.4 knots an hour, or by 10.67% from the low on 2nd April, adding a lot of 'extra' supply of ships into the market. Cape rates then started to decline to reach USD 14,337 on 24th December, the last trading day of the year. The two clear takeaways from these time charter rate changes are: **supply demand balance has almost been reached;** and, **any small changes in cargo availability/demand or any small change in supply of ships, through recycling or slow steaming, can have an extraordinary impact on the daily Time Charter rates.**

Supply & Demand Imbalances and Their Impact on Capesize Rates



Prospects for Demand:

We are currently **more confident about the prospects in 2020** than we were a few weeks ago thanks to **major global economic tensions being resolved** with: a big win for the conservatives in UK **removing the uncertainty of Brexit**; a **Phase 1 Trade Deal** announced between the US and China; the US Federal Reserve confirming that it would provide enough liquidity to ensure **short term interest rates do not spike**; and the **Chinese government clearly stating** that they would **employ as much stimulus as was needed to keep their economy chugging along at a**

brisk pace. The fly in the ointment, as usual, was **President Trump's assassination of the 2nd most powerful man in Iran, General Soleimani, ratcheting geopolitical tensions to new highs.**

More recently, the novel Coronavirus outbreak in China, has resulted in many companies unexpectedly extending their Chinese New Year holidays. The result has been an upending of global supply chains, which are expected to return to normal only when people return to back to their workplaces.

The Federal Reserve:

The Fed has followed other central banks and become more accommodative in its monetary policy by cutting interest rates and increasing the size of its balance sheet at the urging of President Donald Trump. **Unemployment and other key metrics put the US on firm economic ground.** As a result, **consumers should find they have more spare change in their pockets to spend.** And with the announcement of a **Phase 1 Trade Deal with China, a great deal of uncertainty that plagued 2018 and 2019 looks to have been lifted going into 2020.**

Trade Wars and Tariffs:

The Phase 1 Trade Deal between the US and China **would result in China buying an additional USD 200 billion in goods over the next 2 years.** The three raw materials that China could easily buy from America would be grain, coal and oil/gas. In 2019 China imported 150.5 MMT of coal from Indonesia which is about 6 days away from China. **If this 150.5 MMT was substituted by American coal, then it would take 42 days or be 7 times more tonne mile intensive than the same volume of coal from Indonesia.**

A lot of **misconceptions exist regarding the trade war vis-a-vis shipping.** Trade sanctions and tariffs, in and of themselves, cannot destroy demand so long as **the sanctioned commodity is either available from some other supplier/country or is substitutable by a similar priced commodity with similar/identical attributes.** All sanctions/tariffs do is to make shipping of such commodities more inefficient. If this change in supplier/country **results in congestion; slower loading of ships (compared to the original supplier/country); and an increase in tonne mile, then that is best for the dry bulk markets.**

Japan

Despite turning a corner in 2018, **the Japanese economy went down the proverbial tube of economic woes in 2019.** Japanese exports fell almost every month in 2019, and in November 2019 registered a 7.9% y-o-y fall. The IMF forecasts Japan's 2019 GDP growth at 1.0% and 2020 at 0.7% on the back of positive geo-political events. Consumers also took a hit in late 2019 with the introduction of a consumption tax hike. However, economists are uncertain as to whether the increase in consumption tax will harm consumer spending. **The Japanese government is launching a \$239 billion fiscal stimulus in 2020.** Easing trade tensions globally due to the Phase 1 Trade deal between US and China, domestic fiscal support and strong global demand for Japanese goods will spur demand for raw materials, boosting demand for shipping.

EU

The European Union is the **second-largest economy in the world** after the USA and **one of the largest exporting blocs in the world**. Despite a promising start to 2019, the Eurozone saw the economy stagnate for much of the year. **The ECB's aggressive monetary policy has systematically punished savers while failing to lift economic growth for the region**. Germany, the region's largest economy, saw its full-year PMI contract for 2019, and has reported GDP growth at 0.6% (the weakest full year growth since 2013). The economy was supported by strong domestic demand, and the government still has a fiscal surplus to rely on should the economic situation continue to deteriorate. Overall, **the Phase 1 Trade Deal should benefit the trade-dependent economies of the EU, and lead to an increase in demand for commodities to produce finished goods**. This will therefore increase the demand for shipping.

China

GDP grew at 6.1% for FY 2019, despite the ongoing trade dispute with the USA. **China has continued to import vast quantities of coal (299.7 MMT) and iron ore (1070 MMT) and has set another record year for steel production (996.3 MMT)**. **The Phase 1 Trade Deal between the USA and China should result in significant imports of agricultural and energy-based commodities from the USA**, increasing tonne-mile demand for dry bulk vessels significantly.

USA

The US ended 2019 on firm economic ground, with GDP growth forecast at 2.3% despite policy uncertainty and the ongoing trade dispute with China. Along with strong job creation, the **unemployment rate continues to remain at record lows**. The Federal Reserve's pivot from **tightening to easing should encourage further growth**. **The Phase 1 Trade Deal** signed between the USA and China **should ease trade tensions and lead to a significant rise in exports of commodities to China**. All of which should boost demand for dry bulk shipping. The proverbial fly in the ointment was **President Trump's assassination of Iranian General Soleimani ratcheting up geopolitical tensions to new heights**.

India

Despite a significant election victory and a clear mandate to Prime Minister Narendra Modi to deliver a more robust economic performance, **India's economy continues to be plagued by severe weakness and government ineptitude**. The IMF forecasts GDP growth of 4.8% for 2019 and 5.8% for 2020. **At the root cause of India's economic woes lies a lack of confidence in the country's financial sector, weak regulatory enforcement and reforms, an over-reliance on nonbank sources of funding for the corporate sector, and poor governance of state banks**. Strong steel production should lead to demand for iron ore, coal and coking coal, thereby increasing the demand for shipping.

Prospects on Supply of Ships:

On the supply side, **the fleet stood at 840.82 M DWT at the start of 2019 and by the end of the year had grown to 873.43 MDWT**. During the year, **8.23 MDWT was recycled, and an additional 40.82 MDWT was delivered, thus making net fleet growth of 3.88%**. As of 31 December 2019, **the existing orderbook stands at 81.3 MDWT (deliveries up to end of 2023), or approximately**

9.31% of the world fleet at the start of 2020. Specifically, in the geared segment, **net fleet growth was 2.96% in 2019 in the Handy/Supra/Ultra segment and the existing orderbook for the geared fleet stood at 17.70 MDWT (deliveries up to end of 2023), or approximately 5.65% of the geared world fleet at the start of 2020.** This will help reduce the pressure from the Supply side of the equation.

While the supply side looks appealing on the surface **the previously mentioned facts do not factor in upcoming regulatory impacts or the current age profile of the fleet.** At the start of 2020, **6.94% (60.62 MDWT) of the world dry bulk fleet, and 10.13% (31.75 MDWT) of the geared dry bulk fleet is over the age of 20, and 12.72% (111.24 MDWT) of the world dry bulk fleet, and 16.11% (50.51 MDWT) of the geared dry bulk fleet will be over 20 by the end of 2023** if none of these ships have been recycled by then. The first conclusion to draw from this is that **the current orderbook is, at best, replacement capacity and not additional capacity.** Secondly, **vessels over the age of 20 were designed, built and delivered at a time when the average price of oil was around \$19.7/barrel with a low of \$10/barrel during the peak of the Asian Crisis during 1998/2000, hence were designed for power and not for fuel economy.** With new sulphur fuel regulations coming into force on the 1st of January 2020, **ships that are 20 years old or older will find it difficult to compete against younger more fuel-efficient vessels. It is our conclusion that going into 2020, recycling should pick up, and new orders should slow as new regulations take hold.**

To keep things in perspective with regards to PSL, we would like to highlight the annual net profit/loss over the past few years.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Av. BDI	6,390	2,617	2,758	1,549	920	1,206	1,105	719	673	1,145	1,353	1,353
Net Profit (loss) \$m	148.1	88.1	35.5	23.6	4.5	17.5	(2.5)	(69.41)	(75.61)	(3.76)	14.1	(7.25)
Av. No. of Ships	44.12	32.79	21.39	21.91	30.44	38.93	41.66	45.46	40.29	36.02	36	36
Profit (loss)/Ship \$m	3.36	2.69	1.66	1.08	0.15	0.45	(0.06)	(1.53)	(1.88)	(0.10)	0.39	(0.20)

During the abysmally low market period of 2015 and 2016, we managed to keep costs under tight control; raised about USD 65 million from our shareholders via a rights offering in early 2015; raised USD 100 million from a 5 year unsecured bond in January 2016; raised USD 55 million from a 3.5 year unsecured bond in December 2016; pre-paid a lot of our secured loans coming due in 2018 and 2019; and sold our older and inefficient ships to raise further cash (15 ships recycled in 2015 - 2016 and 2 older ships sold in 2016 - 2017 for further trading). In 2018, we fully prepaid one loan facility, thereby releasing 3 vessels from their mortgages. In 2019, we fully prepaid another loan facility and released 2 more vessels from their mortgages.

AWARDS AND ACCOLADES:

Precious Shipping was one of 10 companies nominated for the Board of the Year Award 2018 by the Thai Institute of Directors & the Stock Exchange of Thailand, in the category for companies with a market capitalization below Baht 30,000 million.

At the 11th Seatrade Maritime Awards Asia 2018, Precious Shipping was adjudged finalist for the ‘Ship Owner/Operator’ Award. Great Circle Shipping Agency (“GCSA”), our wholly owned ship-management subsidiary, was **adjudged finalist for the ‘Ship Manager’**

award. At the 2018 Lloyd's List Asia Pacific Awards, we were adjudged finalist for the 'Class NK **Dry Bulk Operator of the Year**' award while GCSA was adjudged finalist for the '**Ship Manager of the Year**' award. At the International Bulk Journal's IBJ Awards 2018, we were adjudged finalist for the '**Bulk Ship Operator of the Year**' award and our cement carrier APINYA NAREE was adjudged finalist for the '**Bulk Ship of the Year**' award.

FINANCIAL HIGHLIGHTS (THAI BAHT TERMS) AND REVIEW OF THE YEAR:

In terms of operations, during the year under review, the Total Revenues of the Company were Baht 4,183.03 million (2018: Baht 4,970.12 million) and the Company incurred a Net Loss of Baht 228.49 million (2018: Net Profit of Baht 456.20 million). The Shareholders' Equity of the Company is Baht 11,559.05 million (2018: Baht 12,695.46 million) and the Total Assets of the Company have decreased during the year to Baht 25,060.55 million (2018: Baht 27,836.91 million). The decrease in Total Assets is mainly on account of the depreciation on Vessels. The Company operated 36 vessels in both 2018 and 2019.

During the year, the Company incurred Baht 219.74 million (2018: Net Profit of Baht 463.70 million) as Net Loss before Exchange Loss of Baht 6.04 million (2018: Baht 5.36 million) and Income Tax of Baht 2.71 million (2018: Baht 2.14 million). Earnings in the first half of 2019 were much lower than in the same period of 2018. This was as a result of lower than expected trade volumes due to an accident at a Vale mine in Brazil, severe weather conditions in Australia and African swine fever in China. The Company's vessels achieved an average time charter equivalent earnings of USD 9,622 per day per vessel in 2019 as compared to USD 11,063 per day per vessel in 2018. The Net Vessel Operating Income (net of voyage disbursements and bunker consumption) in absolute terms was 17% lower compared to the previous year. Absolute vessel running expenses (Opex) in Thai Baht terms, decreased by about 3%, due to the appreciation of the Thai Baht against the U.S. Dollar (Functional Currency). However, in USD, the average vessel running cost per day per vessel (Average Opex per Day) increased from USD 4,621 in the previous year to USD 4,778 in 2019. The average technical downtime was 10.98 days per vessel (average vessel age of 8.3 years in 2019), as 17 vessels underwent for dry-docking and special survey during the year.

We conducted an "in-house" exercise again this year to determine Total Return to Shareholders, which was calculated for the 26 years that we have been operating as a listed entity. Based on the closing share price as on Friday the 16 September 2019 of Baht 9.25 per share (we started trading on the SET on the 16 September 1993) and assuming you had subscribed at the IPO, then, at the end of 26 years, you would have 11.71 times your initial investment. This return does not assume any re-investment of the dividends into shares or any interest on the dividends received.

OUR FLEET:

At the end of 2019, our fleet consisted of 36 ships in the water (8 Ultras, 9 Supras and 19 Handy sizes) with an aggregate capacity of 1,585,805 DWT. This worked out to an average 44,050 DWT per ship, and an average age of about 8.3 years.

In a highly capital-intensive business with very high leverage characterized by unpredictable and wildly swinging cycles, the timing of the purchase of ships is possibly the single most important decision that must be made.

The average Time Charter Equivalent (TCE) earnings of our Fleet in 2019 were USD 9,622 per day per ship. Our average daily Operating Expenses (Opex), we were slightly higher than our target of USD 4,750 per day per ship reaching a figure of USD 4,778 per day per ship.

Market Segmentation/Benchmarking: In 2019, the Baltic Handy Size Index (BHSI) averaged 491 points, equivalent to a Time Charter (TC) rate of USD 7,189 per day. In comparison, **our Handies earned USD 9,002 per day, outperforming the BHSI TC rate by 25.22%**. Further, the Baltic Supramax Index (BSI) averaged 880 points, equivalent to TC rate of USD 9,948 per day. In comparison, **our Supramaxes earned USD 9,961, outperforming the BSI TC rate by 0.13%. Our Ultramaxs earned USD 10,712 and outperformed the BSI TC rate by 7.68%** (as there is no special index for the Ultras, we have compared them with the BSI). Our target to outperform both the indexes was achieved.

THE INDUSTRY OUTLOOK:

A more 'normal' supply of new ships is expected for the next few years.

The Cape sector (90,000+ DWT: 2085 ships of **376.58 MDWT at the end of 2019**): 211 ships of **44.93 MDWT or 11.93%** of the existing DWT are scheduled for delivery up to end of 2023. In this sector, 162 ships of **30.17 MDWT or 8.01% will be over 20 years of age** by end of 2023 and some or all of them are likely to be recycled during 2020 to 2023.

The Panamax sector (70 – 90,000 DWT: 2316 ships of **183.43 MDWT at the end of 2019**): 227 ships of **18.71 MDWT or 10.20%** of the existing DWT are scheduled for delivery up to end of 2023. In this sector, 409 ships of **30.55 MDWT or 16.65% will be over 20 years of age** by end of 2023 and some or all of them are likely to be recycled during 2020 to 2023.

The Supra/Ultramax sector (40 – 70,000 DWT: 3668 ships of **205.08 MDWT at the end of 2019**): 217 ships of **13.06 MDWT or 6.36%** of the existing DWT are scheduled for delivery up to end of 2023. In this sector, 617 ships of **30.75 MDWT or 14.99% will be over 20 years of age** by end of 2023 and some or all of them are likely to be recycled during 2020 to 2023.

The Handysize sector (10 – 40,000 DWT: 3989 ships of **108.34 MDWT at the end of 2019**): 155 ships of **4.64 MDWT or 4.28%** of the existing DWT are scheduled for delivery up to end of 2023. In this sector, 801 ships of **19.76 MDWT or 18.23% will be over 20 years of age** by end of 2023 and some or all of them are likely to be recycled during 2020 to 2023.

When reading the above numbers please keep in mind that **Slippage was 2.72% in 2019. Slippage has averaged around 29.8% over the last 5 years and fluctuates inversely with the BDI and availability of finance.**

The freight market is the prime mover that drives ships to the recycling yards. The lower the freight market the greater the number of ships ending up at the recycling yards. Deliveries in 2019 were muted when compared to average deliveries for the decade, with 40.82 MDWT of additional capacity delivered.

On a net basis, **the global fleet increased by 3.88% in 2019 and is forecast to grow at 4.07% while tonne-mile demand (for dry bulk seaborne trade) will grow at 2.7% in 2020 according to Clarksons.** This gap between expected demand growth and expected supply growth in 2020 **should make for an increasingly volatile market.** As supply and demand balance has either

been reached or is very close, **the market would be characterized by extreme volatility as any small change in demand or small change in supply would have a disproportionate impact on the BDI.**

Regulatory impacts should see many more ships heading for the recycling yard in 2020. IMO2020 will result in more expensive but 'cleaner' LSFO being burnt by ships from 1st January 2020, except those owners who fit/retrofit scrubbers on their ships, and thereby reduce the level of pollutants reaching the air that we breathe as well as the 'acid' rain that results from such emissions.

Bunker/Oil Prices and its impact on slow steaming:

Higher bunker prices in theory should result in an increase in slow steaming. The maximum 0.5% sulphur is in force from 1st January 2020, and **as the actual cost of LSFO for ship owners has already exceeded the cost of HSFO by more than \$300+ per tonne, we should see a lot more ships being slowed down to avoid burning more of this expensive LSFO.** That should make slow steaming the norm even if time charter rates were to improve significantly. There are analysts who calculate that this **could result in the supply side of ships in the world fleet shrinking by ~10%. That would certainly tilt the supply demand equation firmly in the ship owner's favour.**

The impact of IMO 2020 would essentially be as follows:

- **Older ships would struggle to either retrofit scrubbers**, due to their high capital cost as well as their high running costs, or struggle to burn 'cleaner low sulphur' oil in their engines. Those older ships that would have their 20th, 25th or 30th birthday by the end of 2020, would have to struggle with the extremely expensive costs associated with special surveys of such older ships together with the costs of retro fitting a Ballast Water Treatment System (BWTS) as well as the IMO2020 expensive Low Sulphur Fuel Oil (LSFO) to be burnt in their engines. **The world dry bulk fleet has about 69.78 MDWT of ships in this 'older' ship category of which about 34.63 MDWT are in the 'geared' ships sector where PSL operates.** Some or all these ships will certainly end up in recycling yards. Others will experiment with burning 'compliant' LSFO blends and diesel oil in these old engines designed to burn residue High Sulphur Fuel Oil (HSFO). Such experiments could result in a lot of breakdowns/delays to such ships and **clients would be hesitant, to put it mildly, to place any of their cargoes on such older ships.**
- Ships that are **burning compliant LSFO would operate at more economical slower speeds as the price differential between LSFO and HSFO is currently at the \$300+ levels.** This would result, combined with the impacts associated with the effect of IMO2020 described in the preceding paragraph, **in a supply side dividend with supply shrinking enough to cause some sort of a freight rate spike.** How high would the freight rate spike be or how long it would last is any one's guess.
- There are 1,254 ships of 191.34 MDWT **that are fitted/fitting scrubbers (1,068 retrofits of 159.51 MDWT and 186 new buildings of 31.83 MDWT as per Clarksons data base at the end of 2019)** out of a total of 12,868 dry bulk ships of 954.77 MDWT in the world fleet, including all the new buildings in the order book up to 2023. **These 20.04% or 191.34 MDWT of scrubber fitted ships** would be pumping soluble Sulphur/Nitrogen/particulate matter, and only God knows what else, into the waters of the oceans and **transferring the pollution from the sky into the seas.**
- **The question is, will the oil majors/refineries produce HSFO to cater to this small minority of ship owners?** If they do, then it means that they would have to dedicate

certain refineries/storage tanks/pipelines/delivery vehicles (barges/small tankers) to service those owners who have opted to burn HSFO. The cost benefits of doing this would be something that the refineries would have to consider and, just maybe, **HSFO would not be sold at any appreciable discount to LSFO but possibly at a small premium as we get to the SH of 2020?**

- The ships that are planning to or **actually fitting scrubbers would face their own set of challenges** that would include, **bans from using open loop scrubbers in ports**, extraordinary **scrutiny of their exhaust gasses** to ensure that their scrubbers, for which we understand there are no standards, are actually emitting minimal Sulphur oxides into the atmosphere, **corrosion** of the piping system within the scrubbers as well as at their outlet pipes (Hydrex.com, the underwater welding specialists, state that there has been a rash of such underwater welding requirements from scrubber fitted ships), **installation of heavy duty pumps** to handle the constant high pressure flow of water in the scrubber piping system requiring the **use of two generators at sea instead of just one**, **spares/repairs/maintenance of scrubber systems**, **manpower needed to operate and handle scrubbers**, not to mention the **catastrophic Scrubber failure** documented on a [video that went viral](#) in September 2018, etcetera.
- A lot of these **'scrubber' ships will be in dry docks** fitting these 'refineries' to enable them to be compliant with IMO2020 emission rules. That will certainly **take away some supply from the market**. Various reports have suggested that this would **reduce overall supply in the dry bulk world fleet by as much as 1.5 to 2% in the FH of 2020**. This reduction in supply would assist the freight market by tightening the supply of ships.
- **For those ship owners taking the sensible route** of not installing scrubbers and instead burning LSFO they **will face compatibility of various different blends of LSFO** (currently almost all ship owners do NOT mix any fresh HSFO with existing HSFO onboard their ships but take fresh supplies in 'empty' tanks and only start using such fresh supplies after their contracted laboratories have confirmed that the fresh HSFO that they have bunkered is suitable to be burnt in their ships); getting their **ships tanks 'cleaned'** by bunkering small quantities of MGO in 'empty' tanks to 'clean' them of any residues of HSFO; **Bunkering LSFO starting sometime in Q4 2019** in all available 'empty' tanks; having **clear guidelines for ship staff** on how to store receive and use LSFO, etcetera.
- At some point in time, **dumping toxic/sulphuric wastewater from 'open loop scrubbers' into the oceans will come back to haunt us** with such ships being banned from pumping their toxic wastewater into our oceans/seas. **Singapore, China and a host of other countries from Europe to the Americas and from Asia to Middle East have banned the use of 'open loop scrubbers' in their territorial waters**. How long will it be before the world realizes that it would be best to ban the dumping of wastewater generated by 'open loop scrubbers' anywhere in the oceans/seas? **It's like saying that a small portion of an aircraft (territorial waters of any country/port) is declared as a 'nonsmoking' zone whilst the rest of the aircraft (oceans/seas) are designated as an unrestricted smoking zone, and we know how that ended!**

Getting to Zero Coalition:

We are a **member of the Getting to Zero Coalition**, an alliance of more than 90 companies within the maritime, energy, infrastructure and finance sectors. The coalition aims to have a **commercially viable zero-emission vessel in operation by 2030**. As a member of the coalition, PSL will help **architect the future of the maritime transportation industry** by evaluating zero carbon energy sources and their supply chains, engine technologies and safety aspects. Although most alternative energy sources are in the research stage, the current front runners are **Biomass**

derived fuels (Biofuels, Biogas), Hydrogen based fuels (Ammonia) and Synthetic fossil fuels (e-methanol, e-methane). Biomass derived fuels are commonly described as “net-zero” because although the combustion of Biomass fuels release CO₂, their production takes CO₂ out of the atmosphere in an equivalent quantity. **Hydrogen** based fuels can be considered **zero-carbon** while in use, however most commercially available sources of Hydrogen based fuels have significant carbon emissions upstream. **Synthetic fossil fuels** are usually net-zero and have a promising future, however, are likely to take a longer time to become commercially available at scale. Based on current technological constraints, **Wind power, Solar power and Electric propulsion** are more likely to be viable as sources of supplemental energy rather than becoming primary energy sources for large ocean-going ships. **LNG** has the potential to be considered a viable clean fuel alternative at the time of combustion. It has virtually no SO_x and very low NO_x emissions, and as compared to fuel oil has almost a 30% reduction in CO₂ emissions. However, **LNG is mostly comprised of Methane, which is a highly potent GHG and far more harmful to the environment than CO₂.** The use of LNG from “well to wake” involves Methane leakages, referred to as ‘Methane slip’. **It is estimated that for the same amount of emission, Methane warms the planet 30 times more in a short span of 12 years, as CO₂ would in a hundred years.** Hence, until a solution is found to address or substantially reduce ‘Methane slip’ particularly at the time of production, LNG cannot be considered a viable option to reduce GHGs.

Evidence of the above commitment was reported on the 16 Jan 2020 in Lloyd’s List. **Lloyd’s Register, Samsung Heavy Industries, MISC and MAN Energy Solutions have announced a joint development project for an Ammonia-fueled tanker.** A hazard study for the Ammonia-fueled tanker will be completed in April with the hopes of getting the specifications approved in 2021 and **a commercially viable vessel on the water by 2024.**

As PSL’s commitment to the environment led to the early induction of ‘Eco’ vessels, it is expected that as soon as viable options of these next generation zero-emission ‘green’ vessels are available, they will also form part of our fleet.

Global Warming, Green House Gases (GHG) and IMO Regulations:

Awareness of the detrimental effects of Global Warming, GHG and Sulphur dioxide pollution have reached hitherto unseen heights and focus on the environment has become even more important. Organizations world-over have become more conscious about the environment than ever before, and shipping is no exception. **The IMO has taken positive steps in this matter by effecting several legally binding regulations to be adopted by the shipping industry.** Apart from the existing Emission control areas that require ships to burn fuels which contain no more than 0.1% Sulphur, another new regulation will enter into force from 1st Jan 2020 when there will be a global cap of 0.5% on the Sulphur content of marine fuel which is burnt in engines and boilers. **The availability and quality of LSFO, referred to as compliant fuel, is one of the challenges that face the industry from 2020 onwards.** The other option, being fitment of **scrubber units** on vessels, besides being both technically and financially challenging, is further in doubt as a suitable solution, as these are designed to remove Sulphur pollution from the atmosphere and **transfer the same as a pollutant to the seas.**

PSL is committed to sustainable long-term measures to improve the environment and **has** therefore **opted for operating our vessels with compliant fuels.** Our vessels have prepared to operate with compliant fuel **by cleaning all fuel tanks, sub dividing large fuel tanks into smaller tanks** capable of handling smaller parcels of fuel without mixing, **using suitable additives and**

lubricants and conducting pre-joining and on the job training for the crew to meet these challenges.

In April 2018, the IMO adopted a resolution of a 50% reduction of total GHG emissions by 2050, as compared to the levels in the year 2008. To achieve this, similar to the **European Union Monitoring, Reporting, Verification of CO2 emissions rules (EU MRV)** – which has been implemented from Jan 2018 for all vessels operating in the EU region, the IMO has made it mandatory from 1st Jan 2019, for all vessels to implement the **fuel consumption Data Collection System (IMO DCS)**. This requires vessels to report annual fuel oil consumption worldwide to IMO through the flag administration. The regulation also requires the **existing Shipboard Energy Efficiency Management Plans (SEEMP)** to be updated and certified by the flag authority or a Recognized Organization (RO). This system is **expected to generate reliable data to monitor and assess the progress of efforts to reduce the emission of GHGs.** Our vessels have implemented the SEEMP required by MARPOL Annex VI regulations, from January 2013. All vessels have implemented both the EU MRV and IMO DCS, and we have planned for all vessels to report such fuel consumption data collection to a RO approved by the flag. **To formalize PSL's commitment towards preserving and conserving the environment and to reduce our carbon footprint, we are ISO 14001: 2015 certified.** The ISO 14001:2015 provides a framework for a holistic and strategic approach to PSL's environmental policy, plans and actions, and will **demonstrate that PSL is an environmentally responsible organization, and that all our operations are conducted in an environmentally sustainable manner.** From 2014, as part of the Company's commitment to the reduction of GHGs, all our vessels have been maintaining records of CO2 emissions, from burning fossil fuel in the engines and boilers. **The average carbon intensity per transport, measured in Grams of CO2 emitted per Tonne-Nautical Mile was 50 grams of CO2 in 2014. Over the years this has improved and the figure for this year is around 14 grams of CO2.** This is a fleet average and that PSL operates very fuel efficient 'Eco' vessels which have a carbon footprint in the range of 7 to 10 grams of CO2 Emission per Tonne–Nautical Mile! This reduction of CO2 emissions in the operations are the **result of several measures** which have been adopted by PSL. A few **important ones are: improved Voyage Planning** with reduced ballast passages and port stays; **maintaining optimized speed** so that the vessels are just in time for the required schedules; **weather routing** to take advantage of ocean currents and optimized routes avoiding rough weather; **optimizing of speed and operating the vessels on eco-speeds** wherever possible; **maintaining optimized trim** to improve performance; **maintaining the external underwater hull and propeller** in clean condition so that frictional losses through the water are kept to a minimum; **employing efficient hull coatings** (anti-fouling paints) which ensure that the hull is maintained in clean condition; **avoiding wastage of electric power** on board; maintaining the diesel engines and other **fuel burning equipment in efficient condition** and **disposing waste sludge generated by Fuel purification to shore facilities**, despite the costs, rather than using incinerators on board.

Fuel Saving Devices:

As part of management strategy, **the performance of some vessels has also been improved by retrofitting fuel saving devices like the Mewis Duct, Pre-Shrouded Vanes and Hub Vortex Absorbed Fins.** Further, **several older and less fuel-efficient vessels of the fleet were replaced between the years 2013 to 2017, with 'Eco' vessels.** 'Eco' operation is made possible by larger cargo hauls, reduced fuel consumption on account of better hull lines, lower lightship, very efficient electronically controlled engines and optimized use of waste heat from the engines (even the exhaust gases from the auxiliary engines is diverted through the boiler to use the available heat). **Our new Eco vessels are very efficient and operate with less than 50% of**

CO2 emissions per transport work as compared to the older vessels of the fleet. As a comparison using the measure of CO2 emissions per tonne of cargo carried, **the values recorded in the year 2018 are about 60% lower than that of the year 2008. We have made a huge reduction in our carbon footprint, and this is expected to improve further, with shorter ballast passages and port stay, larger cargo hauls and slow steaming.**

Our Competitive Position:

Our existing 36 ships-in-the-water makes us one of the larger players in the market. With the ownership structure being extremely fragmented, we are recognized as an **established brand name with clients wanting to do business with us first** before they take their custom to any of the other smaller, and potentially weaker, players. Additionally, our rejuvenated fleet consisting of **younger, larger, better geared and more economical vessels that will enhance our competitive position for years to come especially under the IMO2020 high priced LSFO environment.**

The Annual PSL Maritime Day Run:

PSL believes that the health of our employees is one of our foremost priorities. Global medical expenses are expected to increase at a very high rate of over 5% per annum in the immediate future. This is largely due to a sedentary lifestyle and an ageing world population. **Running or brisk walking is well known as a beneficial exercise.** Regular runners claim that besides the physical health benefits, the activity helps to lift one's mood and spirits due to the release of endorphins. It relieves stresses and helps manage negative feelings like anger and depression. The act of committing to the completion of a stretch of running induces motivation, discipline and feelings of personal achievement. It is also believed to increase energy and creativity as a natural outcome of the peace, sound sleep and healthy diet induced by this exercise. For several years, PSL has advocated running and brisk walking in the conveniently located facilities of the Lumpinee Park. **To further encourage widespread participation, an Annual PSL Maritime Day Run was also started over a decade ago.** A temporary suspension of the event was necessary over the last three years, due to renovations and other activities in the park, but a resumption of this annual popular event is expected shortly.

THE ISSUES FACING OUR INDUSTRY:

Operating Costs of our Company increased in 2019 on account of the larger number of dry dockings and in-water surveys, as compared to 2018. Some of these were routine dockings whilst in others the dry docking were carried out for work related to fuel tanks' conversions (sub dividing larger fuel tanks to smaller ones) in preparation for the low Sulphur regulations post Jan 2020 or for the installation of Ballast Water Treatment Systems. Similarly, there have been increases in expenses related to replacing fuel components of these vessels during overhauls related to preparing the Main and Auxiliary engines to operate with low Sulphur grades of fuel oil post January 2020. Such expenses are expected to continue through 2020. Most of the other expense heads were maintained without any significant increases. Further, greater emphasis is continually being placed on the standards of training for the senior personnel required to operate our technologically advanced modern fleet. Insurance costs were under control, because of favorable claims record of the Company's fleet and also because the insurers are financially strong. In particular, the Protection & Indemnity ("P&I") insurers ('P&I Clubs') belonging to the International Group of P&I Clubs experienced another benign claims year and better investment

returns. This has enabled the Clubs to be supportive of their shipowner members in these times of depressed freight-market.

International Maritime Organization (IMO) conventions are constantly updated to match demands for enhanced steps to protect the environment.

Among several other requirements, engine exhaust emission standards are also controlled by the MARPOL regulations. Apart from the existing Emission control areas that require ships to burn fuels which contain no more than 0.1% sulphur, another new regulation has entered into force from 1st Jan 2020 when there will be a global cap of 0.5% on the sulphur content of marine fuel used in the engines and boilers of ships. All the company vessels negotiated the transition successfully by the end of 2019, by cleaning the fuel oil systems on the vessels and operating the engines/boilers with fuel oil of Sulphur content 0.5% (also known as compliant fuel). It is expected that till mid-2020, the uncertainty of availability and costs of compliant fuel is likely to pose as a challenge to operations of ships worldwide. The other option, being fitment of scrubber units on vessels, besides being both technically and financially challenging, is further in doubt as a suitable solution, as these are designed to remove sulphur pollution from the atmosphere and transfer the same as a pollutant to the seas. More countries are insisting on stringent ballast water management practices on board ships. New regulations will require ships to treat the ballast water taken into its tanks with the help of an approved Ballast Water Treatment System (BWTS) which needs to be installed on board. The IMO Ballast Water Management Convention entered into force on 8 September 2017, 12 months after ratification by 30 States, representing 35% of world merchant shipping tonnage. All vessels are required to carry a Ballast Water Management certificate. All new vessels' keel laid from this date are required to be fitted with IMO approved ballast treatment plants. All existing vessels are required to retrofit such plants in a phased manner along with surveys associated with first renewal of IOPP (International Oil Pollution Prevention) certificate after 8 September 2019. All IMO approved treatment plants presently in the market have not yet met the stringent USCG approval requirements. There is a separate US Coast Guard schedule for BWTS installation, defined mainly by the number of USCG approved BWTS that were available in the market. By end December 2019 about twenty-one BWTS have been granted approval by the coast guard. USCG and IMO approved BWTS have already been fitted on 27 vessels in our fleet. The remaining vessels will also be fitted with such approved BWTS before the IMO/USCG compliance dates. As a result of initiatives from the International Labor Organization (ILO), working and living conditions of crewmembers on board are receiving increased importance. In order to formalize this and ensure uniform compliance, ILO has adopted the Maritime Labour Convention 2006 (MLC 2006). A Maritime Labour Certificate (MLC) and a Declaration of Maritime Labour Compliance (DMLC) is required on board to ensure compliance with the Convention for all ships above 500 tons in international trade. These certificates are to be obtained from the Flag state and their recognized organizations after thorough verification and surveys on board each vessel. The MLC 2006 has attained the required number of member state ratifications in August 2012. All ships were required to meet the compliance requirement and have valid certificate for compliance with MLC convention before 20 August 2013. Thailand ratified the MLC convention on 7 June 2016 and as a result MLC 2006 entered into force for Thai flagged vessels from 7 June 2017. The Statement of Compliance (SOC) with MLC 2006 which was being issued till date on our Thai flagged vessels has now been replaced with a Marine Labour Certificate. This is a welcome development and facilitates smooth trading of Thai flagged vessels worldwide, as it eliminates the risk of the SOC not being acceptable in some countries.

Singapore has ratified the MLC convention. Hence the Company's vessels flying the Singapore flag vessels are fully compliant with the MLC requirements.

In April 2014, the International Labour Organization (ILO) agreed several amendments to the MLC to implement the principles agreed back in 2009 by the joint IMO/ILO financial security

working group. These amendments have entered into force on 18 January 2017. Ships that are subject to the MLC are now required to display certificates issued by an insurer or other financial security provider confirming that insurance or other financial security is in place for the cost and expense of crew repatriation, as well as up to four months contractually entitled arrears of wages and entitlements following abandonment (Regulation 2.5). A further certificate will be required for liabilities for contractual claims arising from seafarer personal injury, disability or death (Regulation 4.2). P+I Clubs of the respective vessels have provided such certificates for all ships in our fleet.

Focus on the environment is becoming even more important. It is no longer just fashionable to say we are “Going Green”; organizations world-over are being pushed by their stakeholders to become more environment-conscious, guided by compliance with the newer regulations. It is expected that the IMO along with the ICS will take a pro-active role to put in place regulations which will apply to shipping on a global scale. One of these is the mandatory reporting of CO2 emissions (measured in grammes/tonne-mile) on voyages, similar to the European Union MRV rules (Monitoring, Reporting, Verification of CO2 emissions) – which has been implemented from Jan 2018 for all vessels operating in the EU region. In similar lines IMO require all vessels to implement the fuel consumption data collection system (DSC) from Jan 2019. This requires vessels to report annual fuel oil consumption worldwide to IMO through the flag administration. The regulation also requires the existing Shipboard Energy Efficiency Management plans (SEEMP) to be updated and certified by the flag authority or a recognized organization. In April 2018, the IMO adopted a resolution on the strategy of a 50% reduction of total GHG emissions by 2050, as compared to the levels of the year 2008. These regulations will in turn phase out several older, less efficient vessels. We have taken the initiative to prepare in advance for these regulations by monitoring and data collection of CO2 emissions on all vessels in the fleet. The company arranged for all vessels to report such fuel consumption data collection to a Recognised Organisation (RO) approved by the flag, from 1st January 2019 onwards. The vessels are also operated always with clean hulls (by using efficient anti fouling paints and also by hull cleaning when necessary) as this increases efficiency (thereby reducing carbon emission). More importantly, the new acquisitions for the fleet have been selected primarily on their ‘Eco’ operation characteristics. ‘Eco’ operation will be possible with larger cargo hauls on vessels with very fuel-efficient engines, and optimised use of waste heat from the engines. We have aimed to achieve this with new vessels having fuel efficient engines and reduced waste heat (even the exhaust gases from the auxiliary engines is diverted through the boiler to use the available heat). The new vessels with larger cargo carrying capacity are expected to operate with low CO2 emissions especially (as world trade improves) with more regular fully laden voyages. Besides, there are specific IMO Conventions and regulations mandated by individual countries, to control the emission of, Nitrogen oxides, Halons and CFCs from ships. These regulations are expected to become more stringent in the coming years. In addition, certain states in the USA are likely to require ships calling their ports to use shore power which is greener than the power generated on board ships. ‘Bonnet’ technology is another concept, presently available only in certain ports, which can receive the exhaust gas from ships for treatment before discharging into the atmosphere. To formalize the Company’s commitment towards preserving and conserving environment and to reduce carbon footprint, the Company has obtained ISO 14001: 2015 certification from Class NK of Japan. The ISO 14001:2015 provides a framework for a holistic and strategic approach to the Company’s environmental policy, plans and actions, and will demonstrate that the Company is an environmentally responsible organization. PSL vessels have implemented “Ship Energy Efficiency Management Plan” (SEEMP) required by MARPOL Annex VI regulations from January 2013. Vessels have also fully implemented the more stringent garbage disposal regulations required by MARPOL Annex V which came into force from January 2013. With effect from 31 December 2020, EU Regulation on Ship Recycling will be applicable to foreign ships in EU waters. Ships are to comply with Inventory of Hazardous Material (IHM). Implementation of this requirement is expected

to be time consuming and expensive. The company commenced preparations in this regard by sending senior technical superintendents for Hazardous Material Training courses organized by Classification societies thereby giving them the necessary competencies to complete the procedures to obtain IHM compliance for all vessels. On completion of the course and obtaining the necessary qualification from Class, inspections/material analysis/ data collection was commenced, and the results submitted to the respective Classification societies in order to obtain IHM certification. So far, we have obtained the IHM certification for 15 vessels and are near completion for 9 more vessels. The company expects that all vessels will be certified well before the EU deadline at the end of 2020

The Safety of Life at Sea (SOLAS) convention may also have several amendments in the future. This is being driven by one of the worst maritime disasters in US history - the loss of the US-flagged ro-ro vessel El Faro and its 33 crew, which sank in the Bahamas in October 2015 while trying to navigate through Hurricane Joaquin. The detailed USCG investigation report, published in September 2017, highlighted several errors, mainly by the Master, and includes 36 recommendations on safety and seeks several amendments in the SOLAS convention, as mentioned above.

With the melting of the polar ice cap due to global warming, and the consequent increase in navigability through the northern route, on 1 January 2017, the IMO has adopted the Polar Code and related amendments in 2014 - 2015 to make it mandatory under both the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL). The code's focus is on the safety of ships, seafarers and passengers who are on board the vessels in the harsh polar environment and also on the regulations to prevent discharge of Oil, Noxious liquid substances in bulk, Sewage and Garbage. It is expected that regulations which require the use of low sulphur Fuel oil are also likely to follow.

Maritime Training Center: As previously reported, the Company set up a full-fledged Maritime Training Center at its Head Office in Bangkok in March 2008. The PSL Training Center includes a state-of-the-art Bridge Navigation Simulator for training of maritime personnel. Vessel-type specific Bridge Navigation Simulator recreates the actual maneuvering characteristics of the ship and its bridge controls as it enters a specific major port and provides ideal conditions in which to train Officers in hands-on practices for effective bridge teamwork and competence in ship-handling and navigation. This is a significant step taken by the Company to train and equip its Officers and Crew to take better care of themselves and their ships, all with a view to ensuring safety of the crew, cargo and the ship by preventing accidents, thus also helping to preserve the environment. In the current scenario of a worldwide shortage of trained personnel, and the rapid promotions that is a natural result of such a shortage, this is a major step to provide specialized training that would otherwise have been acquired 'on the job'. In the last quarter of 2019, work was commenced to upgrade the Bridge Navigation Simulator to the latest available design. This involved a total renewal of all projectors, panels, consoles and the software updated as per the requirements for our fleet. The work is on schedule and it is expected that the upgraded Bridge Navigation Simulator will be available shortly for resumption of training courses,

The International Convention on Standards of Training, Certification and Watch-keeping for Seafarers 1978, which establishes the basic requirements for seafarers was revised in 1995 and again in June 2010 in a conference in Manila, major amendments, known as the Manila amendments, brought about more stringent requirements keeping in mind the need for global standards of competency for seafarers. The Manila amendments have entered into force on 1 January 2017. The PSL training and fleet department had been making preparations in advance so that by the date of enforcement all vessels had seafarers with the required training and certificates on board our ships.

Maritime Resource Management (MRM): MRM is a training program for ship's officers, engineers, pilots and shore-based personnel. The aim is to increase knowledge about human capabilities and limitations and to reinforce positive attitudes towards safety and teamwork. MRM is generally accepted to be one of the most efficient means of improving crew cooperation and minimizing the risk of accidents caused by human errors as well as failures in effective teamwork and resource management. The MRM course is authorized and licensed by The Swedish Club, a member of the International Group of P&I Clubs, and one of the few insurers providing Hull as well as P&I insurance covers. Apart from the MRM courses, the PSL Training Center has classrooms, Video-Based Training (VBT) and Computer based training (CBT) for the ship staff. Courses include MRM, Bridge Team Management (BTM), Bridge Team Competency (BTC), Officer Of the Watch (OOW), Chief Mate Course (CMC), Command Course (Command), Shipboard Safety Course (SSC), Maritime Professional Briefing (MPB), Maritime English training (divided into 5 course levels) programs for safety and efficient ship operations of deck and engine departments. The Training Center also conducts lectures on VTS (Vessel Traffic Separation) & SMCP (Standard Marine Communication Phrases) within the BTM and MRM courses, with the aim of developing our officers' communication skills in communicating with a VTS officer using standard maritime phrases in various simulations. The courses are upgraded regularly and provide a solid foundation to the Company's training activities and enable our Officers and Engineers to keep abreast of the latest developments in ship operations.

To meet the needs of trained engineers to serve on the new vessels fitted with new generation Main Engines from MAN Diesel & Turbo and Wartsila, the PSL Training Center liaises very closely with the Technical Department and the engine manufacturers to continuously upgrade the training courses which were first introduced even before the vessels were actually delivered. Other training courses which the engineers go through before joining the ships are "Engine Room Management and Competency Enhancement" - "EMC" for Senior Engineers, "Engineer on Watch" - "EOW" for Junior Engineers, courses on "stern tube sealing systems" and "ships' cargo gears with special focus on hydraulic", and "Shipboard Safety. The PSL Training Center also augments classroom theoretical courses with practical training, wherever possible. Considering the fact that the new vessels acquired (are fitted with more fuel efficient modern engines using advanced electronic controls and technology, the Company's senior engineers, Electrical Officers and shore-based Technical Superintendents are put through the engine-maker's specific training courses designed to better understand the operation and for effective trouble-shooting. Junior engineers are in turn trained at the Company's Training Center and by trickle-down method on board ships. New courses are also being introduced to prepare the ships' staff for the new challenges expected in the coming years on account of the low Sulphur cap, carbon dioxide emissions and ballast water treatment regulations. In order to equip the officers with knowledge of new developments, the company has taken the step of organizing specialized courses conducted by experienced and proficient guest teachers.

The use of "Electronic Chart Display and Information System" (ECDIS) has become mandatory for new ships built from July 2013. All the vessels in the fleet are equipped with ECDIS with the onboard software updated to the latest version. Officers are required to complete specialized ECDIS I generic training as part of their competency certificates.

PSL is committed to ensure that navigating officers are fully conversant with ECDIS equipment prior joining the vessel. Officers are given generic ECDIS training at approved institutes. Realizing the fact that certification alone does not make an officer fully familiar and confident to use ECDIS, PSL Training Centre has equipped itself and developed ECDIS training/familiarization courses. After attending the approved ECDIS generic training course, officers are required to undergo further ECDIS familiarization course at our in-house facility.

The training department also keeps abreast of imparting awareness to Officers on the risks due to increased incidents of the liquefaction of cargoes, such as iron ore fines, coal, manganese ore fines, and nickel ore. More than a hundred seafarers have lost their lives over the past eight

years on vessels which have capsized and sank due to the liquefaction of such cargoes. The latest cargo entry in the list of solid bulk cargoes susceptible to liquefaction that can cause catastrophic results is “bauxite”. When subjected to sufficient dynamic loading, very wet fine-grained bauxites go through a process of slumping and dynamic separation, with the upward expulsion of water/slurry. This may result in free surface effect of liquid sloshing about which could significantly affect the vessel’s stability, leading to the risk of the ship capsizing. In response, the International Maritime Organization’s (IMO’s) Sub-Committee on Carriage of Cargoes and Containers issued new guidance on the carriage of bauxite, requesting adequate safety precautions to be taken when carrying this cargo.

There are already conceptual designs on small crafts that try to eliminate or minimize the human effort onboard ships. Some experts in automation visualize that in the next twenty years or so, ships may be totally un-manned with automated equipment using sensors, smart digital systems and other technologies, which can be monitored and controlled from shore based stations, completely removing the element of “Human Error” on board. Although the concept of such Autonomous vessels appeared unrealistic initially, bold steps were made in this direction in 2017, both in the industry and regulators. In May 2017, Yara and Kongsberg, introduced the concept of the autonomous Yara Birkeland container vessel due to be launched this year and commence operations by 2020. In October Rolls-Royce partnered with Google and introduced Augmented Reality software as part of their remote operation solutions for autonomous vessels. At the same time, in line with these developments in autonomous shipping, IMO’s Maritime Safety Committee has also agreed to start to map out a new international legal framework for the safe operation of autonomous ships, as not having any human in charge of a vessel brings into many legal issues to work on. However, it has been said that “Most accidents are down to human error, but what we never measure is how many accidents are avoided because of human intervention. Take humans off ships and you are entering an unknown realm. Stakeholders in shipping need to keep abreast of these developments to ensure the most beneficial application of the technology.”

The Scourge of Piracy continues to be a concern notwithstanding the fact that the number of reported incidents have reduced considerably. The International Maritime Bureau reports that in 2019 the number of reported incidents reduced to 162(from 201 incidents in 2108). There were no incidents in the earlier risky area around the Gulf of Aden and Somalia. Nevertheless, all our ships sail at least 250 NM away from the Somali coast, e strictly follow BMP4 guidelines, and also have armed guards while transiting the Gulf of Aden, as these areas are still denoted as High Risk Areas.(the International Maritime Bureau reports that Somali pirates continue to have the capacity to attack ships) .

The presence of international Navies and their patrolling the high-risk areas, and the use of armed security guards on board, have also succeeded in making piracy for the Somalis less lucrative.

However, in 2019, incidents of piracy have remained increased in the Gulf of Guinea, mainly off Nigeria and in the coastal waters extending from the Ivory Coast to the Democratic Republic of Congo, where 4 hijackings and 23 attacks have been reported, with 121 seafarers being kidnapped for ransom. The primary difference between this region and Somalia is that Nigeria has an elected Government with clear policies to deter piracy in its waters and that helps localize the menace and also control/handle it. However, all our vessels trading in the region observe all the BMP guidelines to deter piracy along with armed escort vessels arranged by the company as necessary.

Attacks in the South East Asia region have reduced slightly – 53 incidents have been reported, more than half of which have been in Indonesian waters. However, as compared to the previous year increased patrolling by local navies have brought down the incidents around the Philippines, Malaysia and Indonesia. PSL has taken an active role in reporting to the IFC (Information Fusion Centre), a centre for monitoring the movement of all vessels in South East

Asian waters. The IFC is based in the Singapore Naval Base and relays information to all regional Marine Coastguard units and has been effective in tackling piracy in the region.

Cybersecurity:

As modern and technologically advanced newer ships have become increasingly connected and software-dependent on their day to day systems, cyber security has emerged as a key area requiring attention to control operational and safety risks on board these ships, while also emerging as a major issue to be tackled by shipping companies during their board meetings worldwide. We are continuously assessing this threat with a view to uplift our overall security infrastructure and to nurture a secure environment within which the organisation can work and minimize the risk of any security breach

Cyber risk is seen as an area where the threads in the global risk environment come together and the scale and sophistication of risks is expected to grow. This is further fueled in part by geopolitical trends - more state sponsored attacks could add to those cyber-attacks that are financially motivated. Cyber exposure is growing in companies due to the rapid increase of interconnected devices, which is ever increasing due to increase in emerging technologies use on-board ships and the use of artificial Intelligence.

Even though the cyber risk has become more visible today, it is still under resourced in the amount of effort being put into mitigation the risks associated with it, even though attacks can be very costly, if occurred. It's said to be above the scale of natural catastrophes and yet the infrastructure the industry has in place against it is smaller in scale.

The prime focus of our industry will now be in our ability to respond to these ever-increasing Cyber-attacks.

In 2017, the IMO adopted resolution MSC.428(98) on Maritime Cyber Risk Management in Safety Management System (SMS). The Resolution states that an approved SMS should take into account cyber risk management in accordance with the objectives and functional requirements of the ISM Code. It encourages administrations to ensure that proper risk assessments and measures to protect ships from cyber incidents are included in the SMS. It also requires that these measures are implemented no later than the first annual verification of the company's Document of Compliance after 1st January 2021. This is under progress and we hope to complete this well ahead of the deadline.

Though we have not had any cybercrime incidents till date, at PSL we constantly review and maintain our findings that:

- Our present systems incorporated in Office environment and onboard ships are "robust" enough with the understanding that both IT and OT systems may be involved in cyber security incidents
- We are undergoing Vulnerability Assessment and Penetration Testing by Nettitude, a subsidiary of Lloyds Register and a top member of CREST which is recognised globally as the cyber assurance body for the technical security industry. Such testing is done both in the office and the ships IT infrastructure and ecosystem.
- Additionally, the integrity and vulnerability of our financial and accounting related database is audited by EY once a year.
- We have a system of Firewall checks in Office and have only permitted limited white-listed websites to be accessed on-board ships. That minimises, if not eliminates, the risk due to Cyber-attacks onboard ships.
- With regard to the most discussed topic on ship cyber-attack related references to AIS, ECDIS and Vessel Data Recorders (VDR) which are integrated as part of the Integrated

Bridge System (IBS), our system setup on-board ensures that these equipment are not directly connected to the internet at any time and hence, no data from these equipment is available or transmitted directly online.

Nevertheless, in order to reduce vulnerability to both cyber accidents and cyber-attacks, and to ensure safe and efficient operations of our fleet, as part of constant reviewing and addressing cyber security:

- at all levels of the company – from senior management ashore to the crew on-board, as an inherent part of the safety and security culture onboard each vessel;
- in company policies – by considering how to align cyber risks with the existing security and safety risk management requirements contained in the ISPS and ISM Codes; and
- in relevant onboard procedures – by including new related requirements in in-house training programs, day to day operations of the vessel and maintenance of critical cyber systems, if any, that may exist onboard.

Digitalization:

The Management at PSL has always been fully committed to reaping the benefits of digitalisation and to achieve this goal, we are continually going through the process of identifying various ways in which we can transform existing digital set up at PSL. In 2019, we shifted our complete Chartering and Postfix operations to a cloud based IMOS platform with latest advanced features which gives us a very high reliability and performance monitoring, reflecting PSL Management's commitment to our valued clients.

At PSL continuous training is the key to keep staff and seafarers up to speed with new technology which we take very seriously. In 2019, we have invested substantial sums in renovating the Ship Simulator Station in our Training Center. It is now equipped with high technology laser vision digital projectors and the latest version of the software and developed models of our own fleet vessels. This project is expected to be completed by 2nd week of February 2020 and will give our Masters and navigating officers an almost real feel of handling the navigation of the very ships on which they will be sailing.

We have migrated our chartering and operations to a cloud-based platform which offers broader functionalities along with a much-increased security environment. This will also allow us to set a new digital framework of how information can or should be exchanged between different counterparties in the future.

JOINT VENTURES:

- **International Seaports (Haldia) Pvt Ltd:** This is now our only investment in Ports in the Haldia Dock Complex (about 22.4% of the total capital) under our port projects investments. This JV continues to operate very well, and we have to-date received total dividends of USD 4.48 million, which works out to about 220% of our original Investment made in years 2002-2003.

IN CONCLUSION:

Demand:

The environment for 2020 is going to be characterized by volatility. **Downside risks for 2020 will include, amongst others, Geopolitical tensions like Trump's assassination of Iranian General Soleimani; China importing lower quantities of Coal and Iron Ore; Protectionism increasing; Vessel supply not being absorbed fast enough; and excess Shipyard capacity holding the promise of more ships to come.** But it is not all gloom and doom. **The upside potential for 2020 consists of, amongst others, the over 2,800 basis points of rate cuts in 2019 delivered by over 40 Central Banks should steer the World GDP growth rates in a positive direction; the 'One-Belt-One-Road' that China proposes to build linking some 65 countries from Asia/China to Europe at an expected cost between USD 1.2 to 20 trillion; China importing more high-grade Iron Ore as they combat pollution and shift to higher grades of Steel production requiring better quality imported Iron Ore; China importing more Coal to reduce pollution, to reduce the terrifyingly high annual death toll at Coal mines invariably accompanied by protests from the relatives of those that have perished; Slower ordering at shipyards due to challenging markets, lack of traditional finance sources and regulatory changes that could make such 'new ships' obsolete well before their retirement age; Higher slippage rates due to challenging markets; Higher recycling rates due to challenging markets and regulatory pressure; The US economy continuing to outperform expectations; Low oil prices leading to greater World economic growth rates; and weaker currencies in the Euro zone and Japan helping them to export their economies out of trouble.** Most importantly, with **geopolitical tensions receding; the signing of the 'new' NAFTA; Phase 1 of the trade war resolution between US and China being signed; Brexit uncertainty disappearing with the conservatives winning an absolute majority in the UK parliament; the Federal Reserve providing liquidity as needed; and the Chinese government adding as much stimulus as needed to keep their economy chugging along at a brisk pace; should all assist the demand side by removing the overhang of uncertainty that has crippled decision-making during 2018/2019.**

Supply:

Under the current conditions, **approximately 12.77% (111.24 MDWT) of the existing world fleet would be over 20 years of age between 2020-2023 if no ships are recycled till the end of 2023.** These ships would come under tremendous financial pressure due to the upcoming expensive regulatory requirements. **Depending on how challenging the freight markets turn out to be in the period 2020 to 2023 many of these ships would be forced to take the decision to head to the recycling yards in Asia.**

With respect to the approximately **9.31% of new ships (81.34 MDWT) scheduled to be delivered to the end of 2023,** the lack of funding coupled with delays in deliveries at ship yards would **subject them to a degree of slippage** (it was 2.72% in 2019), that would help slow down their arrivals into the freight market.

Financing:

In 2019, ship financiers continued to be a diffident group, particularly when it came to providing finance for small and unlisted Shipping companies. Fortunately, most are less self-effacing when it came to providing finance to PSL. Publicly listed companies have always benefited from being transparent by obtaining superior terms compared to their unlisted peers. Basel IV regulations,

when implemented, will likely only widen that chasm. As a result, “alternative finance” panels maintain their spot on the agendas of global ship finance conferences. Panelists bemoan the disappearance of many shipping banks while peddling their higher priced loans to small ship-owners. And they are not short of takers!

The vacuum left by the departing mainly European Shipping banks has been filled to an extent by Chinese leasing houses as well as a smattering of Japanese financiers. The Chinese leasing houses have grown their portfolios at a frenetic pace, driven in part by their ability to write big cheques.

The financial community is increasingly focused on the environmental, social and corporate governance (ESG) as well as the UN’s Sustainability Development Goals (SDG). Companies, which were previously assessed by banks and investors solely based on their financials are now judged on their overall impact, defined under the SDG framework as their Natural, Social, Human and Financial Capital. We expect this focus on overall impact to intensify over the next decade. The multilateral development bank community were forerunners in adopting these principles although we now increasingly see commercial banks following suit. In 2019, several leading commercial banks active in Ship Finance launched the Poseidon Principles by which they committed to integrating climate considerations into their ship lending decisions. An important first step in the Shipping industry’s battle against climate change!

According to Marine Money, the Shipping Industry (excluding offshore) as a whole, raised USD 6.70 billion from capital markets in 2019 compared to USD 7.4 billion in the previous year (2018). USD 3.71 billion came in from Bonds and USD 2.99 billion from Public Equity. Only USD 15 Million of the public equity raised was through a primary offering with remainder being through secondary offerings, signaling that public markets were all but closed to new companies. A far cry from the USD 823 Million raised from eight primary offerings as recently as 2017! Capital markets activity in the dry-bulk sector was relatively muted. Of the USD 6.70 billion raised from the capital markets by the Shipping Industry in 2019, a mere USD 455 million constituting less than 7% came to the Dry-bulk sector.

Concluding Remark:

Considering all the above, **we are taking advantage of the opportunities that are present in the market.** We hope to deliver to all our stakeholders the promise of this potential. This will in no small measure be **due to the very dedicated and hardworking professionals that make up the office, as well as, the floating staff at PSL.**

