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THE ILLEGALITY OF FISHING VESSELS 'GOING DARK' AND METHODS OF DETERRENCE

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Abstract Given recent data regarding fishing vessels switching off their Automatic Identification Systems (AIS) in the Western Indian Ocean, this article assesses the potential illegality of the practice by analysing national and international legislation. It shows that the enforcement of AIS laws is generally poor, and although these are becoming increasingly robust in some jurisdictions, the sanctions are not severe enough to act as deterrents. Furthermore, this article suggests that the insurance industry enables the practice of switching off AIS through weak due diligence practices. Insurers have a role to play in curbing such illegal behaviour, and it is not discretionary.

Keywords: public international law, comparative law, maritime law, Automatic Identification System, illegal fishing, maritime insurance.

I. INTRODUCTION

A. Use of Automatic Identification Systems

An Automatic Identification System (AIS) is a key tool for averting maritime collisions. AIS helps vessels transmit and receive information between themselves and to shore-based stations and aircraft, including the vessel's identity, position, course, speed etc, except where laws and agreements protect navigational information from being shared. Its use is regulated in national and international legal frameworks. Guidelines which must be considered when operating the systems under the International Convention for the Safety of Life at Sea (SOLAS) define the aim of using AIS as follows: 'AIS is intended to enhance safety of life at sea; the safety and efficiency of navigation; and the protection of the marine environment.'[1]

One of the benefits of AIS is its use in tracking vessels (referred to as 'targets' once detected).[2] The guidelines state that '[b]y monitoring the information

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[1] IMO Resolution A.1106(29), 'Annex: Revised Guidelines for the Onboard Operational Use of Shipborne Automatic Identification System (AIS)' para 4.

[2] ibid, para 44.

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broadcast by that target, its actions can also be monitored. Many problems common to tracking targets by radar, namely clutter, target swap as ships pass close by and target loss following a fast manoeuvre, do not affect AIS. AIS can also assist in the identification of targets, by name or call sign and by ship type and navigational status.'[3] AIS is thus a means to assess ship behaviours and has advantages over traditional systems like radar. It is therefore seen as 'a useful source of supplementary information'[4] to existing radar systems. In addition to ensuring the safety of ships, AIS is increasingly used by States as a tool to enhance maritime surveillance.[5]

B. Misuse of Automatic Identification Systems

Despite its important function in avoiding maritime collisions, there is a widespread practice of vessels regularly switching off their AIS. The practice is termed 'going dark' as it makes it harder to detect those vessels. Disabling the system can be considered illegal in some circumstances, as will be explained below. Motivations for vessels 'going dark' can include security reasons, but it is also common practice by vessels engaging in Illegal, Unreported and Unregulated (IUU) fishing and other illegal activities such as smuggling and encouraging trade with sanctioned countries.

The trend of AIS switching-off in Major Fishing Area 51, as defined by the Food and Agriculture Organization of the United Nation (FAO), situated in the Western Indian Ocean, was the focus of an investigation by the Blue Marine Foundation. In 2022, the Blue Marine Foundation commissioned a report by OceanMind which analysed the AIS data of EU-owned purse seine vessels operating in that region.[6] This followed an earlier report published by the Blue Marine Foundation which analysed the fleets' AIS use dating back to 2017.[7] The data on 'switching off' AIS, ie the non-transmission of AIS data, relied on in this article is that collected by OceanMind.

The report found that over two years, between January 2017 and April 2019, French-flagged purse seine vessels failed to transmit AIS data for 68.2 per cent of the study period and Spanish-flagged vessels for 80.6 per cent of the time. These figures were high and further analysis followed in a recent study.[8] In

[3] ibid.

[4] ibid, para 4.

[5] R Herbert-Burns, S Bateman and P Lehr (eds), *Lloyd's MIU Handbook of Maritime Security* (CRC Press/Lloyd's MIU 2009) 23.

[6] OceanMind, 'IOTC Catch-Effort Assessment, and AIS Usage by Flag-States in the Western Indian Ocean, 2016-2020' (OceanMind Ltd 2022) <https://bit.ly/OceanMindReport2022>; Purse seine vessels are types of fishing vessels that use a vertical net 'curtain' to surround schools of fish, the bottom of which is then drawn together to enclose the fish, like tightening the cords of a drawstring purse. (See MSC, 'Purse Seine' <https://www.msc.org/what-we-are-doing/our-approach/fishing-methods-and-gear-types/purse-seine>).

[7] J Rattle, 'Automatic Identification System (AIS) Usage by Spanish and French-flagged Vessels' (Blue Marine Foundation 31 August 2020) <https://bit.ly/AISFranceSpain2019>.

[8] J Rattle and G Duncan-Jones, 'Fishing outside the Lines: Widespread Noncompliance in Indian Ocean Fisheries' (Blue Marine Foundation 2022) <https://www.bit.ly/IOTCReport>.

addition to vessels flying the French and Spanish flags, purse seine vessels beneficially owned by French and Spanish companies which reflag to Seychelles and Mauritius were also considered. Registering and reflagging to Mauritius and Seychelles allows the EU-owned vessels to access the waters of those coastal States and to benefit from their tuna quota allocation. Those vessels are effectively an 'extension of the EU's distant-water fleet'.[9] The second study focuses on the period between 1 January 2019 and 31 December 2020.

The data collected was as concerning as the initial study, showing considerable AIS non-compliance by all fleets studied, including one Spanish vessel which had a continuous AIS transmission gap of nine months. Areas within which those activities were recorded include the high seas, the boundaries of Exclusive Economic Zones (EEZs), and areas inside those EEZs. EEZs studied included those of Seychelles, Mauritius, Madagascar, Somalia, Tanzania, Kenya, UAE, Yemen, Iran, Oman, Pakistan, South Africa and the Chagos Archipelago. OceanMind concluded that '… comparisons of AIS transmission with reported areas of catch-effort (for 2019) suggest that significant fishing activity has been undertaken by these flag-states without associated use of AIS'.[10] A third study covering 1 January 2021 to 31 August 2022 confirmed the ongoing trend of switching off AIS by the EU fleets.[11]

Looking into possible motivations behind those AIS switching-off trends, piracy threats are considered in the reports, but they conclude as follows: '[t]he location of these start/end transmissions do not appear to be significantly associated with the HRA [High-Risk Area] for piracy, with AIS transmissions being low, both within and a considerable distance from the HRA'.[12] The missing AIS data has been flagged and further investigations to explain this have been called for.

Two significant concerns stem from the findings of these reports: (i) the scarcity of AIS transmissions means that, besides the risk of collision, there is a higher risk of these gaps relating to IUU activity,[13] and (ii) switching off the AIS could, in itself, be an illegal act. It is thus essential to understand why vessels, in general, would switch off their AIS because 'AIS data can help to identify "anomalies" of tracks to find criminal activities'.[14]

[9] ibid 10.

[10] OceanMind, 'IOTC Catch-Effort Assessment, and AIS Usage by Flag-States in the Western Indian Ocean, 2016-2020' (n 6) 6.

[11] OceanMind, 'AIS Usage by Flag States in the Indian Ocean, 01Jan 2021-31Aug 2022' (OceanMind Ltd 2022) <https://bit.ly/OceanMindAIS2022>.

[12] OceanMind, 'IOTC catch-effort assessment, and AIS usage by flag-states in the western Indian Ocean, 2016-2020' (n 6) 6–7.

[13] OceanMind, 'AIS Usage by Flag States in the Indian Ocean, 01Jan 2021-31Aug 2022' (n 11) 17.

[14] E Ties et al, 'The Promises and Perils of Automatic Identification System Data' (2021) 178 Expert Systems with Applications 2.

Correlating this phenomenon of missing AIS data with that of additional literature, a common trend can be seen in previous reports of IUU fishing in FAO Fishing Area 51. The Global Atlas of AIS-based fishing activity,[15] published by the FAO in 2019, also states similar facts concerning AIS use in that region. It reports that because many vessels switch off their AIS, the fishing activity of most industrial tuna purse seine vessels cannot be identified by AIS. It is while arriving at and leaving port that AIS is most often operational; for example, the report notes: 'AIS detects properly the number of industrial purse seiners from the Seychelles (13) and European Union (19), but that almost all these vessels turn off their AIS after leaving port.'[16] A 2019 study focusing on the Seychellois fleet and taking into account Vessel Monitoring System (VMS) and logbook data found that 'there is a high likelihood of considerable AIS switch off, particularly for the purse seine fleet and their supply vessels'.[17]

C. *Importance of Monitoring Automatic Identification System Use*

In addition to its collision-avoidance functions, AIS helps to monitor and track fishing vessels and their behaviour at sea and can help to identify related illegal activities. These can range from IUU fishing to organised crimes. Although it cannot be assumed that all vessels switching off their AIS for extended periods are engaging in illegal activities, the deliberate manoeuvre to tamper with the system and 'go dark' does raise suspicion.

IUU fishing contributes to overfishing, which leaves fish stocks vulnerable to rising ocean temperatures. There is now evidence that climate change and overfishing interact in impacting some fish stocks, as reported by the Intergovernmental Panel on Climate Change (IPCC).[18] Thus, overfishing and IUU fishing activities are anthropogenic pressures which can and should be controlled for the stocks to be able to recover and given a chance to thrive. A reduction in overfishing would contribute to the Sustainable Development Goals (SDGs): '… the SDGs are interlinked, and achieving SDG 14, and especially the targets of increasing economic benefits to SIDS [Small Island Developing States] and Least Developed Countries, as well as eliminating illegal fishing and overfishing, will benefit all other SDGs'.[19]

[15] M Taconet, D Kroodsma and JA Fernandes, *Global Atlas of AIS-based Fishing Activity: Challenges and Opportunities* (FAO Rome 2019).

[16] H Murua et al, 'AIS-based Fishing Activity in the Western Indian Ocean (FAO Area 51)' in Taconet, Kroodsma and Fernandes ibid 258.

[17] AE Nieblas et al, 'Seychelles VMS/Logbook comparison for Tuna Fisheries (FAO Area 51)' in Taconet, Kroodsma and Fernandes, ibid 96.

[18] NL Bindoff et al, *Changing Ocean, Marine Ecosystems, and Dependent Communities* in H-O Pörtner et al, (eds), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (CUP 2019) 505.

[19] ibid 520, citing Singh et al, 'A Rapid Assessment of Co-benefits and Trade-offs among Sustainable Development Goals' (2018) 93 Marine Policy 223; see also UN Department of

The use of AIS in fisheries management is a debated issue, as will be shown below. Nonetheless, in terms of assessing illegal activities at sea, AIS could prove to be an essential technological tool. It has been recognised that AIS 'provides important insights into the character of fisheries in the Indian Ocean'.[20] It presents the opportunity to detect illegal practices in EEZs and on the high seas. The high seas face the least regulation and enforcement; '[h]igh seas and straddling stocks are overfished at twice the rate of those within national jurisdictions'.[21] The practice of vessels reflagging to another country is also problematic as '[h]igher IUU fishing risks were also related to flags largely connected with high ownership by countries other than the flag state'.[22]

As stated above, IUU fishing is only one of the possible explanations underlying illegally switching off the AIS. 'Dark' vessels can engage in a wide range of illegal activities. The United Nations Office on Drugs and Crime (UNODC) published its report on organised crimes in the fishing industry and concluded, inter alia, that:

> … fishing vessels are used for the purpose of smuggling of migrants, illicit traffic in drugs (primarily cocaine), illicit traffic in weapons, and acts of terrorism. Fishing vessels are used as mother ships, ie vessels that serve as base stations from which criminal activities take place, as supply vessels for other vessels engaged in criminal activities, or simply as cover for clandestine activities at sea and in port.[23]

A recent article found that 15 per cent of smuggling occurs in the Arabian Sea and FAO Fishing Area 51 in the Western Indian Ocean.[24] Following this extensive study of 20 years of fishing-related offences worldwide, 6,853 incidents were recorded, including illegal fishing, human rights abuse, smuggling of weapons, drugs and other illicit items, illegal transhipments, illegal use of flags, etc.[25] Switching off the AIS is also a way for trade to continue from sanctioned countries,[26] which is illegal.

Economic and Social Affairs, 'Goal 14: Conserve and Sustainably Use Oceans, Seas and Marine Resources for Sustainable Development' <https://sdgs.un.org/goals/goal14>.

[20] WWF and TMT, 'Unregulated Fishing on the High Seas of the Indian Ocean' (WWF/TMT 2020) 9.

[21] DC Dunn et al, 'Empowering High Seas Governance with Satellite Vessel Tracking Data' (2018) 19 Fish and Fisheries 731.

[22] ER Selig et al, 'Revealing Global Risks of Labour Abuse and Illegal, Unreported, and Unregulated Fishing' (2022) 13 Nature Communications 2.

[23] UNODC, 'Transnational Organized Crime in the Fishing Industry' (UNODC 2011) 4.

[24] D Belhabib and P Le Billon, 'Fish Crimes in the Global Oceans' (2022) 8(12) Science Advances.

[25] ibid.

[26] See eg K McQue, 'Smuggled Iranian Fuel and Secret Night-time transfers: Seafarers Recount How It's Done' (*The Washington Post*, 3 January 2022) <https://www.washingtonpost.com/world/middle_east/iran-oil-smugglng-sanctions/2022/01/02/97a6bf90-5457-11ec-83d2-d9dab0e23b7e_story.html>; I Ralby et al, 'Maritime Crime during the Pandemic: Unmasking Trends in the Caribbean' *Center for International Maritime Security* (30 July 2022) <https://cimsec.org/maritime-crime-during-the-pandemic-unmasking-trends-in-the-caribbean/>; and Project Sandstone, 'Anatomy of a North

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Interpreting evidence of widespread AIS non-compliance in the broader context, one cannot know for certain, unless further investigations are undertaken, exactly what activities are being carried out when vessels 'go dark'. The Indian Ocean Tuna Commission (IOTC) set up an observer scheme to monitor fishing vessels on their journeys,[27] which was suspended during the pandemic.[28] Although AIS has some disadvantages, for example, it can be subject to 'spoofing' (which is why further investigation is called for in suspicious cases), this should not detract from the fact that there is a disregard for AIS rules and that masking a ship's location and identity could enable additional illegal behaviours.[29]

It is true that VMS data could be used to verify vessel positioning when they 'go dark', but the availability of this data is restricted to the fishing authorities of the relevant flag States unless there are additional agreements in place to share the data. This is not easily available nor publicly accessible data, except in a few countries.[30] Nonetheless, switching off AIS has been highlighted as a practice that enables IUU fishing and other illegal activities as outlined above. Since it can prove difficult to detect illegal activities like smuggling once a ship reaches shore, identifying and deterring the switching-off of the AIS that enables such activities could deter serious crimes.

The aim of this article is to determine whether the switching off of the AIS by purse seine fishing vessels operating in the Western Indian Ocean is an illegal and sanctionable act. The focus is on EU-owned vessels flying French and Spanish flags and those that have reflagged to Mauritius and Seychelles, as they have the most concerning AIS transmission gaps during the 2016–2022 period. This article seeks to assess whether it is illegal for vessels operating in FAO Major Fishing Area 51 to switch off their AIS, and it further considers how this behaviour could be deterred by the relevant States and non-governmental actors, specifically, maritime insurers.

Having laid out the importance of AIS use above, the legal analysis follows in section II. The AIS provisions applicable to the EU-owned vessels are determined through a systematic analysis of international laws relevant to AIS, AIS provisions under EU law and the domestic laws of France, Spain, Mauritius and Seychelles. In addition to the flag State laws that apply to those vessels, the AIS laws of some of the EEZs that they could have accessed are also considered as the laws of those countries would apply to

Korean Coal Smuggling Operation' (*The Diplomat*, 16 April 2020) <https://thediplomat.com/2020/04/anatomy-of-a-north-korean-coal-smuggling-operation/>.

[27] IOTC Res 11/04 on a Regional Observer Scheme.

[28] IOTC Circular 2020-14 Temporary suspension of observer deployments under the IOTC Regional Observer Programme.

[29] 'Spoofing' refers to the intentional manipulation of AIS signals resulting in erroneous or missing AIS data.

[30] The VMS data of Belize, Brazil, Chile, Costa Rica, Ecuador, Indonesia, Panama, and Peru are provided to Global Fishing Watch and are hence publicly available. (Global Fishing Watch, 'Transparency') <https://globalfishingwatch.org/transparency/>.

those vessels as well. These laws are reviewed in the context of the OceanMind and Blue Marine Foundation data to identify any breach of AIS legislation by the vessels included in the study. Case law relating to AIS is scarce but where available, it is considered in this article. A case review is used to identify reasons that have been raised to justify switching off the AIS. In 2021, the Coalition for Transparent Tuna Fisheries (CTTF) objected to several Spanish vessels being certified by the Marine Stewardship Council (MSC). The responses to the lack of AIS data and reasons given during the MSC objection procedure evidence how the fleets operate within the AIS legal parameters and the legitimacy of this is considered in section III.

Finally, after assessing the illegality of switching off the AIS by EU-owned purse seiners in FAO Major Fishing Area 51, section IV considers how governmental and non-governmental actors could deter switching off AIS in the region whilst section V concludes with some recommendations.

II. THE LEGAL POSITION

A. International Legal Framework

The mandatory requirement for some vessels to have AIS in place stems from SOLAS, a key convention regulating the safety of merchant ships. Under Chapter V Regulation 19 of SOLAS, all ships of 300 gross tonnage or more engaged on international voyages must be fitted with an AIS.[31] The provision applies to all ships and thus encompasses purse seine fishing vessels. The term 'international voyages' under SOLAS refers to a voyage from a port where SOLAS applies to a port outside that country and vice versa.[32] Its application might thus depend on whether the vessels are calling at another port, which can be difficult to determine when ships leave port and 'go dark' for extensive periods of almost ten months at a time. In cases where SOLAS applies, Regulation 1.4 also confers a discretion upon the flag States to establish to what extent the AIS provisions shall not apply to fishing vessels.[33] This will be further considered in the analysis of the legal frameworks of the flag States below, which will also show that, irrespective of the application of SOLAS, States have implemented AIS-specific laws that go beyond the SOLAS provisions.

There is a mandatory requirement for the system to be maintained in operation at all times.[34] SOLAS lists as mandatory functions of AIS: the monitoring and tracking of ships; the exchange of data with shore-based facilities; providing information about the vessel, namely the identity, location, speed etc and, allowing the vessel to receive similar information from other ships that also use AIS.[35] There are instances where those

[31] International Convention for the Safety of Life at Sea (1974) 1184 UNTS 2, (SOLAS) Ch V, reg 19.2.4. [32] ibid Ch I, reg 2(d). [33] ibid Ch V, reg 1.4. [34] ibid reg 19.2.4.7. [35] ibid reg 19.2.4.5.

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functions do not need to be undertaken and/or the AIS does not have to be in operation; these are 'where international agreements, rules or standards provide for the protection of navigational information'.[36]

When applying the SOLAS AIS provisions, it is mandatory to apply the relevant International Maritime Organisation (IMO) guidelines on operating AIS,[37] that is, the Revised Guidelines for the Onboard Operational Use of Shipborne Automatic Identification Systems (AIS).[38] The IMO guidelines list the objectives of AIS use as being the safety of life at sea and of navigation, and the protection of the marine environment.[39] Building on the requirement for the AIS to be in operation at all times, it specifies that the system should be on when the ship is underway or at anchor.[40] Importantly, it highlights the advantages of using AIS as a means of monitoring activities of vessels: '[b]y monitoring the information broadcast by that target, its actions can also be monitored'[41] and it offers a better means of tracking vessels compared to radar.

The AIS should also comply with the IMO's Performance Standards.[42] These specify the objectives of using AIS as a collision avoidance tool which are: a means for shore-based authorities to obtain information about the ship and its cargo, and as a traffic management system. As per these Performance Standards, AIS should be capable of continuously providing information to the competent authorities and of providing positional information 'at a data rate adequate to facilitate accurate tracking by a competent authority and other ships'.[43]

Of particular importance for this article, at the international level, it is the IMO guidelines that outline circumstances when AIS can be switched off:

> … if the master believes that the continual operation of AIS might compromise the safety or security of his/her ship or where security incidents are imminent, the AIS may be switched off. Unless it would further compromise the safety or security, if the ship is operating in a mandatory ship reporting system, the master should report this action and the reason for doing so to the competent authority. Actions of this nature should always be recorded in the ship's logbook together with the reason for doing so. The master should however restart the AIS as soon as the source of danger has disappeared ….[44]

There are different ways of operating AIS, but the IMO guidelines specifically use the term 'switching off' which will be discussed further in section III. Therefore, although provision is made for AIS to be switched off, it is limited to exceptional circumstances where the safety of the ship warrants such action. Those safety and security risks are not defined but they have been interpreted by IMO and industry guidance to include, for example, piracy and armed-robbery

[36] ibid reg 19.2.4.6. [37] ibid reg 19.2.4.7.
[38] IMO Resolution A.1106(29) 2015. Revised Guidelines for the Onboard Operational Use of Shipborne Automatic Identification Systems (AIS). [39] ibid, para 4. [40] ibid, para 22.
[41] ibid, para 44.
[42] IMO Resolution MSC74(69). Recommendation on 1998, Annex 3, Performance Standards for an Universal Shipborne Automatic Identification System (AIS).
[43] ibid, Annex 3, para 3.2.4. [44] IMO Resolution (n 38) para 22.

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risks.[45] Disabling AIS is also conditional upon the system being switched back on 'as soon as' the risk abates. The action of switching off the system, together with its underlying reason, must 'always' be recorded in the ship's logbook. There is a reporting requirement to the competent authority in certain geographic locations with mandatory ship reporting systems in place. However, there are currently no such areas in the Western Indian Ocean, and this reporting requirement would thus not apply to the vessels operating in that region. However, flag and coastal State laws might also have reporting requirements, which will be explored next.

B. EU Law and Laws of Coastal States

International laws are not always reflected at the domestic level, making their enforcement challenging. However, coastal States have recently been strengthening their fisheries legislation to ensure effective monitoring and protection of their waters and marine resources. The primary and secondary legislation of flag and coastal States increasingly contains AIS-specific laws. EU laws in relation to French and Spanish flagged vessels are thus reviewed, but so are the laws of the coastal states where some EU-owned vessels studied are registered. The laws applicable to EU vessel owners are also considered.

1. EU-flagged vessels

EU law on flag State requirements applies to EU vessels and imposes a duty on the Member States to enhance maritime safety and protect the environment.[46] Allowing a ship to fly its flag places a mandatory duty on a Member State to 'verify the safety records of the ship by all reasonable means'.[47] Furthermore, under Regulation 2017/2403, Member States must ensure that each of their vessels 'are monitored accordingly, irrespective of where it operates and the framework under which it does so'.[48] Thus, EU vessels operating in the Indian Ocean should be monitored.

The law reflects the SOLAS provisions on the need for AIS to be fitted and maintained in operation. Article 10(1) of the EU Regulation 1224/2009 reads:

[45] IMO, MSC.1/Circ.1334 'Guidance to Shipowners and Ship Operators, Shipmasters and Crews on Preventing and Suppressing Acts of Piracy and Armed Robbery against Ships' (23 June 2009); IMO, MSC.1/Circ. 1601 'Revised Industry Counter Piracy Guidance' (8 October 2018); BIMCO et al, 'BMP5 Best Management Practices to Deter Piracy and Enhance Maritime Security in the Red Sea, Gulf of Aden, Indian Ocean and Arabian Sea' (June 2018).

[46] Council Directive (EC) 2009/21 on compliance with flag State requirements [2009] OJ L131/132, preamble (1) art 1.

[47] ibid, art 4.

[48] Council Regulation (EU) 2017/2403 on the sustainable management of external fishing fleets [2017] OJ L 347/81.

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> … a fishing vessel exceeding 15 metres' length overall shall be fitted with and maintain in operation an automatic identification system which meets the performance standards drawn up by the International Maritime Organisation according to chapter V, Regulation 19, section 2.4.5 of the 1974 SOLAS Convention.[49]

Article 109 of EU Regulation 1224/2009 also states that the AIS data collected must be complete and accurate, and it also provides for the cross-checking, analysis and verification of the AIS data. References to the use of AIS data for cross-checking purposes do not affect the mandatory requirement for the AIS to be maintained in operation under this regulation or the provisions described below.

EU Directive 2002/59/EC is also applicable to the EU-flagged vessels studied. Article 6a and the corresponding Annex II make it mandatory for fishing vessels of an overall length of more than 15m, registered in the EU, to be fitted with an AIS complying with IMO performance standards, and to maintain the system in operation at all times.[50] It further provides that in exceptional circumstances, where the master considers it necessary in the interest of safety, the AIS may be switched off. The mandatory IMO guidelines are applicable to EU vessels. AIS must always be in operation whether the ships are underway or at anchor. If the system is switched off because of imminent security risks it must be recorded in the logbook and the system switched back on as soon as the danger has disappeared. The provisions of EU Directive 2002/59/EC relating to AIS use are implemented in the domestic laws of France[51] and Spain.[52] They go further than SOLAS provisions and apply to both international and non-international voyages.

Spain requires all Spanish-flagged vessels to always have their AIS on unless the master deems it necessary to switch off the system for the safety of the ship.[53] Switching off AIS is a marine traffic offence under Article 307.3.o) of the Royal Decree 2/2011 for ships navigating without a required system permitting their localisation and tracking at all times.[54] Offenders risk a fine of up to 120,000 euros.[55] France has also adopted similar provisions requiring fishing vessels

[49] Council Regulation (EC) 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy [2009] OJ L343 (Reg 1224/2009).

[50] Council Directive (EC) 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system [2002] OJ L208, art 6a.

[51] A. 23 novembre 1987 relatif à la sécurité des navires et à la prévention de la pollution, NOR : MERR8700184A (France), ch 221-V, art 228-10.

[52] Real Decreto 201/2012, de 23 de enero, por el que se modifica el Real Decreto 210/2004, de 6 de febrero, por el que se establece el sistema de seguimiento y de información sobre el tráfico marítimo; Real Decreto Legislativo 2/2011, de 5 de septiembre, por el que se aprueba el Texto Refundido de la Ley de Puertos del Estado y de la Marina Mercante (Spain).

[53] ibid 6a.

[54] Real Decreto Legislativo 2/2011, de 5 de septiembre, por el que se aprueba el Texto Refundido de la Ley de Puertos del Estado y de la Marina Mercante, art 307.3.o).

[55] ibid, art 312.2.c.

to maintain AIS in operation at all times.[56] For a breach of this provision, the captain can be fined a maximum of 1,500 euros (and 3,000 euros for a repeat offence) and the company that owns the ship risks a fine of up to five times that sum (and up to ten times in case of a further offence occurring within a year of the previous one).[57] Furthermore, a recent regulation from the French department, Réunion Island, in FAO Major Fishing Area 51, also requires French-flagged vessels to maintain their AIS on at all times in its territorial waters and all French EEZs of the southern Indian Ocean. A failure to do so could attract a fine of up to 150,000 euros and a period of imprisonment, not exceeding one year.[58]

Looking at AIS data collected for EU-flagged purse seiners switching off their AIS for extensive periods of up to nine months at a time and spanning areas outside the HRA piracy area, the behaviour of those vessels is not in line with the above legal provisions and IMO guidelines on AIS switching off.

EU-flagged vessels fishing in Seychelles waters are also subject to additional conditions set out in the Fisheries Partnership Agreement between Seychelles and the EU, stating that 'Union vessels shall comply with … the provisions under the relevant Seychelles legislation unless otherwise provided by the Agreement and this Protocol and in accordance with the principles of international law.'[59] Further provisions under Seychelles' legislation are also applicable and referred to below.[60]

2. *Mauritian-flagged vessels*

EU-owned vessels that reflag to Mauritius are governed by the laws of Mauritius. Flag States are able to limit the application of SOLAS AIS provisions in the case of fishing vessels and Article 108(2)(f) of the Merchant Shipping Act 2007 specifies that SOLAS does not apply to fishing vessels.[61] The SOLAS AIS provisions analysed above are thus not applicable to the Mauritian-flagged vessels studied in this article. However, Mauritius has implemented AIS-specific legislation which applies to fishing vessels registered in Mauritius and thus to the EU-owned vessels that reflag to

[56] A. 23 novembre 1987 (France).

[57] Décret n°84-810 du 30 août 1984 relatif à la sauvegarde de la vie humaine en mer, à la prévention de la pollution, à la sûreté et à la certification sociale des navires, art 57(I)(2); Code pénal, art 131-13

[58] Arrêté préfectoral 2080/2022 du 14 Octobre 2022 réglementant les comptes rendus obligatoires, le suivi du trafic, le mouillage et le stationnement dans les zones économiques exclusives et eaux territoriales françaises du sud de l'océan Indien; Code des transports, art L5242-2.

[59] Protocol on the implementation of the sustainable fisheries partnership agreement between the European Union and the republic of Seychelles (2020-2026) para 2.

[60] Merchant Shipping Act 2004; Fisheries Act 2014 (Seychelles).

[61] Merchant Shipping Act 2007 (Mauritius) section 108(2)(f).

Mauritius.[62] The Fisheries and Marine Resources (Automatic Identification System) Regulations 2016 goes further than other AIS legal instruments previously mentioned. Regulation 5 specifically places a positive onus on the ship master, owner or agent of vessels to ensure that: the AIS is capable of transmitting at all times to the National Coast Guard; that it is not capable of being manually overridden; and that it allows neither the input nor output of false positions.[63] Furthermore, the data that the AIS must be able to transmit includes the identification of the vessel, its geographical position together with the date and time, and the speed and course of the fishing vessel.

Regulation 6 makes it mandatory for the AIS to be operational at all times except when the vessel is anchored in its port at Port Louis or in the lagoon area.[64] A failure to do so is an offence which can attract a fine between Rs 2,000 and Rs 50,000 and imprisonment not exceeding two years. This provision also states that a vessel may 'switch off' its AIS when it is anchored in the port but only after notifying the National Coast Guard Operations Room. The AIS must then be operated at least six hours before the vessel leaves port 'so that the necessary data is duly transmitted …'. Other offences attracting a similar fine include interrupting the system's power supply, causing a break in data transmission or altering it, disconnecting the system, tampering, interfering, damaging, destroying or rendering inoperative the AIS.

The regulations go even further and deal specifically with instances where the AIS might not function properly. Any malfunctioning of the system must be reported immediately to the local authority as per Regulation 6(4)(a). There is a duty to replace or repair the equipment within 30 days of the report and an additional duty to report the positioning of the vessel every four hours to the National Coast Guard during the period of replacement/repair.[65] The law requires that the system be replaced if an AIS is reported as malfunctioning on more than three occasions over 12 months.[66] Unlike SOLAS, where security reasons can justify the switching off of AIS, Mauritian law does not explicitly make provision for this. Looking at any defence to the switching off of the AIS, Regulation 8 provides that it is a defence for a person charged with the above offences to prove that he/she had lawful authority or that there was a reasonable excuse explaining the conduct. The term 'reasonable excuse' has not been defined nor interpreted, although it follows that if, for example, a defence of piracy risk is raised, proof of this will need to be provided.

Applying those provisions to the case of EU-owned, Mauritian-flagged vessels, the missing AIS data, especially over lengthy periods, suggests that those vessels are not complying with the AIS laws of Mauritius. The lengthy gaps in AIS transmissions could amount to breaches of either Regulation 6(1),

[62] The Fisheries and Marine Resources (Automatic Identification System) Regulations (GN No. 116 of 2016) (Mauritius) reg 3 (AIS Regulations). [63] ibid reg 5. [64] ibid reg 6(1). [65] ibid reg 6(4). [66] ibid reg 6(5).

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a failure to operate AIS at all times, or Regulation 7 for causing a break in transmission of data. Although the AIS legal requirements seem more extensive in this jurisdiction and imprisonment is listed as a sanction, the very low fines should be noted, which amount to a maximum of about USD1,000. Mauritian fisheries legislation is otherwise quite robust and caters for the adequate management of fishing vessels flying its flag and could lead to the identification and deterrence of illegal AIS switching off behaviour upon proper enforcement of the laws.

3. *Seychellois-flagged vessels*

The laws of Seychelles do not specifically refer to AIS. Nonetheless, the Seychelles Fisheries Sector Strategy and Policy 2019[67] refers to the strengthening of monitoring, control and surveillance (MCS) measures, including encouraging the use of new technologies like AIS, in fisheries monitoring. General provisions for the implementation of SOLAS in domestic law have been adopted, for example, the Merchant Shipping Act 2004, amended in 2019, provides that SOLAS shall have the force of law in Seychelles. It applies to Seychelles ships wherever they operate and all other ships in port or within the territorial waters of Seychelles.[68] The Act does not limit nor exclude its application to fishing vessels, suggesting that the SOLAS AIS provisions apply to the EU-owned, Seychellois-flagged vessels studied, subject to the application of the 'international voyage' requirement under SOLAS. Upon any breach of SOLAS by a Seychelles-registered vessel, the Registrar can suspend the Certificate of Registry of the ship until the failure is rectified. The master and owner of the boat can both be found guilty of non-compliance with SOLAS.[69] As in the case of Mauritius, however, the fine that can be imposed is very low (SCR2,000)[70] despite having been reviewed in 2019, and is thus unlikely to have a deterrent effect.

Another law potentially relevant to AIS is the Fisheries Act of 2014.[71] The law applies to fishing vessels in Seychelles waters and fishing vessels registered in Seychelles wherever they may be.[72] This law, although it does not specifically refer to AIS, distinguishes between vessel monitoring devices and vessel tracking devices. Under the Act, vessel tracking devices are defined as equipment which can independently transmit and automatically record information about a vessel's location, sailing route and fishing activities. This definition could be interpreted as encompassing AIS, meaning this law would be applicable to the Seychellois-flagged vessels studied in this article and relevant to any other vessel that accessed Seychelles waters with an

[67] Ministry of Fisheries and Agriculture, *Seychelles Fisheries Sector Policy and Strategy* (2019) (Seychelles) 21.
[68] Merchant Shipping Act 2004 (Seychelles) section 4.
[69] ibid, section 86(1).
[70] Merchant Shipping (Amendment) Act 2019 (Seychelles).
[71] The Fisheries Act 2014 (Seychelles).
[72] ibid, section 2.

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AIS switched off. Under Section 64(1)(c), a person who 'tampers or wilfully destroys, damages, renders inoperative or otherwise interferes'[73] with the system would be liable, upon conviction, to a maximum fine of SCR 450,000.

Therefore, under the laws of Seychelles, the EU-owned, Seychellois-flagged vessels studied that systematically switch off their AIS as they leave port,[74] with considerable AIS gaps when navigating on the high seas, could be in breach of the Merchant Shipping Act 2004 for non-compliance with SOLAS. If the Fisheries Act 2014 'vessel tracking devices' provisions are interpreted as applying to AIS, the vessels that switch off their AIS could also be in breach of Section 64 of the Fisheries Act. Any deliberate action interrupting the transmission of AIS data could be interpreted as tampering, rendering inoperative or otherwise interfering with the AIS under those laws.

4. *EU-owned vessels*

Several vessels are registered in coastal States like Mauritius or Seychelles although they are beneficially owned by EU entities.[75] The use of special purpose vehicles in flag jurisdictions is often a means to limit the legal risks of the actual owners, that is, the beneficial owners. Nonetheless, in some instances, this reflagging process might no longer give such protection to the owners as the domestic laws have been strengthened. As shown above, countries like Mauritius have implemented AIS regulations which are more stringent than the SOLAS AIS requirements.

Under the Merchant Shipping Act of Mauritius, any pecuniary sanction imposed on the owner of a ship under Mauritian law will also be imposed on other persons beneficially interested in the ship.[76] A similar provision is found in the law of Seychelles.[77] Hence, pecuniary sanctions relating to AIS non-compliance would also be imposed on the beneficial European owners. Nonetheless, enforcement of these laws is lacking.

French domestic laws applicable to companies could also be relevant concerning French-owned vessels. France has implemented an innovative piece of legislation, *loi n°2017-399 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre*[78] imposing human rights and environmental due diligence obligations on companies. Given that crimes linked to human rights and environmental law violations have sometimes been linked to AIS switching-off practices in general literature, this law could be relevant. However, to be triggered, the following conditions must be met:

[73] ibid, section 64(1)(c).

[74] Murua et al (n 16).

[75] M Vyawahare, 'Red flag: Predatory European Ships Help Push Indian Ocean Tuna to the Brink' (*Mongabay*, 8 April 2021) <https://news.mongabay.com/2021/04/red-flag-predatory-european-ships-help-push-indian-ocean-tuna-to-the-brink/>.

[76] Merchant Shipping Act 2007 section 18 (Mauritius).

[77] Merchant Shipping Act 2004 section 49(1) (Seychelles).

[78] L n°2017-399, 27 mars 2017, NOR: ECFX1509096L(France).

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(i) the companies must comprise at least 5,000 employees in France or (ii) at least 10,000 in France or elsewhere. Companies that own French fishing vessels might not satisfy those requirements.

The EU might adopt similar laws. On 23 February 2022, the European Commission published a proposal for a Corporate Sustainability Due Diligence Directive.[79] The scope of this remains to be determined, but if such a law is adopted and encompasses fishing companies, it would be an effective additional tool to fight illegal AIS switching-off practices and other underlying illegal acts.

5. *Applicable laws based on the location of the vessels*

In addition to the flag State legal requirements assessed above, vessels must also comply with the laws regulating the waters where they are navigating, as mentioned in the case of Seychelles. Some of the French and Spanish vessels studied were found to have accessed EEZs of other coastal States in FAO Major Fishing Area 51. OceanMind states: '[d]ue to the length of the gaps, it is possible that the vessels have engaged in operations in other EEZs or the HRA'.[80]

From the above legal analysis, EU AIS requirements apply to EU flagged vessels wherever they are operating; Mauritian AIS laws apply to Mauritian vessels wherever they are; and the Seychelles legislation also applies to the Seychelles flagged vessels wherever they are. Therefore, if those vessels accessed other countries' EEZs when they went 'dark', they would still be caught by a breach of AIS provision under their flag State's legal framework. This section briefly looks at AIS-specific laws of some other EEZs which might also apply to the vessels studied if they accessed those regions while 'going dark'.

As stated above, SOLAS does not apply to fishing vessels in Mauritius and the AIS-specific regulation only applies to vessels registered in Mauritius. However, in the case of Seychelles, the laws also apply to foreign ships. The Merchant Shipping Act 2004 applies to foreign vessels that switch off AIS in port or within the territorial sea of Seychelles. If applicable to AIS, the Fisheries Act 2014 has a wider scope than the Merchant Shipping Act 2004 as it applies to foreign vessels in Seychelles waters which encompass the 'exclusive economic zone, the territorial sea, archipelagic waters, internal waters and all other waters subject to the fisheries jurisdiction of Seychelles'.[81] The Réunion island regulations referred to above concerning the French-flagged vessels also apply to foreign ships that carry an AIS and

[79] Commission, 'Proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and Amending Directive (EU) 2019/1937' COM (2022) 71 Final, 23 February 2022.

[80] OceanMind, 'AIS Usage by Flag States in the Indian Ocean, 01Jan 2021-31Aug 2022' (n 11) 28.

[81] The Fisheries Act 2014 (Seychelles) section 3.

access Réunion island's territorial waters and other French EEZs of the southern Indian Ocean. Any of the vessels studied could be caught by these provisions if they accessed those Seychelles or French waters without transmitting AIS.

Other coastal States like Tanzania and Kenya also have AIS-specific rules. The latest OceanMind study includes one Tanzanian vessel. Kenya's AIS legislation specifically excludes fishing vessels from the scope of its application.[82] However, Tanzania has recently adopted AIS laws under its fisheries legislation which confirm the application of SOLAS Chapter V Regulation 19 to fishing vessels.[83] There is also a specific requirement that the vessel continually reports to the relevant Tanzanian authority and the law also provides for the authority to be notified in instances where technical failures arise and for the 'non-functioning'[84] of the AIS. This could be interpreted to include cases where the system is deliberately switched off, but no further clarification is given. Non-compliance with these AIS requirements is an offence under Tanzanian law, and fines of up to USD250,000 can be imposed. Tanzania has also implemented additional rules to be followed by all fishing vessels within 24 hours of entry and exit of its EEZ. In relation to AIS, it requires that AIS data 'shall always be operational and transmitted to the Authority when operating within Exclusive Economic Zone'.[85] The operator of a fishing vessel who fails to abide by this provision commits an offence and upon conviction could be liable to pay a fine of up to USD750,000.[86] There is a further general provision under this Act for any vessel allowed to access the waters of Tanzania to 'comply with all relevant provisions of the laws of the United Republic relating to navigational standards, seaworthiness and safety of vessels at sea'.[87] Therefore, in addition to the analysis of breaches of the AIS laws of the flag States, if vessels accessed the EEZ of Tanzania with their AIS switched off after these AIS provisions came into effect, they would be in breach of the laws of Tanzania and risk hefty fines.

As shown above, it is permissible to switch off AIS in limited circumstances, and there are often additional legal requirements under national laws regulating the use of the systems. The laws cover AIS switching-off scenarios, tampering with the system and even procedures to follow in case of a malfunctioning AIS, which include additional reporting requirements. While some laws do not use the term 'switching off', they refer to terms like tampering, damaging, rendering inoperative and interfering with the system. There are strict requirements concerning data transmission both in terms of the type of data to be transmitted and the reporting periods. Where SOLAS and IMO provisions are implemented in the laws of the jurisdictions considered above, any action to

[82] Merchant Shipping Act Cap. 389 section 382(1)(f) (Kenya).
[83] Deep Sea Fisheries Management and Development Regulations 2021 (Tanzania) reg 68(1).
[84] ibid 68(2).
[85] ibid reg 43(2).
[86] Deep Sea Fisheries Management and Development Act 2020 (Tanzania) section 36(2).
[87] ibid, section 36(1)(c).

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deliberately switch off the AIS must be recorded in the ship's logbook, and the system must be switched back on as soon as the danger is no longer present. The switching off of the AIS without abiding by the letter of those laws would amount to a breach of the legislation. The considerable transmission gaps observed among the EU-owned fleet would fall foul of the laws considered above.

III. ASSESSING MOTIVATIONS FOR SWITCHING OFF THE AIS

Having established the instances where EU-owned vessels would be in breach of AIS laws, this section critically analyses the reasons that are usually advanced to justify switching off the AIS. The objection to the MSC certification of part of the Spanish fleet is taken as an example. However, it should be noted that the reasons given in the MSC objection proceedings do not give a complete picture of the motivations for switching off the systems for all the fleets studied in the Western Indian Ocean.

CTTF objected to a recent MSC certification of a tropical tuna Indian Ocean purse seine fishery, relying partly on Blue Marine Foundation's findings about the poor transmission of AIS data by the fleet. The vessels represent about half the Spanish fleet operating in the Indian Ocean and some Seychelles-flagged vessels. The arguments relating to AIS were sustained, and the adjudicator instructed the Conformity Assessment Body (CAB), to reconsider whether AIS forms part of the fishery management strategy; whether AIS laws apply to the fishery; and if there has been AIS compliance during the assessment period.[88] A post-remand decision[89] stated that a new condition would be implemented requiring the fleets to ensure that there is no systematic non-compliance with AIS requirements. In further assessing the legality of switching off AIS in the Indian Ocean, the reasons advanced in the broader literature on AIS and those given by the fleets in the MSC proceedings, are now considered. Reasons explored include piracy, reliance on other surveillance systems, switching AIS to different modes, and commercial motivations.

A. AIS Use in Fisheries and Reliance on Other Systems

When pointing out the AIS transmission gaps of fishing fleets, a preliminary issue raised is the role of AIS in the monitoring of fishing vessels. The use of AIS as a management tool applicable to fishing vessels is a debated issue. It

[88] Marine Stewardship Council, *Decision of the independent adjudicator in the 'Objection to the final draft report and determination on the proposed certification of the AGAC Four Oceans Integral Purse Seine Tropical Tuna Fishery (Indian Ocean)'* (21 April 2022).

[89] Marine Stewardship Council, *Decision of the independent adjudicator post-remand in the 'Objection to the final draft report and determination on the proposed certification of the AGAC Four Oceans Integral Purse Seine Tropical Tuna Fishery (Indian Ocean)'* (23 June 2022).

should first be noted that although EU Regulation 1224/2009 refers to the use of AIS data for cross-checking purposes,[90] the laws identified in the legal analysis above require that AIS is always operational while transmitting the prescribed data. Whether the data should be used for fisheries management is irrelevant to the question of whether the AIS should be operational.

Secondly, the fact that AIS data is increasingly being relied upon in fisheries management cannot be ignored. Although VMS and logbook data are usually used to track fisheries-specific data, the FAO has stated, '[w]hether logbook and/or VMS data are available or not, some fishing activity can be assessed with the Automatic Identification System (AIS)'.[91] AIS is also part of fisheries monitoring systems under EU law, which provides for AIS to be used 'to assess the presence of fishing vessels …'[92] and for AIS data to be transmitted to EU agencies for reasons which include the protection of the marine environment.[93] In the post-remand consideration, the CAB concluded that 'AIS is clearly part of the fishery specific management strategy as it is part of the EU Common Fisheries Policy.'[94]

Some coastal States, referred to above, like Mauritius and Tanzania, specifically regulate AIS use under national fisheries legislation. The Seychelles Fisheries Sector Policy and Strategy 2019 encourages the use of AIS to better control fishing activities. Thus, not only is AIS being relied upon in fisheries monitoring, but it is also making its way into the legal framework which regulates fisheries. In 2018, the FISH-I Africa task force report on 'The Potential Use of AIS as a Fisheries Monitoring Tool' noted:

> The use of AIS intelligence data increases the efficiency of operational assets and increases the likelihood that fisheries officers will find violations. It also can provide a key piece of evidence when engaging in bilateral or multilateral diplomatic correspondence. The use of AIS intelligence data in these contexts is strongly recommended.[95]

The fishery also stated that they rely on other means than AIS: 'All the [fishery's] vessels have a wealth of equipment and well-trained crew for the identification [of] other ships, objects, and marine features, and take the necessary actions to rectify course and avoid collision, in a timely and secure manner. This was confirmed by the insurance companies.'[96] This statement is problematic; whether seafarers can rely on other systems and their training to operate the vessel without the use of the AIS, a system which is specifically

[90] Reg 1224/2009, art 10.
[91] Taconet, Kroodsma and Fernandes (n 15) 2.
[92] Reg 1224/2009, art 11.
[93] ibid, art 12.
[94] MSC Decision (23 June 2022) (n 89) para 6.
[95] Stop Illegal Fishing, 'The Potential Use of "Automatic Identification Systems – AIS" as a Fisheries Monitoring Tool' (Gaborone, Botswana 2018) 17.
[96] Marine Stewardship Council, 'Client response concerning the decision of the independent adjudicator on the objection to the final draft report and determination on the proposed certification of the AGAC Four oceans integral purse seine tropical tuna fishery (Indian Ocean)' (25 May 2022) 5.

used to avoid collisions, is irrelevant as the legislative requirements for AIS use and transmission of data must be complied with.

It is unclear whether the phrase 'this was confirmed by the insurance companies' suggests that insurers are aware of the practice of deliberate AIS switching-off and the extent of it. If they are, this could be problematic, especially if there has been no enhanced due diligence including, for example, the verification of logbook data, as will be examined below.

B. Piracy

Piracy was a primary reason advanced by the fishery to justify the scarcity of AIS data highlighted by OceanMind. In general, it is also the major reason given to justify AIS switching-off for vessels in the Indian Ocean.[97] The adjudicator accepted that switching off AIS for piracy reasons in this instance is appropriate and legitimate.[98] However, there is a discrepancy between the justification given by those fleets and that of recent literature and reports concerning piracy in that area.

CTTF highlighted that:

> OceanMind concluded that the generally low levels of AIS transmission by the Spanish and Seychellois-flagged purse seine fleet coupled with the observed locations of the vessels suggests that transmission behaviour and AIS use by these vessels cannot be wholly explained by the vessels turning off AIS due to the risk of piracy.[99]

This correlates with the wider literature on the subject, stating that the HRA has considerably reduced over the years to reflect the diminishing piracy risks and will be removed from 2023.[100] The HRA was implemented in 2010 in the Western Indian Ocean due to the dangers posed by Somali piracy; it represents the area with the highest likelihood of piracy attacks. As a result of decreased piracy concerns, the HRA area has been revised, with the latest reduction in the area applied in September 2021.[101]

Therefore, while piracy risk is a reason that can justify the switching off of AIS, piracy concerns have decreased over time in FAO Area 51. The International Maritime Bureau Piracy & Armed Robbery Map[102] shows little

[97] Nieblas et al (n 17) 96.

[98] MSC Decision (23 June 2022) (n 89) para 14.

[99] Marine Stewardship Council, 'Response by Coalition for Transparent Tuna Fisheries (CTTF) to the CAB's Response to the Remand to the Objection against the certification of the AGAC Indian Ocean tuna purse seine fishery' (25 May 2022) 4.

[100] M Fraende, 'Shipping Industry to Remove the Indian Ocean High Risk Area' (*BIMCO*, 22 August 2022) <https://www.bimco.org/news/priority-news/20220822-indian-ocean-high-risk>.

[101] Maritime Global Security, 'Change in Piracy Threats in Indian Ocean Prompts Re-think of High Risk Area' (17 August 2021) <https://www.maritimeglobalsecurity.org/media/1053/1-sep-2021-hra-revision.pdf>.

[102] Commercial Crime Services, 'IMB Piracy & Armed Robbery Map 2020' <https://www.icc-ccs.org/index.php/piracy-reporting-centre/live-piracy-map/piracy-map-2020>.

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to no concerns off the coasts of Kenya, Ethiopia and Tanzania over the past couple of years. Similarly, a case study of the Seychelles fisheries found that: '[t]hough piracy was less of a concern during the study period than previously, this switch-off behaviour appears to continue for the purse seine fleet as part of the standard measures put in place by onboard private security companies'.[103] Best Management Practices have been adopted over the years to guide seafarers in response to piracy risks, and these recommend that vessels' AIS remain switched on with restrictions on available data concerning the ship's identity, position, course, speed, navigational state and safety information.[104]

The IMO's guidance states:

> [i]t is up to the master's professional judgement to decide whether the AIS system should be switched off, in order for the ship not to be detected, *when entering areas where piracy is an imminent threat*, however the master should balance the risk of attack against the need to maintain the safety of navigation.[105]

OceanMind's findings show that 'AIS transmission gaps occurred in regions with a considerable distance from the HRA …'.[106]

The AIS switching-off trend across the Western Indian Ocean thus does not correlate with reports on the reduction of piracy risks nor IMO and industry guidance concerning AIS.

C. 'Silent' and 'Tanker' Modes

In response to the MSC objection, a distinction was drawn between an AIS functioning in 'blind mode'/'silent mode', 'also referred to colloquially as 'off'',[107] where the vessel can receive AIS data but does not transmit any, and a 'low power'/'tanker' mode with AIS transmission to vessels within approximately 30 miles.

It is unclear when vessels have their AIS completely switched off or in other modes. There also seems to be some confusion about whether an AIS in 'blind' or 'silent' mode is to be considered as 'switched off', as termed in the IMO guidelines identified above. The CAB was unable to conclude whether there was non-compliance in those instances:

> There is a lack of clarity within the … fleet as to the use of other AIS modes or records of AIS use. Whilst operating AIS in a 'silent' mode may comply with the

[103] Nieblas et al (n 17).

[104] BIMCO et al, 'BMP5 Best Management Practices to Deter Piracy and Enhance Maritime Security in the Red Sea, Gulf of Aden, Indian Ocean and Arabian Sea' (June 2018) 1.

[105] IMO MSC.1/Circ.1334 'Guidance to shipowners and ship operators, shipmasters and crews on preventing and suppressing acts of piracy and armed robbery against ships' (23 June 2009) (emphasis added).

[106] OceanMind, 'AIS Usage by Flag States in the Indian Ocean, 01Jan 2021-31Aug 2022' (n 11) 4.

[107] MSC, 'CAB Response to the Remand to the Objection against the Certification of AGAC Indian Ocean Tuna Purse Seine Fishery' (19 May 2022) 7.

> requirement in Article 6a of Directive 2002/59/EC for AIS to be operational, it is assessed that it is not likely it would be fully compliant with the intent of Article 1 of Directive 2002/59/EC nor Article 10 of Council Regulation No.1224/2009, in the absence of justification under Article 6a. It is assessed that a 'low power' mode may be technically compliant but a conclusive judgment is not made.[108]

SOLAS does not distinguish between those different modes. However, it should be noted that the AIS provisions not only require the system to be switched on, but they also list the types of data that must be transmitted when it is in operation, including information exchange with shore-based facilities,[109] requirements which the alternative modes referred to above would not meet. IMO Resolutions and the performance standards also require data transmission at a 'rate adequate to facilitate accurate tracking by a competent authority and other ships',[110] placing further emphasis on the fact that AIS-related legislation does not merely require the system to be switched on, but it must also transmit the required data at all times. The domestic legislation of coastal States also lists additional requirements of AIS operation. The laws of Tanzania require that fishing vessels in its EEZ must always have their AIS operational and that data be continually reported to the relevant Tanzanian authority.[111] Similarly, Mauritian fleets must operate AIS at all times 'so that the necessary data are regularly received at the National Coast Guard Operations Room', with additional requirements for, inter alia, any malfunctioning of the system, alteration of data transmitted, break in transmission of data or interference with the system.[112]

As stated in the legal analysis, the required data includes the most recent geographical position of the ship together with the date, time and speed of the vessel. As the CAB itself admitted, operating AIS on 'blind' or 'low power' modes 'will reduce the benefits of the use of AIS and reduce data availability'.[113] Thus, it is unlikely that ships operating AIS in those modes would be complying with the laws on AIS operation and data transmission.

D. Logbook Data

The CTTF objection noted that all the vessels 'spent more time "dark" than they did transmitting on AIS'; and that one vessel 'spent only 14% of the two-year study period with its AIS transmitting and had a continuous transmission gap of 4-and-a-half months', while another vessel 'had a continuous transmission gap of nine months and 28 days'.[114]

The legal analysis showed that it is a requirement of the IMO that the action of switching off the AIS be recorded in the logbooks. Logbook data could then be

[108] ibid 8. [109] SOLAS (n 31) Ch V, reg 19.2.4.5. [110] ibid.
[111] Deep Sea Fisheries Management and Development Regulations 2021 (Tanzania) reg 43, 68.
[112] AIS Regulations 2016 (Mauritius) reg 6.
[113] MSC CAB Response (19 May 2022) (n 107) 8. [114] CTTF Response (n 99) 1–2.

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verified to investigate motivations behind the AIS switching-off and track the ship's location and route during the periods it 'goes dark'. Interestingly, concerning the Spanish fleet, the evidence before the adjudicator shows that: '… the client has confirmed to the CAB that there is no record in vessel logbooks, nor other, verifiable, contemporaneous evidence of the reason for having AIS off or in another mode'.[115] SOLAS and IMO provisions require switching off the AIS because of security risks to be recorded in the logbook. Vessels that do not follow this procedure would be in breach of those provisions.

E. Switching off AIS for Commercial Reasons

In 2019, a study of Seychelles-flagged purse seiners switching off their AIS highlighted possible deliberate AIS switching-off motivated by commercial reasons.[116] Before the adjudicator, a statement was made by the fishery seeking MSC certification concerning its fleets' manipulation of the AIS to the effect that '[i]t could have been switched off for a commercial advantage. This is not illegal or inappropriate.'[117] On the contrary, a perusal of all AIS laws referred to above would lead to the conclusion that this is indeed an illegal practice. Even if, after further investigation, the CAB noted that commercial reasons were not relevant, the above statement confirms trends reported in the FAO's Global Atlas of AIS-based fishing activity in FAO Major Fishing Area 51 and shows that there is a misconception of AIS legal requirements in the industry.

It is unclear whether all the fleets studied in this article have similar explanations to those considered in this section concerning their missing AIS data but, given the data transmission requirements as evidenced above, in many of the circumstances studied, it is unlikely that the practice is legal. The legal assessment of data presented in the OceanMind and Blue Marine Foundation reports, and the poor justifications advanced by Spanish fleets and in wider literature show that there are likely breaches of AIS laws by vessels operating in the Western Indian Ocean. The suspiciously long periods of AIS switching-off warrant further investigation.

IV. DETERRING AIS SWITCHING OFF

This article has established the illegality of switching off the AIS by EU-owned purse seine vessels in FAO Major Area 51 and analysed the validity of the justifications that have previously been given to explain non-compliance with laws mandating that AIS be maintained in operation; grounds which, as shown above, are of little merit. This section considers how the deterrence of AIS

[115] MSC 'CAB Response' (19 May 2022) (n 107) 18.
[116] Nieblas et al (n 17) 96.
[117] MSC Decision (21 April 2022) (n 88) para 156.

switching off could best be achieved. Flag and coastal States could enforce those laws identified above, and if the switching-off of the AIS cannot be justified upon investigation, the fishing vessels could be sanctioned. The role of States in this respect is thus considered in subsection A below. Furthermore, because fishing vessels usually hold Protection and Indemnity (P&I) insurance, this article argues that non-governmental actors, that is maritime insurers, also have the power to trigger a significant change in the switching off of AIS by fishing vessels. This is considered in subsection B.

A. Enforcement of AIS Laws by States

The fishery seeking MSC certification held that: '… since the inception of piracy, none of their vessels has been subject to procedures initiated by the management fisheries authorities of their flag States, IOTC, or coastal States or port states where they operate, with regards to the use of AIS in the Indian Ocean, for the period under assessment (2014–2018), to date'.[118] A review of case law in the different jurisdictions studied shows an evident lack of prosecutions for breaches of AIS laws, yet the scarcity of AIS data observed in the OceanMind Study of FAO Major Area 51 would fall foul of the laws of Mauritius, Seychelles and the EU. This suggests a lack of enforcement of AIS laws by States.

States have duties when it comes to ensuring that their vessels abide by their AIS laws. For example, under Article 94 of the United Nations Convention on the Law of the Sea (UNCLOS), a provision referring to the high seas, '[e]very State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag'.[119] The UN Fish Stocks Agreement (UNFSA) which covers tuna and tuna-like species targeted by fishing vessels in the Indian Ocean, is also relevant to the purse seiners studied. It applies to areas within and beyond the national jurisdiction of States and includes mandatory requirements to prevent overfishing, to collect 'complete and accurate data'[120] about fishing vessel positions and their catch, and for States to enforce monitoring, control and surveillance (MCS) measures, in particular, for vessels flying their flag, 'irrespective of where violations occur'.[121] There is also a requirement for investigations and any ensuing judicial proceedings to be carried out expeditiously and for appropriate sanctions that have a deterrent effect to be implemented.[122]

As for regional agreements, the Southern Indian Ocean Fisheries Agreement (SIOFA) applies to the high seas area of the southern Indian Ocean and ensures

[118] MSC 'Client Response' (25 May 2022) (n 96) 4.
[119] United Nations Convention on the Law of the Sea (1982) 1833 UNTS 397, (UNCLOS) art 94.
[120] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) art 5(j).
[121] ibid, art 19(1)(a).
[122] ibid, art 19(2).

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the sustainable management of the fisheries and the marine environment. It has been ratified by the EU, France, Mauritius and Seychelles. Under Article 11, the parties agree to enforce the flag State legal requirements on vessels flying their respective flags to ensure that the vessels do not carry out unauthorised fishing in waters under national jurisdiction next to the area to which the agreement applies. Furthermore, the party must not authorise those vessels to fish beyond its national jurisdiction if that party is unable to exercise its duties concerning those vessels under the provisions of the SIOFA and in accordance with international law effectively.[123]

The enforcement of AIS provisions remains poor but there are case examples of the switching off of AIS being successfully sanctioned. Two Spanish vessels were fined based on EU and Spanish AIS provisions due to their AIS being 'turned off or interrupted' in the Atlantic Ocean based on investigations by Oceana.[124] The owners of the vessels, together with their captains, were fined 12,000 euros following a 40 per cent reduction granted in each case because the companies accepted responsibility for the offences. Despite those Spanish prosecutions, the systematic switching off of the AIS by EU fishing vessels, especially in the Indian Ocean, continues.

It is unclear why the enforcement of AIS laws by flag States and coastal States is poor. The reason could potentially be financial. The FAO noted in 2014 that '[t]he value of access rights paid by Distant Water Fishing Nations (DWFNs) to be allowed to fish in the national Exclusive Economic Zones (EEZs) is considerable for several African countries and also contributes to the overall value generated by activities related to fisheries'.[125] In Africa, a dichotomy needs to be highlighted: '[p]olicy actors have often emphasised the importance of the industrial fisheries, especially DWFNs in contributing to the national economy. As such, there is often a laxity to enforce such regulations even when they exist to ensure sustainable development of the fisheries sector'.[126] The authors of that article thus called for better regulation of those DWFNs.

Another explanation could be the link between the switching off of AIS and organised crime. It was noted by the High Level Panel for a Sustainable Ocean Economy, '[o]rganised crime is, by its clandestine nature, a difficult object of scientific inquiry. Verifiable data tend to be scarce, and, since these crimes often either go unidentified or are unsuccessfully prosecuted, statistics from

[123] Southern Indian Ocean Fisheries Agreement (SIOFA) art 11.

[124] L Malarky and B Lowell, 'Avoiding Detection: Global Case Studies of Possible AIS Avoidance' (Oceana 2018) <https://usa.oceana.org/wp-content/uploads/sites/4/ais_onoff_report_final_5.pdf>.

[125] G de Graaf and L Garibaldi, 'The Value of African Fisheries' (FAO Fisheries and Aquaculture Circular No. 1093, Rome 2014) 46.

[126] I Okafor-Yarwood et al, 'Survival of the Richest, not the Fittest: How Attempts to Improve Governance Impact African Small-Scale Marine Fisheries' (2022) Marine Policy 106.

domestic law enforcement agencies may lead to significant underestimations of the problem.'[127]

For example, one major concern in Mauritius is the smuggling of drugs and other illicit articles at sea by fishing vessels, as noted by the Mauritius Drug Commission in 2018.[128] The Commission's report indicates that the substances could be hidden inside the frozen fish, making these undetectable by police dogs at customs: '… drugs may be hidden in frozen fish as well by accomplices of traffickers who would have no difficulty to pick the parcel from the high seas and to hide it in frozen fish, if not in the cavity of the fish before it is frozen'.[129] Furthermore, the Commission also noted: '[t]he Commission also heard of a company dealing with frozen fish in the port area having private quays where the fish, without any check by the authority, went straight to the premises of the factory'.[130] It is unclear how smuggling occurs, but it seems difficult for States to deal with the illegal behaviour once the vessels reach shore.

Identifying and deterring AIS switching-off could potentially have an impact on tackling such serious crimes, making the enforcement of AIS laws by flag States even more crucial. Recently, a Seychellois fishing vessel owner was charged with importing drugs into Seychelles when the vessel allegedly switched off its VMS to avoid detection while meeting with an Iranian dhow to collect the drugs.[131] There are, nevertheless, no reports of prosecution of vessels switching off their AIS before courts in Mauritius or Seychelles. However, it can be confirmed that AIS monitoring is relied upon to monitor illegal behaviours. Parliamentary Debates in Mauritius confirm that AIS data of vessels entering Mauritian waters are monitored:

> It must be pointed out that the National Coast Guard (NCG) is responsible for the protection of our Exclusive Economic Zone (EEZ) and marine resources as well as the suppression of any illegal activity, including drug trafficking by using its surface and air assets which are – (i) the Automatic Identification System (AIS) which allows the tracking of vessels ….[132]

Furthermore, in response to the Wakashio oil spill incident in 2020, the Prime Minister commented to the effect that:

> Just because that radar at Gris Gris is not operational right now does not mean that we have no idea what vessel is in our territorial waters or in our Exclusive Economic Zone. We have, (…), the Automatic Identification System which is operational and which tracks all vessels coming into our waters.[133]

[127] E Witbooi et al, 'Organised Crime in the Fisheries Sector' (World Resources Institute, Washington 2020) 3.
[128] The Commission of Enquiry on Drug Trafficking Report (Mauritius, July 2018).
[129] ibid, para 6.11.13. [130] ibid.
[131] *The Republic v Faiz Mubarak and Ors* (CR60/602021) [2021] SCSC 343 (Seychelles).
[132] Seventh National Assembly of the Republic of Mauritius, Deb First Session 18 May 2021.
[133] ibid, 18 August 2020.

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It thus seems that considerable reliance is placed on AIS, and the illegal switching-off of the AIS would thus seriously undermine the efforts made by coastal States to combat serious crime. Flag States and coastal States can and should therefore enforce their AIS laws.

B. Implications for the Maritime Insurance Industry

Although there is a clear need for flag and coastal States to investigate further and prosecute vessels switching off their AIS, one industry which could deter the illegal switching off of AIS is the maritime insurance industry. Insurers might be insuring vessels that are deliberately breaching the AIS laws of the flag States and countries whose waters they access, and thus, they may be indirectly enabling this illegal behaviour.

The vessel data analysed between 2016 and 2022 shows significant AIS transmission gaps. Without further investigation, such as verifying VMS or logbook data, the causes underlying AIS switching-off cannot be determined. However, if a proper risk assessment were to be carried out by insurers prior to insuring the vessels, flagging histories of AIS non-compliance by vessels, this would help curb the different types of illegal activities enabled by the vessels 'going dark' and lead to increased compliance with AIS laws.

AIS was primarily implemented as a safety tool to prevent maritime collisions and the latest OceanMind report commissioned by the Blue Marine Foundation advises against insuring vessels who switch off their AIS as evidenced in the data,

> '[a]s the low transmission rates from all flag states demonstrate a considerable risk of vessel collisions and therefore crew health and safety, it is not recommended to insure the vessels under these circumstances.'[134]

Alongside the high risks posed to crew safety by the long gaps in AIS transmission, OceanMind also highlights the IUU risks in their latest report[135] and the insurance pathway is increasingly suggested as a means to tackle IUU fishing enabled by AIS switching-off.[136] The spotlight is mainly on P&I clubs because 'P&I insurance could be considered the most likely form of minimal insurance that IUU vessel operators might have'.[137]

Highlighting the role that insurance plays in maritime safety, the FAO stated:

> Financial security arrangements are private in nature, but they are perceived by the IMO not only as commercial tools, but also as elements of strengthening the

[134] OceanMind, 'AIS Usage by Flag States in the Indian Ocean, 01Jan 2021-31Aug 2022' (n 11) 9.
[135] ibid 33.
[136] D Miller et al, 'Cutting a Lifeline to Maritime Crime: Marine Insurance and IUU Fishing' (2016) 14 Frontiers in Ecology and the Environment; C Cunliffe, 'Plenty more fish in the sea? How the insurance industry can help put an end to illegal fishing' (AXA XL, 17 January 2022) <https://axaxl.com/fast-fast-forward/articles/plenty-more-fish-in-the-sea-how-the-insurance-industry-can-help-put-an-end-to-illegal-fishing>.
[137] Miller et al (n 136) 358.

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> maritime safety system. The imposition of compulsory insurance can also contribute to higher standards on board. This is due to the fact that the inherent risks of a particular ship *will be* reflected in the insurance premiums (the greater expected loss in the view of the insurer, the higher will be the insurance premiums). In fact, ill-maintained vessels may not only face increased premiums, but may also become commercially uninsurable.[138]

Therefore, this section assesses the relevant rules regulating the behaviour of firms which apply to insurers and identifies any guidance relating to AIS. The largest P&I clubs involved in the maritime industry are located in London and most EU-owned vessels considered in this article are insured in England where the financial sector is very well regulated.

1. Duties of maritime insurers

The Financial Conduct Authority (FCA) regulates the behaviour of firms in the UK. Under section 1D of the Financial Services and Markets Act 2000, the FCA follows an 'integrity objective' which consists of protecting and enhancing the integrity of the UK financial system.[139] Of relevance to this article, the FCA requires any firm that it authorises to follow its 11 principles which include: acting with integrity;[140] acting with skill, care and diligence;[141] and taking 'reasonable care to organise and control its affairs responsibly and effectively, with adequate risk management systems'.[142] The FCA handbook further states that these three principles concern activities wherever they occur and are not limited to the UK territory.[143] The FCA principles are termed 'fundamental obligations of firms'[144] and are binding obligations. In this context, they apply to the vessels' insurers but also to the reinsurers. If the firms are found to be in breach of these obligations, the FCA can take disciplinary action.[145]

In a December 2020 survey most insurers interviewed failed to safeguard against insuring vessels officially sanctioned for IUU fishing.[146] Furthermore, most did not require fishing vessels to be fitted with VMS or AIS, nor did they have policy clauses excluding cover if those vessels switched off their AIS. This is concerning especially since some of the vessels studied are owned by companies featuring in the Financial Transparency Coalition's report on the

[138] NA Martinez Gutierrez and R van Anrooy, *Compulsory Insurance (Third Party Liability) requirements for fishing vessels: A case for the introduction of compulsory fishing vessel insurance in the Caribbean* (FAO Rome 2020) 6 (emphasis added).
[139] Financial Services and Markets Act (UK) section 1D.
[140] Financial Conduct Authority (FCA) Handbook, Prin.2.1.1, Prin. 1.
[141] ibid, Prin.2.1.1, Prin. 2.
[142] ibid, Prin.2.1.1, Prin. 3.
[143] ibid, Prin.3.3.1.
[144] ibid, Prin. 1.1.2.
[145] ibid, Prin.1.1.7.
[146] Oceana, 'Best Practices in Marine Insurance to Fight Illegal, Unreported and Unregulated (IUU) Fishing: Workshop Summary Report, <https://europe.oceana.org/sites/default/files/workshop_summary_report.pdf>.

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Top 10 companies involved in IUU fishing.[147] It could thus be argued that if insurers are providing insurance to EU-owned vessels that illegally switch off their AIS in the Western Indian Ocean, in particular, vessels with a history of lengthy AIS transmission gaps which could have been flagged through proper risk assessment processes over the years, then they might not be complying with the FCA principles. The switching-off of AIS presents several risks in terms of enabling potential illegal activities, but also with regard to crew and maritime safety.

2. *AIS-specific guidance established for the insurance industry*

In addition to those general duties that insurers must comply with, the UK regulator, HM Treasury Office of Financial Sanctions Implementation (OFSI), has released guidance applicable to the maritime insurance industry which specifically refers to the switching off of the AIS by ships.[148]

Sanctions compliance is a serious matter for corporations, given the monetary and reputational risks. The application of sanctions legislation is not limited to cargo ships and '[f]ishing vessels are increasingly being used as instruments in transnational organized-crime activities'.[149] For example, in 2016, two thousand weapons were found under fishing nets in a vessel bound for Somalia.[150]

The OFSI guidance recognises legitimate reasons for switching off the AIS but it also states that 'AIS is often intentionally disabled by vessels that seek to obfuscate their whereabouts, and is often practised by vessels seeking to conduct illicit trade.'[151] Possible illegal transhipment issues while the vessels 'go dark' are also highlighted.

The OFSI uses AIS switching-off as an example:

> … turning off AIS or carrying out ship-to-ship transfers does not mean that in every instance a breach of financial sanctions has occurred. It does, however, raise suspicion that the ship(s) might be carrying out illicit activity and

[147] Daniels et al, 'Fishy Networks: Uncovering the Companies and Individuals behind Illegal Fishing Globally' (FTC October 2022).

[148] HM Treasury Office of Financial Sanctions Implementation (OFSI), 'General Guidance for Financial Sanctions under the Sanctions and Anti-Money Laundering Act 2018' (December 2020) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1062452/General_Guidance_-_UK_Financial_Sanctions.pdf>; OFSI, 'Maritime Guidance: Financial Sanctions Guidance for Entities and Individuals Operating within the Maritime Shipping Sector' (December 2020) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948299/OFSI_Guidance_-_Maritime_.pdf>.

[149] J Bergenas, 'What's happening below deck?' (Global Initiative against Transnational Organized Crime, 7 January 2019) <https://globalinitiative.net/analysis/whats-happening-below-deck/>.

[150] A Smith, 'Australia Navy Finds 2,000 Weapons on Somalia-Bound Fishing Dhow' (*NBC News*, 7 March 2016) <https://www.nbcnews.com/news/world/australia-navy-finds-2-000-weapons-somalia-bound-fishing-dhow-n533196>.

[151] OFSI, 'Maritime Guidance' (n 148) 3.

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> breaching sanctions regulations – particularly where this includes use of a designated port.[152]

Industry guidelines also suggest that '… intentional AIS manipulation for sanctions evasion purposes is usually accompanied by a port call or an STS transfer'[153] and that 'AIS outages and STS operations should be examined in closer detail if they occur for lengthy time periods of 10 hours or more. This would be a calculated average time taken to potentially conduct a port call or an at-sea cargo transfer.'[154] In that respect, the reported gaps in AIS transmissions considered in this article, some amounting to nine months at a time, are concerning. Yet, those vessels are still insured and keep operating in FAO Major Fishing Area 51 with recurring lengthy AIS transmission gaps over six years.

The OFSI suggested a risk-based approach for insurers, especially in regions presenting higher risks of illegal behaviour: '[w]hen dealing with such regions, or when passing through or near waters where non-compliant actors are known to operate, enhanced due diligence should be considered'.[155] The OFSI suggests the carrying out of an AIS screening and inserting an AIS switch-off clause in the contracts. It further suggests that 'due diligence could be enhanced for example, through contacting vessels that have "gone dark" by switching off their AIS. This is to better understand the cause of disconnection, noting such instances, and reviewing for trends. This could be considered by ship owners, charterers, insurers, flag registries and port state control entities.'[156]

Lloyd's has issued further guidance on sanctions evasion tactics in the sector, warning multiple actors in the insurance chain of their responsibility, that is, the brokers, insurers and also reinsurers:

> [t]he (re)insurance industry is characterised by a division of responsibility between brokers, insurers and reinsurers but *each party in the placement chain is individually liable for sanctions compliance*. In line with this guidance, market participants are expected to understand their sanctions risk profile, and review their current sanctions due diligence and screening processes to validate that they are proportionate to their risk profile.[157]

According to Lloyd's, a combination of two factors can trigger enhanced due diligence measures: (i) a primary risk factor, which is a geographical high-risk location, defined as an area known for illegal marine activities and close to sanctioned countries; and (ii) a secondary risk factor which could be a

[152] ibid 4.

[153] IHS Markit, 'Sanctions Advisories for the Maritime Industry: Practical challenges and recommendations for financial institutions regarding the monitoring of AIS outages and suspicious vessel activity' (2022) <https://cdn.ihsmarkit.com/www/prot/pdf/0222/Sanctions-advisories-for-the-maritime-industry_Feb2022.pdf>.

[154] ibid.

[155] OFSI 'Maritime Guidance' (n 148) 4.

[156] ibid 8.

[157] Lloyd's, Market Bulletin Y5246, 'Countering North Korean and Other Sanctions Evasion Tactics' (2 April 2019) 3 (emphasis added).

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history of suspiciously lengthy AIS switching-off periods; complex vessel ownership structures; and the use of flags of convenience.

For EU-owned fleets operating in the Western Indian Ocean, both risk factors are present. The Indian Ocean and FAO Major Area 51 are high-risk areas, and, of relevance to the matter at hand, Lloyd's guidance refers explicitly to FAO sub-area 51.1 (Red Sea) and 51.2 (Persian Gulf/Hormuz Straits). Furthermore, as suggested above, the reduction in HRA does not support the lengthy AIS transmission gaps.[158] The secondary risk factor is also present with vessels reflagging to Mauritius and Seychelles through possibly complex ownership structures, and there is also the undeniable fact that their AIS is switched off for alarmingly long periods.

This article does not suggest that any sanctions evasion activities underlie the AIS switching-off trends observed in the OceanMind reports. However, the data gives a good example of cases which should have warranted enhanced due diligence by maritime insurers over the years.

If the insurers do not apply enhanced due diligence and have not investigated those vessels that switch off their AIS for long periods around sanctioned areas, they cannot be certain that those vessels are not engaging in activities in breach of financial sanctions.

There are both civil and criminal penalties that could be imposed on insurers for breaching sanctions law. The OFSI can impose monetary penalties as per Section 146 of the Policing and Crimes Act 2017, recently amended by the Economic Crime (Transparency and Enforcement) Act 2022, which makes a failure to comply with financial sanctions legislation a strict liability offence.[159] This new amendment makes it irrelevant whether insurers have knowledge of or ought to have reasonable cause to suspect breaches of sanctions legislation by their clients, which, before this amendment, were necessary to establish for the OFSI to be able to prosecute and impose monetary penalties. Therefore, the onus on insurers and the risk of being fined are even higher now. Applying this fact to the context of AIS, if a vessel 'goes dark' as a sanctions-avoidance mechanism, its insurers in the UK could be found to be in violation of sanctions legislation even if they had no knowledge of the illegal behaviours. This should be additional motivation for insurers to encourage transparency from those vessels by requiring that their AIS be operational at all times, in accordance with the law.

The important role of the maritime insurance industry should not be underestimated since, without insurance, those vessels would be in breach of legislation applied by flag States and hence would not be seaworthy. Furthermore, EU vessels that reflag to other coastal States need valid liability insurance as a prerequisite to register in some countries, such as Mauritius,

[158] Gard, 'Indian Ocean Piracy "High Risk Area" Reduced' (20 August 2021) <https://www.gard.no/web/updates/content/32251424/indian-ocean-piracy-high-risk-area-reduced>.

[159] Economic Crime (Transparency and Enforcement) Act 2022, section 54.

where the government states: 'Proof of Liability Insurance: Every ship seeking registration must carry insurance against risks of loss or damage to third parties.'[160] Terminating insurance jeopardises this process and would indirectly curb any illegal activities enabled by the switching off of the AIS. A high risk of losing insurance cover could encourage compliance with AIS requirements.

It is thus suggested that in light of data showing ongoing switching off of AIS over a period of six years, it is unlikely that insurers are complying with the fundamental obligations under the FCA rules, nor are they complying with OFSI guidance. Insuring vessels that 'go dark' for months at a time, in areas known for illegal marine activities and near sanctioned countries, puts insurers at great risk of being caught by sanctions legislation if enhanced due diligence is not carried out, especially after the introduction of the new strict liability offence. Furthermore, as Lloyd's guidance suggests, other actors in the chain can also be at risk of being caught by the same laws, such as the reinsurers and the brokers.

V. RECOMMENDATIONS AND CONCLUSION

Navigating without AIS when it is prescribed puts lives at risk. Furthermore, that the illegal practice of switching off the AIS slips through several layers of regulatory nets is a serious matter because it might allow IUU fishing and illegal activities to continue at sea. Notwithstanding the debates about whether AIS should be used in fisheries monitoring alongside other systems like VMS and radar, AIS is increasingly being referred to in fisheries legislation and relied upon by coastal States to monitor illegal behaviours in their waters and for the protection of their marine resources, highlighting the need for the enforcement of AIS legislation. Suggestions have been made for VMS data and logbook data to be verified.[161] For improved ocean governance and marine protection, transparency is key. Some countries voluntarily provide their VMS to public platforms.[162] Norway has recently started doing so and other EU countries like France and Spain should consider following suit.

This article has analysed the laws applicable to AIS with reference to the lengthy gaps in AIS transmission by EU-owned purse seine vessels in FAO Major Fishing Area 51 demonstrated by the data in the OceanMind and Blue Marine Foundation reports. It has established that this recurrent behaviour would very likely be in contravention of the international SOLAS and IMO

[160] Ministry of Blue Economy, Marine Resources, Fisheries and Shipping of the Republic of Mauritius, Registration of Ships under the Mauritian Flag <https://blueconomy.govmu.org/Pages/Departments/Shipping%20Division/Registration.aspx>.

[161] OceanMind, 'IOTC Catch-Effort Assessment, and AIS Usage by Flag-States in the Western Indian Ocean, 2016-2020' (n 6) 7.

[162] Global Fishing Watch, 'Transparency' <https://globalfishingwatch.org/transparency/>.

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AIS requirements, EU law, the laws of Mauritius and Seychelles and possibly laws regulating other coastal States' EEZs that could have been accessed during the 'dark' periods.

Justifications given by the fleets studied and those reported in literature suggest that AIS legal requirements are misunderstood or not abided by. Security concerns raised to justify the switching off of AIS do not correlate with current piracy risks observed in the region, nor with Best Practice Management measures aimed at the industry specifically to address piracy concerns.[163] It follows that piracy concerns should thus not detract from the enforcement of AIS laws.

AIS-specific legislation is increasingly being implemented by coastal States. Vessels that enter Tanzania's waters without transmitting AIS data would be in breach of the recently implemented AIS laws and risk a hefty fine. In the case of Mauritius, imprisonment is also a possible sanction. These laws place an even stricter requirement on vessels than SOLAS. In some instances, as in Mauritius and Seychelles, the pecuniary sanction would also apply to the beneficial owners of the vessels.

As stated by the Organisation for Economic Co-operation and Development (OECD), 'under current conditions, IUU fishing is a profitable undertaking, and hence the first step in combatting such activities is to identify measures that render them unprofitable'.[164] Some jurisdictions, like Seychelles, could further strengthen their AIS switch-off regulations by specifically referring to AIS and increasing the level of fines. Mauritius could also impose higher fines to have a strong deterrent effect. However, increased enforcement of AIS laws is most needed, and more research is needed to explain the lack thereof; possible causes such as the financial importance of fishing agreements and the lack of evidence linked to organised crime were considered in this article. Prosecutions by flag States and coastal States would deter further contraventions, and vessel names could be added to sanction lists to ensure that all relevant actors dealing with the marine industry, including financial institutions, are aware of their illegal behaviour.

The insurance industry also has a role to play in curbing the switching-off of AIS, and it is suggested that it is not discretionary. There are legal obligations to that effect, and the FCA principles and industry guidance seem to support this statement. Compliance by insurers appears low, given the extent of the AIS switching-off issues in FAO Major Fishing Area 51 observed over a six-year period. It would be for the FCA to determine whether insurers providing insurance to those vessels with a history of AIS non-compliance are acting with integrity, reasonable skill, care and diligence and whether the risk assessments currently in place, and which allow the illegal behaviour, are

[163] BIMCO et al (n 104).

[164] OECD, 'Why Fish Piracy Persists: The Economics of Illegal, Unreported and Unregulated Fishing' (OECD Publishing, Paris 2005).

considered appropriate. Given that insurers repeatedly enable vessels to flout the laws of coastal States on AIS requirements and that this non-compliance could potentially be a way of masking more serious crimes at sea, it is argued that insurers do not currently meet these standards. Furthermore, if 'dark' vessels are found to have breached sanctions legislation, insurers and other actors such as reinsurers and brokers could face significant financial and reputational damage following investigation and ensuing sanctions by the relevant regulators.

The financial regulatory system is a crucial lever. Revocation of insurance policies or the inability to obtain insurance due to previous illegal behaviour would be a significant and effective driving factor in reducing the illegal switching off of AIS and, consequently, IUU fishing, smuggling and other crimes.

The solution would be to not insure those vessels that fail the enhanced due diligence process. Insurance risk assessments must include investigations of AIS compliance histories. An AIS clause in the policy that permits the insurers to request justification of apparent breaches, verify other data sources such as the logbooks, and terminate the contract in appropriate cases would present an additional means of ensuring compliance with the requirements of insurance regulators and OFSI, and would increase transparency in the fisheries sector.

Illegal AIS switching-off is a problem which is thus relatively easy to track if the laws are enforced in the different sectors. It is therefore suggested that increased transparency in the fishing industry could be achieved by States effectively enforcing their AIS laws and by the private sector, in particular maritime insurers, abiding by the fundamental obligations that regulate their practice and guidance issued by industry. These could significantly curb IUU fishing and illegal activities by fishing vessels at sea.

Africa loses 11.49 billion USD annually from IUU fishing activities.[165] In the Western Indian Ocean region, on which this article is focused, species like yellowfin tuna are depleting at an alarming rate. It has been observed that 'the EU's industrial distant water purse seine fleet is the largest contributor to overfishing by virtue of it being the largest harvester of the species and has been for as long as the stock has been overfished'.[166] Given the broader implications of overfishing, climate change, and not achieving the Sustainable Development Goals, much more is at stake than loss of fish stocks and financial losses. It is time for the EU, flag States, and the insurance industry to take responsibility and abide by their duties. Indian Ocean coastal States should also be mindful that, should the stocks collapse, the fishing fleets that they are currently licencing will move on to new waters, richer in resources, leaving a decimated marine environment behind.

[165] Daniels et al, 'Fishy Networks: Uncovering the companies and individuals behind illegal fishing globally' (FTC October 2022) 6.

[166] Rattle and Duncan-Jones (n 8) 7.