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FAL

BULLETIN 372

FACILITATION OF TRANSPORT AND TRADE IN **LATIN AMERICA AND THE CARIBBEAN**

Towards the decontamination of international maritime transport

Background

According to changes made in Annex VI[1] of the International Convention for the Prevention of Pollution from Ships (MARPOL) —also known as IMO 2020— the aim is to reduce the sulphur content of maritime fuel oil from the current 3.50% m/m (mass by mass) to 0.50% m/m in the high-sulphur fuel oil (HSFO) used aboard merchant ships operating outside designated emission control areas (ECA),[2] and that in ships operating within ECA the maximum sulphur content should not exceed 0.10% m/m. Annex VI also sets progressively tighter limits on other pollutants such as sulphur oxides (SOx), nitrogen oxides (NOx), and particulate matter (PM)[3] emissions worldwide, as well as the establishment of additional ECA aimed at further reducing emissions of air pollutants in designated maritime areas. See map 1.

This *FAL Bulletin* pursues two objectives. The first is to share information and a few reflections about the IMO 2020 Regulation. To that end, it provides an introduction to Annex VI of MARPOL and to the possible impacts, expectations, and uncertainties it poses for the maritime sector. Supplementing the information and reflections presented by the authors, it will also contain comments by the professionals and experts in the field who responded to the survey conducted by the authors to ascertain where Latin America and the Caribbean stands vis-à-vis these changes in the regulations. The second objective is to provide a brief introduction to the study being undertaken by the Infrastructure Services Unit (ISU) to estimate the CO_2 emissions from the international maritime transport of the countries of the region.

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UNITED NATIONS

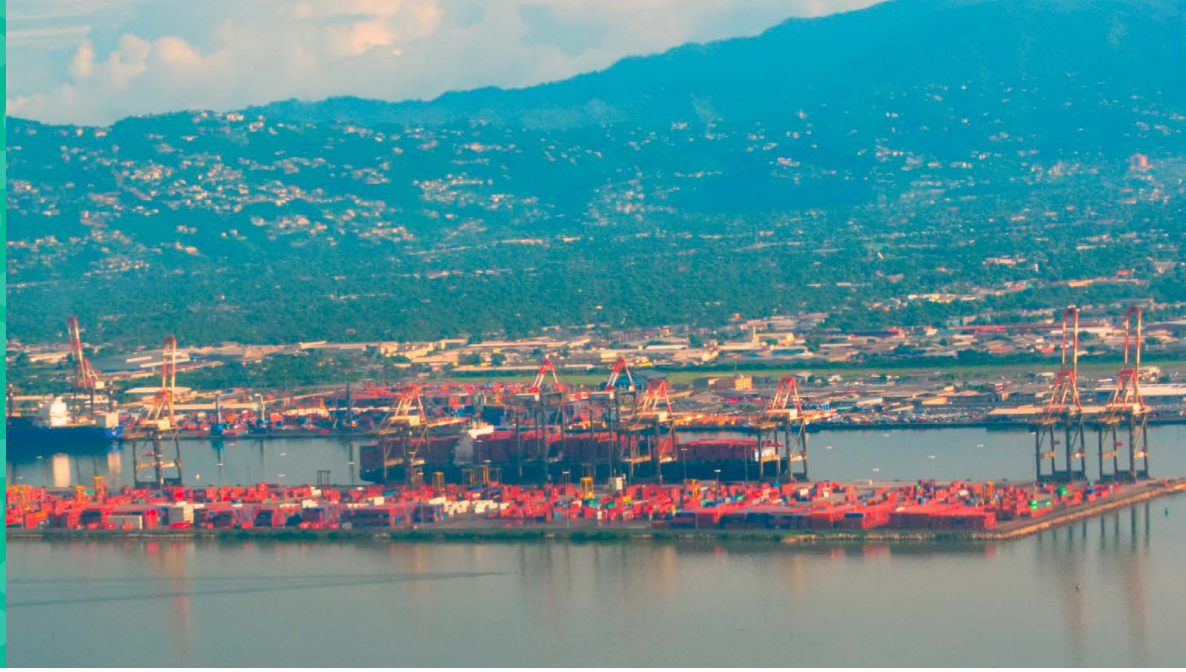
ECLAC

70 ECLAC FOR SUSTAINABLE DEVELOPMENT WITH EQUALITY

[1] For further information see [online] http://www.imo.org/en/Publications/Documents/Supplements%20and%20CDs/Spanish/QC664S_022019.pdf.

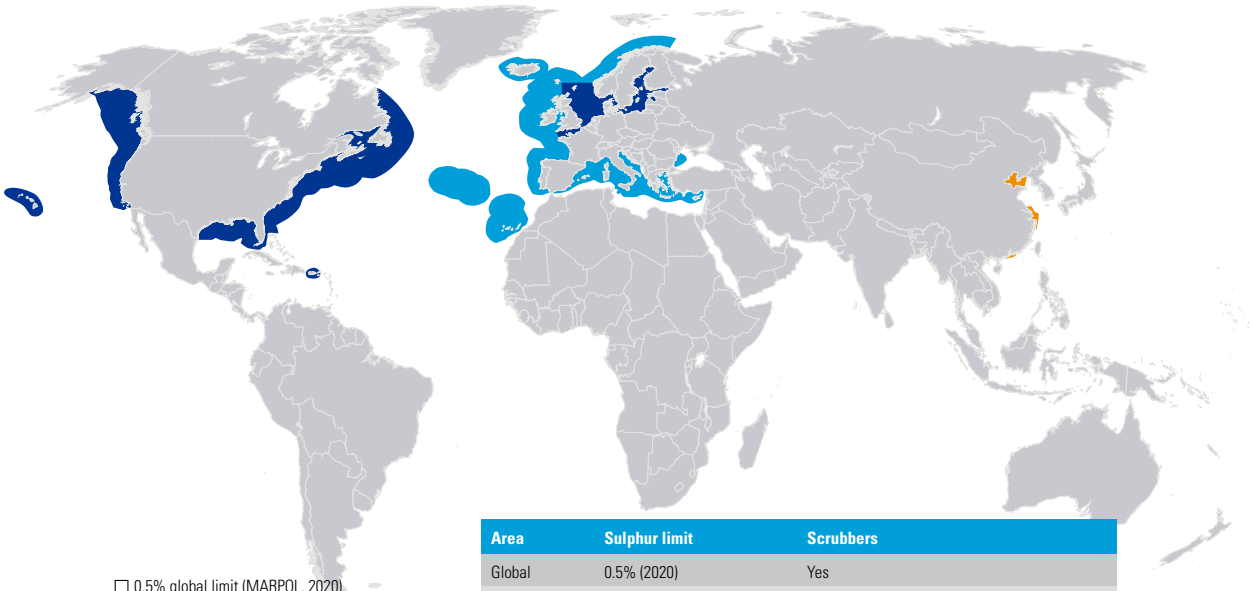
[2] The designated ECA are: The Baltic Sea area – defined in Annex I of the MARPOL Convention (only for SOx); The North Sea area – defined in Annex V of the MARPOL Convention (only for SOx); The North America area (which entered into force on 1 August 2012) – defined in Appendix VII of Annex VI of the MARPOL Convention (SOx, NOx, and PM); and The Unites States Caribbean Sea area (which entered into force on 1 January 2014) – defined in Appendix VII of Annex VI of the MARPOL Convention (SOx, NOx, and PM).

[3] Described in chapter 3 of Annex VI and the NOx Technical Code in MARPOL.



These new environmental regulations in the maritime sector enter into force on 1 January 2020. Given the scope of the change they imply, they have triggered numerous expectations and considerable uncertainty. As regards expectations, the regulations go a long way towards systematizing and clarifying the rules governing emissions in the maritime sector, which should contribute to an immediate reduction of several pollutants as of next year and to a halving of greenhouse gas (GHG) emissions by 2050, to approximately 1.4% of the current global total[4]. The uncertainties include the costs of adapting and of the reforms needed, increased fuel costs, fuel availability, the impact on trade, the risks of concentration in the maritime industry, and environmental uncertainties, such as where to dispose of sulphur dioxide residues.

Map 1
Emission Control Areas (ECA)



Area	Sulphur limit	Scrubbers
Global	0.5% (2020)	Yes
Sulphur ECA	0.1%	Yes
EU	0.1% in all ports	Open-loop restricted in some countries
China	0.5% in selected areas	Yes
California	0.1% within 24 nm	No, only through research exemption

Source: DNV.GL, Global Sulphur Cap 2020, 2019 [online] https://safety4sea.com/wp-content/uploads/2016/11/DNV-GL-Global-sulphur-cap-2020-2016_11.pdf.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.
[a] China and Hong Kong (SAR) may decrease the limit to 0.1 before 2020.

[4] These data are posted at [online] http://www.imo.org/es/OurWork/Environment/PollutionPrevention/AirPollution/Paginas/Air-Pollution.aspx.

As of last year, the world trading fleet comprised 59,687 vessels,[5] consisting for the most part of oil tankers, bulk carriers, general cargo ships, container ships, and gas/chemical carriers. In 2018, total cargo measured 1.92 billion DWT,[6] 23.5% of which corresponded to international trade in Latin America and the Caribbean. In container movement terms, that same year, 816 million twenty-foot equivalent units (TEU) were registered, 53.2 million of them resulting from port throughput in Latin America and the Caribbean[7] (7.1% of world throughput)[8].

This FAL Bulletin is divided into three sections. The first shows current maritime transport emissions, both local and non-local, and includes an introduction to a study being conducted by the Infrastructure Services Unit of ECLAC. The second section looks at impacts, expectations, and uncertainties and touches on issues to do with fuel, its availability and price, different types of scrubber, impacts on trade, and the risk of concentration in particular sectors. It also examines the findings of a survey conducted by the authors of this bulletin among maritime and port sector experts. The third and last section contains a few final considerations on the subject.

I. Current maritime transport emissions

According to the latest International Maritime Organization (IMO) inventory, international shipping is estimated to have emitted approximately 796 million tons (Mt) of CO_2 in one year, which represented 2.2% of the global total.[9] According to IMO forecasts, if measures are not taken to curb it, pollution could increase by between 50% and 250% by 2050 (IMO, 2015).

According to the same source, between 2007 and 2012, emissions of CO_2e (equivalents) from ships accounted for 2.8% of global CO_2e (in terms of millions of tons of CO_2). The long-term goal is to halve GHG emissions by 2050, to approximately 1.4% of the global total (IMO, 2019a).

Another relevant study for evaluating maritime sector emissions is that by Johansson, Jalkanen and Kukkonen (2017), which analysed emissions by using the Ship Traffic Emission Assessment Model (STEAM3), which taps Automated Identification System (AIS) data to collect ship traffic information. The authors found that, on average, shipping can produce low specific emissions per cargo ton kilometre. The computed average of specific CO_2 emissions was 7.6 g per ton (of cargo) km for all ships. Map 2 shows the global distribution of CO_2 emissions by type of ship, according to the study.

According to this study, in terms of cargo transportation, bulk cargo carriers and oil tankers had the smallest specific emissions of 4.7 and 6.1 g per ton/km, while (relatively slower) container ships had 9.7 g per ton/km. There is a wide variation of the specific emissions for the different types of ships, especially if cargo ships are compared with passenger cruise ships. The specific emissions can also vary significantly for the range of ships within any specific ship category, depending, for example, on the design speeds, tonnage and the age of the vessels, and so on.

Complementing the idea put forward in the Johansson, Jalkanen and Kukkonen study, between 2013 and 2015, 23% of shipping emissions of CO_2 were attributed to containerships, 19% to bulk carriers, 13% to oil tankers, and 45% to other types of ships (ICCT, 2017).

However, it is not just a matter of reducing emissions of CO_2; other pollutants are also a concern. Currently, the most-used fuel is HSFO, which is derived from the residue produced during crude oil distillation and contains sulphur. Combustion in the ship's engine thus causes sulphur to be released into the atmosphere, along with the ship's other emissions.

The MARPOL Convention was signed in 1973 and so far has been ratified by 155 countries. Its goal is to prevent maritime pollution caused by shipping emissions. Over the years, annexes have been added limiting emissions first to 4.5% m/m of sulphur and then to 3.5% m/m. With the current change, it is hoped that there will be a drastic reduction in the sulphur content in ships' fuel.

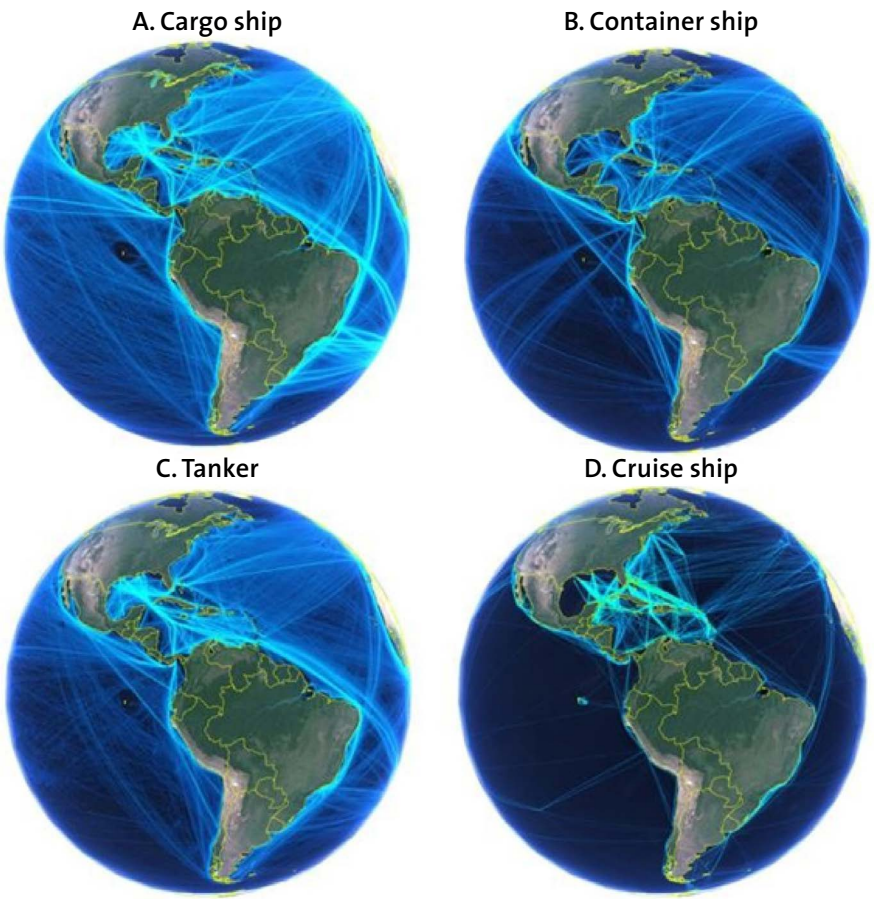
5 Total fleet devoted to carrying merchandise of all kinds (IHS Markit, 2018).
6 Deadweight tonnage (DWT) is a measurement of total carrying capacity of a ship including cargo, fuel, and storage.
7 Finding for a sample of 31 countries and 118 ports and port areas in the region.
8 In this bulletin, throughput refers to the total movement of containers in a terminal or port.
9 For 2012.

The enabling regulations to IMO 2020 contain exemptions for safety reasons or to save human lives at sea, if a vessel or its equipment is damaged, and also to allow experiments with developing shipping emission reduction technologies and programmes to test marine engine emissions.

To comply with and enforce the regulations, each flag State shall issue ships an International Air Pollution Prevention (IAPP) certificate. This certificate includes a section stating that the ship uses fuel with a sulphur content that does not exceed the applicable level, as shown on its fuel receipts or abides by an equivalent provision.

To comply with the proposed measures, a set of amendments to the MARPOL Convention will also enter into force, triggering administrative measures for measuring and controlling ship emissions. These include "cold ironing" and "just-in-time arrivals." The former seeks to ensure that when ships load or unload cargo at the dock, they are provided with an energy source other than their own generators (in order to reduce emissions of GHG and particulates in areas in the vicinity of cities), while the latter is a methodology for reducing emissions by improving voyage planning and administration based on real-time information about a ship's location and speed as it approaches a port.

Map 2
Regional distribution of CO_2 emissions for specific types of ship



Source: L. Johansson, J.P. Jalkanen and J.P. Kukkonen, "Global assessment of shipping emissions in 2015 on a high spatial and temporal resolution", *Atmospheric Environment*, vol. 167, October 2017.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The oil refining industry, for its part, will have to ensure that sufficient quantities of fuel compatible with the Convention are produced to attend to demand as of 1 January 2020, while governments will need to monitor the supply of fuel to ensure that standards are met. In addition, the high cost of investing in refineries and the potential for patenting new fuel mix could lead to a predominance of large oil companies in the supply of fuels.

II. Expectations and uncertainties

Only weeks before the new regulations enter into force, a number of questions remain and various stakeholders are concerned about the possible impacts on different parts of the supply chains related to the international maritime sector.

There is widespread consensus that some measures need to be adopted to reduce emissions to internationally required levels.

Existing ships will need to compete with those coming onto the market within a few years, given that CO_2 emissions could become a key differentiating factor. Added to the concern about ships are worries over the costs of adaptation and of the reforms needed and doubts about which change to aim for: reducing the sulphur emitted in exhaust or installing scrubbers.

There are uncertainties regarding the period of adaptation to the regulations, such as an increase in fuel prices, the actual availability of fuel compatible with the new regulations, the impact on trade and the risks of concentration in the maritime sector as a result of this whole process.

A. Fuel

Fuel is the key factor currently under consideration, whereby there are three main substitution options: low-sulphur fuel oil (LSFO); an alternative fuel with low sulphur content, such as liquid natural gas (LNG); and the installation of scrubbers on ships.

Each shipper will have to choose the best strategy for complying with the regulations. Each of the three options has its advantages and disadvantages, apart from the transition cost concern that applies to all of them. Fuel availability, age of the fleet, the cost of capital, and the time it takes both refineries and shippers to adapt to market demand and supply sources are all part of this transition. A fuel shortage would trigger inefficiencies and cause further hikes in freight costs, because ships would be forced to go out of their way to refuel more frequently.

Oil companies and refineries are developing new types of fuel mix combining heavy fuel oil (with high sulphur content) and marine diesel oil (a more expensive kind of fuel with low sulphur content), with 0.50% m/m of sulphur in the mix, but these are still being tested for potential damage to ships' engines.

LNG may cost somewhat less than fuel mix, but the supply sources for it have not been developed; moreover, the cost of installing the engineering needed on board to store this type of fuel as an alternative is higher than the cost of installing a scrubber. In addition, it could have environmental impacts, which have yet to be analysed.

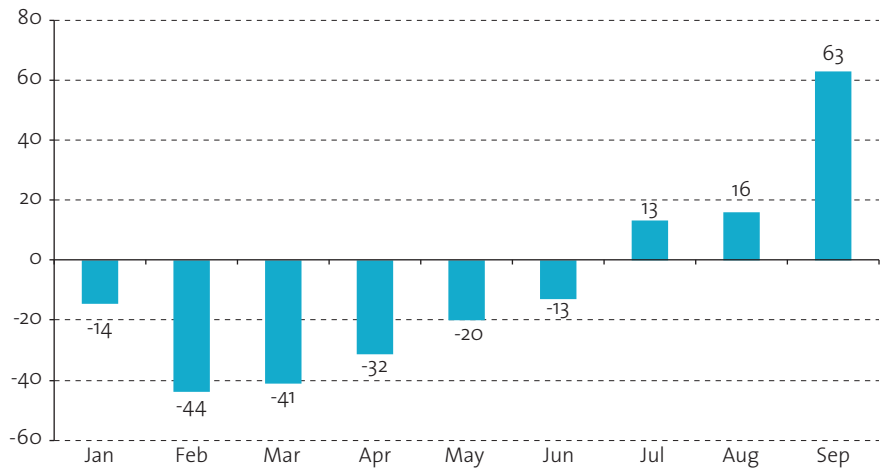
In October 2019, CMA CGM S.A. presented the first liquid natural gas (LNG) powered container ship. While there are already other LNG powered ships, the novelty is that this is one of the largest to date, with a capacity of 23,000 TEU.

Fuel could account for up to almost 50% of the total maritime freight of a 40 ft. container. Annual fuel costs are projected to increase by almost 25% in 2020 compared to 2019,[10] so that increases in fuel prices will directly impact freight rates.

The large shipping companies, such as CMA-CGM, for example, have estimated that compliance with IMO 2020 will increase the average cost by US$ 160 per TEU, based on current conditions.[11] Assuming that the difference in the prices of HSFO and LSFO will be US$ 250 per TEU in 2020, Hapag-Lloyd is also projecting an approximately US$ 1 billion increase in costs in the first few years. For its part, A.P. Moller-Maersk has reported that it spent US$ 3.37 billion on fuel last year and is expecting to spend an additional US$ 2 billion as a result of the new measures entering into force;[12] with regard to freight, as of 1 January 2020, the increase will be fixed at US$ 50 per ton of LSFO. Finally, towards the end of 2018, MSC estimated that the cost of implementing the measures could increase freight rates by between US$ 120 and US$ 360 per container (MSC, 2018).

The Baltic Dry Index (BDI) also began rising as of July this year and by September 2019 had increased by 63% compared with the previous year, as shown in figure 1. While IMO 2020 may not be responsible the entire increase, it certainly has had an impact on the BDI.

Figure 1
Average monthly variation in the Baltic Exchange Dry Index (BDI), year-on-year figures, January–September 2019
(Percentages)

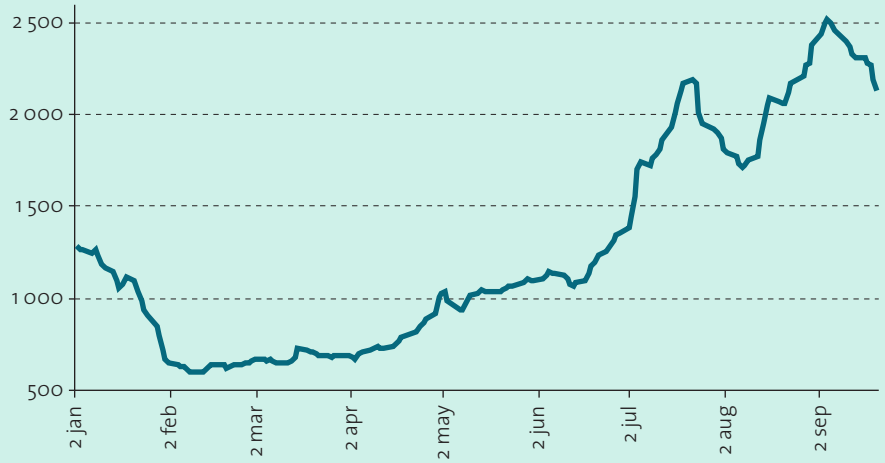


Source: Bloomberg.

Figure 2 shows BDI levels in September 2019 reaching their highest point since 2011, when freight rates were beginning to recover from the 2009 crisis.

[10] For further details, see: Safety4sea (2018).
[11] For further details, see: Maritime Executive (2018).
[12] For further details, see: Safety4sea (2018).

Figure 2
Daily value of the Baltic Dry Index (BDI), 2019
(Dollars)



Source: Bloomberg.

The International Chamber of Shipping does not appear to be as optimistic regarding freight increases, with some analysts expecting an increase of up to 100%.[13]

There are also ongoing worries about how refineries will react and what steps they will take to supply fuel to all ports in the region.

B. Scrubbers

Scrubbers are devices that transfer sulphur from the exhaust to a unit that disposes of it. They offer an alternative to the use of low-sulphur fuels. However, scrubbers also pose a series of challenges, such as the high cost of investing in them, the need for a place where the residues accumulated in the scrubbers can be disposed of, and some countries reluctance to accept ships with these devices.

With so little time until 1 January 2020, many suppliers of scrubbers can no longer guarantee delivery by 2020. It is estimated that scrubbers will be installed in approximately 2,000 ships in 2019 and 4,000 by the end of 2020 (IEA, 2019).

According to Alphaliner (2019), the number of ships having scrubbers installed has risen sharply in just a few months. In June 2019, there were about 13, with a total capacity of 130,000 TEU. By October 2019, there were more than 50 ships, with a total capacity of 500,000 TEU, having scrubbers installed.

Scrubber prices vary by type of scrubber (open loop,[14] hybrid[15] or closed loop[16]) from US$ 1 million to US$ 6 million. This is in addition to installation costs, which may exceed the cost of the device, so that the total investment involved ranges between US$ 2 million and US$ 8 million per ship. Scrubbers have operating costs, estimated at around US$ 80,000 a year for ships of 8,500 TEU, plus an additional 1.5% to 2% outlay for the fuel consumed (IHS Markit, 2019).

For medium-sized ships of, for example, 8,500 TEU, it will take between 2 and 3.5 years to recover the cost of the investment, depending on the type of scrubber and the fuel used. In this case, the estimated total cost would be approximately US$ 5 million, assuming 5 years' amortization for a hybrid scrubber, approximately 95 tons a day of fuel consumed at 17–18 knots, 12 tons of fuel per day in port, and around 275 navigation days per year. Savings

[13] For further details, see [online] https://www.freightwaves.com/news/zero-carbon-shipping-will-double-freight-rates.
[14] The exhaust gases and water used for washing are cleaned and released into the sea along with any harmful substances they contain.
[15] Can be configured for open or closed loop use.
[16] The exhaust gases are washed and harmful substances collected in a deposit that is emptied in the port to be properly processed later on.

would increase for larger ships because of economies of scale, and vary according to needs and price differentials. A break-even point for a scrubber would be less than US$ 45 per ton.

The disposal of the residues generated by scrubbers is also a matter of concern. Currently, the most commonly used type of scrubber is the open loop variety, which releases the diluted water back into the sea and is the least costly to install and operate. The water is treated to remove heavy metals and other particulates before being poured back into the sea: a method that would be safe only in highly alkaline waters, which includes any open sea. The concern has to do with the quality of open loop scrubbers once more manufacturers emerge on the market, meaning that some devices could be less effective at removing chemical products and heavy metals from the water and only partially comply with the required standards, thereby causing air and water pollution.

The discussion surrounding open or closed loop scrubbers is now more political than scientific, with some countries considering banning the entry of ships with scrubbers. A notable case is Singapore, whose Maritime and Port Authority (MPA) announced that, as of 1 January 2020, it would not allow ships with open loop scrubbers to discharge their treated waters in the city's port.[17] Ships arriving in Singapore will have to arrive with the fuel required under the new regulations, even if they have an installed open loop scrubber.[18]

In cases involving closed loop scrubbers, which gather residues in a deposit to be emptied at a port for appropriate treatment of harmful substances, it is important to consider the potential consequences of allowing entry of those kinds of ship.

As scrubbers are gradually installed in ships, the size of the idle fleet increases. By mid-October 2019, there were about 142 container ships, with a total capacity of 1.14 million TEU, with scrubbers installed. By January 2020, that figure is expected to have increased to more than 260 container ships, with a total capacity of 260 million TEU, or (in terms of capacity) 10% of the global fleet.[19]

Given that this kind of device establishes a place —a port— where harmful waste is to be disposed of, there is an alarming risk that Latin America and the Caribbean could be turned into a dump for these pollutants.

C. Trade

Current projections show year-on-year growth in maritime trade declining. Clarksons (2019) predicts a reduction in global trade for 2019 owing, among other reasons, to the announcement by the President of the United States in early August that 10% tariffs would be imposed as of the beginning of September on the US$ 300 billion of annual imports from China. The new tariffs would apply to an estimated 4 million TEU of containers using the trans-Pacific route, and would make part of the trade on that route subject to tariffs. However, it was later announced that the tariffs would take effect in two stages, which could induce a reduction in Pacific Ocean container trade toward the East in 2019 and 2020.

While a stepped-up trade war between the United States and China should not significantly dent Panama Canal activity in 2019, its impact could be felt in first-quarter 2020, since the United States is the primary user of the Canal, followed by China.[20]

Clarksons forecasts a year-on-year growth of container movement of 2.7% worldwide. Specifically, for the trans-Pacific route, movement is expected to decline by 1.1%, while for Asia-Europe (the only region expected to show growth in 2019 over 2018), 4.3% growth is projected.

For Latin America and the Caribbean, based on a sample covering total container movement for seven countries in the region and accounting for 69% of total container movement in 2018, the Economic Commission for Latin America and the Caribbean (ECLAC) estimated growth of 0.8% in the first half of 2019, compared to the same period in 2018. Based on

[17] For further details, see Lloyd's List (2019).
[18] For further details, see Maritime Executive (2019).
[19] For further details, see Mundo Marítimo (2019b).
[20] For further details, see Mundo Marítimo (2019b).

the information available through August, ECLAC is projecting a decline in the value of regional exports and imports of goods in 2019 of 2% and 3%, respectively. In the case of exports, the modest (1%) projected increase in volume will not be enough to offset the (-3%) drop in prices. Import volumes and prices are both projected to fall.

The increase in freight rates could also impact trade. Higher costs could significantly affect exporters as the higher final costs of their products directly impact exports.

Some impact from the change in refining could also be felt, since crude oil, petroleum derivatives, and gas account for 29% of international maritime bulk cargo trade (UNCTAD, 2019). Within the region, exports from Argentina, the Bolivarian Republic of Venezuela, Brazil, Colombia, Ecuador, Peru, and Trinidad and Tobago accounted for 19% of global exports (BP, 2019). The decline in the demand for oil would directly impact regional trade.

D. Risk of concentration

Some analysts —such as Drewry, a shipping consultancy (see Bunker Truste, 2019)— have pointed to the possibility of IMO Regulation 2020 inadvertently fostering consolidation in the shipping industry because the high cost of implementing it could weaken the less robust companies.[21] While previous mergers and acquisitions already gave a handful of shipping lines sizeable control of the global market, there is still some competition for the more interesting commercial routes.

The difficulty of financing the investments involved is a major concern for many companies, especially transhipment, single-product or smaller shippers.

Adaptation costs could also pose a problem for small and medium-sized companies given that the high costs of implementation could increase the risk of concentration and (horizontal and vertical) integration and thereby threaten their existence. Depending on market structure, implementing the new regulation could generate efficiencies, but it could also stimulate anti-competitive practices.

Thus, even though the effects of the new regulations on the international and regional trade of the countries in Latin America and the Caribbean are still uncertain, they clearly warrant close monitoring.

1. Findings of the survey on IMO 2020

With three months to go before implementation of the IMO 2020 Regulation, the authors conducted a brief survey on the topic among maritime sector experts, who were invited to answer questions and make comments. The purpose of the survey was to examine where Latin America and the Caribbean stand vis-à-vis the new rules. Replies were received from 31 academic and maritime-port experts in 16 countries.[22]

Regarding the regulatory changes, 56% answered that they had not received any kind of guidance or support from their providers; 38% said they had been given guidelines; a small portion (6%) said they had received information on the subject via ECLAC or specialized consultants.

As to how the new regulations might impact their company or organization, many of the replies voiced concern about fuel costs, while others —a minority— commended the environmental benefits that could result from the regulations.

Regarding the adjustments to fuel costs, a large majority of respondents said they had not been directly notified of changes to fuel prices nor had they seen any forecasts regarding the availability of the new fuel required.

The main query was whether fuel suppliers will have fuel in line with the new standards to supply to ships, or whether it will have to be imported.

[21] See [online] http://bunkertrust.com/imo-2020-costs-could-force-liner-market-into-further-consolidation-says-drewry/.

[22] The countries that replied were, in alphabetical order: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Guatemala, India, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Vincent and the Grenadines, the United States, Uruguay, and Venezuela (Bolivarian Republic of).

III. Final considerations

As the date for implementing IMO 2020 approaches, the optimistic view is that the new regulations will be effect in reducing the pollutant emissions and raising awareness of the pollution caused by ships. As far as uncertainties are concerned, the main worry has to do with the cost of the adaptations and reforms needed, higher fuel costs and their impact on freight rates, the impact on trade, the risks associated with greater concentration in the shipping industry with the dominant actors increasing their market share, and the environmental impacts, including doubts about where fuel residues will be discharged.

Shipping lines have already begun cleaning their tanks and this process will be stepped up. Large trading ships have separate tanks that enable them to avoid mixing bunker fuels from different suppliers. This cleaning and provisioning process by stages has to strike a delicate balance. If it is done too late and not all the HSFO on board has been burned by year's end, there is a risk of having to dismantle the bunker, at great financial and logistical inconvenience. Refineries will do their best to reduce production of HSFO, but in many cases that will prove impossible. Thus, as shippers stop using HSFO and supply begins to exceed demand, prices will fall. The gap between HSFO and fuel abiding by the newly enforced regulations is expected to widen in the fourth quarter.

Another ongoing concern is what will happen to the remaining HSFO and how to ensure that it does not start being used for other purposes or in other processes, because, in that case, what good will result from the imminent entry into force of the new regulations? Moreover, given the ecological demands that will have to be met to reduce pollution, measures will also need to be adopted in door-to-door logistics to achieve that goal.

The decontamination of the maritime (or, more broadly, waterborne) transport process is an important part of efforts to combat the causes and effects of climate change. Progress made with an international regulation approach, such as that achieved by the entry into force of IMO 2020, shows that such an initiative is feasible and may yield positive results.

Nevertheless, now is the time to ask whether such actions are enough, or whether a broader set of measures must be applied to achieve expected outcomes. A more appropriate route to take may be a combination of regulatory measures and incentives, such as a carbon tax, for instance (among other options).

Economic measures, such as technical and economic regulations —including tax instruments and incentives— also need to be accompanied by efforts by industry and science to identify the clean technologies best suited to reducing pollution. What engines and fuels best serve that purpose? Is natural gas the fuel that does least harm or does it reduce carbons only to release other pollutants into the atmosphere? What trade route options might enhance decontamination without obstructing trade? Is it a matter of simply limiting navigation speed or should an optimal speed be fostered in connection with adjusted shipping routes?

As for liabilities and sanctions for non-compliance with the regulations, IMO states that: "Sanctions are established by individual Parties to MARPOL, as flag and port States. IMO does not set fines of sanctions – it is down to the individual State Party. Implementation is the remit and responsibility of the Administrations (flag States and port/coastal States)."[23]

In short, these uncertainties and other questions will very soon be crucial. Several international organizations, including ECLAC, are promoting frank dialogue among all the actors in the logistics chain, with a view to working together with national authorities and the representatives of the industry and dockers, as well as society as a whole, including academia.

All the positive expectations are based on the hope that these regulations will help bring about an immediate reduction of pollutants and that the uncertainties mentioned will have only minimal impact. Furthermore, efforts to reduce pollutants need to be espoused by all segments of the logistics chain, starting immediately with the maritime sector, but accompanied in due course by the combined and coordinated efforts of all the other stakeholders as well.

[23] See IMO 2020 FAQs, What is the sulphur 2020 limit? [online] http://www.imo.org/en/MediaCentre/HotTopics/Documents/Sulphur%202020%202-page%20flyer_draft_19-6-2019_online_final.pdf.

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V. Publications of interest

FAL Bulletin 369

Logistics for production, distribution and trade

Gabriel Pérez
Ricardo J. Sánchez

On the basis of its mandate, the Economic Commission for Latin America and the Caribbean (ECLAC) works to contribute to economic development in Latin America and the Caribbean, coordinate actions for international integration and promotion, reinforce regional economic ties and promote social development in line with the economic context.

In its more than 70-year history, ECLAC has formulated different strategies, policies and instruments, not only during the rise and fall of import substitution industrialization, but also during open regionalism, and the globalization of production and finance. During that time, it has also put forward proposals to address inequality and the impacts of the global environmental crisis.

Available in: Spanish English

FAL Bulletin 366

Reflections on the future of container ports in view of the new containerization trends

Ricardo J. Sánchez
Eliana Barleta

Recent years have seen a relative slowdown in container movements, which cannot be fully explained by fluctuations in the world economy. The authors note that the year-on-year change in throughput is decreasing relative to changes in GDP. In an attempt to explain these "seesaw" variations, several hypotheses are proposed and some are demonstrated, in particular the reprimarization of the economy, the miniaturization of cargoes, the possible decrease in transshipments, and the increasing use of 40-foot containers.

Available in: Spanish English