# The UNCONTAINED

Breakbulk, Project and Energy Transportation News

2019 Collection

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George joined the Boston Marine Guide in 1986, and has been Editor in Chief since 1988.


**THE UNCONTAINED**

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***[cover image]***
Mammoet's expertise helped to carry out a record load on Alberta's roads.
(Photo Courtesy of Inter Pipeline)

# Foreword

In 2019, *AJOT's* coverage of breakbulk, energy and projects was a global undertaking with reports being filed from locations like northern China, Europe, and Australia as well as stories from closer to home in various parts of Canada and the US. Of course, there is also the day-to-day business of moving commodities like steel, aluminum and forest products that keeps ships moving - often to ports other than the mega-containerport destinations. It is the "uncontained" shipments that draw a lifetime allegiance of purveyors of the business. As one MPV (Multi Purpose Vessel) analyst bluntly said as an aside, "Boxes are boring."

From a purely "breakbulk" perspective steel and steel making dominate the commodity moves, whether that is iron ore, scrap or finished and semi-finished goods. And the steel industry is heavily influenced by China - both the movements of inbound raw materials and outbound steel goods. For that reason, the ongoing Sino-US tariff war has had a dampening effect on trade, as outlined in Peter Buxbaum's various articles on the steel industry. The aluminum business has been impacted greatly in North America as it is closely linked to the auto industry - another downstream issue of the US-China dispute.

Forest products are also a big breakbulk product, especially moving out of the North American Pacific Northwest. Canadian correspondent Leo Ryan's covered the topic for over twenty years and brings a perspective from north of the border that highlights the issues not only with China trade but the USMCA (US-Mexico-Canada) debate as well.

Perhaps the commodity most influenced by international events is the soybean. Early in the trade dispute, Beijing targeted US agricultural exports - and soybeans are the largest export agricultural commodity - in retaliation for tariffs on their own exports to the US. Soybeans thus became a mainstay of the breakbulk editions in 2019 and will likely remain so until the tariff wrangle is resolved.

The "project" side of the breakbulk business is perhaps the most fascinating. Specialized vessels loaded with oversized freight like wind turbine parts, massive generators, oil & gas industry loads and even gantry cranes for container ports are awe inspiring to see.

Wind power represented a big part of the 2019 coverage. Whether it was shipments to Canada's wind farms in the western provinces or the emerging offshore market in the Northeastern US, it is clear wind power is rising unabated. *AJOT* business & finance correspondent Matt Miller has covered the subject on both sides of the Atlantic with an in depth view of the fledgling offshore business in the Northeast US and the mature wind power industry in the Netherlands - a close look at what the US might become over the next two decades.

Another major segment of the power segment of the project business is LNG (liquefied natural gas). LNG exports from the US are increasing as more "export" facilities come online - particularly in the US Gulf region. But it is a global phenomenon. Peter Buxbaum's "The natural-gas economy" is a sneak peek into the application of a transforming technology that's likely to reshape energy product moves over the next two decades.

What will 2020 be like for a business that must be at once attuned to the day-to-day but with an eye to projects that frequently take decades to bring into reality? Our (albeit cautious) guess is a resurgence of business as trade issues ease and project money and regulatory reforms release projects that have been in stasis - but with apologies to the Bard, the future is indeed the undiscovered country.



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# BREAKBULK SHIPPING



# 1.1 Investments in steel capacity proceeding in US and Europe

## *But bearish industry sentiments expressed by some US experts*

***Peter Buxbaum, AJOT***
This article was originally published on January 28, 2019 in issue #681

Nucor Corp. announced plans in January to build a new steel plate mill in the United States Midwest. Nucor's board approved an investment of $1.35 billion to build the mill, which is expected to be fully operational in 2022 and capable of producing 1.2 million tons a year of steel plate products. The company plans on announcing the site for the new project in the coming weeks.

Nucor currently also operates plate mills in North Carolina, Alabama, and Texas. The new plate mill will enable Nucor to supply plate products new to the company.

"By building this state-of-the-art plate mill in the Midwest," said Leon Topalian, Nucor's executive vice president of beam and plate products, "we will enhance our ability to serve our customers in the region while also furthering our goal of meeting all the steel needs of our customers around the country."

The move comes on the heels of a Nucor announcement in September 2018 that it would invest $650 million to expand the production capability of the company's flat-rolled sheet steel mill located in Ghent, Kentucky, and $176 million to construct a new hot band continuous pickle galvanizing line at the same location. U.S. Steel and Big River Steel also announced expansions to existing plant capacity last year.

Meanwhile, construction on the first new steel plant in Europe in 40 years began in April 2018. Voestalpine announced the startup of new high-tech and fully digitized forge in Kapfenberg, Austria, with an investment of some 350 million euros. The plant, still under construction, began production in October 2018.

Nucor CEO John Ferriola credits the Trump administration with "taking the decisive and meaningful actions that American manufacturers need to compete on a level playing field." "Tax reform, continued improvements to our regulatory approach, and strong trade enforcement," he added, "are giving businesses like ours the confidence to make long-term capital investments in the U.S. that create jobs and ensure our success for decades to come."

But a January 14, 2019, report in The New York Times paints a less-than-rosy picture of the steel industry in the United States. Domestic prices for hot-rolled coil steel spiked by 40% during the first half of 2018, according to the report, in reaction to Trump administration tariffs on imported steel, only to fall over 20% during the second half of the year. Flagging demand, due to higher end prices and slowing production and investments by steel users, caused prices to crater. Employment in the sector has remained stagnant, as steel producers rely more on automation for production. Share prices for many steel companies plummeted in recent months and the consensus among the Times experts was for a bearish 2019 for the steel sector.

Ferriola disagrees with that assessment, saying that the company's investments are part "of our planned strategy for long-term profitable growth" and that they increase "our presence in the important Midwest market, specifically in the automotive, agriculture, heavy equipment, and energy pipe and tube sectors." Nucor's shares fell by 18 percent in 2018, a moderate

correction compared to the hammering received by some other steel shares.

Nucor's Kentucky investments will expand the production capability of the Nucor Steel Gallatin plant in Ghent from 1.6 million tons to three-million tons annually and will also increase the maximum coil width produced. The pickle galvanizing line is expected to be operational within the next few months and will produce 500,000 tons per year of galvanized hot band steel. Ferriola said Nucor is evaluating additional expansion projects as part of the company's initiative to grow its sheet business.

U. S. Steel announced in August that it would invest $750 million to modernize and enhance its Gary Works plant in Indiana. In June, Big River Steel announced that it is expanding its Arkansas-based scrap recycling and steel production facility, doubling the company's hot-rolled steel production capacity to 3.3 million tons annually and facilitating the company's ability to produce higher grades of the electrical steel used in energy efficiency products and in hybrid and electric vehicles.

## Europe's First New Steel Plant in 40-years

Europe's first new steel plant in 40 years will be fully digitalized, according to the global, Vienna-based Voestalpine Group, which generated revenues of over 13 billion euros during its 2017/2018 fiscal year. Beginning in 2021, the new plant will produce over 200,000 tons of high-performance steels annually, chiefly for the aerospace and automotive industry as well as the oil and gas sector.

The new steel plant will replace an existing Voestalpine plant in Kapfenberg and will produce pre-materials for the aerospace, 3D-printing, automotive, and oil and gas extraction industries. The company's aerospace customers include Airbus, Boeing, Embraer, and Bombardier, which use Voestalpine products in structural and undercarriage parts, engine components, and door segments. The new plant will process material produced by Voestalpine's specialty steel plant.

Voestalpine CEO Wolfgang Eder claimed the plant startup is "a positive signal for European industry, as this is the first investment in a completely new steel plant in decades." By 2021, he added, Voestalpine will have invested half a billion euros in technology development and digital transformation at the site in Kapfenberg.

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*"A positive signal for European industry, as this is the first investment in a completely new steel plant in decades."*

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According to The New York Times report, the U.S. steel industry over the last 40 years has received—as it is now—substantial levels of trade protection. The problem, according to one expert, is that during these periods of protection, U.S. steel companies usually don't make investments that promote efficiency and competitiveness.

Perhaps Nucor is the exception to that rule. But given plummeting demand and prices, the best bet for the steel industry as a whole might be for the U.S. government to embark on a major infrastructure initiative, a program that has been spoken about for years but which has not yet materialized. A one-thousand mile southern border wall made of steel slats, as once suggested by President Donald Trump, might also boost demand for steel-industry products.

Unfortunately, given the current partisan gridlock in Washington, it is highly unlikely that either such project will come about any time in the near future.

*POSCO steel plant in South Korea*


# 1.2 China's efforts to remove steel capacity hasn't reduced production

***Peter Buxbaum, AJOT***
This article was originally published on March 11, 2019 in issue #684

***But a downturn may represent a turning point***

The steel industry in China has been blamed for much of the woes faced by the sector globally in recent years. Overcapacity and overproduction in the People's Republic of China (PRC) have led to dumping steel in international markets, thereby suppressing prices and eating into the profits of companies in advanced economies.

The Chinese government has promised to consolidate capacity in its domestic industry, and indications are that they are making good on their word. China has also implemented stricter environmental regulations for manufacturers, which should also have the effect of reducing steel production capacity. But other policies of the Chinese government—which holds considerable sway over its economy—such as a possible economic stimulus program and a more flexible approach to smog reduction, could push production in the wrong direction. Domestic Chinese steel production and demand are still on their way up, frustrating the presumed aims and benefits of industry consolidation.

*[top image]*
Baotou world steel production

"China's supply reform and stricter environmental policy have worked positively in the market," said Eun Young Lee, a steel industry analyst at DBS Bank in Singapore, "but Chinese stimulus policy is the wild card for steel demand."

## Chinese Consolidation

The Chinese government has promoted industry consolidation by removing outdated and small players and concentrating on large-scale mills through mergers and acquisitions. Its so-called "blue sky action plan" directly restricts utilization of steel production capacity and indirectly increases production costs by regulating sintering and coking plants.

In the first half of 2018, Chinese steel demand received a boost from a mini-stimulus package for the real estate industry. The government is considering further stimulus policies to mitigate the harm being done by the trade dispute with the United States. "China steel demand growth is expected to decelerate in the absence of stimulus measures," said Al Remeithi, chairman of the World Steel Association (WSA) economics committee. Continued economic reforms and toughening environmental regulations "will lead to deceleration of steel demand into 2019."

But both downside and upside risks exist for China. "Downside risks come from the ongoing trade friction with the U.S. and a decelerating global economy," he added. "However, if the Chinese government decides to use stimulus measures to contain a potential slowdown, steel demand in 2019 will be boosted."

The expansionary measures the Chinese government is considering include reducing import tariffs and accelerating the implementation of infrastructure projects. Planned infrastructure projects include one-thousand miles of subway lines in Shenzhen, Suzhou, and Changchun, which would generate 80 million tons of steel demand.

China's supply-side reform has introduced "fundamental improvement in the global steel sector," according to Lee. China began the reforms in 2016, with the target of removing 100 million to 150 million tons of steel capacity and 800 million tons of outdated coal capacity by 2020. By 2017, 115 million tons of steel capacity had already been removed through consolidation along with as much as 120 million tons of substandard steel capacity.

"World steelmaking capacity is down from its 2015 peak by 3.5 percent over two years," said Lee. Global capacity totaled 2.25 billion tons in 2017, down from 2.33 billion tons in 2015. "China continues to work towards industry consolidation," Lee added.

China's industry-consolidation program is operating off the 13th Five-Year Plan, which calls for raising the concentration ratio among the top-10 industry players from 34% in 2015 to 60% in 2020. Baowu, China's number-one steel player formed from a merger between Baoshan and Wuhan steel in 2016, was reportedly in talks with Magang Group over a possible merger, although some have denied those reports. If successful, the combination will create China's new top steel company with 2017 production of 85.1 million tons representing 88% of the world's biggest steel producer, ArcelorMittal, which produced 97 million tons that same year.

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***"World steelmaking capacity is down from its 2015 peak by 3.5 percent over two years"***

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The Chinese government's policies of limiting industrial activities may be moving in the opposite direction with the adoption of a more flexible approach for emissions this winter. The Chinese government did not repeat last year's across-the-board cuts but allowed local governments to decide on their own measures to meet emission targets during the heating season. The government also reduced its target for the number of days of severe air pollution in northern cities from 15% last year to five percent in this year's initial plan to three percent in its final plan.

The municipalities implemented a variety of schemes, some of which did not hew to the central government's percentage reduction goals. It's unclear at this point how effective these local measures will prove to be nor their ultimate effect on steel production within the larger picture of capacity reductions.

Steel traders assumed that the situation will not play out as effectively as the government's stricter approach last year, and steel prices dropped as a result. "Implementation of a more flexible-smog policy rather than a one-size-fits-all fight on pollution weakened sentiments," noted Lee. In other words, traders calculated that steel production and supply would grow as a result of the government's more lenient environmental policy.

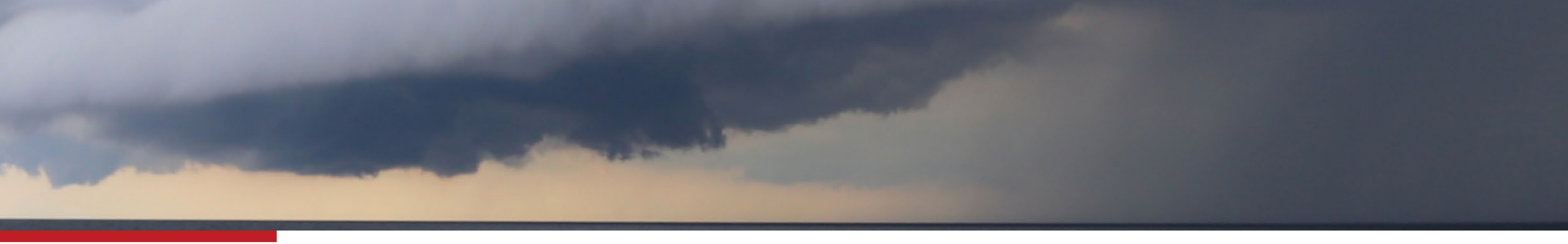
## China Steel Production Still High

Despite continued supply reform policies, China's steel production remained at a record high, at least as of the end of 2018, with output on target to register growth of well over eight percent for last year. There is also evidence, according to Lee, that some illegal capacity continues to operate, although the government is cracking down on that phenomenon.

Steel producers also upped their production late last year in advance of the winter regulations, creating a supply surplus and precipitating a dip in prices. "We expect the supply surplus to be temporary as steel production in China will be negatively hit even under the revised winter production cuts," said Lee.

Lee expects global production growth to slow with China's output shrinking beginning this year. "China's production is set to post negative growth in 2019," said Lee, leading to a deceleration in global steel production growth from 3.5 percent in 2018 to 1.0 percent to 1.3 percent in 2019.

"China's supply reform and environmental regulations," Lee concluded, "will remain as key determinants to global output."

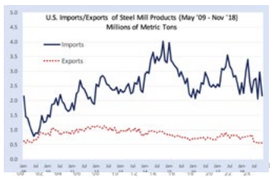


# 1.3 Storm clouds on the horizon for global steel

***But for now, continued growth is foreseen***

***Peter Buxbaum, AJOT***
This article was originally published on March 11, 2019 in issue #684


*[chart 1.3-1]*




*[chart 1.3-2]*

Experts differ on the numbers, but the consensus appears to be that global steel demand will continue to grow in 2019, although at a slower rate than in the last two years. Steel demand grew by nearly four percent in 2018 but is expected to grow by less than one and a half percent this year. That could indicate a slowdown in the global economy, perhaps foretelling a recession in mature economies where the deceleration will be most pronounced. China, the world's largest producer and consumer of steel, is a whole different ballgame.

The global picture differs by region. Demand in China is expected to contract while modest growth is expected in advanced economies. Some North American steel companies continue to expand, but U.S. Steel, for one, has raised an alarm bell over its operations in Europe where falling prices and rising costs have eaten into profits.

Much of steel's fate in 2019 will depend on macroeconomic indicators such as consumer sentiment for vehicles, among other goods, and construction activity. Most experts foresee a slowdown in mature markets while emerging markets are expected to show healthy demand growth this year and next. Trends in vehicles sales, at least in more advanced economies, should raise a red flag for the global steel industry.

Global steel production reached 1.81 billion tons in 2018, up 4.6% over 2017, according to figures released by the World Steel Association. Steel production increased across the board last year, except in Japan and the European Union, which each saw a contraction of a fraction of percent. In the EU, production out of Germany, France, and Spain all dropped, while Italy's was up by 1.7% over 2017. Production in the Middle East saw an increase of 11.7 percent, with Iran's production spiking by 17.7% over 2017.

As far as demand goes, Worldsteel's numbers show 1.66 billion tons in 2018, an increase of 3.9 percent over 2017. In 2019, its forecast is that global steel demand will grow by 1.4% to reach 1.68 billion tons. Note that global production last year exceeded demand last year by 150 million tons.

"In 2018, global steel demand continued to show resilience supported by the recovery in investment activities in developed economies and the improved performance of emerging economies," said Al Remeithi, Chairman of the Worldsteel Economics Committee. "While the strength of steel demand recovery seen in 2017 was carried over to 2018, risks have increased. Rising trade tensions and volatile currency movements are increasing uncertainty."

## US Plants

In the United States, Steel Dynamics reported record steel shipments of 10.6 million tons and steel fabrication shipments of 642,000 tons. The company also reported record sales, operating income, and net income.

"In 2018, the domestic steel industry benefited from a steady improvement in underlying steel consumption," said Steel Dynamics CEO Mark Millett, "based on strength from the automotive, construction, and energy sectors.

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***"We believe the market dynamics are in place for domestic steel consumption to continue to increase this year,"***

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Increased steel consumption, coupled with generally lower finished steel imports, created a strong market environment.

"We believe the market dynamics are in place for domestic steel consumption to continue to increase this year," he added.

The company's planned flat roll steel mill that was announced late last year, "with capabilities beyond existing electric arc furnace flat roll steel producers," said Millett. "We have targeted regional markets that currently represent over 27 million tons of relevant flat roll steel consumption, which includes the growing 16 million ton Mexican flat roll market."

Steel Dynamics' new steel mill will boast a capacity of 3.0 million tons and the capability to produce latest-generation high-strength steel products. The project will include value-added finishing lines and a paint line. The plant's product offering will include flat-roll steel products, Galvalume, and painted steel, to serve the energy, automotive, construction, and appliance sectors. With an estimated investment of over $1.7 billion, the company expects to locate the facility in the Southwest.

United States Steel Corporation recently announced the restart of construction on an electric arc furnace (EAF) facility in Fairfield, Alabama. The company initiated construction of the EAF in March 2015 and suspended construction in December 2015 due to unfavorable market conditions. The EAF will have an annual capacity of 1.6 million tons. The furnace is expected to begin production in the second half of 2020.

U.S. Steel also announced it will restart the No. 1 Electric-Weld Pipe Mill in Lone Star, Texas. The mill was idled in 2016 due to challenging market conditions for tubular products created by fluctuating oil prices, reduced rig counts, and what company CEO David Burritt called "high levels of unfairly traded imports."

The mill will provide electric-welded pipe in various size ranges for customers across the U. S., including the Permian Basin, which includes oil fields in western Texas and southeastern New Mexico. "We are encouraged by an improvement in market conditions and an increased customer demand for tubular products," said Burritt.

The Lone Star No. 1 Mill has an annual capacity of 400,000 tons. The restart process is underway and will be completed in the third quarter of 2019.

Meanwhile, U.S. Steel said in a recent conference for analysts and journalists that its European business "is under a lot of pressure, and that's a big change for us." The company is forecasting a drop of 3.2 percent in steel shipments for its European operations this year. The 2019 outlook showed fewer shipments and higher capital expenditures than earlier forecasts.

The automotive markets are likely to be an area of concern for the steel industry in the longer term. Worldsteel forecasts that demand for automobiles "will continue to grow at a healthy pace" in emerging markets while growth in developed economies is "softening" due to "slowing demand growth, rising fuel prices, and interest rates."

A recent report in Business Insider indicated that demand for personal vehicles is slowing in many areas of the world. According to the report, car sales have fallen all over the Eurozone since mid-2018. In the U.S., car sales are down in 2019 from last year's peak, while in Turkey car sales have plummeted a whopping 60% since January 2018. Now that's a trend that the global steel industry had better follow.

# 1.4 Tariffs, a manufacturing slump and the steel industry

***Peter Buxbaum, AJOT***
This article was originally published on November 25, 2019 in issue #698

***Demand, production, and share prices are all down; layoffs are on their way up***

A superficial reading of United States steel industry statistics could tend to bear out President Donald Trump's trade policy. Through August 2019, U.S. imports of steel decreased 13.4% on the year in terms of tonnage and 15.7% in terms of value. In August 2019, the steel trade deficit was 42.7% lower than the year before.

Year-to-date production as of early November was up by 2.5% from the same period last year for the domestic industry, and the capability utilization rate stood at 80.3%—up 2.4% from 2018 when the year-to-date utilization rate was 78.1%.

But other numbers tell a different story. Output by U.S. mills began to decline in early November, as did the average mill utilization rate. In September, U.S. mills saw a decrease in domestic shipments of over 700,000 compared to the month before as well as a small decline in total exports. Steel import permit applications in October increased by 29.2%.

## Manufacturing Recession

There has been much talk about whether the U.S. is experiencing a manufacturing recession, all of which may be beside the point since there is no accepted definition of what constitutes a recession in a particular industry. It is clear, however, that Trump's trade war has led to a global trade slump and, in turn, slowdowns in manufacturing and in capital spending by U.S. businesses.

Manufacturing output in the U.S. is down 0.9% in the past year, while factory shipments are down 0.4% year-on-year according to the Census Bureau. These numbers are not as severe as those experienced during the 2008 recession or even the 2015-2016 manufacturing slump, but they do indicate a downturn. So, does the plunge in the Institute for Supply Management's manufacturing index, which fell from 60.8 in August 2018 to a 10-year low of 47.8 in September.

The steel industry, domestically and worldwide, are bearing the brunt of these trends, as are the workers employed in that sector. The most recent U.S. jobs report beat expectations, but held some ominous import for manufacturing workers, with a decline in hours worked. In the steel sector, lower demand and production cutbacks have meant layoffs at several steel companies this year.

As a case in point, the Luxembourg-based ArcelorMittal, the largest steelmaker in the world, recently reported its second quarterly loss in a row—a third-quarter deficit of $539 million, compared to a profit of $899 million in last year's third quarter. The company blamed lower shipments and weak steel prices in markets all over the world. (Some U.S. steelmakers are still reporting profits. See sidebar to the right)

For the nine months ending September 30, ArcelorMittal reported a decrease of 1.8% in total steel shipments compared to the same period last year. The company expects steel consumption in the U.S. to contract by one percent due to ongoing weakness in automotive demand and a slowdown in the machinery sector. Cost cutting may have motivated ArcelorMittal to announce the recent shutdown of one of the three blast furnaces at its Indiana Harbor steelmaking plant in East Chicago, Indiana.

ArcelorMittal isn't the only steelmaker shutting down production capacity and laying off employees. Lower demand and lower production are now bearing their fruit, in the form of job cuts at major steel producers in the United States over the past few months.

AK Steel announced the closing of its mill in Ashland, Kentucky, by the end of the year, throwing 260 employees out of work. Earlier this year, TMK Ipsco Tubulars Inc. announced it was laying off 159 workers at its plant in Wilder, Kentucky, due to dropping demand from the oil and gas industry.

NLMK steel in Farrell, Pennsylvania, which imports steel slabs from Russia and rolls them into finished products, laid off 100 workers in its hot mill over the summer, citing the higher costs of steel imports. In October, United Structures of America closed its plant in Portland, Tennessee, putting 45 employees out of work. The company blamed the layoffs on falling demand for steel in the construction industry.

Barber Steel Foundry in Rothbury, Michigan, part of the Pittsburgh-based Wabtec (Westinghouse Air Brakes Technology) Corporation, which manufactures locomotives and freight cars, is closing this month, laying off 61 employees. Bayou Steel in Louisiana filed for bankruptcy October 1 and announced it was closing, putting 439 people out of work, including 72 workers at its Harriman, Tennessee, operations.

Earlier this year, United States Steel (USS), the second largest steel producer in the U.S., shut down one of its blast furnaces at its Great Lakes Works near Detroit, cutting 250 jobs through September. USS also announced it is idling its tin mill in East Chicago, Indiana, laying off some 300 workers.

## Falling Demand

During his election campaign, Trump repeatedly promised he would revive the steel industry through trade war measures primarily aimed at imports from China and Europe. The tariffs at first sent steel stock prices up in anticipation of higher profits.

But these protectionist measures have had the opposite effect. Steel giants like U.S. Steel, Nucor, and ArcelorMittal all brought additional domestic capacity on line in anticipation of greater demand. While demand rose modestly earlier on, the additional capacity led to a situation of overproduction in the U.S. market, with the ultimate result of falling steel prices.

And it's not just steel prices that have fallen of late; so have stock prices of publicly held steel concerns. Nucor has seen its share value fall by over 20% since its early-2018 high. ArcelorMittal's stock has fallen by well over 50%, from a high of $37.50 in January 2018 to just $16.00. U.S. Steel has dropped from a 52-week high of $28 to around $13.50 recently.

Those numbers may be good news for investors, who may find shares in the steel sector cheap enough to be worth taking the plunge and buying. But the numbers on the whole do not bode well for the steel sector anywhere, unless and until the impediments to the international trading system are fixed.

# 1.5 Steel: By the numbers

***Peter Buxbaum, AJOT***
This article was originally published on November 25, 2019 in issue #698

***ITA numbers suggest declines, and reversal of trade deficit reductions brought on by tariffs***

According to the latest report from the International Trade Administration (ITA), August 2019 steel imports were down but license data suggests the October numbers will show a significant increase in imports. Year-to-date through August, U.S. steel imports were 18.8 million metric tons, a 13.4% decrease from 21.7 million metric tons last year. In value terms, imports decreased 15.7% to $17.4 billion from $20.6 billion.

Brazil accounted for the largest share of U.S. imports by country so far this year at 18%, followed by Canada, at 16.7%, and Mexico, at 11.1%. The U.S. imported 6.3 million metric tons of flat products so far this year, accounting for 33.8% of total steel imports, the largest category of steel product imported. This was followed by semi-finished products at 25.9% and pipes and tubes at 22.4%.

U.S. steel exports have remained relatively flat for the past nine years, according to the ITA. Compared to the trade balance one year ago, the August 2019 steel trade gap has narrowed by 42.7%.

Compared with August 2018, August 2019 exports were up 0.6% by volume and down 19.8% from three years ago.

In terms of NAFTA trade, total steel imports into the U.S., Canada, and Mexico decreased 12% this year, while intra-North America steel imports and exports have been on the rise. Imports among the three countries account for a 38.3% share of total NAFTA steel imports so far this year, followed by Brazil's share with 13.7%, and South Korea, at 8.6%.

After peaking in the third quarter of 2018, domestic steel prices have been on the downslide. U.S. domestic prices for hot-rolled band in September 2019 were down 34.5% from last year; for cold-rolled coil, they were down 21.5%; and for standard plate they were down by 22.2% from a year ago.

US steel production decreased by 0.3% to 7.4 million metric tons in August compared to the month before, marking a 1.1% decline from the August 2018 production level. Capacity utilization decreased in August 2019 by 0.3% from the month before as well as from one year ago and down 1.1% from five years ago. By November it was up slightly.

"Though capacity utilization has increased 38.3% points from the thirteen-year low reached in April 2009," the ITA report noted, "it remains well below the prerecession historical averages."

Steel demand in August 2019 decreased two percent from a year ago and six percent from five years ago. Steel demand in 2018 amounted to 100.9 million metric tons, a one-percent increase from 99.7 million metric tons in 2017.

The U.S. steel industry posted a combined net income of $472 million in the third quarter of 2019, with five out of six companies tracked by the ITA reporting quarterly gains. Nucor reported the highest quarterly net profit at $275 million, followed by Steel Dynamics at $151 million, Commercial Metals Company at $86 million, Carpenter Technology at $41 million, and AK Steel at $2.8 million. U.S. Steel reported quarterly net loss of $84 million.



# 1.6 The ups and downs of iron ore prices

***Peter Buxbaum, AJOT***
This article was originally published on July 22, 2019 in issue #691

Iron ore prices may have retreated in recent weeks from their earlier heights but are still up an impressive 67% on the year. The high of $126.35 a metric ton, reached in early July, was the highest level seen since January 2014.

The surge in iron ore prices has been linked to compromised supplies from mines in Australia and Brazil. Brazil's Vale SA, one of the industry's top exporters, cut output following a fatal dam collapse in January. In Australia, weather and fire damage have set back operations in that country's mines.

Increased iron ore prices have caused pain for steel producers in China and elsewhere and the supply disruptions, presumably occurring in the normal course of business and not as a result of manipulation, have not prevented Chinese steelmakers from complaining to their government to intervene in the market. The threat of Chinese government action caused the recent fall in iron ore prices, according to some observers, but producers should not count on falling prices developing into a trend.

The China Iron Steel Association (CISA) released information confirming that its members had requested a government investigation into the price hikes and that, in fact, the Chinese government was doing just that. According to CISA, China's steelmakers saw profits fall 18.2% in the first five months of this year and their profit margins sink to five percent. Chinese steelmakers, led by Baowu Steel, are also taking action by setting up a working group to find ways to mitigate soaring iron ore prices.

Steelmakers worldwide have reported that their margins are being squeezed by climbing iron ore costs, with U.S. Steel reporting in June that it closed one furnace in Europe and two in the United States. Meanwhile, the iron ore producers, which have implemented efficiencies in recent years, have seen their profit margins spike, thanks to the higher prices and lower expenses.

***[image 1.6]***
China's iron ore imports in June fell to their lowest levels since February 2016 and iron ore inventories are shrinking.

There is a wild card in this picture, on the demand side, having to do with steel output limits in China aimed at curbing pollution. Wu'an imposed output restrictions on 14 steelmakers through August 31 and the city is now considering further measures. Tangshan is scheduled to lift its restrictions on August 1, but some observers speculate that the city will impose more stringent restrictions beginning in September. But those developments, which could reduce the demand outlook for steel and, by extension, for iron ore, in the immediate term, will not likely change the Chinese steel industry picture in the long run.

Iron ore prices may have fallen of late, but industry experts warn against premature celebration. China's iron ore imports in June fell to their lowest levels since February 2016—down over 10% from May—and iron ore inventories at China's ports are shrinking. Stockpiles stood at 115 million tons at the end of June, down 18% on the year, leaving China's steel producers with only about four weeks of supply on hand.

# 1.7 Steel Success Strategies conference in New York dominated by steel tariffs and protectionism fears

***Manik Mehta, AJOT***
This article was originally published on July 22, 2019 in issue #691

If politics is indeed driving a wedge between Americans today, then nowhere is this more visible than in the steel sector which is mired in a verbal battle between the steel-making and steel-consuming industries on the issue of steel import tariffs under Section 232 of the Trade Act, whose imposition for reasons of national security is contested by the opponents.

The question of steel tariffs also dominated the three-day Steel Success Strategies conference, the 34th edition, held in the latter half of June in New York where representatives of steel-supplying nations such as China, Japan, Korea, India, Turkey, Germany, etc., worried by growing American protectionism, had also descended. Comments by some US steel executives at the conference suggested that the tariffs had indeed checked the "inundating steel imports", besides resulting in a sharp rise in domestic production and sales, and a surge in profitability.

***[image 1.7]***
(L to R) Ronald Ashburn – Association for Iron & Steel Technology, Bernhard Hoffman – US Steel Corp, Peter LeBlanc – ArcelorMittal

Nucor's CEO John Ferriola, making a dramatic "landing" on the stage via a visual spacecraft to hammer down the message that Nucor was involved in making special spacecraft bodies (out of steel, naturally!) since the summer of 1969. An elated Ferriola - remember his past statement that "it's a great time to make steel in America"? – said that demand for steel was projected to grow to over 1.7 billion metric tonnes by the end of this year. "Unemployment in the US is at its lowest since five years … Nucor posted the highest earnings in its history in 2018. We do not just sell steel to our customers … we sell them solutions! The US manufacturing sector earned its highest earnings since this century," he exclaimed to the thunderous applause from the packed auditorium.

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***"The US manufacturing sector earned its highest earnings since this century"***

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Bernhard Hoffmann, Vice President (Engineering/Product Development) at US Steel Corp., the largest integrated steel producer in the US and the largest North American tubular producer, with a 22 million tons annual steelmaking capability, told the conference delegates that OEMs would continue to invest in autonomous and electric vehicles which constitute a significant source of steel consumption though the emphasis will be on "cost-effective lightweighting", as Hoffmann put it, for the vehicle structures and improved drive motor efficiency. US Steel continues to invest in technology to help produce advanced high structural steels (AHSS).

Many of the delegates, representing a variety of industries and services, privately told the *American Journal of Transportation* that after tariffs were raised on steel, aluminum and other products, prices had risen. However, the prices had, meanwhile, fallen from those high levels for a variety of reasons across the industries; if the weakness continued, companies might struggle to make money from their new investments. There were fears that such a situation might lead to a steel glut.

But steel companies disagree, arguing that the market can absorb the new capacity. Executives say they have carefully considered their investments and expect them to do well through the economy's ups and downs.

According to Ferriola, steel capacity was not being added "just to add tons" and that the bulk of the investment was based on producing greater high-margin, value-added products and not commodity-grade steel. But Ferriola also acknowledged the uncertainties in the trade though he seemed, generally, optimistic about 2019.

The tariffs did initially reduce steel imports, generating more domestic demand in 2018 and boosting profits. With abundant cash in hand and added money coming from corporate tax cuts provided by President Trump, US steelmakers began adding more capacity than they would have done otherwise. However, as the global economy cools down and demand falls, electric arc furnace companies, armed with higher profit margins, want to have a bigger share of the US market. This could possibly lead bigger companies to poach on the weaker ones, in the process of consolidation.

Peter Marcus, managing partner at World Steel Dynamics, speaking at the SSS-conference, said that Trump's USA-China trade war is causing economic apprehension, and that an "economic chill" was devastating the global economy and the steel industry.

He maintained that 50% of China's exporting manufacturers planned offshore units, and China's manufacturing prowess advantage was lessened because of huge wage boosts since 2000, and new technologies available to all. "China's export armada is de-fanged," he said.

# 1.8 The India aluminum paradox

## *Why exports and imports are both seeing healthy growth*

***Peter Buxbaum, AJOT***
This article was originally published on May 13, 2019 in issue #688


*[chart 1.8]*

Trade tensions between the United States and India have been on the increase of late, thanks primarily to the trade policies of the Trump administration. Some recently released numbers show the extent to which such policies can—and cannot—influence bilateral trade patterns.

This is a story about the trade in steel and aluminum between the U.S. and India—mostly aluminum. The numbers show that India's steel exports to the U.S. fell by 49% last year while exports of Indian aluminum to the U.S. went up by an impressive 58%.

The steel part of the statistic is easy to understand. President Donald Trump imposed an across-the-board 25% tariff on steel imports, with some exemptions, making Indian steel more expensive in the United States. But Trump also slapped a 10% tariff on aluminum imports. So why, then, did imports of aluminum from India increase, let alone by so much? And does it make sense that India's imports of aluminum have also been increasing?

## India's Aluminum Export Boom

The answer lies in the particular conditions of the aluminum industry and trade in India, including the specific needs of domestic aluminum users. First, it's important to note that India's aluminum exports have been growing prodigiously for several years—to the entire world and not only the U.S. They leapt by nearly 16% during the second quarter of this year and by over one-third in 2018—increasing by 440,000 metric tons to reach 1.66 million metric tons. From 2015 to 2017, India's aluminum producers' exports rose by a whopping 83%.

Indian aluminum represents only 1.25% of U.S. imports of the metal, but six percent of India's exports. South Korea, Turkey, Mexico, Italy, and Japan are India's other major aluminum customers, together with the U.S. buying 65% of India's exports.

India was able to increase its exports of aluminum thanks to two unusual conditions. First, there existed a large surplus in domestic aluminum stockpiles, and, second, global aluminum supplies became scarcer thanks to the turmoil caused by the Trump tariffs as well as sanctions on aluminum producers such as Rusal.

At the same time, India's imports of aluminum also grew mightily. In 2018, India's aluminum imports, including scrap, grew to nearly two-million metric tons, continuing a growth trend of 12% per year on average since 2011. Imports claimed a 54% share of the country's total aluminum consumption last year.

## Lower Production Costs

India is one of the cheapest countries in the world to make aluminum thanks to the government's support of upstream producers, allowing them to double output since 2010. At the same time, aluminum prices in India are around 14 percent above London Metal Exchange (LME) prices, providing incentive for downstream aluminum users in India to import the material they need. LME aluminum prices have been falling of late, having peaked in April 2018 at $2,600 per ton and since sinking to the $1,800 per ton range. Prices have not crossed the $2,000 per ton mark since late October 2018.

So the picture that emerges from all this is of an India that is a low-cost producer of aluminum—making its exports attractive overseas—but not low-cost enough for domestic users who can find cheaper product abroad. Global trade turmoil is also making Indian aluminum more attractive overseas, including in the U.S.

These conditions have sparked calls by some in India's aluminum industry for an increase in the country's import duties on scrap and primary aluminum. Not surprisingly, domestic producers support that measure, seeking, as they see it, protection from low-cost imports. Downstream users of aluminum reject the notion of increased tariffs, desiring as they do cheaper aluminum.

The Commerce Ministry has taken up the cause of tariffs, urging the government to make it part of its industrial policy. The ministry is currently supporting a 10% rate on both primary aluminum and scrap—up from the current levels of 7.5% and 2.5% respectively.

Critics of the proposed tariffs say it will not make much of a difference in the imports picture, because half of India's aluminum imports originate in countries with which India has free trade agreements—including Malaysia, Thailand, Vietnam, and South Korea. That percentage is likely to increase if the government succeeds in concluding an FTA with the Gulf Cooperation Council (GCC). Bahrain, a GCC member, is the world's eighth-largest producer of aluminum, accounting for 10% of the country's economy. The kingdom has been taking steps to expand its aluminum production, but has been hit hard by the Trump tariffs. The bottom line is that an increase in import duties would likely result in more imports from countries with which India has preferential trade arrangements.

## India's Domestic Demand

In addition, not all of India's domestic demand can be satisfied by local producers. That's because the vast majority of India's scrap aluminum buyers—many of them small- and medium-sized companies—are in the market for aluminum alloys that are not produced in sufficient quantities by domestic smelters. SMEs that produce manufacturing extrusions, rolled products, cables and conductors, auto casings, utensils, and products for India's growing construction and packaging sectors will see their already slim margins squeezed if the government imposes new import tariffs.

The numbers also indicate that the primary buyers for domestic smelters are outside of India. That explains why exports have been rising so strongly in recent years, not only for primary aluminum but also for certain specialty aluminum alloys.

It remains to be seen whether the government of India will impose new import tariffs on aluminum. If it does, the biggest effect will probably be to hurt domestic Indian manufacturers, while having little impact on overall import patterns. The failure of such a policy would also expose the fallacy of viewing metals like aluminum as unitary products, when, in fact, it represents many dozens of products, not all of which, by a long stretch, are produced by every metal-producing country. Better to leave the market to its work, which, in this case, yields the result that, with the continued growth of the Indian economy, both aluminum imports and exports will likely to continue to rise.

# 1.9 Manufacturing in Vietnam: capacity shifts, tariff avoidance, tariff evasion

***Peter Buxbaum, AJOT***
This article was originally published on July 22, 2019 in issue #691

***Producers are shifting capacity from China to Southeast Asia and logistics companies are responding with increasing investments but U.S. authorities are looking out for tariff cheats.***

On July 2, the U.S. Department of Commerce slapped preliminary duties as high as 456.23 percent on some steel imports from Vietnam. The rationale: circumvention of antidumping and countervailing tariffs against corrosion-resistant (CORE) and cold-rolled steel (CRS) from South Korea and Taiwan.

Commerce found that certain steel products that were first produced in South Korea and Taiwan were then shipped to Vietnam for minor processing before being exported to the United States. Spikes in shipments of CORE and CRS from Vietnam to the U.S. provided the department with a big clue. CORE shipments increased 4,076% from December 2015 to April 2019, while CRS increased 922% from February 2016 to April 2019.

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***"The tariffs will hurt Vietnam, among the few countries that have benefited from trade tensions between the U.S. and China."***

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This isn't the first-time penalties were imposed on imports from Vietnam. In December 2017, DOC hit CORE and CRS imports with punitive tariffs, claiming they originated in China. In March 2019, U.S. Customs found some importers were evading duties for imported aluminum door thresholds from China that were transshipped through Vietnam with false declarations of origin and without depositing antidumping or countervailing duties. These kinds of investigations are on the rise, according to a recent report from the international law firm Baker & McKenzie, which noted that deliberate falsification of import documents can lead to criminal liability.

## Manufacturing Shift

There are several developments at play with these kinds of stories. Producers have been shifting manufacturing capacity from China to Vietnam and other countries for years but the tariff situation has accelerated that trend and it's become clear that Vietnam is benefiting from the U.S.-China trade war. Vietnam "has been called 'the new China,'" noted a recent report from the Council on Foreign Relations, "given its low wages and lax labor and environmental regulations." U.S. imports from Vietnam increased 34% in the first five months of 2019.

Trump's ire, who described Vietnam as "almost the single-worst abuser of everybody." Vietnam's trade surplus with the U.S. has increased from $20 billion in 2014 to $39.5 billion last year. The problem unmasked by the most recent tariff case is that increases in imports from Vietnam represent not only efforts at tariff avoidance but tariff evasion.

Vietnamese officials say they are working on reducing the trade surplus with the U.S., according to published reports, and are cracking down on Chinese manufacturers who are rerouting their goods through their country. The U.S. Embassy in Hanoi announced that it has conducted talks with Vietnamese authorities and that it hopes Vietnam will take steps to address U.S. concerns.

"The tariffs will hurt Vietnam," opined Chang Shu, chief Asia economist at Bloomberg, speaking of the latest round, on steel, "among the few countries that have benefited from trade tensions between the U.S. and China."

## Cost Versus Quality

U.S. importers have endeavored to diversify their source of supply to lower-cost countries like Vietnam even before the tariff wars started, citing rising costs in China. But many have found that it's hard to duplicate the quality and scale of manufacturing capacity that the People's Republic has to offer. Logistics also presents a problem, as there are fewer transportation options, leading to longer transit times and less flexibility for supply chains, but there are signs of improvement on that front.

According to John Singleton, CEO of Wen Parker Logistics, 20% to 25% of production capacity currently located in China will eventually shift elsewhere over a period of years. "Companies still deep in China are those with price points that can withstand tariffs and higher costs and that can't find the desired quality elsewhere yet," he said.

Chasing low labor rates may be a fool's errand in the long run, as labor rates will presumably rise everywhere as the global economy develops. But Vietnam is still one of those places "where lots of people are still scrambling for entry-level work," according to Singleton.

Logistics infrastructures will have to be improved if Vietnam is to further develop its manufacturing prowess and there are signs that logistics companies are beginning to make those investments. At this point, many shipments originating in Vietnam are consolidated in Shanghai, Hong Kong, and Singapore, leading to transit times from Vietnam as much as double those from China.

Vietnam is seeing rising incomes and improving infrastructures, according to John Carr, president and CEO of MIQ Logistics. "This is one of the reasons why we are building up our presence in Vietnam," he said.

## New Services to Match Sourcing

The planning processes required for sourcing changes mean that companies cannot shift their sourcing patterns on a dime, nor can ocean carriers revamp their operations quickly. Some of the ship lines have tweaked their service offerings and port calls to better accommodate increased volumes out of Southeast Asia, according to Sri Laxmana, vice president for global ocean services at CH Robinson.

"If the tariff war continues to escalate," he said, "you may see more direct services out of Southeast Asia."

According to a recent report from Agility Logistics, India and China remain the leading investment destinations for the logistics industry. But Vietnam leads a second group that is drawing increased interest from the industry, thanks to its diversity of exports.

"Vietnam will offer potential big growth for exporters in the coming years," said Steven Gundlach, a DB Schenker executive vice president. "Vietnam's booming business extending from manufacturing to the exporting of mobile phones and furniture shows no signs of slowing. The country has a good diversification of products to export and continues to increase its exports into the U.S. market."

The shift into Vietnam of manufacturing from China has been part of a continued, normal migration of industry to lower-cost venues, while the accelerated pace of investment has been brought on by the Trump tariffs that have been directed at China. Vietnam may continue to benefit from the U.S.-China trade war, but exporters and importers should bear in mind that the Department of Commerce and U.S. Customs are on the lookout for cases of tariff evasion.

# 1.10 Forest product exports robust at Canadian West Coast ports

***Leo Ryan, AJOT***
This article was originally published on May 13, 2019 in issue #688

At Canadian breakbulk ports on the West Coast, led by the Port of Vancouver, forest product exports remain at high levels thanks to sustained demand from trading partners in Asia sparking record volumes in some instances. China and Japan are the strongest foreign markets followed by Taiwan, South Korea, India and the Philippines.

The numbers for the Port of Vancouver certainly tell the story. Forest products ranging from logs to lumber and wood pulp accounted for nearly 26 million metric tons of cargo out of total port throughput of 147 million tons in 2018.

Last year saw outbound shipments of logs from Vancouver soar by 26% to 8.4 million tons. And lumber, logs and wood pulp alone accounted for three quarters of overall export breakbulk volume of 12.5 million tons.

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***Port Alberni's outbound cargo included 536,546 tons of logs in 2018.***

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Canada's largest port serves as the major consolidation center for breakbulk cargo on the Pacific Coast. It is handled by two terminals at the port – Lynnterm and Fraser Surrey Docks.

At Nanaimo, biggest port on Vancouver Island, a new multi-purpose breakbulk terminal is stimulating steady growth. Forest products and logs each contributed more than 2 million tons to total traffic of 5.3 million tons in 2018.

Situated on a 25-mile inlet on the west side of Vancouver Island, Port Alberni's outbound cargo included 536,546 tons of logs in 2018. "Raw logs from Port Alberni are being shipped to China, Japan and South Korea," Mike Carter, director of operations, told the *American Journal of Transportation*.

Meanwhile, the maritime trade statistics suggest that at least Canadian ports on the West Coast have not been hurt significantly by the ongoing dispute with the United States which has slapped softwood lumber duties on Canadian producers on alleged subsidy grounds. In the latest development, the Canadian government said in April it will appeal a decision by the World Trade Organization (WTO) panel allowing the US to use "zeroing" to calculate lumber anti-dumping tariffs. Zeroing calculates duties based on whether the domestic price of a product exceeds its US import price after it is adjusted for transportation and handling costs.

# 1.11 Soybeans – the special sauce

***Soybeans are a special commodity in the tariff war between the US and China.***

***George Lauriat, Editor in Chief***
This article was originally published on March 11,, 2019 in issue #684

After nearly three-months of negotiations (see G. Lauriat Let's Make a Deal *AJOT* Issue 683), President Trump and China's President Xi still haven't made a deal with the next round of tariffs being "postponed indefinitely" and U.S. soybeans remaining an innocent casualty of this Sino-U.S. trade war.

U.S. soybean exports to the People's Republic of China (PRC) have stopped as China's retaliatory tariff has priced them out of the market. And price might not even be the issue as the centrally planned Chinese economy has in all by words effectively banned U.S. soybean imports.

For U.S. exporters, the failure of China and the U.S. trade tariff negotiations represents a difficult setback. American Soybean Association (ASA) President Davie Stephens, a soybean

grower from Clinton, Kentucky, wrote after the talks broke down, "We are glad that talks between these two countries will continue without the tariff hike... it's still hard to see a tangible end in sight."

It's worth noting that soybeans aren't just another crop when it comes to China – it is the agricultural export. In a little over two decades the value of the U.S. soybean has risen from a modest $414 million in 1996 to $14 billion in 2017. China imported over 30% of U.S. production in 2017, amounting to around 60% of total U.S exports. Both Chinese importers and American exporters – prior to the current dustup – expected the U.S. to be the main supplier to the PRC. But the possibility of the U.S.-China soybean trade being permanently damaged stands to alter the shipments of agricultural commodities for the foreseeable future.

When China and the U.S. agreed to sit down for trade talks, Beijing said it would buy five million soybeans as a goodwill gesture. This kicked off a spate of buying in late January into early February. Industry estimates believe the tally will eventually hit ten million tons – although with the trade talks slowly grinding along the possibility of Beijing suddenly closing the tap is very real.


*[chart 1.11-1]*


*[chart 1.11-2]*

At a February 26th meeting before the U.S. Senate Committee on Commerce, Science and Transportation, Donna Lemm, an Advisory Board Member for the Agriculture Transportation Coalition (AgTC) and Executive VP, IMC Companies, Inc., noted how deep and long-term the damage from tariffs could be, "It is essential to emphasize the daily threat of global competitive sourcing confronting all your agriculture and forest products constituents:

• There is nothing that we produce in agriculture and forest products in this country, that cannot be sourced somewhere else in the world. What is produced in Nebraska and Illinois, for examples, Brazil, Australia, Argentina, Canada and Mexico are more than eager to supply.

• When we cannot deliver, affordably and dependably, to our customers in Asia, Europe and around the world, those customers will find alternative sources.

• When our foreign customers go elsewhere, and establish new sources and new supply chains, it is incredibly difficult to get those customers back."

## Bean Counter: The Soybean Dilemma

Lemm's comments point out the real danger of an extended trade dispute – foreign customers (i.e. China) going elsewhere. In the case of soybeans, Brazil and Argentina are rivals to the U.S. for the China market. And China itself has the ability to produce more soybeans with crop conversion. Although crop conversion, say from wheat, itself, invites economic volatility by creating shortages in another sector.

It can be easily argued China's readiness to "buy" U.S. soybeans in January-February in advance of the talks as matter of "good faith" is less about "good faith" than dire need. As much as the tariffs have hit the U.S. heartland, they have hit China's gold coast of cities like Shanghai, Guangdong and Xiamen just as hard – it's tough to make soy sauce without soybeans.

Because China imports a great deal less from the U.S. than vice versa, the impacts of the tariffs have been slower to percolate through the economy. Nonetheless, the U.S. tariffs are sowing havoc with the machinery of the "Factory-to-the-World" export oriented economy.

*"Maximizing yields and profitability are priorities, but how we approach them has changed as the world around us changes."*

Recently Beijing announced a lowering of the growth of its GDP target from 6.5% to a range of 6% to 6.5% - the first concession of the economic squeeze of the U.S. tariffs and general issues China has with its trade partners. This is the lowest growth forecast since the 1990s. Chinese Premier Li Keqiang said of the ongoing and widespread trade disputes, "Economic and trade frictions ... [have] had an adverse effect on the production and business operations of some companies."

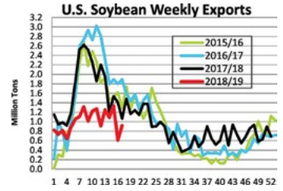
Part of the dilemma of Beijing taking aim at U.S. soybeans and other agricultural products is the difficulty in replacing them. According to the United States Department of Agriculture (USDA), Brazil – the number two exporter of soybeans to China – will have less supplies to ship. The USDA reported, "Record soybean exports in 2017/18, coupled with a reduction in the 2018/19 harvest, will significantly reduce Brazil's exportable supplies in the coming year. Local year (Feb/Jan) exports last year reached a record 84.2 million tons, 15.4 million above the previous record volume of 68.8 million recorded in 2016/17."

What this means is China will either have to dig in and prepare for some domestic economic discord or make a deal. In a sense this was outlined by Premier Li at the opening of the National People's Congress (March 5) when he said, "We must be fully prepared for a tough struggle. The difficulties we face must not be underestimated, our confidence must not be weakened, and the energy we bring to our work must not be allowed to wane."

The dilemma for U.S. negotiators is no less problematic. According to a Bloomberg report in late February, China proposed a deal for some $30 billion in U.S. agricultural exports – more than twice the $14.8 billion China spent in 2017. China imports globally around $126 billion in agricultural products annually. Back in 2017 soybeans accounted for just over $12 billion with another $2.5 billion split largely between cotton, corn and wheat.

But buying more agricultural goods at the expense of other boxes yet to be checked like IP [intellectual properties], financial access and accountability might be more than the Trump Administration is willing to concede… even with the 2020 Presidential elections becoming the "elephant in the room" for all negotiations.

U.S. soy producers, with or without an agreement, still have crops to sell. To that end, looking for alternative markets as means of transporting soybeans to customers has become a new priority. In Illinois, the number one State for production in 2018, Lynn Rohrscheib, a soybean farmer from Fairmount, Ill., and Illinois Soybean Association (ISA) chairwoman said, "Maximizing yields and profitability are priorities, but how we approach them has changed as the world around us changes."




*[chart 1.11-3]*

Among the technological innovations that the ISA is looking to deploy is the shipping container. While a vast majority of soybeans are shipped either bulk or breakbulk, container shipping offers advantages in ship scheduling, unit sizes, storage and accessibility to wider markets.

Austin Rincker, a soybean farmer from Moweaqua, Ill., and ISA Marketing Committee chairman, said of the box alternative, "We focus on improving logistics to get soybeans to market, including by rail, road and waterway. On the heels of another record harvest in Illinois, we continue to focus on expanding trade opportunities. For example, we are working with industry partners to step up container shipping to open the door to new, diverse international markets for soybean exports."

If a deal gets made between the U.S. and China, soybean farmers stand to be the big winners. In the meantime, finding alternative markets and transportation measures is a skill that might come in handy for the next time around.

# 1.12 Red flag raised on Canada's west coast port breakbulk capabilities

***Jan-Ludwig Beringer, CEO of Rohde & Liesenfeld Canada Inc., says Canada's west coast ports aren't up to the task of handling project cargos.***

***Leo Ryan, AJOT***
This article was originally published on March 11, 2019 in issue #684

A veteran project forwarder based in Calgary, in the heart of western Canada's energy industry that in the past year has been crippled by the severe downturn in world oil markets, Jan-Ludwig Beringer is well known among his peers for his sense of humour – but also for not mincing words when assessing difficult situations. This was borne out in a recent interview combined with emailed comments.

"It's time to call a spade a spade," said the president and CEO of Rohde & Liesenfeld Canada Inc. since 2001. "The environment for new projects in western Canada has hit a low point, and the inefficiencies of our ports in handling project cargos is part of that equation."

In recent years, he said, railways and terminal operators have notably invested large sums for handling bulk commodities in west coast ports. For breakbulk cargo, Beringer qualifies things as "a disaster."

"Major projects like LNG terminals, propane terminals, petrochemical plants, polyethylene plants or Wind Energy parks being planned or being built in British Columbia, Alberta and Saskatchewan, are all negatively impacted by inadequate, costly and unpredictable project cargo break-bulk handling capabilities in Canada's west coast ports."

The six deep-water project break-bulk terminals on the west coast, Fraser Surrey Docks, Lynnterm (in Port of Vancouver), Squamish, Prince Rupert and Stewart World Port, ranging in geographical locations from the mouth of the Fraser river to the BC Pacific border with Alaska, all lack proper break-bulk handling capabilities and capacity, ac-

***[image 1.12-1] - previous page***
Fraser Surrey Docks at the Port of Vancouver

***[image 1.12-2]***
Jan-Ludwig Beringer – CEO,
Rohde & Liesenfeld Canada Inc.

cording to Beringer.

## Seven Main Issues

In comparison to North America's leading project break-bulk port of Houston, Texas these six Canadian entities are all at a distinct disadvantage. Beringer lists the seven main issues as follows:

"First, there are no shore cranes to handle break-bulk project cargos, meaning vessel's gear is the only cost effective way to discharge project cargos. Once the cargo is on the terminal, there is no way to effectively reload it again onto a conveyance for further inland movement.

"Secondly, no right to work legislation is in place to create competition – meaning all labor has to come from the Longshoreman's union halls at union rates.

"Thirdly, private trades, specialized riggers, trained heavy-haul drivers, jacking crews, crating and inspections/survey personnel have limited or no access to perform any work on these port terminal facilities without shadowing labor with an equal number of union workers and hours.

"Fourthly, terminal handling costs cannot be fixed or budgeted for a project and there is no such thing as a project specific terminal handling rate. Unionized gang hour rates and shadow labor rates for trades brought in to work under union labor agreements is the customary way terminal handling costs are assessed to the cargo owners. These costs can easily run into a six figure amount for each project cargo discharged at a western Canada port. Terminal handling costs are sometimes higher than the ocean freight cost that was paid to get the project cargos from the overseas port of loading to the Canadian port of discharge.

"Fifthly, terminal space is extremely limited and there is little opportunity to effectively manage the movement of project cargos off of the ports, as the loading of cargos is limited to available union gang hours and handling equipment.

"Sixthly, no SPMT trailers, maffey trailers, tractor units or heavy-duty trailers of any kind are available for ground handling or interim storage of project cargos after vessel's discharge.

"And lastly, experienced union trades to perform cost effective rail car loading, tie-down and securing to AAR requirements are not readily available. A lot of project cargos, particularly pipe, are transloaded off the terminals using trucks to off-dock rail car sidings for loading into rail cars. This double handling is prohibitively expensive and could easily be avoided if rail car loading could be performed cost effectively on the port terminal property."

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***" Overall, there needs to be an initiative to improve the break-bulk project cargo handling capabilities in Western Canada's deep water sea ports..."***

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## Challenges for Project Owners

With all these project cargo handling limitations, how do project owners plan and budget for the movement of all their capital equipment from off-shore manufacturing locations to final destination in the three main project destinations: BC, Alberta and Saskatchewan? The answer is that they find it very challenging compared to other areas in the world, affirms Beringer.

"Project owners burn through huge upfront logistics hours with EPC's, Freight Forwarders, Asset Based Heavy-haul companies and Consultants to try and a) understand the cost components that make western Canadian ports so expensive, and limited in their capabilities, and b) in finding any possible work-around solutions."

## The Houston Factor

Are there some current work-around solutions? Here, Beringer is skeptical. "There are none that are cost effective and would ever bring costs down to the level of Houston. Western Canadian ports are quite simply put, both expensive in handling heavy-lift and out of gauge project cargos and difficult to circumvent, outside of bringing project cargos in from the Gulf on the well established high-wide road corridor up to western Canada destinations. Something that currently does not exist on any highway routes from the Great Lakes ports of Thunder Bay or Duluth and certainly not from any B.C. ports of entry. B.C. and the Southern border state of Washington with entry ports like Seattle, Tacoma, Vancouver, Everett and other smaller ports in Washington state, also do not have any established high wide corridors for project cargos."

"Routes from any of these ports," continued Beringer, "require extensive bridge surveys and route surveys to be completed and individual permits applied for on each heavy-lift or over-dimensional cargo moving through those jurisdictions. Evidence of a previous move of similar weight or size does not waive the requirement for going through the whole bridge engineering and road survey process again for a new permit."

In conclusion, Beringer said: "Overall, there needs to be an initiative to improve the break-bulk project cargo handling capabilities in Western Canada's deep water sea ports if we want to encourage project owners to invest in building major projects in western Canada. The current environment of foreign funded protest groups operating against new developments in the fossil fuel energy sector, the high costs and uncertainty of new planned construction projects due to excessive government permitting and environmental impact studies, and on top of all of that, the high costs and constraints of delivering break-bulk project cargos through to construction sites, places Western Canada into a distinctive disadvantage over U.S. competitors, particularly in the Gulf states. Government, private industry and the waterfront unions need to work together to improve our ports in order to compete with our southern neighbors in attracting new project investments."


# SHIPPING REGULATIONS

*New LNG bunkering ship operation*



## 2.1 It's make or break with IMO 2020

***Ocean carriers must recover most of their additional fuel costs or the industry will take a turn from bad to worse.***

***Peter Buxbaum, AJOT***
This article was originally published on November 25, 2019 in issue #698

Cost recovery has already begun for IMO 2020.

On September 1st Zeamarine, one of the largest breakbulk operators in the world, announced a bunker adjustment policy related to IMO 2020—the International Maritime Organization's (IMO) regulation to limit maritime emissions. That made the Hamburg-based breakbulk and multipurpose carrier one of the first in the sector to implement a surcharge in an effort to recover additional costs associated with the IMO policy. Company executives said the adjustment is based on the difference between the costs of traditional heavy fuel oil and the marine gasoil to be used in compliance with IMO 2020.

RTM Lines, an Ocean Transportation Intermediary (OTI) specializing in breakbulk cargo, has already started levying a bunker surcharge "based on web-based bunker platform reports which will be provided along with the freight invoice," according to Richard Tiebel, the company's head of operations. The OTI reserves "the right to adjust [the charges] at time of quotation, time of loading, and at time of discharge," he added.

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***"IMO 2020 poses an increase too significant for carriers to absorb and stay operational."***

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The new IMO regulation, which will enter into force on January 1, 2020, aims to reduce the sulfur oxide (SOx) emissions of the world's 50,000 merchant ships by 80%. While a positive step for the environment, the IMO implementation will add significant additional costs for carriers, and, by extension, for shippers. Carriers have the option of complying with the regulation in several ways, including burning alternative fuels and implementing technologies that reduce the sulfur content of heavy fuel oil emissions.

### Breakbulk Sitting on the Sidelines

Breakbulk carriers have lagged behind container lines in implementing IMO-related increases. Maersk and Hamburg Süd both revised their bunker adjustment factors effective January 2019, a full year ahead of the sulfur cap implementation. COSCO Shipping Lines introduced a new monthly-reviewed surcharge effective May 1st. Zim and Crowley were among the other steamship lines that announced rate increases in advance of the IMO requirements.

Whether it is for breakbulk cargo, containers, or other cargo types, the general consensus is that IMO 2020 will increase shipping costs worldwide. Many ships will be burning more expensive fuel, while others will be retrofitted with new technologies such as scrubbers. The


*[image 2-1]*
First LNG ship to bunkering operations

maritime consultancy Alphaliner found that carriers in the transpacific trades are taking vessels out of service for extended periods for these retrofits. According to Alphaliner, as many as 90 containerships will be out of the water at any given time during the fourth quarter of this year, resulting in reduced capacity and potentially inflated rates.

It has become clear that carriers need to pass along at least a significant proportion of these increased costs to their customers. "Fuel costs already represent more than 50% of total operating expenses," said Nikos Petrakakos, vice president of Seabury Maritime, an investment and advisory firm. "IMO 2020 poses an increase too significant for carriers to absorb and stay operational." A Seabury Maritime analysis showed that shipping a container from China to the United States East Coast will cost $600 more after IMO 2020 takes effect.

The analysts at Drewry believe that carriers will be fairly successful in collecting the surcharges thanks to the wider market acceptance of burden sharing and the fact that carriers started discussing the issue with shippers early on. "It is essential that carriers increase their fuel recovery ratio, or else there will be serious consequences," said Simon Heaney, Drewry's senior manager for container research.

A Drewry analysis concurred with Seabury that the ability of carriers to pass on cost increases could be make-or-break for the industry. Under a scenario that assumed carriers would manage to pass on 75% of the cost difference, Drewry's calculations showed securing the higher rate would lead to a profitable industry in 2020. But under an assumed 50% recovery rate, losses to carriers would result.

## IMO 2020 – An Opportunity Docks

As is often the case, business problems yield opportunities in some quarters. One, not surprisingly, is that gasoil exports from the United Arab Emirates are running at recent highs. The biggest rise has been in gasoil bound for Singapore, the world's largest bunkering port. Gasoil exports bound for Southeast Asia jumped from 10,000 barrels per day in September to 70,000 in October. A year ago, those levels were close to zero.

Another opportunity, this one a bit more surprising, is that the United States is importing record volumes of heavy fuel oil. As prices of high-sulfur fuels sink globally—at $41.56 per barrel on November 6, they reached a three-year low—it has become economical for U.S. concerns to import heavy fuel oil from Russia and former Soviet Union countries, and those reached a multi-year high of 1.35 million tons in October. U.S. ports also received fuel oil from Jordan at the end of October, with another tanker set to arrive around the end of November.

Why the interest in fuel oil that will soon become obsolete? U.S. refiners have greater capability than others around the world to break down cheaper, heavy fuels into higher-margin, compliant products. Their vacuum distillation capacity can break down heavy fuel oil and their coking capacity can upgrade cracked fuel oil. Industry experts say that the increased imports are a sign that U.S. refiners are taking delivery of the heavy fuel oil, as its price declines ahead of the IMO 2020 implementation, in order to upgrade it.

As always, there are also potential snafus associated with the introduction of a new regulatory scheme. LuminUltra, a microbial monitoring specialist, has expressed concerns that reducing sulfur content can result in increased microbial influenced corrosion on vessels. In other words, as Patrick Taylor, LuminUltra's director of global business development, put it, "Less sulfur means more bugs."

## IMO 2020 Enforcement an Issue

Enforcement of the new rule is also a potential weak spot with reports indicating that some countries might not fully implement IMO 2020. The "enforcement regime is something that is still evolving," said Sam Ruda, port director at the Port Authority of New York and New Jersey.

The World Shipping Council (WSC) says there must be a level playing field if the regulation is going to work. "We urge any country considering deviation to abandon those ideas," said John Butler, the WSC CEO.

## 2.2 Complying with IMO 2020 - the options

***Peter Buxbaum, AJOT***
This article was originally published on November 25, 2019 in issue #698

Shipowners have several alternatives to lower exhaust emissions. Using liquefied natural gas (LNG) provides a nearly 100% reduction in SOx emissions compared to heavy fuel oil (HFO), while marine gas oil (MGO) contains 0.10 percent sulfur m/m (mass of sulfur/total mass), compared to HFO's sulfur levels of 3.5% m/m.

Scrubbers, which require substantial upfront investments, allow ships to use HFO while reducing SOx emissions by spraying exhaust gas with water. Other technologies include heat recovery, which converts wasted fuel into electricity; lithium-ion batteries, which are already in use on ships; and fuel cells, a future potential alternative to today's ship engines, which have been the subject of recent testing.

Some carriers that have been public with their plans have indicated that they intend to take a hybrid approach, using lighter fuels and also investing in scrubbers. An Alphaliner report noted that some transpacific carriers are outfitting their vessels with scrubbers.

Zeamarine, the breakbulk and multi-purpose vessel operator, signaled a fuel switch when it announced that its bunker adjustment will be based on the cost difference between IFO 380, the traditional 3.5% sulfur heavy fuel oil, and marine gasoil (MGO), a pricier alternative.

CMA CGM announced that it will "favor the use of 0.5-percent fuel oil for its fleet," will use LNG to power some of its future containerships, while also ordering several scrubbers. In addition to the LNG, a number of companies like Wilhelmsen are looking into LH2 – Liquid Hydrogen – as a bunker fuel.

In 2018, CMA CGM signed an agreement with Total Marine Fuels Global Solutions covering the supply of 300,000 tons of LNG per year for 10-years starting in 2020. The LNG will fuel CMA CGM's nine new 22,000-TEU container ships, scheduled for delivery beginning in 2020. "LNG is the fuel of the future for shipping," said Rodolphe Saadé, CEO of CMA CGM, in a statement.

COSCO also took steps to secure alternative fuel sources when it signed a supply agreement with Double Rich Limited to provide the carrier with low-sulfur fuel oil in March 2019. COSCO also installed scrubbers on two of its vessels on a pilot basis, and announced it will be investing further in that technology.

Maersk is also planning on running the vast majority of its fleet on low-sulfur fuel and to invest in scrubbers—to the tune of $263 million—for retrofitting selected vessels. "The purpose of the strategy," said Vincent Clerc, chief commercial officer of Maersk Shipping, "is to mitigate the risk of fuel price uncertainty in 2020."

Hamburg Süd was somewhat ahead of the curve when it launched a pilot with its customer Electrolux in the Chilean Port of Iquique over two years ago, expanding the program in 2018 to other Latin American ports. Auxiliary engines and boilers switched from HFO to MGO during layovers, while the shipper and carrier divvied up the additional costs. Using MGO decreased the SOx emissions attributable to the Electrolux cargo by over 95 percent.

All in all, industry experts say $30 billion in additional costs will be incurred to comply with IMO 2020.



## 2.3 Quebec's Desgagnés Group innovates with polar class dual fuel tankers

***Leo Ryan, AJOT***
This article was originally published on May 13, 2019 in issue #688

Based at the Port of Quebec on the St. Lawrence River, the privately-owned Desgagnés Group has been steadily raising its profile not only in North America but on various shipping lanes around the globe. Attracting industry attention especially has been the introduction of the world's first polar class dual fuel oil/chemical tankers.

The carrier took delivery in late April of the M/T Rossi A. Desgagnés, a state-of-the-art, new-generation tanker whose construction was just completed. It was the last in a series of four custom-built tankers, based on an original concept developed by Desgagnés and ordered from the Besiktas Shipyard in Yalova near Istanbul, Turkey. The vessel will soon be leaving Turkey and is expected in Canada in mid-June.

The M/T Rossi A. Desgagnés joins the M/T Gaïa Desgagnés acquired this spring by the company. These two investments alone exceed C$100 million.

The major renewal plan for the company's tanker fleet reaffirms its commitment to environmental protection and sustainable development, offers unparalleled service to its customers and creates unique career opportunities for seafarers young and old, wanting to work on avant-garde ships, stated a press release.

"The construction of the Rossi A. Desgagnés, as for the Paul A. Desgagnés, Mia Desgagnés and Damia Desgagnés, is the result of multiple innovations and colossal work," says Louis-Marie Beaulieu, Chairman and Chief Executive Officer of Desgagnés. He added that the ship was named Rossi A. Desgagnés to pay tribute to Mario Rossi, who has been working at Desgagnés for 15 years and who played a major role in the design and supervision of the project.

A chartered account by profession, Beaulieu took over the reins in 1987 of an enterprise whose origins go back to the 19th century. Revenues have more than doubled in the past decade to C$300 million from operations in liquid bulk, general cargo, breakbulk, dry bulk and passengers. Capital expenditures have run in the hundreds of millions of dollars during this period. The Desgagnés fleet of 20 vessels trades in the Great Lakes, the St. Lawrence Seaway, the Canadian Arctic, the east coasts of Canada and the United States, and all seas in the world.

The company now owns five dual-fuel/LNG tankers and is particularly proud of this fleet, unique in America, which focuses on safety, environmental protection and sustainability. Liquefied natural gas (LNG) offers undeniable advantages, allowing, among other things, a significant decrease in greenhouse gas emissions and reducing particle emissions to practically zero.

The Rossi A. Desgagnés is double-hulled and holds a Polar 7 ice class, confirming her capacity to navigate in ice-laden waters. With a deadweight of 15,000 tons at 7.8 meters' draft, her cargo tanks can hold up to 17,505 m3 at 98% capacity. It is equipped with a Wärtsilä 5RT-flex 50DF engine developing 5,450 kW power. To ensure outstanding maneuverability and to optimize safety, it features a variable pitch propeller, a 750kW bow thruster, a 550kW stern thruster and a dynamic positioning system.

# 2.4 AWO'S Allegretti "optimistic" Trump will uphold the Jones Act after proposed waiver rejected

***Stas Margaronis, AJOT***
This article was originally published on May 13, 2019 in issue #688

Following a meeting with Republican U.S. senators, President Trump has decided not to go ahead with a proposal to waive Jones Act rules that would have allowed foreign flagged ships to transport natural gas from American ports to Puerto Rico and the U.S. Northeast.

The President's decision was hailed by Tom Allegretti, president & CEO, The American Waterways Operators.

The day before the President's meeting with the senators, Senator John Kennedy, a Republican from Louisiana was quoted as saying: "I am going to go to the White House tomorrow to try to talk the President out of doing something foolish and that is trying to curtail the Jones Act protections…If that is his inclination, then (Trump) has been receiving some bad advice."

In response to questions from *AJOT*, Allegretti said, "We are therefore optimistic that when the President considers the 650,000 American jobs supported by the Jones Act, and the importance of the Jones Act to maintaining robust sealift capabilities and protecting our domestic waterways from security threats, he will stay true to his commitment. He came through on that commitment just yesterday (May 1, 2019) in refusing to approve Jones Act waivers that were proposed to him."

The Jones Act requires that goods shipped between U.S. ports be transported on American-built ships that are owned and crewed by Americans.

***[image 2.4] next page***
502nd LRS contribute to Hurricane Maria relief efforts

Allegretti strongly objects to waivers of the Jones Act: "The use of Jones Act waivers undermines the Jones Act because it undermines confidence in America's long-term commitment to its maritime industry and workforce. Maritime businesses rely on that commitment and stability to make long-term investments in new vessels, additional employees, and expanded services for customers. The President's refusal to approve such waivers should send a clear signal to special interests that their anti-Jones Act proposals will not be approved in this Administration."

The concern by U.S. senators about the Administration's current proposal to waive Jones Act provisions was based on past history.

- In September, 2017 the Trump Administration's Department of Homeland Security (DHS) waived the Jones Act requirement for one week to allow oil and gas operators to utilize foreign-flagged vessels to ensure fuel reached emergency responders during Hurricane Irma and following Hurricane Harvey.

- A second waiver, later in September of 2017, was approved by the Administration allowing foreign flag carriers to transport goods to Puerto Rico following the devastation caused by Hurricane Maria. The Department of Homeland Security announced on September 28, 2017 that the Jones Act would be temporarily waived. Reportedly, DHS had faced pressure from U.S. Senators including the late Senator John McCain, a longtime opponent of the Jones Act, demanding that shipments be speeded up using foreign flag vessels.

Allegretti told *AJOT* there was never any question that U.S. carriers could do the job of supplying Puerto Rico. The real problem, he said, was port facilities and truck transport on the island were seriously damaged by Hurricane Maria.

"From the time Maria made landfall to today, American maritime has demonstrated that it is fully committed to Puerto Rico's recovery and has the capacity to deliver badly-needed relief supplies, including millions of gallons of fuel, to the island. Unfortunately, in the immediate aftermath of the hurricane, Puerto Rico's internal distribution capabilities were devastated, so that while the Jones Act fleet consistently delivered relief cargo to the island, that cargo was piling up in the port with no way to reach its inland destinations."

# PROJECT / ENERGY SHIPPING

# 3.1 Combining project cargo risks

***It's best for different coverages to be included in a single policy***

***Peter Buxbaum, AJOT***
This article was originally published on January 28, 2019 in issue #681

The expanding demand for infrastructure enhancements in developing countries and elsewhere around the globe has allowed project cargo volumes to grow in recent years. Power stations, water filtration plants, communications systems, power grids, and construction equipment are some of the projects being shipped, while an increasing reliance on alternative energy sources has allowed wind and solar energy installations to emerge as major components of the global project cargo picture. China's Belt and Road initiative also represents opportunities for the transfer of large-scale projects.

Project cargoes represent greater inherent risks of loss than others, raising the question as to how to best insure against them. Project cargo's complexity and risk mean that insurers are careful to demand hefty premiums. Project cargo insurance traditionally has not been cheap, but combining risks in a single policy could provide some relief. One insurer has responded with an offering that provides comprehensive coverage for both marine and engineering risks.

"Companies on all continents are increasingly seeking convenient and comprehensive insurance for large-scale projects," said Christopher van Gend, global head of engineering at Allianz Global Corporate & Specialty (AGCS), Allianz Group's specialist corporate insurer. "AGCS possesses both the technical underwriting and engineering talent for infrastructure projects and industrial operations to better meet client schedules and deadlines." AGCS introduced a collaboration between its marine insurance and engineering divisions last year to provide a policy that includes end-to-end coverage for project cargoes.

Project cargo policy coverages usually includes physical loss and damage and may also include consequential loss, such as delay in start-up (DSU) costs. DSU coverage provides indemnity for loss of anticipated profits, costs to avoid or mitigate a delay, debt servicing costs, and/or the increased cost of working.

***[image 3.1-1] previous page***
Mammoet's expertise helped to carry out a record load on Alberta's roads.
(Photo Courtesy of Inter Pipeline)

From an underwriting standpoint, it is best to have both coverages included in a single policy, according to Erika Schoch, the head of marine reinsurance for Latin America at Swiss Re. "The value of any one item or part has little bearing on its significance to loss of profit," she explained. The material loss underwriter "receives premium based on the value and the claim is paid relative to that value." For the DSU underwriter, "loss or damage to low-value items which are vital to a contract might result in an entire plant being inoperable."

***[image 3.1-2] next page***
A civil engineer from Stantec inspects a bridge for the Oregon International Port of Coos Bay.

• • •

***"Companies on all continents are increasingly seeking convenient and comprehensive insurance for large-scale projects"***

• • •

The very nature of project cargo represents unique risks that must be confronted at the outset, during the planning stages. "Project cargo usually consists of large, heavy items, often having high centers of gravity," said John Potter, head of marine and aviation at Antares Underwriting. "They are prone to toppling in transit and during handling."

Project cargo also includes smaller pieces of equipment, such as computers, which may be critical to the operation. "Weather episodes can knock out a small-sized piece of equipment," noted Potter. "The lesson is that the criticality of any one item for a project is a significant factor that the underwriter must bear in mind when assessing the risk."

Some risks, such as theft, are lower for project cargo than for ordinary cargo but they are higher during lifting, handling, and general movement, noted Potter. Project Cargo is inherently unstable in transit and beyond repair." "If the item in question is critical to the project," Potter added, "its loss may cause a delay in its completion."

## Collaboration

AGCS's announcement of an expanded project cargo offering was formed by a partnership between its marine and engineering divisions. This collaboration allows AGCS to provide end-to-end coverage for companies managing unique and complicated risks, ultimately delivering a more comprehensive and fluid transaction under a single policy.

Underwritten by AGCS Marine, the policy is designed to manage risks of exposures such as shipment of equipment and machinery to construction sites; loss or damage of components in transit; DSU loss of income stemming from late or non-arrival of components; and construction all-risk insurance provided by engineering.

"Having a single policy cover both marine and engineering risks provides tremendous benefits such as enhanced risk management and expedited policy issuance and claims resolution," said Kevin Wolfe, global head for project cargo at AGCS. "We now provide a single point of contact for clients and brokers, which makes it easier to identify whether a loss occurred in transit or during a construction phase. All underwriters and loss adjusters are with one company."

Combining different risks, such as material loss and consequential loss, into a single policy is advantageous to both underwriters and insureds, noted Schoch. "Preferably they will be written as two sections of the same policy with the loss of profit claim triggered by a loss under the material damage cargo section," she said. "That way, any condition or warranty imposed by underwriters on the cargo policy will similarly affect the advance loss of profit coverage."

The alternative, writing two separate policies, one for material damage and the other for economic loss, would cause complications for all concerned. "The insured would have to submit claims separately to two sets of insurers who may not adopt identical positions," Schoch explained. "With the same underwriters, the claim will be dealt with by one claims department in conjunction with the underwriter who assessed and wrote the risk. An overall view would be adopted minimizing the loss to both insurers."

Presumably, the efficiencies occasioned by combining risks into a single policy should allow insurers to give their customers a break on the premiums. Still, project insurance will remain more expensive than other cargo policies.

"Project cargo produces very expensive losses," said Potter, "so maximum premium income must be generated."

# 3.2 Regulatory logjam has cost C$100 billion in canceled resource projects

***Leo Ryan, AJOT***
This article was originally published on March 11, 2019 in issue #684

A freshly-released think-tank report shows billions of dollars in planned spending on resource projects in Canada has rapidly evaporated, and a further drop should be expected unless there are substantial amendments to the federal government's planned regulatory overhaul in controversial legislation presently being considered by parliament.

The C.D. Howe Institute indicated that the investment value of major energy, mining and forestry projects plunged C$100 billion between 2017 and 2018 – equivalent to erasing 4.5% from Canada's GDP. The report is aptly titled: "A Crisis of Our Own Making."

Among the projects that have been canceled are TransCanada Corp.'s Energy East Pipeline CNOOC Ltd.'s Aurora LNG and Petronas Bhd's C$36 billion Pacific Northwest LNG project. For the first time, Canada has dropped out of the ten top energy destinations in the world.

The declines in planned investment in the Canadian resource sector have continued even as investments in competing jurisdictions have rebounded following a long decline in commodity prices.

U.S. and global investment in oil and gas has rebounded while in Canada it has continued to plunge," said the report, adding: "Global planned investment in mining has dropped but it has dropped even further in Canada."

Extensive regulatory delays are cited as a significant issue. The study showed that it can take up to 15 years to get a mine approved in Canada, compared with six years in Australia. And it can take up to 11 years for pipeline approvals in Canada versus two years in Australia and five years in the United States.

Even more important, the study stresses, is the fact that the proposed legislation does not fix the biggest obstacle facing major resource projects: the federal government's approach to consultations with impacted Aboriginal peoples.

***[image 3.2] - below***
Canadian pipeline project underway




# 3.3 Wind power shipments surge in Canada

***Windpower component shipments have boosted breakbulk totals for Canadian ports.***

***Leo Ryan, AJOT***
This article was originally published on May 13, 2019 in issue #688

The global breakbulk market has witnessed a surge in shipments of wind power components in recent years, a trend that has also gathered momentum in Canada. Transportation providers on both water and land have been engaged in shipping components manufactured notably in Europe and domestic sources. And there is no sign of weakening demand for the immediate future, although sometimes opposition surfaces from local residents impacted by a wind power project.

Indeed, Canada in 2018 continued to show strong and stable growth in this niche sector, reports the Canadian Wind Energy Association (CanWea). It finished the year with close to 13,000 megawatts of capacity, enough to power some 3.3 million homes or 6% of electricity demand. National installed capacity has doubled since 2012.

Robert Hornung, the Association's president, asserts, "Each year, the wind energy industry provides more clean and low-cost electricity to Canadians and increases its contributions to a modern and reliable electricity grid. Wind is a success story across the country – helping to meet electricity demand in a way that is consistent with Canada's climate ambitions and that benefits landowners, rural and indigenous communities, and the economy."

Last year saw the completion of six projects that added 566 MW of new installed capacity, with Ontario and Quebec accounting for nearly 9,000 MW.

Canada is home to the world's ninth largest wind generating fleet. There are today some 300 wind farms operating from coast to coast, comprising 6,600 turbines, including projects in two of the three northern territories. Among Canadian provinces, the large bulk of capacity is currently located in Ontario (40%), Quebec (30%) and Alberta (12%).

***[image 3.3-1] - above***
Muntgracht. The all-purpose vessels on Spliethoff's CEE service frequently transit the St. Lawrence Seaway's Welland Canal.


For 2019, CanWea anticipates 1,000 MW of new wind energy projects commissioned in Alberta, Ontario and Saskatchewan.

## Positive Outlook on St. Lawrence Seaway

In an interview, Bruce Hodgson, director of market development for the St. Lawrence Seaway Management Corporation, offered an optimistic outlook. “Project cargoes are important to HWY H2O. The Great Lakes St. Lawrence System competes vigorously with other gateways such as the East Coast of the US and the US Gulf. Our ports, carriers and other supply chain stakeholders work collaboratively to insure the seamless delivery. It is a team endeavor!

“We handle a wide variety of cargoes, from wind turbines and blades to modules destined to the oilsands in Western Canada. The volume of project cargo moving through HWY H2O for the 2018/2019 season was at a similar level to the previous year at 400,000 metric tons. This traffic was destined to a number of ports including Toledo, Cleveland, Thunder Bay, Duluth, and Detroit. We also saw the export of locally manufactured wind blades from Duluth to Europe.”

“Looking forward,” Hodgson stated, “we see a robust year ahead, with wind cargoes forecast to be up and a number of infrastructure projects coming on line. We will be aggressively continuing our sales and promotion initiatives in the project cargo/over-dimensional market, working with existing and new carriers explaining the ease of transiting our system.”

Also optimistic was Tim Heney, CEO of the Port of Thunder Bay on the tip of Lake Superior which in recent years has developed a growing business in project and dimensional cargoes. He said he looked forward to another strong Seaway season in 2019 in the project and breakbulk business at Keefer Terminal.

***[image 3.3-2] - above***
Niche carrier BigLift calling the Port of Valleyfield near Montreal which is expanding its breakbulk operations.

The season began this spring with a return of steel and rail shipments destined for western Canada.

“Steel shipments continue to increase and diversify with beams, rail and pipe and we are also looking at coil shipments for this season,” Heney said, “Other regular cargoes include wind turbines, electrical transformers and pressure vessels.”

Otherwise, he added, “The big story is the construction of our new rail yard and heated warehouse building in partnership with the National Trade Corridors Fund and the Northern Ontario Heritage Fund. This project will increase cargo handling capacity and efficiency.”

## Valleyfield’s Arctic Cargo Horizons

Similarly, upbeat was the Port of Valleyfield, on the St. Lawrence Seaway near Montreal.

“We are looking forward to another busy season in 2019,” said Jean-Philippe Paquin, the port’s general manager. “Positioned mainly as a project cargo and regional bulk port, we continue to see a growing volumes of domestic Arctic cargo. Most notably NEAS, a leader in Arctic service, will increase its ship capacity in 2019 and is expected to have a banner year. Capital investment projects at Baffinland Iron Mine is also fueling growth for Desgagnés Transarctik.

“International breakbulk cargo is showing healthy growth on Spliethoff’s CEE service, in addition to the new monthly service from Compass Logistics, inaugurated in September 2018, linking Rotterdam and Valleyfield. This added capacity on the growing Canada-Europe trade lane should allow us to further increase our international breakbulk traffic.”

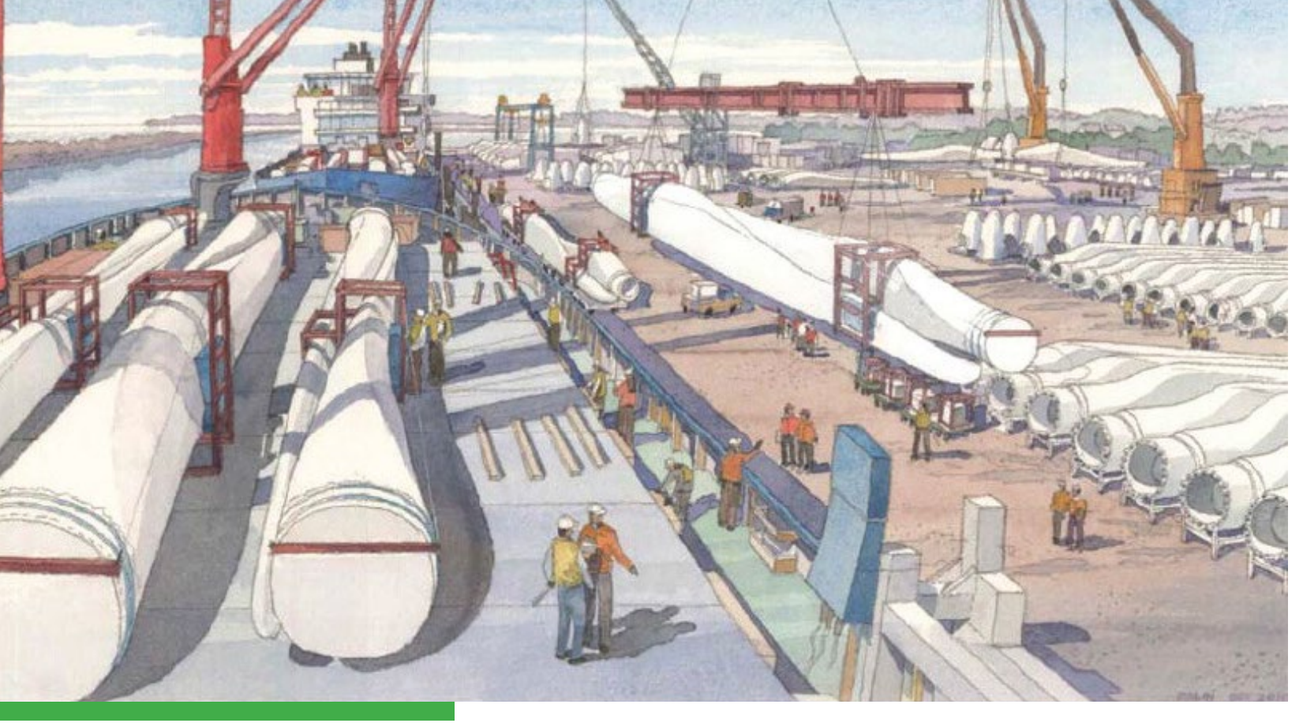
“The growth in project cargo is also pushing port limits.” Paquin indicated. “The new bulk terminal built in 2018 is already committed to bulk cargo users, and additional space is needed to accommodate the growing breakbulk volumes. The port has already started work to expand lay down area for breakbulk, adding approximately 215,000 square feet of space. Later this spring, work will also begin on our gate expansion project. We will be doubling gate capacity to accommodate traffic from our various users, adding gates and an automated check-in process for breakbulk deliveries, as well as a second scale to accelerate bulk cargo truck movements.”

## Amherst Island wind energy project

Among recent major wind farm undertakings in Canada, one worth highlighting involved Ontario-based tug and barge operator McKeil Marine in the $272 million Amherst Island wind energy project that was completed and reached an operational stage last summer. The project was established in response to the Government of Ontario’s commitment to developing renewable electricity. A total of 26 wind turbines were installed on Amherst Island, located six miles west of Kingston on Lake Ontario.

“All materials, supplies and workers were transported from an assembled dock near Millhaven ON,” noted Jayson Stansfield, Manager Commercial. “McKeil was contracted to supply a complement of tugs, barges and workboats. McKeil’s clients, Algonquin Power and Pennecon Limited, felt the firm was right after seeing our vessels in action on the Pave-Al project at Billy Bishop Airport on Toronto Island.”

However, this was one of those projects that sparked considerable controversy during a decade-long battle that saw 350 of the island’s 420 residents oppose it. Nevertheless, 17 landowners are today “hosting” the 26 turbines.



# 3.4 New Bedford inks lease for Vineyard Wind offshore wind project

***A long time coming as New Bedford Marine Commerce Terminal inks lease as the primary staging area for Vineyard Wind offshore wind farm project.***

***Matt Miller, AJOT***
This article was originally published on September 23, 2019 in issue #694

It was a long time coming, but Massachusetts' New Bedford Marine Commerce Terminal is finally getting business…and a lot of respect.

The Vineyard Wind project, America's first large-scale offshore wind development, will lease the New Bedford terminal for at least 18 months as its primary staging facility, at an annual cost of $6 million. While the exact timetable for the project is still uncertain, the lease will stretch from December 2020 into 2022, and quite possibly beyond.

***[image 3.4 -1] above***
New Bedford Marine Commerce Terminal

"At least for the first couple years, it's going to be pretty much at capacity," said Richard Baldwin, principal consultant at Ramboll, a consultancy that specializes in offshore wind development.

Vineyard Wind is an 800MW wind farm that will be constructed 14 miles south of Martha's Vineyard.

The 29-acre heavy lift facility at New Bedford was specifically built to stage the offshore wind industry. It's the first in the US to do so and is far ahead of others now being planned.

"We feel that we're well positioned to not only support offshore wind development in these first few years of the US offshore wind industry, but also looking forward to the future," said Gregory Dolan, the terminal manager.

## Long Time Blowing in the Wind

The saga of the terminal is one of persistence, setbacks and, ultimately, some success. Construction began in 2013 on the site of a long-abandoned fabric mill. The vacant site lay south of the New Bedford Port, the largest fishing port in the US.

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***"There were some tense moments with the failure of Cape Wind, but that said, we had taken the long view on this. Cape Wind was a driver, but [the terminal] wasn't built for Cape Wind."***

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The project's centerpiece is a 1,200-foot-long pier, with uniform load-bearing capacities of 20 metric tons per square meter and concentrated loads of up to 100 metric tons per square meter. This is critical as turbines and blades are becoming larger and heavier.

"The terminal is designed for at least the next generation of turbines to come," said Dolan, who was also involved in the planning and design of the terminal. "Even in comparison to the European ports, it's definitely at the higher end" when it comes to load bearing.

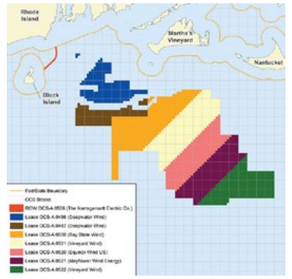
The terminal ended up costing $113 million. But 60% of that money was spent on environmental cleanup and remediation. The port of New Bedford is a federal superfund site and construction included removal of PCVs and other contaminants from the harbor, as part of channel improvements, as well as removal of contaminants on the site itself.

The terminal is part of the Massachusetts Clean Energy Center, a state economic development agency.

The New Bedford Terminal was aimed to at first support the Cape Wind project, the ultimately doomed almost-two-decades-long effort to construct wind farms in Nantucket Sound, off Cape Cod. Wealthy residents litigated the project to death, while Democratic Senator Edward Kennedy battled against it in Washington. Cape Wind ultimately sank in court in 2017.

Meanwhile, the terminal, completed in early 2015, has stood pretty much empty, although it recently hosted delivery of onshore wind turbines destined for western Massachusetts. It's also being used by survey vessels for other offshore projects.

According to Bruce Carlisle, senior director for offshore wind at the Clean Energy Center, state officials had been




***[image 3.4-2]***
Offshore wind projects off the coast of New Bedford, MA

working with the federal Ocean Energy Management about wind projects further offshore since 2009.

## Offshore Wind Revolution

While Rhode Island's Block Island wind farm became the first commercial offshore wind in the US to be built and operate, that 30MW project is extremely small and contained. Massachusetts can claim bragging rights when it comes to major offshore wind, while Rhode Island may be close behind with its 400MW Revolution Wind project, approved by state regulators in May. This will be a joint venture with Connecticut.

Carlisle believes most of the staging for Revolution Wind will take place in Rhode Island or Connecticut, but New Bedford might handle some of the overflow. "We haven't ruled out the ability of the terminal to provide some overflow or some additional component or logistic support, or other poor areas of the port in New Bedford, for example, to serve as an operation and maintenance base," he said.

The New Bedford terminal was designed with some flexibility in mind. The length of the quayside will allow simultaneous delivery and pickup, crucial for an offshore wind farm staging, where hugely expensive jackup vessels can ill afford to sit idle. Add to this the further complexity of the Jones Act, which mandates US flagged ships deliver goods within the US.

"The terminal is built to sort of maximize the logistical flexibility of a developer," explained Dolan. "We wanted to be able to have a deployment going on while delivery of components was still ongoing. So the quayside was built so that you could have an internationally flagged cargo vessel unloading it at one end while you were loading U.S. flagged standard at all the other."

So saying, New Bedford is, by comparison to the mega-ports of Europe, quite small. It's not designed to accommodate onsite construction or large-scale fabrication, which is what has developed in European purpose-built offshore wind ports. "We don't have some of the same manufacturing opportunities that you see" elsewhere, said Edward Anthes-Washburn, executive director at the New Bedford Port Authority. "There are some things that we're not ever going to do because, we have a pretty productive commercial fishing port and seafood processing sector that is very vibrant. We have to be somewhat choosy on what to do."

New Bedford also will be hard-pressed to handle more than one project at a time, said Baldwin, adding, "While it is downstream of any bridges and there are no air-gap issues, vessels do have to transit the hurricane barrier so there is a vessel beam issue."

However, because the Commonwealth of Massachusetts paid for the facility's development, wind farm developers won't have the burden of carrying costs on the port. They'll just have to pay rent. "This is their preferred model," said Baldwin.

"There were some tense moments with the failure of Cape Wind," said Carlisle. "But that said, we had taken the long view on this. Cape Wind was a driver, but [the terminal] wasn't built for Cape Wind."


# 3.5 Taiwan's offshore wind industry ready for launch

***Next March, Taiwan is embarking on the construction of an 80 wind turbine, 640 MW wind farm - Asia-Pacific's largest.***

***Matt Miller, AJOT***
This article was originally published on September 23, 2019 in issue #694

Taiwan's offshore wind industry has, so far, tracked that of the US. To date, both have completed just one small-scale project.

But Taiwan's trajectory will soon outpace the US. Yunlin, Asia-Pacific's largest wind farm, is due to start construction next March, some five miles off the coast of western Taiwan. The project will install a total capacity of 640MW, through 80 wind turbines of 8MW each.

Offshore wind promises to be a key component of Taiwan's renewable energy and the country is moving at top speed to ramp up wind-driven power. "It's very ambitious," said Matthias Mross, managing partner of Global Renewables Shipbrokers. Hamburg-based GRS has the contract for procurement consulting services for transport and installation of the project.

German developer Wpd AG heads the Yunlin project, along with a consortium of Japanese power and utilities interests. Wpd also has a contract to construct a 350MW offshore wind farm near Taoyuan County.

The Netherlands' Jumbo Maritime and Malaysia's Sapura Energy were awarded contracts for the transportation and installation of the mono-piles for the first project. It's Sapura's first foray into offshore wind.

Wpd isn't the only European wind developer making forays into Taiwan. Denmark's Ørsted, the world's largest wind power developer, confirmed in April that it will build two offshore wind farms in Taiwan totaling 900MW, with construc-

tion due to begin in 2021.

Taiwan demonstrates how offshore wind is sweeping through East Asia. China is projected to become the world's largest offshore wind generator in the next three years, overtaking the current leader, United Kingdom. By 2022, China will have installed almost 11GW of offshore wind power, according to FTI Consulting.

## East Asian Offshore Wind

Other East Asian nations are pressing ahead as well. According to the research and consulting firm Wood McKenzie, South Korea should install 6.4GW of offshore wind power by 2030. Japan recently passed a law that should spur offshore wind development there as well, although it must overcome some geological and water depth impediments first.

The Taiwan government announced rate subsidies and incentives for offshore power in 2017, with further clarifications earlier this year. These rates incentives spurred a flurry of interest and development. Taiwan has proposals on the table for projects totaling 10.5GW, according to Offshore Magazine.

Taiwan is attempting to play catch up with neighbors. It's also benefiting from advances in wind power technology. Bigger, more powerful turbines translate into more power generated from fewer installations. That means construction costs come down as well, although challenges can mount.

The Taiwan example also shows the opportunities available for construction and logistics support, as the country attempts to rapidly jumpstart and develop a supply chain. The ports of Kaohsiung and Taichung will also need improvements to receive and stage the wind farm components.

With construction, logistics support and maintenance, the country needs to take a measured approach to what it does itself and what it relies on others to do, Mross believes. Taiwan will depend on foreign companies and talent at first, eventually transitioning to domestic suppliers. Meanwhile, domestic companies will gain expertise and knowledge as they invest in the industry and partner with outside companies.

"Our role is to set up such knowhow transfer by bringing in experienced companies from Europe to Taiwan, [and pairing them] with Taiwanese companies, whether it be a joint venture or a loose cooperation," Mross said.

The vessels needed to service both the construction and the ongoing operations of the wind farm provide one example. And Mross contrasted how Taiwan is approaching its support of the industry with the US, which is circumscribed by the Jones Act. In the initial stages of development, Taiwan will allow foreign-flagged vessels to supply and support offshore construction projects. According to Mross, the government will permit for the foreseeable future the large, highly specialized foreign-flagged, jack-up vessels necessary for construction. For smaller vessels, the government supports a transition from foreign-flagged vessels to domestic fleets and Taiwan crews, he said.

"That has important implications because it takes time to build up a local proper supply chain, which goes from smaller products, smaller services up to the larger, fully contracted services," said Mross. "Taiwan has made a quite good approach to that, allowing time to reach a critical mass for their local supply industry."

This transitional period should assist Taiwan's efforts to not only develop an indigenous supply chain, but to get up to speed on wind farm operation and maintenance. That's critical, Mross believes, because foreign companies won't be in Taiwan forever and local companies must eventually take responsibility. As he pointed out, a utility can't afford to wait months until a foreign crew arrives to repair an out-of-commission turbine.

This transference process will take several years, and progress from the simpler tasks to the more complex. Local crew transfer vessels, according to Mross, can become proficient in a few months' time.

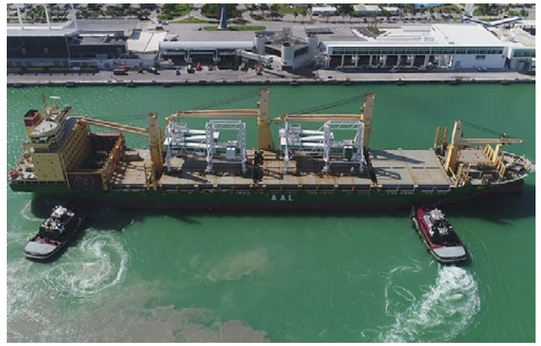


***Freight Traders, a member of XLProjects in New Zealand, discharged second charter for power project***

***Delta Maritime in Greece handled involving heavy process equipment shipped to Baku, Azerbaijan.***

***COSDEL moves 447 high-end automobiles from North America to Riyadh Auction***

***Wilhelmsen UAE share this yacht shipment to Gibraltar***



***AAL 'lifts' its customer service to another level with SEDNA***

***Handling giant 86m pressure vessel proves no pressure for AAL***

# 3.6 The Netherland's ports are trying to balance traditional energy business and renewables

*Matt Miller, AJOT*
This article was originally published on November 25, 2019 in issue #698

***Renewables, particularly offshore wind power are big business for the ports of the Netherlands. But so are the traditional energy businesses that are mainstays in ports like Amsterdam and Rotterdam, Europe's largest. It is a tough balancing act not only for the ports but all the stakeholders.***

The Port of Rotterdam is Europe's largest. It stretches westward some 25 miles from its original 19th century site adjacent to the old city center. On reclaimed land, near that far western tip, past miles and miles of oil refineries, crackers and storage facilities and close to the port's first fully automated terminal, towers the prototype of the world's largest offshore wind turbine.

GE Renewable Energy finished installing its 12MW Haliade-X turbine mid-October. GE has begun to undergo stress testing on the giant windmill.

The turbine's location is both practical and symbolic. It stands next to the 500-meters-long Sif Group factory that assembles and marshals the columns, called monopiles, used in offshore wind. On the seaside, Sif operates a 400 meters quay capable of simultaneously receiving turbine components and dispatching them to North Sea wind parks. When the port was visited recently, jackup vessels were anchored, ready to pick up the monopiles, and deliver them to the North Sea.

## Renewables Power New Business

In August, Sif announced it was substantially expanding its operations in this newest, decade-old area of the port, known as Maasvlakte 2. It has leased a total of 62 hectares and acts as a terminal operator, handling offshore-wind related logistics, as well as component production. Part of the expansion will involve the lengthening of the quay by 200 meters.

The wind turbine, which soars some 860 feet high, is also a dramatic indicator of the direction being taken by the Rotterdam Port Authority and other port authorities in the Netherlands. They seek to support the businesses necessary as energy production moves from fossil fuel to renewables.

Offshore wind is the most visible of these efforts, but not the only one. Solar and biofuels are also in the mix. And hydrogen is likely to become a major presence as that fuel source is developed. (A consortium led by the Swedish energy giant Vattenfall announced in July plans to retrofit a gas-fueled power plant in northern Netherlands to use hydrogen by 2023.)

"We embrace it all," said Joost Eenhuizen, business manager maritime and offshore industry at the Port of Rotterdam Authority.

Providing logistical support for a shift to renewable energy underscores a growing national ethos in Netherlands. It also is proving to be increasingly good business for the country and its ports. "We are at the eve of a big new industry, and a big change," said Femke Brenninkmeijer, the Port of Amsterdam's commercial director, who heads the energy, cargo and offshore department. "One thing for sure, it will demand a lot of space from the ports."

This is true for the major ports of Rotterdam and Amsterdam, as well as some of the country's smaller ports. Most notable is the far northern port of Eemshaven, the Netherlands' biggest wind-related port, and one of the major entrepôts for the offshore wind industry in the world. In addition to staging of new wind farms and maintenance of existing ones, Eemshaven has emerged as a prominent "landing port" for international power, with converting stations for transmission of electricity. It hosts power plants as well.

"Eemshaven lives and breathes offshore wind," the port proclaims in a marketing brochure.

To a far more modest degree, the country's newest port, Flevokust, is targeting wind farms as well. It has just signed an agreement with a yet-unnamed wind farm operator for use of the port as a staging area.

## Balancing Fossil Fuels and Renewables

The country known for its quaint windmills is in the forefront of modern-day wind energy, with onshore wind being increasingly augmented and supplanted by wind generated on the North Sea. The Netherlands predicts it could produce 11.5GW of offshore wind energy by 2030. That equals about 37% of current electricity needs. Some 10% of the North Sea is scheduled to be an energy production area by this time.

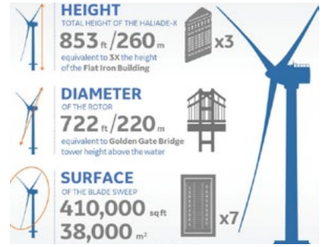
This focus on wind and other renewable energy sources is indicative of efforts by Dutch ports to better incorporate sustainability into their operating mindset, and their marketing focus. "We would like to facilitate and catalyze as much as possible the move to a more sustainable world," said Eenhuizen.

This experience is useful for ports in other countries grappling with similar issues.

It's a hard balancing act. The Dutch populace increasingly demands a greener future and the ports are eager to demonstrate they can embrace environmentally progressive policies.

But that's not an easy task, necessarily. Ports represent one of the Netherlands' most important economic centers. They aren't just transportation and logistics hubs. Heavy industrial zones lie within their borders.

For many Dutch, the ports continue to embody a greenhouse-gas emitting, fossil-fuel dependence, with their high-profile depots, crackers, tanks and pipelines. Two of ten power plants on the Rotterdam port premises are still coal-fired.




*[image 3.6-2]*
Windmill specifics

*[image 3.6-1]*
Wind turbine installation at the Sif Group factory at the Port of Rotterdam

The Port of Rotterdam is highly dependent on petroleum-related business. It forms the foundation of the port's industrial core. Supertankers unload crude at Rotterdam terminals. Five refineries operate within the port complex, including the Shell refinery, which is Europe's largest. Add to that another nine tank terminals for oil products and pipelines connecting the crude to other industrial sites in the south of the Netherlands and to refineries in Germany and Belgium, plus 28 chemical manufacturers.

Port authority officials recognize this dilemma. "Oil and oil products is quite a big commodity," said Steven Jan van Hengel, senior business manager, shippers and forwarders, at the Port of Rotterdam. However, he added, "that is changing and evolving now, with the Paris Climate Agreement and the energy transition we're in. So, that's a big, big challenge," He addressed a group of journalists hosted by Netherlands Foreign Investment Agency.

"Rotterdam is very much a fossil-oriented port. That's where we've seen our biggest growth in the last decades," added Eenhuizen. "The port area itself accounts for a large share of the emissions in the Netherlands."

The port's response, Eenhuizen said, isn't to immediately jettison existing business, but to welcome new business "It's an 'and, and' strategy, in which we slowly move from one industry toward the other, not in a single day, not in a single year, but something that will happen over time."

This will eventually result in a new business model, Eenhuizen said, that is sustainable and centered on renewables.

He cited the port's power plants, which are connected to the high-voltage power grid through onsite transformers. New transformers linked to the grid will also be installed for use by the wind farms.

The Port of Amsterdam also relies on fossil fuel as a revenue source. It's the world's largest gasoline port. Aviation fuel is piped from the port to Schiphol Airport, 15 miles away.

Rather than turn its back on these refineries and gasoline transporters, the port should work with them to develop and promote a greener future, Brenninkmeijer believes. She cited as one example the development of bio-kerosene as a synthetic jet fuel.

"They have the knowledge, the expertise and the people equipped for the new future fuels," said Brenninkmeijer.

The ports see a role for themselves as well in moving ships and shipping toward environmental responsibility. One question the industry is being asked: "How do we get the current maritime industry changed to what's more sustainable?" explained Brenninkmeijer. "The ports can accelerate this transition."

As ports turn more of their attention to offshore wind and other renewable energy-related business, it would seem to result in overheated competition. Not so, said Brenninkmeijer. "We can't do this alone, so we have to work with all the other ports to meet the challenges," she said. "The complexities are so big, the investments needed nationally are so big that you cannot build alone."

Paying for this transformation isn't easy, either. "One of the big dilemmas is about changing the infrastructure for the future," said Brenninkmeijer. "We have to invest [as a port] in this infrastructure. but we have to do this with our partners."

In wind alone, this reflects increased demand for marshaling facilities as more and more developers seek to harness the North Sea energy. Part of this involves ancillary operations such as cables production and storage. Part of this involves production and assembly of the components themselves.

Space is one big constraint. Marshaling yards must be large enough to accommodate massive wind turbine components. And because these components are so large, it's becoming increasingly necessary to construct or assemble onsite. The port of Amsterdam, for example, has reserved 35 hectares for wind-related production companies.

Wind farm operators demand precise timetables for construction; the purpose-built vessels necessary are hugely expensive. So, to insure exclusivity, even more space is necessary.

Then, there's the maintenance of these farms when operating. And, there's the decommissioning and dismantling of oil rigs and demobilizing of older generation wind turbines, which will be shipped elsewhere in the world.

"The whole system is going to change. The production of energy will be close, in the North Sea," said Brenninkmeijer. However, she added, it will take some time, with planners looking at 2030 to 2050 for this transformation.

"We shouldn't look at this as one player who profits from this," Brenninkmeijer concluded. "In the end, we will all profit from this." The Netherlands will profit from this.

# 3.7 Port of Flevokust Haven built to serve the wind

***Matt Miller, AJOT***
This article was originally published on November 25, 2019 in issue #698

Flevokust Haven, the Netherlands' newest port, is a mere speck of land compared to its enormous counterparts in Amsterdam and Rotterdam. However, this inland port on the country's largest lake is as aggressively pursuing renewable energy-related business as are the bigger ports.

"We are dependent on the windmill industry," said Rogier Wilms, Flevokust's program manager.

In October, the port signed a contract with a yet unnamed offshore wind developer to lease 2.5 hectares for storage and assembly. The contract will last until the end of 2021.

Other developers are also interested, according to Wilms. "We have more demand than we can provide," he said.

Flevokust opened for business just one year back with a private container terminal on half the port's initial five hectares' area. The Flevoland provincial authorities constructed the port on land reclaimed from the IJsselmeer. This large fresh water lake is actually an inland bay, cut off from the North Sea by a dyke constructed almost a century back. The new port offers a 400 meters' quayside.

Flevokust is about 37 miles from Amsterdam port. It's the last link in a series of inland ports built to support the country's extensive transport and logistics system. It's also just down the road from the Lelystad Airport, which is being expanded to serve as a "twin" to Schiphol Airport, if it can overcome local opposition.

Concurrent with the port, the government is also developing a 160 hectares' industrial area. This includes a 30-hectares solar park.

When planning the port, provincial officials had windmills in mind. The area around Flevokust in Flevoland province now hosts upwards of 800 onshore wind turbines. That has created an aesthetic concern.

"There are so many windmills. It's basically disturbing the landscape," Wilms said. And as the industry has developed, the turbines have grown larger and larger. The region wants to take advantage of that. "We want less windmills, but bigger ones," Wilms said.

This transition will take maybe seven years, with many more after to maintain the turbines, he said.

At the same time, offshore wind generation is coming to IJsselmeer, with three wind parks on the drawing board. And, Wilms added, Flevokust could become a staging port for wind parks in the North Sea itself if and when existing locks linking IJsselmeer to the ocean are strengthened and expanded, a project now in its beginning stages. This will allow short-sea vessels to dock at the port.

Road access to the port is a critical aspect of the design, Wilms said, since wind turbine components must be transported overland. The port developers made sure the heavy transport trucks could carry the blades without removing poles or traffic signs. The province's relatively straight roads help. "We've already laid out the infrastructure so that the transport of all these big parts is very easy," he said.

***[image 3.7]***
Aerial view of Port of Flevokust



***ALG transports helicopter fleet from Turkey to the U.S.***


***Cargolux Airlines transported a 10-meter long shaft with a total gross weight of 43 metric tonnes from Luxembourg to Zhengzhou***

***Sal Heavylift arranged for the safe loading of the 3.105 ton Mermaid Power Barge***

***Origin Logistics deliver machinery for iron & steel plant***


***Megalift deliver for a new industrial gas plant in Malaysia***

***C.H. Robinson ensures smooth transportation of huge tanks***

# 3.8 Port of Eemshaven shows the profit in going green

***Matt Miller, AJOT***
This article was originally published on November 25, 2019 in issue #698

The far northern Netherlands port of Eemshaven has ridden to great success the rapid rise of offshore wind development and concurrent electricity generation. Eemshaven now boasts of launching 16 North Sea wind farms, plus another four with a contract for operations and maintenance. It also hosts one of the country's largest onshore wind parks, a 213MW complex.

Some 70% of the port's business is now wind-related," estimated Erik Bertholet, the port of Eemshaven's business manager for offshore wind.

One-third of all energy produced in the Netherlands now comes from Eemshaven, with its three large power stations, although by no means is that all wind-generated. A high-capacity submarine cable linking the Netherlands and Britain reaches landfall at Eemshaven.

The availability of plentiful renewable energy is one big reason why, for example, Google located an immense data center nearby, investing more than 1 billion Euros, with a further expansion recently announced. (It can rightly say the energy is non-fossil fuel, since 69MW of wind-produced electricity is generated directly to the center.) Rival QTS also located its mega data center in Eemshaven.

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***"If you have big wind farms, you can directly lead it with the grid to your location,"***

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"If you have big wind farms, you can directly lead it with the grid to your location," explained Bertholet.

Not only do these centers require huge amounts of electricity, they need reliable sourcing and speed. Two electric grids radiate from Eemshaven to the Netherlands and elsewhere in Europe, insuring both redundancy and latency.

Hard to believe all this has happened only over the past decade. Eemshaven demonstrates how economic gains can be generated through hitching itself to a green future.

***[image 3.8] next page***
Aerial view of Port of Eemshaven

Of course, being in the right location plays a big role as well. Not only is Eemshaven on the North Sea, but it's close to German waters, where many wind farms developed as well, supplying that country with renewable energy.

Eemshaven is a relatively new port, opened only in 1973. The port now boasts of more than five kilometers of quay in four basins.

In about 2008, Germany's first offshore wind farm, Alpha Ventus, began to take shape in the North Sea. Because Eemshaven is a deep-water port that offers heavy load capabilities, some of the turbine components destined for the wind farm were shipped via Eemshaven. And, said Bertholet, this exposed Eemshaven to wind farm developers and demonstrated what the port could do.

Perhaps the biggest single boost came in 2015, when construction began on the Gemini Wind Farm, some 50 miles north off the coast. It is now the world's third largest offshore wind complex, generating 600MW of electricity.

However, it's a steady stream of business that has brought lasting benefits. Offshore construction and support vessels now make frequent calls on Eemshaven; some base themselves there. "If you're in Europe in the installation of wind farms and you have not been to Eemshaven, well, probably there's something wrong with you," Bertholet quipped.

He also rattled off a list of major players in offshore wind equipment manufacturing with offices now in Eemshaven: Siemens, Mitsubishi, GE, Vestas.

Eemshaven has developed into a supply chain of companies large and small that construct, supply and maintain offshore wind farms and their ancillary functions. That's the model Eemshaven follows. It's investing in new support facilities for these players. The latest is a heliport the port inaugurated in September. "We're constantly innovating what we can do as a port," Bertholet said.

What Eemshaven doesn't have are production facilities. "Everything's coming into Eemshaven and everything's coming out, so that's superb for logistics," said Bertholet. "The added value is high."

# 3.9 The natural-gas economy

***Peter Buxbaum, AJOT***
This article was originally published on September 23, 2019 in issue #694

***LNG infrastructure is expanding in the U.S., but not without its detractors.***

In mid-June, the Philadelphia City Council approved a plan to build a $60 million liquefied natural gas (LNG) facility in Southwest Philadelphia. The Passyunk Energy Center will be a public-private partnership between city-owned Philadelphia Gas Works and Liberty Energy Trust.

Across the river in southern New Jersey, a group of New York investors plans to build an LNG port along the Delaware River, presumably to export LNG produced by a related company with operations in north-central Pennsylvania. The investment group has also proposed to create a liquefaction plant near the source of the fracked natural gas, the Marcellus Shale fields, in Wyalusing, Pennsylvania.

These developments are emblematic of what's going on in the United States, in what some call the new natural-gas economy. The U.S. is an emerging LNG supplier, accounting for four percent of global LNG exports in 2017. The country is projected to become the third largest LNG producer in the early 2020s, after Australia and Qatar.

## LNG Export Terminals

The first LNG export terminal in the contiguous 48 states, in Louisiana, entered service in 2016 following Department of Energy approval, helping to make the U.S. a net exporter of gas in 2017 for the first time since 1957. The DOE recently gave its preliminary approval to retrofit an import terminal in Maryland to export LNG, a facility already connected to a pipeline that would bring gas straight from Marcellus Shale. About 16 other export terminal proposals now await approval by the DOE.

According to a recent report, U.S. liquefaction capacity will have increased thirteen-fold by 2022 over the previous five years. The country is expected to have spent over $167 billion on new liquefaction terminals between 2017 and 2022, according to GlobalData, a data and analytics company.

These developments are not without controversy. Environmentalists squawk when LNG projects are announced—including the ones in Philadelphia and South Jersey—on the grounds that the U.S. should be weaning itself, and the rest of the world, off fossil fuels. It's worth mentioning, however, that, as fossil fuels go, natural gas burns a lot cleaner than some others, including diesel.

As noted in a 2012 DOE report, which gave the thumbs-up to LNG exporting, "U.S. natural gas prices increase when the U.S. exports LNG." Although the report identified a net benefit to the U.S. economy from exporting, chemicals manufacturers, which use natural gas as a feedstock, howled in protest. The use of LNG is also on the rise domestically to fuel vehicles. UPS, for example, recently added 50 LNG vehicles to its alternative fuel fleet as part of an investment of over $90 million in natural gas. But transporting LNG domestically on the water has its obstacles, thanks to the Jones Act.

Policymakers in Philadelphia, New Jersey, and elsewhere, point to advantages from LNG in diversifying fuel sources for utilities and in the areas of economic development and jobs creation. The Trump administration is also encouraging U.S. producers to export surplus gas, especially to Europe.

According to Nikos Tsafos, a senior fellow at the Center for Strategic and International Studies in Washington, D.C., Europe currently imports mostly piped gas from Russia, Norway, and Algeria, while LNG accounted for 12 percent of European gas demand in 2017. The U.S. supplied four percent of Europe's LNG in 2017, ranking behind Qatar, Algeria, Nigeria, Norway, and Peru, and, at less than 100 billion cubic feet, amounted to less than 1.5% of Europe's gas imports from Russia. Around 14% of US LNG exports went to Europe in 2017.

"Europe can import more LNG using existing infrastructure," noted Tsafos, adding that the utilization rate for import terminals in Europe averages 29%, and is as low as six percent in some facilities.

"Despite this low utilization rate," Tsafos said, "there are many new facilities proposed in Europe. If all these projects were built, Europe's LNG import capacity would grow by 50%." It's impossible to predict at this point the precise increase in Europe's future LNG importing capacity, but it is clear that Europe has growth potential as a U.S. LNG export market.

***"Despite this low utilization rate there are many new facilities proposed in Europe. If all these projects were built, Europe's LNG import capacity would grow by 50%."***

## Regional Demand

Closer to home, the U.S. is expected to contribute more to capacity growth in North America's LNG industry over the next few years as compared to its neighbors to the north and south, while the regasification capacity is expected to remain the same for the region, according to GlobalData.

Its report forecasts that total liquefaction capacity in North America will increase to 405.1 million tons per year (mtpa) in the next three years, for an average annual growth rate of 60.6% since 2017. North America is expected to see capital expenditures of $285.5 billion on new liquefaction projects, of which 58% will be spent in the U.S. Thirty-eight liquefaction terminals are expected to have become operational between 2018 and 2022 and total planned liquefaction capacity in North America in 2022 is expected to rise to 376.3 mtpa. North America will account for 72% of total global capacity from planned and announced projects between 2019 and 2023, according to the report.

GlobalData expects liquefaction capacity additions in Canada of around 101.1 mtpa by 2022. The country is expected to spend roughly $105.3 billion on the development of new liquefaction terminals.

"Canada is adding considerable LNG export capacity as its natural gas exports via pipelines to the U.S., are decreasing," said Soorya Tejomoortula, an oil and gas analyst at GlobalData. Mexico is expected to add around 16.4 mtpa of liquefaction capacity by 2022 and is projected to spend around $12.9 billion on the development of new liquefaction terminals by 2022.

But the U.S. will lead North America in terms of liquefaction capacity additions with 258.8 mtpa, increasing from 19.5 mtpa in 2017 to 287.3 mtpa by 2022, with capital expenditures of $167.28 billion between 2017 and 2022.

"The U.S. is adding substantial LNG liquefaction capacities, redrawing the global LNG landscape," said Tejomoortula. "Booming natural gas production, especially from shale, is driving the country's LNG exports."

# 3.10 Importing LNG, despite US surplus

***Peter Buxbaum, AJOT***
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***Clue: It's the Jones Act.***

During the winter of 2018, the LNG tanker Gaselys, laden with liquefied natural gas from overseas, was spotted in Boston harbor. The French energy company Engie bought the gas to meet demand during freezing weather in the northeast United States. The cargo being carried in the tanker came from a storage tank in the United Kingdom and contained a mix of gas that originated in Algeria, Trinidad and Tobago, and Qatar.

The fact that the US is now a major natural gas producer, raises the question: Why can't New England buy domestic gas?

It does, but domestic supplies can't satisfy 100-percent of the region's demand, especially during the winter and more so since LNG can't be transported to New England by water. A report from the U.S. State Department noted that pipelines entering Massachusetts bring natural gas from the Gulf Coast, Midwest, and Pennsylvania.

Massachusetts also has the only LNG import terminals in New England, one at Everett on Boston Harbor and two offshore from Gloucester. LNG, used primarily during the winter, provides around one-tenth of New England's natural gas supply, and is imported from the Caribbean and the Middle East. Why, again, not from U.S. sources?

It's because LNG can't be shipped to New England from export terminals on the Gulf of Mexico thanks to the Jones Act. None of the world's fleet of 500 LNG tankers meets the requirements that vessels moving between US ports be built in the U.S., flagged in the U.S., and crewed by U.S. citizens.

The Jones Act, passed in 1920, prohibits a foreign vessel from transporting merchandise between points in the United States. A violation of the Jones Act may result in the assessment of a civil penalty equal to the value of the merchandise.

There have been attempts to repeal or reform the Jones Act for decades, all without success. If anything, the pendulum is now swinging in the direction of greater enforcement, with the creation in 2017 within U.S. Customs and Border Protection of the Jones Act Division of Enforcement (JADE). JADE was stood up, it is presumed, primarily to catch Jones Act violators in the offshore oil and gas industries. The Department of Justice routinely settles cases which include payment by shipping companies of Jones Act penalties in the millions.

The same dilemma faces companies like Norway's Statoil, which is heavily involved in massive offshore wind energy projects in Europe, one of which will require the deployment of 4,000 vessels to bring to fruition. The company is looking for offshore wind energy projects to invest in the US, "but because of the Jones Act there are limitations on the vessels we can use," said Knut Aanstad, the president of Statoil's U.S. subsidiary. Aanstad suggested that those legislative requirements could impede a company such as his to go all-in on a wind project because of the scale that such a project would require to make it worthwhile.

The same Jones Act requires northeastern utilities to import from foreign markets, even though the U.S. is floating on a sea of cheap surplus LNG.

# 3.11 Hanjiang Heavy Industry's project cargo important to China's high-speed rail

**By Robert L. Wallack, AJOT**
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Over the past decade, the People's Republic of China (PRC) moved into a leading position on the global stage by their construction of the high-speed rail (HSR) network. Their success is attributed in part to the Hanjiang Heavy Industry, Co., Ltd. (HHI) of the China Railway Construction Company. HHI manufactures, transports and operates 450-ton girder-hoisting machines applied to the hoisting, displacement and loading of the whole span of precast concrete box girders for the construction of the passenger HSR lines.

## Over 15,000 miles of HSR

China's HSR network opened in 2008 for the Beijing Olympics with the Beijing to Tianjin line and has since expanded to 15,534 miles (25,000 kilometers) by the end of 2018. This $300 billion project reaches 30 of 33 provinces with trains rushing passengers at speeds between 124 to 217 miles per hour. Ticket prices are from $271 for business class to $67 for second class seats and much lower prices for stations between the 8 main HSR lines. Four are north-south and 4 are east to west.

Travel times are reduced by hours from the older network and service levels are much higher. Beijing to Shanghai on the HSR is 5 hours from 12 hours (two hours by air) on the older network. China Railway Company service attendants are professionally uniformed and walk the aisles with food carts as well as sweep the aisles and maintain clean, modern restrooms. The passenger seats recline and are equipped with electrical outlets with folding seat trays. The travel experience is vastly different than the old train network of clanking cars and unsanitary conditions.

Situated near the Han River, an important defense fortification against the invading Mongols in the 13th century, and a tributary of the Yangtze River in Xiangyang, Hubei province is Hanjiang Heavy Industry, an important manufacturer to the largest HSR system in the world. Xiangyang has a long history as a central transport location for trade between the north and the south of China and HHI is ideally situated to serve the expanding national HSR construction. The company has four factories producing a variety of bridge construction equipment and girder transporter vehicles for rail and highway projects. Annual output is 400 sets and valued at $217.8 million (1.5 billion yuan).

*[image 3.11-1]*
450 ton beam lifting machine manufactured by HHI ready for shipment to Putian city, Fujiang for HSR construction

*[image 3.11-2]*
China High Speed Train Network Map


Hanjiang Heavy Industry is also challenged by the logistics and transportation of their new machines to customers such as to Putian city. The machines are disassembled into parts and placed onto trucks. There is a lack of cranes and logistics companies to do high quality services for HHI. "They are usually transported by trucks of 42.6 feet (13 meters) or 57 feet (17.5 meters). Each vehicle weighs 30 tons and transit time to Putian is about 2.5 days," said Mr. Li.

The possibility of transporting the disassembled parts of the machines to customers in Fujian by IWT is lost because, "there is no cargo terminal in Fuyang, Xiangyang." For now, if water transportation is required, then it needs to be transported by truck to Wuhan for water transportation. "The cost will increase and the transportation time will be extended. I hope the government will consider building a cargo terminal in Fuyang," said Mr. Li. Numerous projects are under consideration and in construction to make better use of Xiangyang's IWT system for project cargo shipments.

## Inland Waterway Constraints

Inland water transport (IWT) would reduce transport costs for steel inputs to HHI. However, the Xiangyang river ports are not modern nor is there depth of the Han River in Xiangyang to navigate 1500 dead weight ton vessels. "Our steel suppliers are near capable Wuhan river ports, if we can use IWT, that would be useful to us for steel materials to reduce transport costs," said Mr. Jiang, Director, HHI.

Putian city, Fujian province, along the eastern coast, will receive the newly produced "beam moving machine for the transshipment and erection of 40 meters long beams," said Mr. Li. Two 450-ton beam-lifting machines are used together for the transshipment and erection of 900-ton concrete box girders as well as the bridge pier for the whole lifting of the 900-ton beam, he described. Putian city is one station on the north to south line from Hangzhou, Zhejiang province, near Shanghai, to Shenzhen, Guangdong province, near Hong Kong.

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***"The cost will increase and the transportation time will be extended. I hope the government will consider building a cargo terminal in Fuyang"***

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# 3.12 Dutch storm surge expertise helps Louisiana, Texas, New York and New Jersey

***Stas Margaronis, AJOT***
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***The $165 million Seabrook Floodgate Complex, completed in 2012, protects New Orleans by reducing storm surge entering from Lake Pontchartrain.***

Upgrades to storm surge barriers and pumps completed in 2011 by the U.S. Army Corps of Engineers (USACE) have made New Orleans more resilient to storms and hurricanes, according to Piet Dircke, a water management consultant for the Dutch firm Arcadis.

Arcadis was a consultant to the Corps in Louisiana and also advises officials in Texas, New York and New Jersey.

In July, the storm surge defenses kept New Orleans safe when Hurricane Barry drenched New Orleans and Louisiana with heavy rains and high winds.

## Saving New Orleans

In an interview at his office in Rotterdam, Dircke told *AJOT*, "The Corps performed magnificently" in fast-tracking $14.5 billion in upgrades completed in 2011. As a result, when Hurricane Isaac struck New Orleans in 2012, the upgrades prevented a repeat of the deaths and damage caused by Hurricane Katrina in 2005, which cost $161 billion. Dircke related, "The structures that were built may have been oversized and ungainly looking but they saved New Orleans from destruction in 2012 and so you can say the investment was paid off within one year at a 100% rate." One key to the project's success was "The Army Corps speeded up approvals and testing to build a new system of pump stations and three large barriers that had been completed by 2011."

Arcadis was a consultant to USACE and "we had someone in New Orleans for four years. "

Dircke noted, "This is still a largely untold story about how the federal government and the USACE saved New Orleans when some people wanted to abandon it."

The Hurricane and Storm Damage Risk Reduction System (HSDRRS) for southeast Louisiana cost $14.45 billion and includes five parishes and consists of 350 miles of levees and floodwalls.

On its website, the U.S. Army Corps of Engineers summarizes the work it has done protecting New Orleans: "The greater New Orleans system of hurricane and storm damage risk reduction is stronger and better than it has ever been. In repairing and rebuilding levees and floodwalls, the Corps incorporated lessons learned and recommendations from international experts, scientific organizations, government agencies and the private sector who studied causes of system failure during Katrina."

Dircke says the effects of Hurricanes Katrina, Harvey and Sandy on Louisiana, Texas, New York and New Jersey "have focused attention on why we need more storm and sea level defense investments in the United States."

## Protecting New York and New Jersey

Dircke said that he and University of Amsterdam earth scientist, Jeroen Aerts "have been active since 2008 arguing for more sea level protection" in the United States: "We predicted the type of storm surge impact that Hurricane Sandy demonstrated in 2012 but people didn't believe us until they saw how the hurricane caused flooding in the New York subways, shutdowns of power to hospitals, transportation and utilities causing $71 billion in damage."

Dircke says there is now recognition of the urgency for a storm surge defense investment to protect the region: "Under the leadership of New York Mayor De Blasio there is recognition for the need to build a storm surge barrier at the Verrazano Narrows. The previous proposal for a storm surge barrier around southern Manhattan protects Wall Street but left the rest of the New York/ New Jersey region exposed."

***[image 3.12-2]***
Piet Dircke, water management consultant for Arcadis

## Protecting Texas Cities and Ports

Dircke recently returned from consultations in Texas: "Texas is taking action following the devastation the region suffered in 2017 when Hurricane Harvey dumped 50 inches of rain on the region causing $125 billion in damage."

This includes working with Texas ports: "Arcadis is working with the ports of Houston, Galveston plus the cities and the State of Texas to design a storm surge barrier based on similar designs from the Netherlands that would protect Galveston Bay ports and communities as well as the oil and gas industry facilities. There are still many issues to address and concerns by homeowners of the effect of the storm surge complex. The estimated cost for this project is $40 billion but that is a lot less than paying $125 billion for the next Hurricane Harvey."

## Port of Rotterdam Expansion and Protection

In the Netherlands, "we saw the construction of the Maasvlakte port complex by the Port of Rotterdam reclaim 4,900 acres of land from the North Sea using sophisticat-

***[image 3.12-1]***
Maeslant storm surge barriers protecting the Port of Rotterdam

ed Dutch dredging vessels and experience. Companies such as Boskalis and Van Oord have been major contractors in this effort."

The $3.3 billion complex has upgraded the Port of Rotterdam by construction of new, larger, and automated container terminals.

The Maasvlakte complex "also protects the entrance to the City of Rotterdam from storm surges by creating a natural barrier against the North Sea with facilities at a higher sea level than older terminals in the city center.

## Protecting and Rejuvenating Rotterdam

The result was a movement of port facilities from the center of Rotterdam out to the coast, which allowed for a major redevelopment of central Rotterdam:

"This has opened up development of old waterfront land for housing and commercial development. So, the investment in the Maasvlakte port complex has economic development benefits for Rotterdam."

One example "is the reconstruction of the old Rotterdam Drydock Company which had been shut down, but was rebuilt as the Research Design and Manufacturing University or RDM. This is a waterfront facility that has vocational training and other educational facilities and even operates a water taxi to and from the city center."

The Netherlands sea level defense is built on years of experience.

"As so much of the Netherlands is below sea level, there is little margin for error," Dircke notes.

The result is that Netherlands has developed a national sea level protection system: "As a matter of survival, this policy is supported throughout the country through taxes to pay for dikes, barriers and locks. This investment also supports a professional team of educated engineers, planners, and ecological specialists at the (Dutch government's) Rijkswaterstraat."

The Rijkswaterstraat has functions similar to the U.S. Army Corps of Engineers.

"We have begun to recognize that the structures that we build including the Maeslant barrier that protects the city of Rotterdam cannot stand alone and needs staff to operate and maintain them. So, you see at the Maeslant barrier that 22 people work there to maintain the system and make sure that when the barrier needs to be deployed that it works," Dircke said.

## More Research and Investment in Next Generation Computing

More recently "we have begun to realize that as a result of climate change, patterns are changing far more than in the past and the concept of an unusual 100-year flood is now a flood that is happening more frequently and so we must constantly evaluate and upgrade our data and this means that risk factors need to be adjusted."

This effort "is going to require more deployment of big data, machine learning and, yes, even quantum computers, if they are capable. We need better projective data and assessments to enhance our risk assessments. These include early warning weather and storm surge projections that are performed in the United States by NOAA."