

# THE TRUTH ABOUT PIRACY

**S SMITH-GODFREY**

CSIR Built Environment, Transport and Freight Logistics, PO Box 395, Pretoria, South Africa, 0001 Tel: 0027 12 841 3455, Cell: 0027 76 708 6736, Email: [SSmith1@csir.co.za](mailto:SSmith1@csir.co.za)

## ABSTRACT

This paper investigates the link between the rationales between piracy attacks, the information gathered from such incidents and if the same information may be used to address the rationale behind piracy to combat and prevent it. A common understanding of piracy is sought, especially where it relates to the “where” piracy takes places and how it being limited to the High Seas, being outside a State’s jurisdiction limits its combating and prevention. The seven rationales behind piracy is then indicated, followed by insight into how piracy information currently is composed off and then brought together by indicating which information is required based on which rationale behind piracy as its incentive. The approach was to identify how information may be used to indicate the reasons for piracy and so combat and prevent piracy from happening. The main reason is that piracy is undertaken exclusively for financial gain as robbery is the common motive today although ships are still stolen. This paper seeks to understand why the financial gain is sought via piracy attacks. Lastly, the paper highlights how much of this approach is presenting a new perspective in the combat and prevention of piracy.

### Keywords

Piracy, governance, ships design, piracy data, information, congestivity, access, infrastructure, risk

## 1. UNDERSTANDING PIRACY

Piracy happens on the High Seas or the international waters which are outside the Exclusive Economic Zones of countries and has the benefit to pirates that this common area lacks specific national jurisdiction, except for that coming from the flag states under which flags the vessels are sailing. Such flag states may or may not have the required control measures in place to prevent, combat and limit piracy incidents.

In Article 101 of the United Nations Conventions on the Law of the Sea (UNCLOS) of 1982, Piracy is defined as any of the following acts:

***(a) any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed:***

***(i) on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft;***

***(ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State;***

***(b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft;***

***(c) any act of inciting or of intentionally facilitating an act described in subparagraph (a) or (b).***

It is critical to note Art 101, clause (a) (i) and (ii), which indicates “on the high seas” and “outside the jurisdiction of any State”, as this determines that piracy can only be committed and hence apprehended as long as it is on the high seas and outside any State’s jurisdiction.

The issue of piracy committed within territorial waters becomes thus a crime that is the primary responsibility of the State within whose territorial waters the crime is committed and is thus by definition no longer piracy but armed robbery (Oxford Companion to Ships and the Sea) as it did not take place on the high seas or in an area outside a State’s jurisdiction. It also means that when such crime is committed within a state’s jurisdiction, it is that state’s responsibility and no other state’s responsibility as the sovereignty of states will find the ruling principle.

Because of this, states in their judicial systems have to make provision for crimes taking place within their territorial waters and flag states with vessels sailing their flags must have provision for piracy within their judicial systems, which takes place outside their territorial waters, on the high seas.

## **2. RATIONALE FOR PIRACY**

The driver for piracy is related to the amount of cargo having to be transported by ships, in other words the global production transported by the world fleet, of which there is almost 91 000 vessels, according to the United Nations Conference on Trade and Development’s Statistics. This is misleading as only approximately 60 000 or 65% of the world fleet consist of cargo vessels. The cargo fleet is further made up of general cargo vessels which is around 32 000 and about 28 000 bulk carriers. It is predominantly the bulk carriers that are attacked by pirates. This number of vessels sailing the seas mean there are almost 60 000 targets for piracy to attack with a preference for 28 000 vessels.

The question is why will pirates attack these vessels, what are the factors that would drive a pirate to attack a vessel in the open seas?

The first rationale according to Chalk, P, 2009; pirates are provided with a huge number of targets to choose from, meaning the amount of vessels sailing the seas and the enormous amount of freight that these targets are carrying, meaning the world production. The suitability or availability of these targets is determined by where the targets pass on the seas, its sea route or the sea corridor that the vessel follows based on its schedule. This means that the geography of the routes that vessels follow, determines the propensity of the vessel being targeted by pirates. Where the geography of the route is congested and the natural physical infrastructure is of such nature that vessels may be ambushed and attacked, piracy attacks are prone to happen. The congestivity of the route, in other words, the density of the vessels within a specific geographical radius, allows pirates greater availability of targets to attack as well as provide them with more lucrative targets.

Secondly, the role of natural physical infrastructure of the piracy-prone geography is very important as it must provide the pirates with a means of hide-out, in other words coastal areas that leans itself to difficulty to reach and difficulty to control. In Indonesia, the world's largest archipelago with over 17 500 islands, head the list of countries where piracy is rampant. It accounts for 27% of the attacks and Somalian waters have proven almost as dangerous. According to the definition provided in the International Risk Governance Council, on the Risk Governance of Maritime Global Critical Infrastructure, such geographical location where the congestivity of vessels is high and the natural physical infrastructure makes it difficult to reach and to control, such as channels, straits, etc. and has the added requirement that the incapacity or destruction or damage to such geographical locations, would have a negative impact on global security, health and safety. When applied on piracy-prone locations, it becomes clear that piracy attacks on locations where vessel congestivity and natural physical infrastructure is hard to reach and to control, does have an impact on global security, health and safety as well as global trade. The fact that in most cases such geographical locations are located within internationally connected borders, having an impact on the countries whose borders it is, the country whose cargo the vessels are carrying and the country whose vessel it is, being attacked. Based on the number of the countries involved as indicated, it becomes clear that this implies a large number of stakeholders, who integrate a system of natural and built infrastructure, which exist within the system of international trade, which on its turn exists within the system of the global society.

Thirdly, according to Bueger, C, 2014 a further factor to the benefit of piracy is the weak law enforcement for piracy, in other words, the propensity of being caught and punished accordingly. Already based on the definition of piracy, judicial systems are limited to piracy outside its judicial system and in on the high seas, as that is what piracy consists of, if a "piracy" attack happens within territorial waters, it is no longer piracy. Where the piracy attack does happen on the high seas or outside a state's jurisdiction, that state may only pursue the pirates in its own territorial waters to catch them and not in other states' territories, meaning the pirate may elect to deploy its mobility and enter a different state's territorial waters. The sovereignty of states precludes the pursuing state from following the pirates within a different state's territorial waters. If a state, pursuing pirates does manage to catch the pirates, the matter becomes law enforcement and an admiralty issue of ship's arrest and how to deal with the content or cargo of the vessel and the pirates as individuals itself, and

invokes that state's prosecution ability and the enforcement provided for within its judicial system.

Fourthly, in Bueger, c, 2014, reference is also made to maritime insecurity playing a role in piracy occurrences, and is indicated as the degree to which the maritime environment of a region is insecure and prone to violence. In Somalia, a state with huge political problems, piracy is seen as a way of life and young men are recruited for it. A different interpretation is given in this paper to maritime insecurity as it is seen as the degree to which a region is monitored and patrolled for marine governance purposes. It is due to the fact that maritime regions are only insecure if governance structures are absent to make it secure. Governance structure would refer to monitoring of high seas close to territorial waters, which may be autonomous and remote of nature and patrolling of territorial waters for pursuance and capturing purposes. It is thus concluded that when monitoring of the high seas does not take place and patrolling of territorial waters does not take place, a state of maritime insecurity exist. This is a contributing factor to piracy taking place within such an area, as their activities will not be monitored and they do not run the risk of be pursued and captured by patrolling parties.

Fifthly, the economies of piracy is perhaps the most important rationale, as piracy is a business model which earns revenues with a direct causal link to the pirates being unemployed. It being a business model, albeit of the criminal kind, an element of entrepreneurship as per Bueger, C, 2014 is found with risks and rewards linked to the act of piracy itself. This act of piracy requires some organization with inputs required executing the act and these inputs' availability plays a role in how well and how often the act is executed. Part of the availability of the inputs required includes the intelligence available on movements of vessels and what these vessels are carrying. This forms a link with how such intelligence is obtained and the role legitimate organizations play in the provision of such information. Furthermore, as one of the input factors of piracy is arms, the increased availability of such and its mobile nature, has a growing impact on the levels of violence experienced during piracy attacks, and of course it also forms the basis of the threat to board vessels during such an attack.

The sixth rationale of piracy is the fact that with the evolution of vessels and their designs, crew numbers became less and vessels became more autonomous due to navigational advancement, according to Chalk, P, 2009. This makes the task of gaining control of vessels much easier and reduces also the crew's ability to defend themselves against piracy attacks. The fact is that Liner vessels sail at 25 to 30 knots with a high freeboard and therefore seldom attacked by pirates. Bulk carriers on the other hand sail slower at 11 to 14 knots with very low freeboard when fully loaded make ideal targets for pirates, (Stopford M. 2013.) This makes it easier to board bulk vessels than liner vessels.

Lastly, piracy is insured under Protection and Indemnity for Kidnapping and Ransom Insurance, which has increased as piracy attacks gain more prominence over the last couple of years. This demonstrates ship owners' willingness to pay increasingly large sums to insure their vessels and cargoes when intersecting in piracy-prone regions. Such insurance will cover reimbursement of ransoms, fees for negotiators and intermediaries, cost of repatriation and loss of business, apart from the value of the vessel and cargo. Whilst it is

seen as a protective measure against damages and losses, it also acts as incentive for pirates to attack vessels in such areas, as the vessels and cargoes are already insured against the very act of piracy.

### 3. PIRACY REPORTING

The responsibility of reporting on piracy is derived from the responsibility to forewarn as per Art 24 (2) of the United Nations Conventions on the Law of the Sea (UNCLOS) and reads:

***2. The coastal State shall give appropriate publicity to any danger to navigation, of which it has knowledge, within its territorial sea.***

In other words, coastal states must report on the propensity of piracy attacks, as it poses danger to the navigation of other vessels, if they are aware of such dangers. To be aware of such dangers, coastal states needs to be informed of it and they only become informed of it by the information on piracy obtained, made available and distributed.

This may be linked to Art 25 (1) of the same convention, which reads:

***1. The coastal State may take the necessary steps in its territorial sea to prevent passage which is not innocent.***

This clause provides coastal states with the means to ensure that piracy on the high seas may be detected and patrolled in its territorial seas as pirates are mobile and may move to and fro the high seas and territorial waters at will.

This provides the combatting of piracy with the possibility to prevent and mitigate as the information from monitoring the high seas may provide crucial information on insecure areas or passages under threat of piracy, whilst patrolling within territorial waters may provide valuable interception opportunities of pirates.

However this is only possible if information regarding piracy is gathered, analysed and interpreted in a manner that adds to combatting and mitigating piracy. The International Maritime Organization has been at the head of the pack in collecting and promulgating piracy incidents since the early 1980's, with the International Maritime Bureau as a specialised division of the International Chamber of Commerce. The growing number of piracy attacks led to the creation of the IMB Piracy Reporting Centre in 1992. The Piracy Reporting Centre's principal function is to collect and provide information regarding piracy to different stakeholders for different purposes.

Piracy reached a high in Indonesia in 2013 with 106 attacks, and declined to 49 attacks during 2016. Somalia reached a high of 160 attacks in 2011 and declined to 1 attack in 2016 and had 7 attacks in 2013. The Average Cost per piracy attack ballooned in 2013 with \$27 million against 264 attacks with costed in total \$7.2 billion. This came down to around \$13 million on average with 191 attacks globally with \$2 billion in total. It is interesting to see that whilst Somalian attacks went down, Nigerian attacked increased and is second after Indonesia with 36 attacks in 2016

For the purpose of this paper, the focus is on which information regarding the piracy incidents does the PRC provide and does this information link to mitigation of the rationale behind piracy. The PRC's information provides all the incidents reported, per location which is then grouped into regions as well as a distinction between the types of incidents. The incidents range between two primary categories of Attempted Piracy and Actual Piracy and within these two primary categories, Actual Attack includes whether the vessel has been boarded or hijacked and for Attempted Attack whether the vessel was fired upon or attempted to be fired upon. Furthermore, it provides information regarding ports and anchorage areas with three or more reported incidents as well as what the status was of the vessels during both actual and attempted piracy attacks. This status includes whether the vessel was berthed, anchored, steamed or not stated when the incident was reported. The reporting includes also which type of weapons was used during the actual or attempted attack and to which type of violence the crew were subjected to. This gets then aggregated to the region where the actual or attempted attack took place in a comparative format.

The PRC's reporting also includes an indication of which type of vessel were actually attacked or attempted to be attacked, the nationalities of the vessels attacked or attempted to attack, as well as the flag states whose vessels were attacked more than 12 times per region. When reviewing the actual incident report from the Piracy Reporting Centre, a reference number is included, with the date and time, as well as the status of the vessel and the type of violence performed on the vessel is included. The next column includes the name of the vessel, the type of vessel, its flag that it sails, its gross tonnage and its International Maritime Organization's Call Code, the position where the incident took place in terms of latitude and longitude as well the location with a brief narrative of the incident.

In UNOSAT Global Report on Maritime Piracy, the database of the PRC was reviewed, in terms of its elaboration, use and analysis based on geographies, where three derivative fields were added to enrich the data. It included the definition of a new geographic area as the areas mentioned in the IMO's Global Integrated Shipping Information System (GISIS) were not always spelled the same way, allowing for inconsistencies in data collection for analysis purposes. Secondly a definition of a Severity Index were called for as no standard method for classifying the severity of piracy acts and armed robbery were found, which were proposed to range from 4 to 1, with 4 the highest severity which include loss of life and 1 the lowest which includes no threat of violence reported. This is to be linked to the fact that the GISIS database also includes theft, which is in accordance with the definition of piracy in UNCLOS, including "depredation". Lastly a "Distance to Coast" criterion was proposed which are to be used to assess and track the capability of the pirates involved in the incident. It is included as the database does not offer any information regarding the identity of the pirates, their organization, their capacity and capabilities. With this proposed derivative field, the distance from the site of incident to the nearest shore is included, instead to the distance to the nearest safe harbour for the pirates as it is assumed that the pirates will avoid the harbours but make for the shore to avoid being captured. For vessels that are berthed (and thus inland), a negative value for the criterion is assumed.

It becomes thus clear that the current richness of piracy data and reporting is not enough to ensure that Art 24 (2) and Art 25 (1) of the United Nations Convention on the Law of the Sea (UNCLOS) is obtained for states and leads to an approach where linking the piracy reporting

with the rationale behind piracy incidents. To combat and prevent piracy, information on how to do it should be obtained from the information gathered on piracy incidents, by developing combatting and prevention strategies from focusing on the root causes of rationale behind piracy, analysing how this is observed during a piracy attack and reflecting such in reporting on the incidents.

#### **4. PIRACY – SAFE OCEANS**

To make oceans thus safe from piracy, solutions and strategies should be formulated from the reasons behind piracy and secondly from the practical insight gained during piracy incidents. This enables an identification of the weaknesses and strengths of piracy attacks and provides a foundation of how to develop approaches that lowers the propensity of the attacks.

As mentioned earlier, the first rationale of piracy as the number of targets available for attacks, in other words the congestivity of a sea route within a specific geographical radius. If then using this information together with the information from the piracy attack itself, congestivity or the number of vessels within a specific geographical location may be used to track piracy activities within that region in a way that allows pro-active behaviour from coastal states. To execute this practically, coastal states with densely populated sea routes may be able to report this congestivity as a measure for alertness of potential piracy attacks and so comply with Art 24 (2) that the State will give forewarning of possible dangers to navigation of vessels.

The second rationale of piracy being the degree of difficulty in reaching natural physical infrastructure, may also be applied on the very same basis by pro-actively marking areas within a certain geographical radius of congested sea routes as areas of alertness for piracy attacks. This may be linked to the pattern of congestivity that develops around these natural physical infrastructure areas, driven by the flow of vessels during certain periods of time during the year. This degree of difficulty from natural physical infrastructure may be part of a pro-active approach then to combat and prevent piracy attacks during the highly congested periods and to monitor during the lower congested periods. As it is a constant number, being the degree of difficulty from natural physical infrastructure, a specific measure for it may be developed allowing for fluctuations to be linked to the congestivity of sea routes within a specific geographical location. This also is related to the type of vessel and cargo being transported, i.e. tankers transporting oil as a high valued cargo.

The third rationale of piracy being that of weak law enforcement may now also be linked to the above in a manner that classify the law enforcement system deployed in areas of congestivity close to natural physical infrastructure with a degree of difficulty. This may be performed by perhaps evaluating the law enforcement systems of coastal states and classifying the abilities of such law enforcement systems based on their abilities to arrest, detain, indict and penalise pirates, with appropriate weights assigned to it. Such assigned weight will then form part of the pro-active approach to piracy by having marked sea routes with its congestivity assessments during different times of the year with the degree of difficulties from the natural physical infrastructure within a specific geographical location of

the sea route and an indication of the law enforcement ability of the State involved in such an area.

The fourth rationale is that of being maritime insecurity for the monitoring and patrol of such areas, where an assessment of coastal states' ability to monitor high seas and patrol territorial waters can be conducted, in a manner that allows for an indication of the strength of its monitoring and patrolling capabilities. This is to allow for a uniform understanding of how strong any state's monitoring and patrolling capability is, by assigning weights to such based on the same variables for all coastal states and an agreement to apply the same for all coastal states. To develop a pro-active piracy combat and prevention approach, this indication of maritime insecurity being expressed as a number, may now be linked to the congestivity number, the degree of difficulty posed by natural physical infrastructure and the indication of the strength or weakness of the law enforcement capability.

The fifth rationale of piracy as indicated before, is that of the business model of the pirates itself, and is perhaps the only rationale that may only be developed after the attack as takes place. This is due to the fact that the information required establishing the piracy business model is only derived from information obtained during the attack itself. This would refer to their capability and capacity, their resources available and their organizational level, which are all aspects which may be classified from high to low and assigned a weight as an indicator. This may then be interpreted as the pirates' organizational level and utilized to distinguish between different pirate organizations, which may on its turn be linked to the congestivity of the sea route where these pirate organizations are deployed, the degree of difficulty of the natural physical infrastructure within a specific geographical radius of the sea route, the law enforcement indicator and the maritime insecurity indicator as explained above. In the case of the *MV Sirius Star* which is a Very Large Crude Carrier (VLCC) which was hijacked 450 nautical miles in mid ocean off the coast of Kenya on 1 November 2008. This hijack was arranged by the piracy kingpin Mohammed Abdi Hussan in a very sophisticated operation that most probably included insider information on the precise location of the vessel. The use of motherships to launch piracy attacks form, is a new strategy being employed more regularly and seems to indicate that pre-planning of the intended attack is critical for success of the operation (Wikipedia)

The sixth rationale of piracy, being that of the evolution of vessels and their designs is closely related to how well vessels are designed and equipped to defend itself against piracy attacks. An analogy with houses may be considered, where burglaries of houses, are combatted and prevented by house alarm systems, burglar bars and access limiting fencing. These are all internal and integral to the house's structure and form a part of the house itself. It provides an opportunity for vessel design to be reviewed from the perspective of providing defence mechanisms integral to the vessel itself. Currently, armed convoys are deployed to accompany vessels, which is expensive, as well as sunken costs as the armed convoy will not earn the ship owner additional income, instead it is there due to a reactive defence mechanism, which is to protect the vessel. Other measures include that of covering railings so that pirates may not hook the vessel in order to board it, which is insufficient as it still leave the crew unprotected, which may under duress disable the coverings of the railings. Water cannon systems are also used to prevent piracy attacks, but are also enjoying limited success as it is mostly of the time occupying volumes on the vessel, which is intended for



its cargo, and moreover it exposes the crew to danger who has to man the water cannon. This brings it back to the type of defence mechanisms that may be developed, based on what has been learnt from defence mechanisms on land to protect vessels, such as access limiting fences, where pirates cannot come closer than a specific radius of the vessel, once deployed, and incidentally also protects the crew of the ship, as this radius may be determined by the upper margins of the reach of firearms. Furthermore, the design of vessels may also learn from burglar bars deployed in houses and deploy structures all along the hull of the vessel, which will also limit damage to the ship, injuries and loss of crew and actual boarding of the vessel. Where it comes to the alarm systems, automated alarms may be linked to the law enforcement and maritime insecurity indicators of the state where the vessel is passing through. The level of vessel defence may be ascertained as an indicator itself and be tracked for assessment of piracy incidents occurrences.

The last rationale is that of the insurance that ship owners are willing to pay in the event of a piracy attack, which would be reflected as the increase of kidnapping and ransoming insurance. It would appear that kidnapping is a strategy that is being utilized more frequently by pirates, and based on the ransoms demand so made, i.e. unlike attacks on small tankers seen in the South China Sea and the Malacca and Singapore Straits, where the cargo is the target to be siphoned off. This is done for re-sail the attacks in the Southern Philippines which are focused on kidnapping crew members for ransom with vessels often allowed to go on their way once the hostage has been taken. The attacks in the Sulu and Celebs sea region includes an international route used by bulk vessels from Australia to China as well as local and regional trades, (Seatrade, 2017) As this is an incentive for a piracy attack, to receive the insurance pay out for an attack on specific vessels, an indicator for it may be developed. As this increase in insurance is linked to vessels passing through specific piracy-prone areas, this may be developed as a much more accurate assessment if linked to the congestivity of the sea route the vessel will use, the degree of difficulty the natural physical infrastructure within a specific geographic radius of the sea route through which the vessel is passing, will pose, what the law enforcement indicator as well as the maritime insecurity indicator for the specific area is and what the level of organization of the pirates active within this specific area is.

Based on the above and it being compared with the level of piracy information being gathered, reviewed, analysed and distributed, perhaps a level of piracy information that may be collated on a strategic and macro level may be of use, instead of just including information on piracy incidents, allowing only for a micro perspective, may serve some purpose.

## **5. CONCLUSION**

This paper considered the difficulties in understanding piracy and how practically it poses challenges for combatting and prevention thereof.

It then includes the reasons for piracy and the information available on piracy in a manner that allows for a different perspective on combatting and preventing piracy by focusing the required information on a strategic level and linking it to the rationale of piracy, so solutions that addresses piracy from its roots may be develop.

In this process, the operational nature of piracy information gathered and the non-integrated application of root cause analysis were highlighted and indications of proposed new information interpretation are provided.

It does require the various organizations such as the IMO's PRC, the Maritime Security Centre (Horn of Africa), West African Regional Maritime Trade Information Sharing Centre (MTISC), Regional Co-operation Agreement on Combatting Piracy and Armed Robbery against Ships in Asia Information Sharing Centre (ReCAAP ISC), NATO Shipping Centre (NSC) as well as the Maritime Liaison Office (MARLO) to perhaps address the issue of enriching piracy data in a manner that allows for a pro-active approach.

Most importantly about this paper, is that it provides a means of evaluating the globe and its sea routes on a coherent manner, allowing for congestivity, degree of difficulty of natural physical infrastructure and mapping it back to the coastal states with weak law enforcement and under maritime insecurity status. This should enable the International Maritime Organization to drive a process for incapacitating such coastal states with stronger law enforcement and being maritime secure, with the cooperation of other organizations, such as Oceans beyond Piracy, ship owners and marine insurance companies.

This paper is the first paper that draws a line between vessels and houses in terms of defence mechanisms, that focus the attention on vessels not being designed to defend themselves and may perhaps spur another evolution in vessel design, especially when seen as part of the International Convention on Safety of Life At Sea, bringing the ultimate responsibility again back to the coastal states with weak law enforcement and under a state of maritime insecurity as they are the signatories to the convention and not the ship owners who own the vessels or the ship yards building the vessels or the naval architects designing the vessels.

## References

1. Lombardo, N, D, 2014. Underreporting of Crimes at Sea – Reasons, Consequences and Potential Solutions. Oceans Beyond Piracy Discussion Paper
2. Article 101 United Nations Conventions on the Law of the Sea (UNCLOS), 1982
3. The Oxford Companion to Ships and the Sea – Edited by ICB Dear and Peter Kemp. Oxford University Press, P 430
4. Bueger, C, 2015. Learning from Piracy: Future Challenges of Maritime Security Governance. Global Affairs 1 (1)
5. Stopford M. Maritime Economics 3<sup>Rd</sup> Edition P 583 and 593
6. International Risk Governance Council, 2011. Risk Governance of Maritime Global Critical Infrastructure – The Example of the Straits of Malacca and Singapore
7. Chalk, P, 2009. Maritime Piracy: Reasons, Dangers and Solutions. RAND Corporation
8. Article 24 United Nations Conventions on the Law of the Sea (UNCLOS), 1982
9. UNOSAT Global Report on Maritime Piracy: A Geospatial Analysis 1995-2013. United Nations Institute for Training and Research, 2014
10. [https://en.wikipedia.org/wiki/MV\\_Sirius](https://en.wikipedia.org/wiki/MV_Sirius)
11. Seatrade – Maritime Review. Issue 3 Spet 2017, P 19
12. International Convention on Safety of Life At Sea (SOLAS), 1974