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Transshipment: a closer look

An in-depth study in support of the development of international guidelines

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FISHERIES AND
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Preparation of this document

At its Thirty-second Session (Rome, Italy, 11–15 July 2016), the FAO Committee on Fisheries (COFI) encouraged FAO to initiate work on transshipment in the context of IUU fishing. In 2017, FAO initiated this work with a global review of transshipment regulations, practices and control mechanisms. The study, qualitative in nature, shed some light on the variety of transshipment practices, the coverage of transshipment regulations and the need to reinforce control of transshipment.

The study was presented to the Thirty-third Session of COFI (Rome, Italy, 9–13 July 2018), which expressed further concern about transshipment activities, calling for an in-depth study to support the development of guidelines on best practices to regulate, monitor and control transshipment.

The study was planned and conceptualized during the second quarter of 2019; a study team was convened, and the general concept, scope and work plan decided upon. Work commenced in the third quarter of 2019 and continued until the end of the year. Regular coordination meetings were held in Rome, during which the study team evaluated progress towards milestones, fine-tuning the study planning as appropriate. Fieldwork and background research were completed at the end of 2019. The drafting and preparation of the report began early in 2020. The intention is for this report to form the basis of discussions towards the development

Abstract

Ongoing concerns have been expressed by the international community regarding the risks that transshipment could facilitate the introduction of illegal, unreported or unregulated (IUU) fish or fish products into the seafood supply chain. Owing to such concerns, the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO) requested that the subject be studied in-depth for the possible development of international guidelines on transshipment, based on best practice. The FAO fisheries operations and technology branch (NFIO, formerly FIAO) took up this request and formulated a study team to take the work forward.

The study methodology was designed around five core elements: field visits, aiming to ensure a broad geographical balance; a global survey, pitched at FAO Members, regional fisheries management organizations (RFMOs), non-governmental organizations (NGOs) and industry stakeholders; specific case studies looking at tuna and squid fisheries; bilateral discussions with a broad range of RFMOs and due reference to published literature on the subject of transshipment and associated activities. Six months were spent applying the methodology, after which the results were collated and analysed, and the draft report prepared.

The widespread and diverse nature of transshipment as a practice is striking. It occurs in all kinds of fisheries ranging from small-scale artisanal activities taking place in coastal areas, to large-scale industrial activity taking place on the high seas far from shore. Most operators would argue that transshipment activity is essential to their operations; unsurprisingly this is largely driven by economic factors.

The study naturally gravitated towards a focus on risk. Its main line of enquiry focused on the extent to which the risks identified were mitigated by existing managerial arrangements, and what levels of residual risk remained. The implementation of existing measures was identified as a challenge. The study concludes with a discussion centred on identifying those managerial elements which could form the foundation for a discussion on the development of international guidelines based on best practice.

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Indian Ocean Tuna Commission
Inter-American Tropical Tuna Commission
International Commission for the Conservation of Atlantic Tunas
North East Atlantic Fisheries Commission
North Pacific Fisheries Commission
Northwest Atlantic Fisheries Organization
South East Atlantic Fisheries Organisation
South Pacific Regional Fisheries Management Organisation
Southern Indian Ocean Fisheries Agreement
Western Central Pacific Tuna Commission

Abbreviations and acronyms

AIS	Automatic Identification System
ALB	Albacore tuna (*Thunnus alalunga*)
BET	Bigeye tuna (*Thunnus obesus*)
BLS	Blue shark (*Prionace glauca*)
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCBSP	Conservation and Management of Pollock Resources in the Central Bering Sea
CCM	Members, Cooperating Non-Members and Participating Territories
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CCTV	Closed circuit television
CER	Cero mackerel (*Scomberomorus regalis*)
CMM	conservation and management measure
CNCP	Cooperating Non-Contracting Party
CoC	Committee on Compliance
COFI	FAO Committee on Fisheries
CPC	Contracting Party country
CTA	Cape Town Agreement
DGSFS-PA	Peruvian fisheries department
DOF	Thai department of fisheries
DOL	Common dolphinfish (*Coryphaena hippurus*)
EEZ	exclusive economic zone
EJF	Environmental Justice Foundation
FAO	Food and Agriculture Organization of the United Nations
FCWC	Fisheries Committee of the Western Central Gulf of Guinea
GDST	Global Dialogue on Seafood Traceability
GFCM	General Fisheries Commission for the Mediterranean
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ILO	International Labour Organization
IMO	International Maritime Organization
IOTC	Indian Ocean Tuna Commission
IPHC	International Pacific Halibut Commission
ISSF	International Seafood Sustainability Foundation
IUU	illegal, unreported and unregulated fishing
KDE	Key data element
LAG	Opah (*Lampris guttatus*)

LHM	Squid jigging gear (mechanized lines)
LLD	Pelagic drifting longline
LSPLFV	Large-scale pelagic longline fishing vessel
LSTLFV	Large-scale tuna longline fishing vessel
LSTLV	Large-scale tuna longline vessel
MCS	monitoring, control and surveillance
NAFO	Northwest Atlantic Fisheries Commission
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	North East Atlantic Fisheries Commission
NGO	non-governmental organization
NPFC	North Pacific Fisheries Commission
PSC	Pacific Salmon Commission
PSMA	FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
REM	remote electronic monitoring
RFB	regional fisheries body
RFMO	regional fisheries management organization
RFV	record of fishing vessels
ROP	regional observer programme
SAFC	South Atlantic Fisheries Commission (defunct)
S-AIS	Satellite AIS
SC	scientific committee
SCD	Blue swimming crab (*Portunus pelagicus*)
SDG	UN Sustainable Development Goals
SEAFO	South East Atlantic Fisheries Organization
SKJ	Skipjack tuna (*Katsuwonus pelamis*)
SMA	Shortfin mako shark (*Isurus oxyrinchus*)
SPRFMO	South Pacific Regional Fisheries Management Organization
SSP	Shortbill spearfish (*Tetrapturus angustirostris*)
SUNAT	Peruvian customs service
SWO	Swordfish (*Xiphias gladius*)
UN	United Nations
UNODC	UN Office on Drugs and Crime
USD	United States dollar
VMS	vessel monitoring system
WAH	Wahoo (*Acanthocybium solandri*)
WCPFC	Western Central Pacific Fisheries Commission
YFT	Yellowfin tuna (Thunnus albacares)

Executive summary

Transshipment, or the transfer of catch from one fishing vessel to either another fishing vessel or to a vessel used solely for the carriage of cargo (FAO, 1996), is a widely practised fishing-related activity in various fisheries and in all world regions, which aims to reduce fishing operating costs and maximize fishing opportunities. The practice, particularly at-sea transshipment, has become intensely debated as being associated with the risk of fish originating from illegal, unreported and unregulated (IUU) fishing entering the seafood supply chain and facilitating criminal activities in the fisheries sector. This in-depth study on transshipment gives an overview of global transshipment activities, fisheries and actors involved, and describes practices, patterns, types, economic incentives and geographical hotspots related to the activity. The study outlines how transshipment is currently regulated and controlled, evaluates the risk of IUU-caught fish entering the seafood supply chain associated with different transshipment practices, and makes recommendations as to how transshipment may best be regulated, monitored and controlled to mitigate the associated risks.

As well as increasing the risk of IUU-caught fish entering the marketing chain and thereby undermining sustainable fisheries and ocean conservation, transshipment practices may also contribute to the overexploitation of fisheries resources and have negative effects on the socio-economic wellbeing of legitimate fishers and coastal communities, particularly in developing countries. At its Thirty-second Session (Rome, Italy, 11–15 July 2016), the FAO Committee on Fisheries (COFI) encouraged FAO to initiate work on transshipment in the context of IUU fishing. In 2017, FAO initiated a global review of transshipment regulations, practices and control mechanisms. The resulting study, qualitative in nature, shed some light on the variety of transshipment practices, the coverage of transshipment regulations and the need to reinforce control of the latter. The study was presented at the Thirty-third Session of COFI (Rome, Italy, 9–13 July 2018), which expressed concern about transshipment activities, and called for an in-depth study to support the development of guidelines on best practices to regulate, monitor and control transshipment. The present in-depth study responds to this recommendation and, based on the analysis of inherent and residual risks, provides considerations for the development of such guidelines. The effective regulation, monitoring and control of transshipment in the context of combatting IUU fishing is aligned with the 2030 UN Agenda for Sustainable Development. Among other commitments, the Agenda aims to achieve Sustainable Development Goal 14.4, which calls for ending overfishing, IUU fishing and destructive fishing practices by 2020.

The present study integrates a second global transshipment survey directed at States, regional fisheries management organizations, selected and relevant non-governmental organizations and industry stakeholders, with a view to collating more quantitative information on the extent and patterns of transshipment as an integral part of fisheries operations, including capturing updated qualitative elements. A broad review of literature on transshipment practices in fisheries was also conducted in order to compile available knowledge on transshipment activities in all parts of the world; crucially, the review involved large-scale industrial vessels as much as small-scale vessels in a range of fisheries. While gaps still remain, the knowledge base on economic drivers and geographical hotspots of transshipment – as well as their associated risks – is growing steadily, reflecting the

international community's interest in managing the activity in line with agreed standards on sustainable and responsible fisheries management. An updated global survey gathered more quantitative information from FAO Members and regional fisheries management organizations and canvassed the views of non-governmental organizations and industry stakeholders.

Field visits were undertaken to five countries on three continents (Ecuador, Ghana, Peru, Thailand and Uruguay) to gather facts about various types of transshipment, their economic contexts and how in-port and at-sea transshipment activities were regulated and controlled. Bilateral engagements with 13 RMFOs provided additional information on transshipment practices that increase the risk of IUU-caught fish being laundered into the seafood supply chain and analysed the extent to which monitoring, control and surveillance (MCS) measures could mitigate this risk. Two case studies on tuna and squid fisheries take a closer look at the fisheries operations and how transshipment is integrated into them; these case studies also consider the economic rationale, in addition to whether and how transshipment is regulated in the context of tuna and squid fisheries. Finally, based on all components of the study, transshipment practices were identified that increased the risk of IUU-caught fish entering the market and facilitating a range of criminal activities and human rights abuses.

The analysis shows that significant risks remain and that transshipment practices may contribute to laundering IUU-caught fish into the market. Transshipment events, particularly those taking place at sea, need to be sufficiently regulated, monitored and controlled to mitigate this risk of supporting IUU fishing operations which undermine sustainable fisheries, threaten the health of marine ecosystems and have negative socio-economic effects. Guidelines should be developed to set a standard for the responsible management of transshipment activities, as well as for effective monitoring and control to ensure compliance with the applicable national, regional and international legal frameworks. Following this risk-based approach, key considerations for the development of guidelines on regulating, monitoring and controlling transshipment were developed:

Key considerations in the development of guidelines on regulating, monitoring and controlling transshipment

Definitions

- Transshipment should only take place in cases where there are clear and agreed definitions of what constitutes "transshipment" and "landing". Definitions for these terms are present in the FAO Voluntary Guidelines for Catch Documentation Schemes (VGCDS). It should be noted that those definitions are limited to the scope of the CDS guidelines and describe simple physical acts and places. Within the much broader scope of possible guidelines on transshipment, such definitions would need to be amplified to describe not only physical acts, but formalized and documented processes. A proposal on such definitions is presented in Section 5.1 of this report.
- As containerization grows in scale, direct offloads of fish products to refrigerated containers should be clearly considered as either a landing or a transshipment, within the meaning of the two proposed definitions.
- A standardized definition for "large-scale longline fishing vessel" should be established for the tuna RFMOs to ensure consistency in the application of flag State vessel authorizations to conduct transshipment.

Authorizations

- Vessels should not be authorized to act as both donor and receiving vessel on the same trip.
- Donor and receiving vessels should be included and listed in all appropriate RFMO vessel authorization lists as well as the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, including the vessel's IMO number and other vessel details.
- Lists of all donor and receiving vessels authorized to transship by their respective flag State should be made publicly available, including historical lists and dates of authorization.
- All donor and receiver vessels authorized to transship at-sea within a specific RFMO area of competence should be required to be flagged to a Party or Cooperating Non-Contracting Party of that RFMO.
- All donor and receiving vessels that conduct transshipment on the high seas and other areas beyond the national jurisdiction of their flag State should be authorized by their flag State to conduct transshipment and obtain authorizations to transship from relevant coastal States, if the activity takes place within EEZs and other areas within the coastal State's jurisdiction, prior to carrying out transshipment.
- All donor and receiving vessels eligible to receive an IMO number should be required to have one in order to be authorized by their flag State to transship, regardless of the location of the activity.
- Measures controlling transshipment should be implemented to include specific criteria for how vessels receive authorizations to transship, including:
    - the circumstances under which a flag State authorizes its vessels to transship at sea;
    - the circumstances under which a coastal State authorizes vessels to transship at sea in its EEZ;
    - the MCS measures that must be in place for transshipment to occur;
    - data collection and reporting requirements; and
    - how transshipment is carried out consistent with the management regime of the RFMO or relevant coastal State.
- Transshipment should only take place at sea between donor and receiving vessels that have been notified to the relevant RFMO by their respective flag State as vessels authorized to take part in transshipment.
- Transshipment should only be authorized where competent MCS authorities have access to the information needed to make a thorough risk assessment on which to base decision-making regarding a proposed transshipment.
- Transshipment should only be authorized when competent MCS authorities have the capacity to monitor and control the transshipment, including by applying separate risk assessments for transshipments in port and at sea.
- Compliance review processes should be established by RFMOs to assess issued flag State authorizations and transshipment activity.

- Specific reporting procedures should be developed and implemented to account for at-sea transshipments involving partial transfers of fish products to ensure proper accounting of the source, quantity, and type of all fish products at the point of first landing.

Reporting

- Information relating to transshipment events (such as notifications/authorizations, declarations, observer reports, and landing reports) should be standardized, based on paragraphs 49 and 50 of the IPOA-IUU and Annexes A, C and D of the PSMA where possible; this information should be reported to:
    a. the flag State authorities of both vessels;
    b. any relevant coastal State authority;
    c. the relevant port State authority;
    d. the relevant RFMO secretariat, and
    e. other relevant national, regional and international organizations including FAO.
- Requirements should be established to ensure the management, reporting and documentation of transshipment is not limited to targeted and/or regulated species, but covers all species transshipped, including bycatch and any unregulated species.

Pre-event notification and record of event

- All donor and receiving vessels intending to carry out transshipments should provide advance notifications of the specific transshipment event within a suitable and published timeframe to all competent authorities and the RFMO secretariat for each intended transshipment, in order to ensure authorities have sufficient time to make informed decisions on acknowledging receipt of the notification, verifying or confirming that relevant vessels have authorizations to tranship or for issuing conditions for a specific transshipment event to proceed or initiating appropriate MCS responses.
- Upon receipt of an advance notification of transshipment from a donor vessel – and prior to acknowledging or confirming that this same can proceed – flag State authorities should verify that the vessel complies with near real-time VMS reporting and observer carriage requirements and has provided regular reporting on their fishing activities during their current trip, including catch and effort and will meet other conditions that may be issued by relevant authorities for the specific transshipment event to proceed.
- All donor and receiver vessels involved in transhipments should be required to log and maintain records or certificates of such transhipments.

Post-event reporting

- Post-transshipment reporting including declarations should be required by all vessels involved in transshipment and submitted to all competent authorities and the RFMO secretariat; this should ideally be done immediately after the event, but in any case, in as close to real time as possible.

- Post-transshipment observer reports should be required and submitted to all competent authorities and the RFMO secretariat for all transshipment events as an independent means of verification, regardless of event location, as close to real time as possible after the event.
- Landings and transshipments of catches sourced from an RFMO Convention or Regulatory Area should be reported to that specific RFMO regardless of where the catch is landed or further transshipped.

Follow-up reporting

- Procedures should be established to verify all reported transshipment data from vessels, flag States and observers. This auditing process may be completed by the flag State, a coastal State in accordance with its laws for transhipments that occur within areas under its national jurisdiction and relevant RFMO secretariat as appropriate.
- Procedures should be established to report, follow-up on and enforce against infractions by vessels involved in transshipment activities, including prosecution and the levying of penalties or other sanctions; where appropriate the vessels should also be included on IUU vessel lists.

Monitoring

- All donor and receiving vessels authorized to conduct transshipment should be required to have an operational VMS system on board.
- Port-to-port VMS data should be provided to, and shared between, all competent authorities and the RFMO secretariat in near real time, particularly when the vessel is present within the relevant convention area.
- Procedures should be established to address vessel reporting requirements in case of VMS malfunction or failure.
- Independent verification of transshipments (such as human observers or electronic monitoring, or a combination of both) should be required on all donor and receiving vessels involved in transshipment for all events, regardless of location.
- Independent collection of information and data by observers on transshipment events should be authorized for both scientific and compliance purposes.
- Port State measures should be in place and implemented consistent with Articles 12, 13 and 17 of the Port State Measures Agreement for all ports where receiving vessels land their transshipped catch, and the data collected should be cross-referenced against all available transshipment information.
- Catch documentation schemes or traceability programmes should be established and implemented effectively by the recording of transshipped catch on relevant documentation.

Data and information-sharing

- Formal procedures for sharing transshipment data (such as authorized vessel lists, transshipment notifications, authorizations and reports including declarations, reported catch, landing reports, observer reports, inspection reports, infractions

and sanctions) should be established among all competent authorities of relevant flag, coastal and port States and RFMO secretariats.

- Formal procedures for sharing transshipment data between relevant States and RFMOs should be established, especially between RFMOs with overlapping convention area waters, where both RFMOs authorize the same receiving vessels to be involved in transshipment.
- Information related to transshipment activities (such as the number of events, locations, amount and type of species transshipped, and vessels involved) should be made publicly available on an annual basis for scientific and compliance purposes with due regard to appropriate confidentiality requirements.

Use of existing and new technologies

There are a range of existing and emerging satellite-based and other technologies which can be used for the monitoring, control and surveillance of transshipment activities. These may include inter alia, real-time electronic authorization and reporting, remote electronic monitoring (REM) tools such as live-stream closed circuit television (CCTV) and electronic eye systems, WIFI or Bluetooth-enabled weighing scales affixed to crane hooks and slings, synthetic aperture radar, satellite optical imagery, etc. The value of such technologies is enhanced in the context of occurrences which constrain human resources and public health, such as the recent COVID-19 pandemic.

Traceability

The global dialogue on seafood traceability (GDST, 2020) has developed several key data elements (KDEs) within its traceability standard; as these are related to transshipment, they could also inform the discussion on guideline development.

1. Background

In recent decades, the international community has drawn on various governance and management frameworks in the fight against illegal, unreported and unregulated (IUU) fishing. These range from the 2001 International Plan of Action (IPOA) to prevent, deter and eliminate IUU fishing (FAO, 2001), to various voluntary and binding instruments addressing different aspects and responsibilities in this joint international endeavour to close all doors to IUU fishing. During the development of these international frameworks, the focus was on the fishing activity itself, but in recent years there have been increasing calls to bring fishing-related activities into the discussion.

Of the various activities which support fishing operations, transshipment was identified as a possible loophole that enables IUU fishing products to be laundered into international markets, particularly in light of: the lack of information and control over these operations, a lack of clarity in the definition of terms and responsibilities, and the varied implementation of instruments worldwide which has created channels and opportunities for unscrupulous operators to take advantage of the situation.

In 2016 the matter was brought up at the Thirty-second Session of the FAO Committee on Fisheries (see paragraphs 164 and 165; FAO, 2017). Recognizing the lack of clarity around transshipment operations, particularly with regards to authorization and notification procedures, reporting and transparency requirements and control mechanisms, COFI requested that FAO conduct a global study to shed light on current regulations, practices and control of transshipment to assess the status quo. Additionally, COFI suggested the use of the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record) and collaboration with Regional Fisheries Management Organizations (RFMOs) when examining this matter. In 2017 FAO initiated a global study on transshipment based on a three-pronged approach:

I. review of transshipment regulations worldwide at the national and regional level;

II. conducting a global survey through an electronic questionnaire shared with States, regional fisheries bodies (RFBs), non-governmental organizations (NGOs) and the private sector; and

III. a literature review including the review of known case studies.

The resulting study, qualitative in nature, was presented to the Thirty-third Session of COFI (COFI33) in 2018 and results indicated that transshipment seemed to be fairly regulated worldwide (FAO, 2018). With over 90 States responding to the global survey, transshipment practices varied widely and adapted to evolving circumstances; this suggested a need for further study, and that control over transshipment operations could be substantially improved.

COFI33 welcomed the global study on transshipment (see paragraph 55; FAO, 2019), but expressed continued concern about transshipment activities which, when inadequately regulated, monitored and controlled, can contribute to IUU fishing; it called for an in-depth study to support the development of guidelines to regulate, monitor and control transshipment.

In 2019 FAO began work to conduct a more quantitative, in-depth study of transshipment occurrences, hotspots, practices, drivers, risks and impacts. The present study, finalized in 2020, uses a risk-based approach to establish a basis for discussions on the development of international guidelines on transshipment, highlighting areas of persistent and emerging concern.

2. Methodology and approach

The objective of this in-depth study on transshipment is to give an overview of global transshipment activities, to the extent possible within its scope and timeframe. The fisheries and actors involved are described, as are the extent, patterns and hotpots of transshipment activity. Quantitative and qualitative aspects are integrated. The study outlines how transshipment is currently regulated, monitored and controlled and evaluates the risks of fish and fish products from IUU fishing entering the supply chain through transshipment. The methodology was built around the following elements:

Literature review (peer-reviewed studies and other written works):

Recent peer-reviewed studies and other papers have examined transshipment behaviour, thereby exposing a growing management concern regarding transshipment activity and its role in facilitating IUU-caught fish entering the supply chain – especially when it takes place at sea, far from management oversight and control. These studies and their findings were reviewed by FAO, including some studies which incorporated analyses of outputs derived from emerging technological advances such as Automatic Identification System (AIS) data, other satellite-based technologies and 'machine learning' algorithms.

Preparation and launch of an updated global transshipment survey targeted at FAO Members, Regional Fisheries Management Organizations (RFMOs), non-governmental organizations (NGOs) and industry stakeholder groups:

Given that the assignment for this study required a quantitative, more in-depth approach than the initial FAO study in 2017, a new transshipment survey was designed to capture the global extent and nature of transshipment events in more quantitative terms. The 2019 global transshipment survey questions are provided in Annex I.

Field visits:

Five field visits were carried out by FAO to selected ports in Latin America, Africa and Asia. The purpose of these was to undertake localized fact-finding and the gathering of relevant information and data on transshipment activities occurring in different fisheries and world regions. These field visits included meetings with a range of different competent authorities as well as industry and civil society stakeholders.

Bilateral engagement with RFMOs focused on risk mitigation and identification of residual risks:

RFMOs play a major role in the management of high seas fisheries. FAO engaged with 13 RFMOs in order to gauge the views of secretariat compliance staff on

1. the extent to which a range of risks of IUU-sourced or caught fish entering the seafood supply chain through transshipment were mitigated by the RFMO transshipment management measures and their implementation; and
2. other complementary MCS-related measures (e.g. authorizations, vessel monitoring systems, observer schemes, statistical documentation, catch documentation schemes, inspections in port) which contribute to achieving compliance with the transshipment measures.

A list of guiding questions was developed for the interviews, one related to the risks of IUU-caught fish entering the supply chain and focusing on: (1) authorizations to transship and related risk assessment and information-sharing, and compliance assessment and follow-up in the case of detected infractions; (2) data and reporting on transshipment activities; (3) monitoring of transshipment activities; and (4) broader information sharing on transshipment activities. A second list of guiding questions listed all relevant monitoring, control and surveillance (MCS-related) measures utilized by the respective RFMO to evaluate their scope, effectiveness and level of implementation. The objective of this exercise was to identify areas of 'residual risk' arising from gaps or weaknesses in transshipment control and management that can be exploited by unscrupulous operators.

Two case studies (tuna and squid):

Given the global importance of the tunas in world fisheries and the seafood trade, as well as the role that transshipment plays in delivering large volumes of high-value tuna to the international market, the study describes transshipment activities in the context of tuna fishery operations and how these are managed through RFMOs. Information for the case study was gathered through literature review, interviews with government MCS personnel, RFMO secretariat staff, fisheries analysts and MCS experts, in addition to other stakeholders from industry and civil society. The case studies examined the global importance of the fisheries, species, regions and fleets involved, their stock status and management. Available information varied between the two case studies.

Squid fishing activity is not currently within the remit of most RFMOs, especially on the high seas, and has increased dramatically over the last decade. Many of the carrier vessels identified as servicing high seas squid fishing vessels are also authorized carrier vessels in many RFMOs, and many of them fly the flags of States with known weak MCS capacity. Squid fisheries are not as well-known or studied, but the dramatic increases in high seas fishing effort directed at various species of squid – including interactions with carrier vessels known to operate in other fisheries – has given rise to concerns that these interactions provide opportunities for legally and illegally caught fish products to go unreported, thus facilitating the entry of illegal catch into the seafood supply chain. For this reason, FAO chose transshipment related to high seas squid capture as the second relevant case study. The case study findings are detailed in Section 3.4 of this report.

Examination of the drivers of transshipment:

The study also considers the main drivers of transshipment as a business strategy. These include not only economic incentives but also the avoidance of control measures. Other possible drivers are also considered.

3. Findings

3.1 2019 GLOBAL TRANSSHIPMENT SURVEY

The approach taken in the formulation of the 2019 questionnaire was mainly aimed at gathering and collating quantitative information on the types of transshipment activities that are occurring, as well as the location of transshipment activities, in order to identify trends in levels of transshipment over time and the MCS measures being applied.

The questionnaire was addressed to the following groups: FAO Members (including the European Union as a FAO Member Organization and two Associate Members), 13 RFMOs, 8 NGOs and 21 other industry stakeholders. Questions were tailored to each stakeholder group, in light of their role and the kinds of information that they could provide to complement the findings of this study (see Annex I). Data-related questions were framed within the context of the 2017 reporting year.

The links to the survey were disseminated via a mailing list built up through contacts obtained from FAO meetings, known contacts in RFMOs and NGOs and industry stakeholders identified through professional knowledge and web searches. Periodic registration and submission reminders were sent out.

The survey was launched with an initial deadline of 04 November 2019, which was later extended to 28 December 2019. Individual extensions with potential respondents were negotiated on a case-by-case basis.

In terms of overall response rates, these amounted to 23 percent in the case of FAO Members (it should be acknowledged that not all FAO Members have interests in marine capture fisheries), 62 percent of RFMOs and 50 percent of NGOs. Of the 21 industry stakeholder groups to which the survey link was sent, no questionnaire completions were received.

3.1.1 FAO Members

As there is no globally standardized format for collecting data on transshipment activities, a holistic approach was taken in the formulation of the questions. This ensured a level of compatibility between the format of questions in the questionnaire and the format of disaggregated data collected by States, with the intention of gathering as much meaningful information as possible.

While considering the following responses from States to the questionnaire it should be noted that some States who conduct transshipment operations did not provide responses; similarly, in some cases the data requested was either not available or disaggregated in such a way as to make it incompatible for submitting a complete response to the questionnaire. In light of this, the following aggregated responses from States – although incomplete – do provide a clear indication of the magnitude of different transshipment activities and the related management activities. The questionnaire results also provide an important insight into the availability of information on such activities within States, as well as the level of disaggregation.

Twenty-seven FAO Members and the European Union (Member Organization), on behalf of its 28 Member States, provided responses to the questionnaire, while 19 FAO Members reported that the questionnaire was not applicable as the fishing

vessels under their flag did not conduct any transshipment activities in 2017. Nauru reported that in 2017 they were not a flag State and no transshipment activities were reported within their EEZ.

The aggregated results were based upon submissions from the following FAO Members: Australia, Belize, Cambodia, Chile, China, Colombia, Cuba, Côte d'Ivoire, Faroe Islands, Fiji, Indonesia, Kenya, Malaysia, Mauritius, Namibia, New Zealand, Norway, Panama, Republic of Korea, Russian Federation, Saint Vincent and the Grenadines, Singapore, Solomon Islands, Trinidad and Tobago, Ukraine, United States of America, Vanuatu and the European Union on behalf of its Member States.

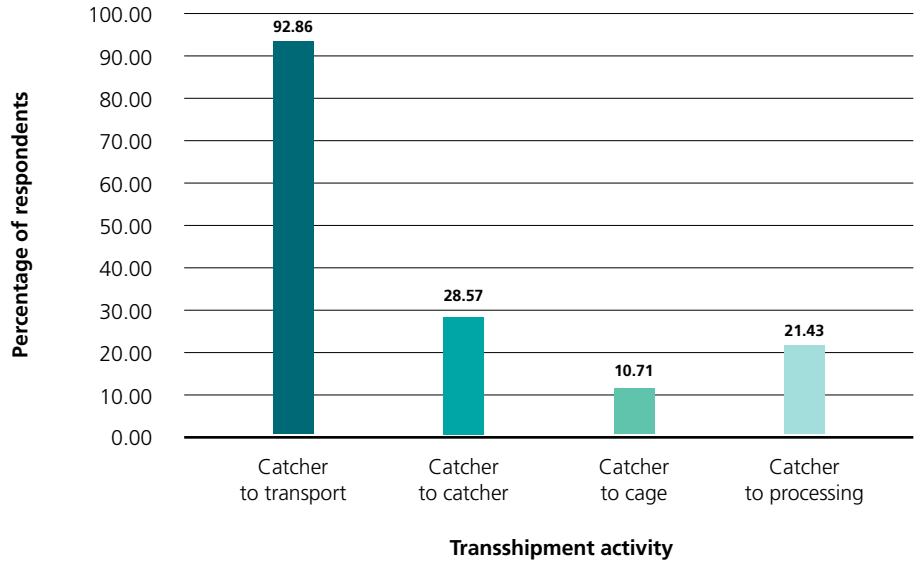
Types of transshipment activity and management measures in place

States were asked to report on the types of transshipment activities conducted by vessels flagged to their country. These were categorized within general groupings (Figure 1). Almost all States with vessels under their flag conducting transshipment reported the occurrence of transshipment from catching vessels to a transport vessel (93 percent), with other types of transshipment activities – catching vessels to catching vessel (29 percent), catching vessel to processing vessel (21 percent), and catching vessel to cage (11 percent) – occurring in a significantly lower number of States.

States were invited to report on the extent (Figure 2) and implementation (Figure 3) of measures to address each transshipment activity. In all four types of activities, the majority of responding States out of the total reporting the occurrence of each respective activity responded that the extent of measures was comprehensive and that these measures were fully implemented. The main exception was in the catching vessels to cage activity, where 33 percent of those reporting had minimal or no management measures in place to address this activity, while 50 percent of those with measures in place reported that these were partially implemented.

FIGURE 1

Percentage of respondents reporting occurrence of activity in waters under their jurisdiction or by vessels flagged to their country



It should however be noted that the sample size regarding the extent of catcher to cage management measures and implementation was small, as only three States reported the occurrence of this transshipment activity.

FIGURE 2
Extent of transshipment management measures in place out of the total number reporting occurrence of each transshipment type

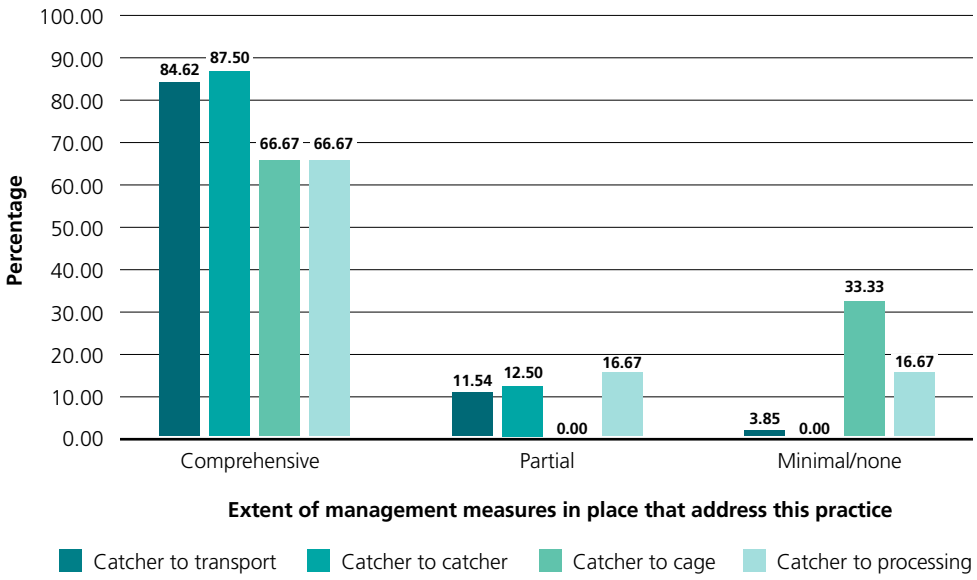
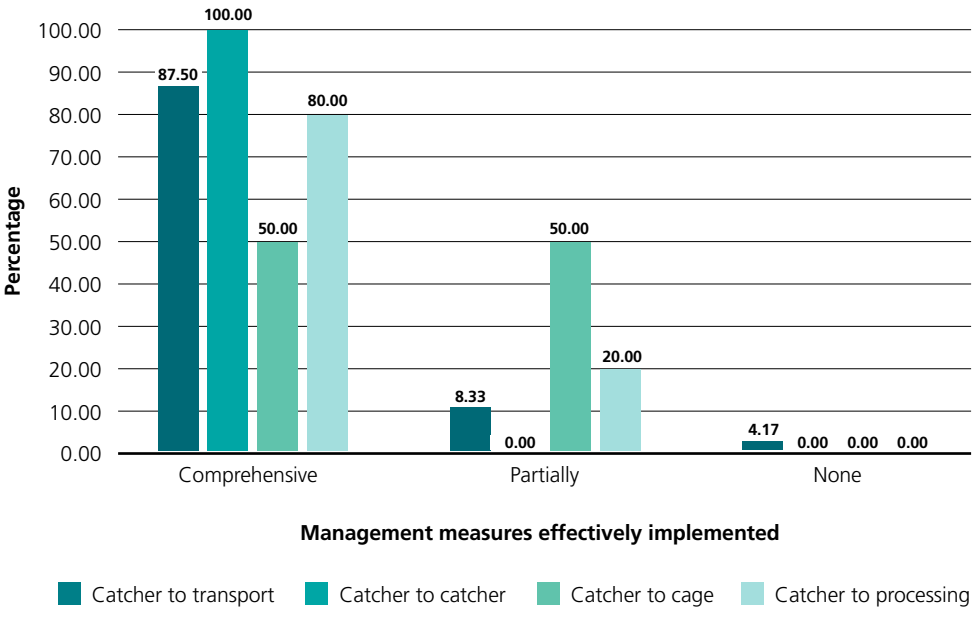


FIGURE 3
Level of implementation for States who reported having "comprehensive" or "partial" measures in place for each transshipment type



Vessels authorized to transship at sea in 2017

States reported on the number of fishing and carrier vessels flagged to their country who were authorized to transship at sea in 2017 (Figure 4). Certain countries noted that not all vessels authorized to transship performed such activities in 2017. The highest number of fishing vessels reported by States as authorized to transship were in the competency areas of the WCPFC (740 vessels) and IATTC (680 vessels) RFMOs, both of which are concerned with the conservation and management of tuna. Significant numbers of vessels were also reported under two non-tuna RFMOs in the case of SPRFMO (494 vessels) and NPFC (318 vessels). With regards to carrier vessels, the majority of the vessels reported were under tuna RFMOs – WCPFC (166 vessels), ICCAT (93 vessels) – while a significant number of carrier vessels was also reported under SPRFMO (90 vessels). The reported figures appear to indicate that transshipment activities are widespread throughout most geographical regions, with the Mediterranean being a possible exception. Transshipment plays a key role in tuna fisheries, and while it is also used in other fisheries it is mainly associated with known squid activity.

States were asked to breakdown the number of vessels authorized to transship at sea in 2017 by vessel type (Figure 5). The highest reported vessel type was the longliner (36 percent), followed by other vessels (24 percent): these mainly involved artisanal vessels as well as vessels targeting saury, and jigger vessels targeting squid (18 percent).

Event and tonnage of transshipment operations in 2017

States were asked to report on the location of transshipment operations by vessels flagged to their country in 2017. In terms of the number of events by fishing vessel (Figure 6), the highest numbers were reported in EEZs. It should be noted that the overall figures are skewed however: 15 451 events out of the total 16 224 reported to have occurred in EEZs were reported by one State, with those undertaken by their artisanal fishing fleet. Otherwise, a higher number of events occurred in the high seas (3 564) compared to those occurring in ports (2 853). With regard to carrier vessels, the vast majority of transshipment events were reported on the high seas (2 674).

FIGURE 4
Total number of catching vessels and carrier vessels flagged by States authorized to transship at sea in 2017, within each RFMO competency area

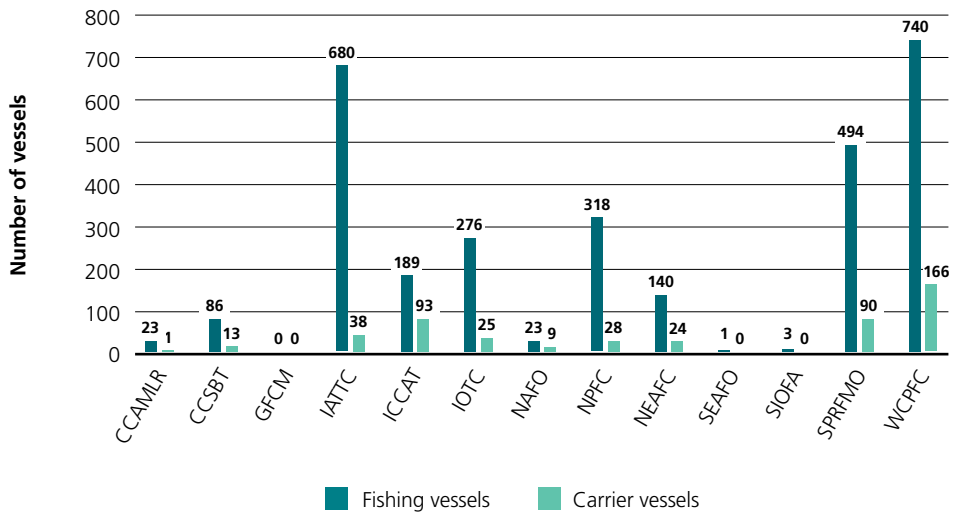


FIGURE 5
Percentage breakdown by vessel types authorized to transship at sea in 2017

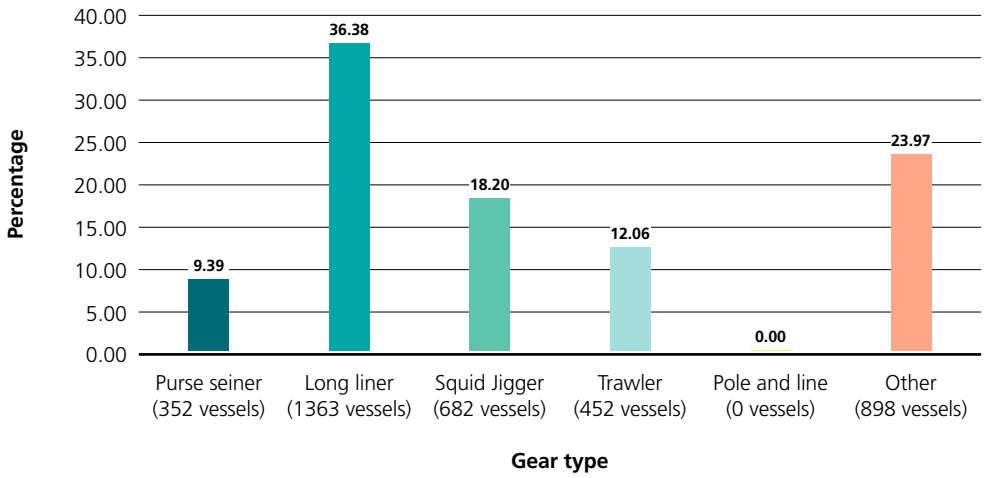
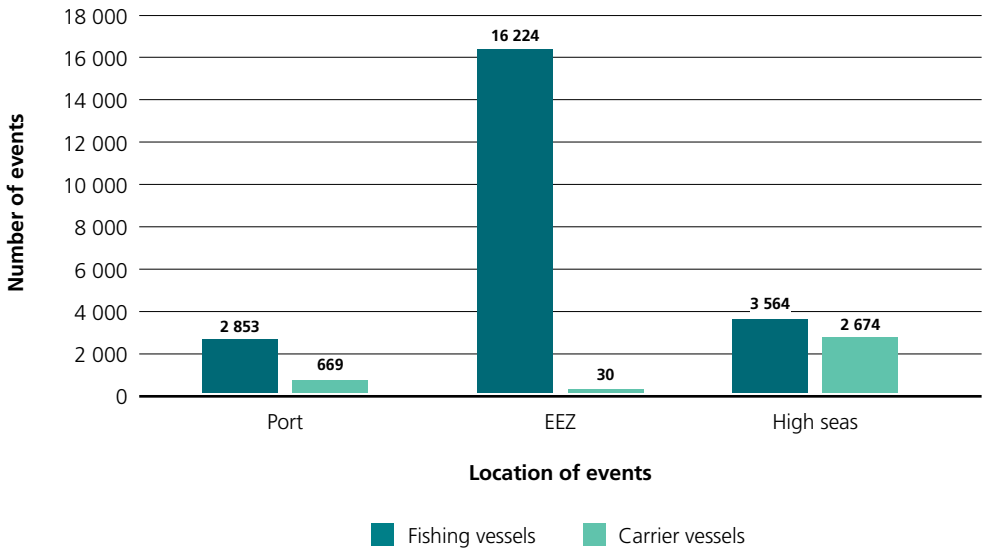


FIGURE 6
Number of transshipment events reported by States for each location in 2017, by fishing vessels and carrier vessels flagged to their country



In terms of tonnage transshipped (Figure 7), the highest proportion reported was by carrier vessels on the high seas (13 240 002 tonnes). When comparing the total tonnage per location between fishing vessels and carrier vessels, ports and EEZs show relatively similar figures. In the case of the high seas the figures are quite disproportionate, with reported figures transshipped by fishing vessels much lower than that of carrier vessels. This could indicate either: 1) that there is a lack of data available data on tonnage from transshipment reports from fishing vessels in comparison to carrier vessels, or 2) that countries to which these fishing vessels are flagged did not provide a response to the questionnaire.

Focusing on the tonnage breakdown by species groupings from at-sea transshipments in 2017 (Figure 8), the largest reported species grouping transshipped was tuna and tuna-like species (1.22 million tonnes).

Considering the number of squid jigger vessels authorized to transship at sea, as displayed in Figure 5, the 0.15 million tonnes of cephalopod reported is lower than expected. Moreover, in comparison to the much higher total figure provided for tonnage transshipped at sea in Figure 7, it is clear that many States did not provide or did not have complete figures of tonnage by species at sea in 2017.

FIGURE 7
Tonnage transshipped reported by States for each location in 2017 involving fishing vessels and carrier vessels flagged to their country

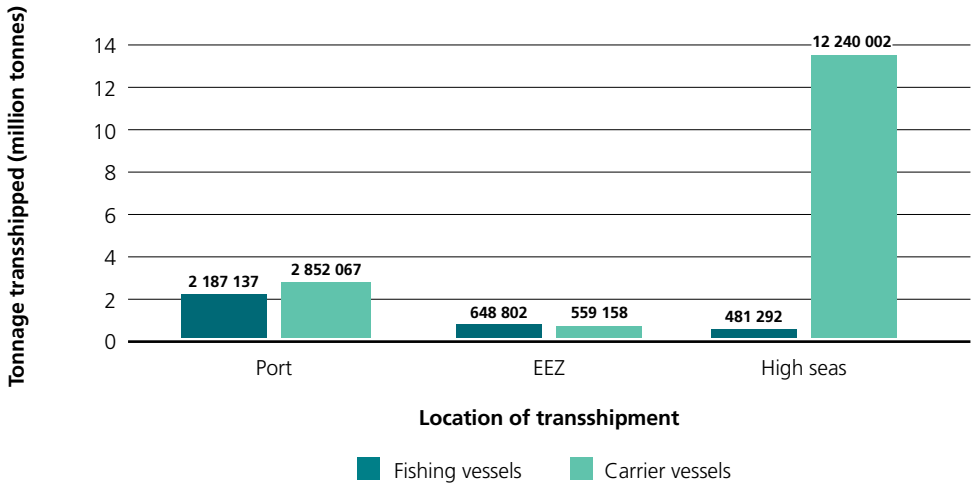


FIGURE 8
Tonnage breakdown by species groupings transshipped at sea in 2017 as reported by FAO Member survey respondents

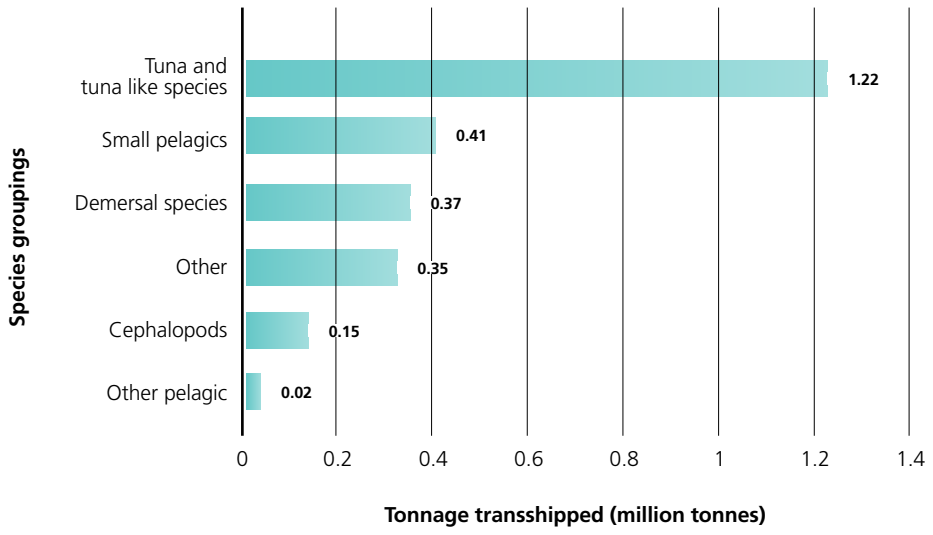
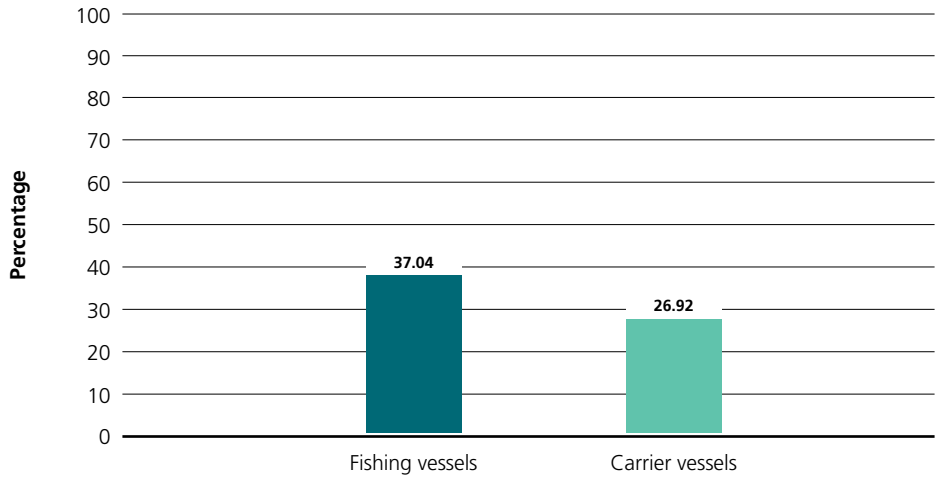


FIGURE 9
Percentage of States reporting to have publicly searchable lists for fishing vessels and for carrier vessels authorized to transship at sea



Publicly searchable lists

With regard to the availability of publicly searchable lists of vessels authorized to transship at sea in 2017 (Figure 9), 37 and 27 percent of State respondents reported these to be available for fishing vessels and carrier vessels, respectively.

Management and MCS measures on transshipment operations in 2017

Of the States that submitted responses to the questionnaire, most reported employing management measures prior to and after authorizing transshipment events (see Table 1). This included checking the compliance history of vessels (84 percent), applying sanctions for breaches of transshipment measures (91 percent), informing relevant States and RFMOs of amounts offloaded by carrier vessels (75 percent) and cross-checking information on transshipment declarations and landings (77 percent).

TABLE 1
Percentage of reporting States reported to be applying management measures

Management measures taken by States before and after authorised transshipment events	%
Countries checking the compliance history of vessels prior to authorizing transshipment at sea	84.21
Countries applying sanctions for breaches of their transshipment measures	90.91
Countries informing relevant flag States, coastal States and RFMOs about amounts offloaded from carrier vessels	75.00
Countries cross-checking information on transshipment declarations and landing	77.27

With regard to MCS measures employed by States to manage transshipment operations, the most commonly used measures were port inspections (78 percent), landing inspections (78 percent) and satellite VMS (75 percent). While the least used measures were vessel traffic services (26 percent), vessel traffic management and information systems (25 percent), satellite sensing (22 percent) and satellite sensing (7 percent).

TABLE 2
Percentage of States implementing MCS Measures on transshipment operations in 2017

MCS measures	%
Port inspections	77.78
Landing inspections	77.78
Satellite VMS	75.00
Fisheries Monitoring Centre	74.07
Prior notifications including intention to transship	70.37
Coordination of MCS resources	66.67
Fishing license	66.67
Prior notification of landing	66.67
Access to illicit or irregular lists	62.96
Authorizations including transshipments	62.96
Routine cross-checking of different sources of data	59.26
Mandatory use of designated Ports	55.56
Port State Control Measures as per PSMA	55.56
Catch Certification Scheme	55.56
AIS	53.57
Risk analysis and management	51.85
Observer reports submitted to RFMO secretariat and made available to other parties	51.85
Labelling of catch	51.85
Surface Surveillance (Ship)	48.15
Sea inspections (both within EEZs and on the high seas)	48.15
Joint Inspection Agreements with other countries	48.15
Information Exchange Agreements with other countries	48.15
Observers - Carrier vessels	46.15 (71.25)*
Observers - Catcher vessels	44.44 (55.54)*
Inspection targeting decided upon through risk assessment methodologies	44.44
Observers' independent estimate of quantities transshipped	44.44
Catch Documentation Scheme	44.44

TABLE 2 (CONTINUED)

MCS measures	%
GSM/GPRS VMS	42.86
Satellite AIS	42.86
Aerial surveillance (Aircraft)	40.74
Tagging of catch and other traceability measures	40.74
VTS	25.93
VTMIS	25.00
Satellite imagery	22.22
Satellite sensing	7.41

*Figure in bracket refers to aggregated percentage coverage of vessels with observers, from States implementing this MCS measure

3.1.2 Regional Fisheries Management Organizations (RFMOs)

The questions for RFMOs were designed taking into consideration the type of information which would be available to RFMO secretariats. Questions were also designed to ensure that certain data obtained from this questionnaire could be compared to that of the FAO Members' questionnaire. The questionnaire was only sent to those 13 RFMOs considered relevant to this study (those known to have transshipment as a feature in fisheries under their purview) including both tuna and non-tuna RFMOs. The aggregated results only provide a partial picture of global transshipment and therefore should be considered as indicative in nature, given that the data is limited to the number of RFMO secretariats who submitted responses. The following RFMO secretariats submitted a response to the questionnaire:

- Commission for the Conservation of Southern Bluefin Tuna (CCSBT)
- General Fisheries Commission for the Mediterranean (GFCM)
- International Commission for the Conservation of Atlantic Tunas (ICCAT)
- Northwest Atlantic Fisheries Organization (NAFO)
- The North East Atlantic Fisheries Commission (NEAFC)
- North Pacific Fisheries Commission (NPFC)
- South Pacific Regional Fisheries Management Organisation (SPRFMO)
- Western and Central Pacific Fisheries Commission (WCPFC).

Nature and extent of transshipment operations

RFMOs were asked to provide information regarding the number of events and tonnage of transshipment operations in different locations in 2017 (Table 3). Most RFMOs reported that data was not available or that it was beyond their mandate (e.g. outside of their convention area in terms of transshipment operations in EEZs and ports of their contracting parties). In some cases, data was available on events but not tonnage or vice versa, while one RFMO also noted that their convention was set up in a way that

they did not have a specific convention area. The data provide an indicative picture of transshipment operations in these locations in 2017. The highest number of events and tonnage was reported on the high seas within RFMO convention areas. According to the responses, in many cases there was no requirement to transmit the data on transshipments of RFMO-mandated species, caught within the RFMO convention area but transshipped elsewhere, to the RFMO – or these data were only partially available. It should be noted that 90 of the transshipment events, equalling 2 273 tonnes, reported as high seas outside of RFMO area, were related to transshipments for an RFMO without an established convention area.

TABLE 3
Number of transshipment events and tonnage transshipped in different location in 2017

Transshipment locations – events and tonnage		
Location	**Number of events**	**Tonnages transshipped**
In port (convention area)	27	150 896
In EEZs (convention area)	69	107 294
High seas RFMO area	4 445	683 006
High seas outside RFMO area	106	5 870
Total	**4 647**	**947 066**

With regard to tonnage by species groupings transshipped at sea in 2017 reported by RFMOs (Figure 10), the highest tonnage reported by survey respondents was for small pelagics (344 280 tonnes), followed by cephalopods (134 970 tonnes) and tuna and tuna-like species (94 780 tonnes). In comparison to the species group figures reported by FAO Member respondents as transshipped (Figure 8), tuna and tuna-like species had a much higher tonnage: over 1 million tonnes. This variation could be explained by the RFMO survey response figures not including submissions from all of the tuna RFMOs. The other major variation lies in the proportion of total composition represented by demersal species in reporting by States (370 000 tonnes) in comparison to RFMOs (0 tonnes). This is thought to be the result of demersal fisheries being largely carried out in national EEZs and therefore either outside of an RFMO convention area, or species not being managed by RFMOs. Additionally, transshipment in high seas demersal fisheries is known to be less common.

Examining the number of transshipment events at sea reported by RFMOs between 2013 and 2017, there appears to be a clear increase in reported transshipment events over time (Figure 11). In 2017, figures reported for the number of transshipment events (4 620 events) were over four times the number reported in 2013 (1 171 events). It should be noted that some of the increase noted from 2015 onwards is attributable to NPFC coming into effect in 2015. Transshipment statistics from what is now the NPFC Convention Area are therefore not incorporated within the data shown in Figure 11. Trends in tonnages transshipped over the same period also revealed an increase (Figure 12), although at an increased rate relative to the number of events, thereby suggesting larger transshipments per event over time.

FIGURE 10
Tonnage per species groupings transshipped at sea in 2017 as reported by RFMO survey respondents

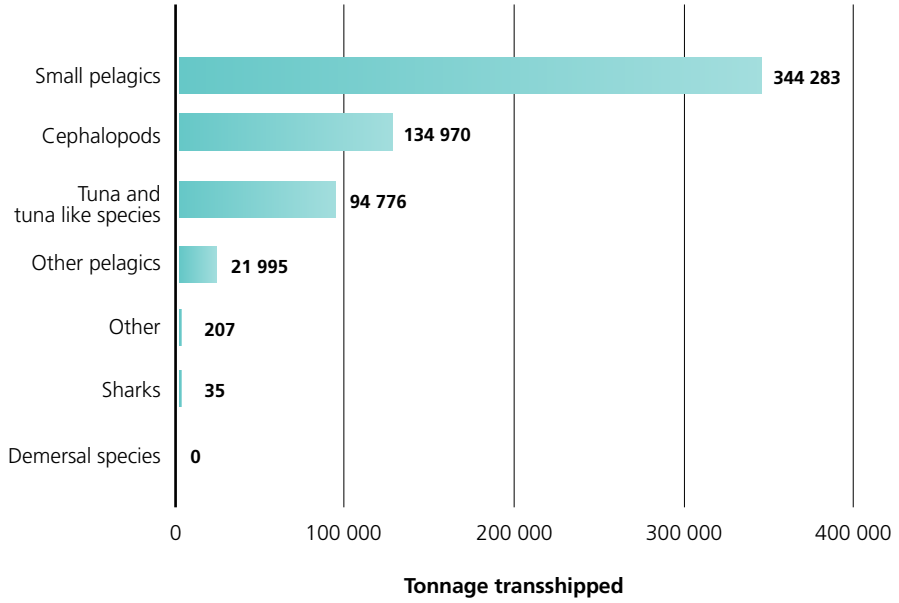
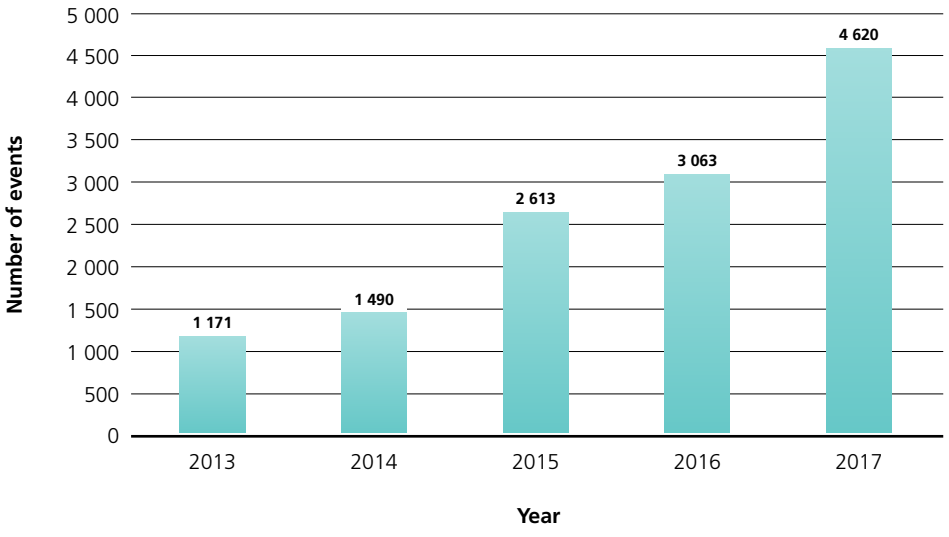


FIGURE 11
Number of transshipment events at sea between 2013 and 2017 as reported by RFMO survey respondents



It remains unclear whether such increases are in fact reflective of increased activity, improved reporting, or a combination of both. States were also asked to report on the overall levels of transshipment over time. Unfortunately, insufficient data was provided within submissions to be able to present indicative aggregated information.

FIGURE 12
Tonnage transshipped at sea from 2013 to 2017 as reported by RFMO survey respondents

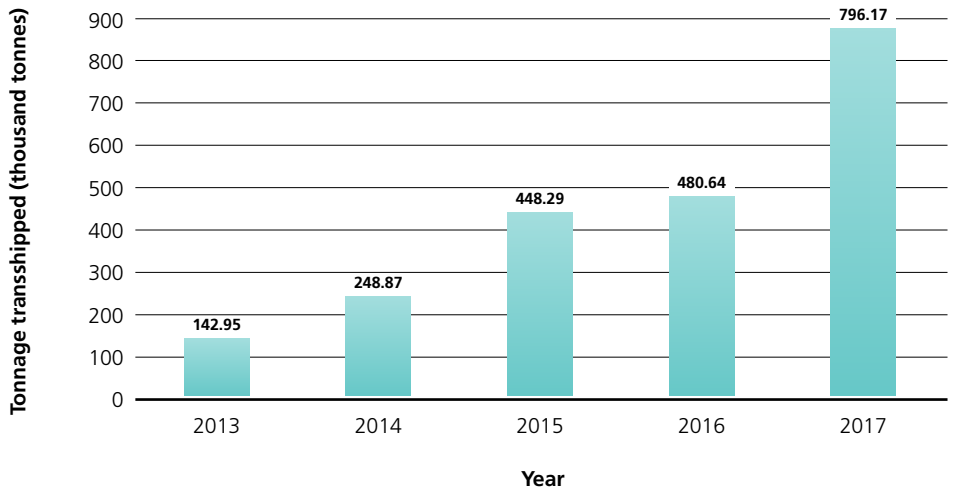
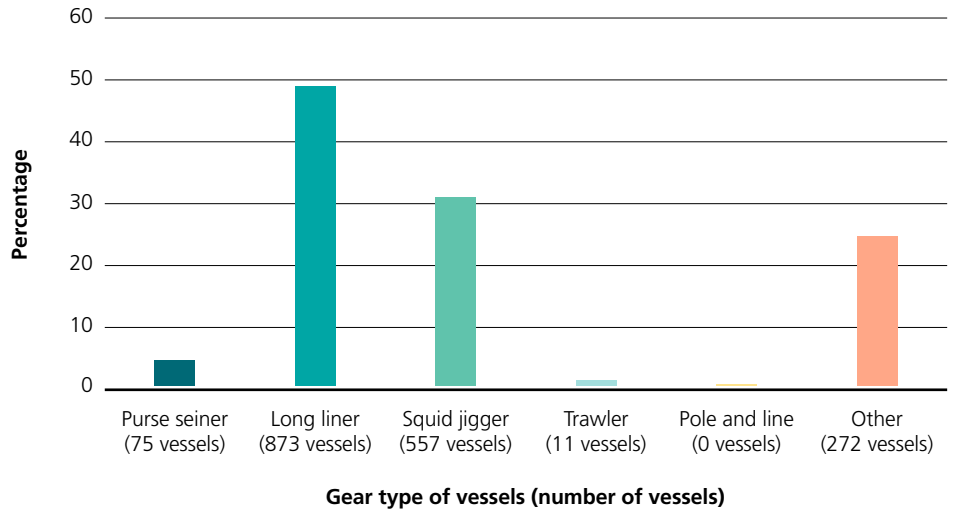


FIGURE 13
Percentage breakdown by vessel types engaged in transshipment at sea in 2017



*Stick-held dip nets reported as one of the gear types in the "other"category

RFMOs were asked to specify the gear type of fishing vessels engaged in transshipment in 2017 (Figure 13). Almost half of the vessels reported were longliners (873 vessels), with squid jiggers making up close to 30 percent of the vessels (557 vessels). One of the gear types specifically mentioned in the "Other" category were stick-held dip nets.

Regulatory framework

With regard to the inclusion of certain key definitions within the regulatory framework of RFMOs, a quarter reported to have large-scale tuna longline vessels within their regulatory framework, while a high proportion of respondents reported that fishing vessels (100 percent), carrier vessels and transshipment (both 87.5 percent) were defined within their regulatory frameworks (Table 4).

TABLE 4
Definition of terms included in the regulatory framework of reporting RFMOs

Definition included within regulatory framework	%
Large scale tuna longline vessel	25.00
Fishing vessel	100.00
Carrier vessel	87.50
Transshipment	87.50

TABLE 5
Availability of publicly searchable lists of vessels authorized to transship at sea

	Publicly searchable list of fishing vessels authorized to transship at sea (%)	Of which historical information available on vessels* (%)
Fishing vessel	37.50	66.67
Carrier vessel	62.50	80.00

*Based on total reporting for that vessel category

TABLE 6
Requirements for notifications and authorisations to transship at sea

	%
RFMO secretariat informed prior to/at authorizations for at-sea transshipment	62.50
Carrier vessels required to notify the RFMO secretariat of their intention to transship at sea upon entry into the convention area	25.00
Mechanism in place for the Commission to review/approve authorization by flag State	12.50

Regarding the publicly searchable lists of vessels authorized to transship at sea (Table 5), 37.5 percent reported having these available for fishing vessels, of which 66.67 percent reported that these publicly searchable lists also contain historical information on vessels. With regards to carrier vessels, over half reported having publicly available lists of carrier vessels (62.5 percent), of which 80 percent also contain historical information on those vessels.

Regarding requirements for notifications and authorizations to transship at sea (Table 6), just over half of RFMO secretariats reported having a requirement for the RFMO to be informed by the flag State Contracting Parties prior to / at the point of authorization for at-sea transshipments (62.5 percent). With regard to the requirement for carrier vessels to notify the RFMO secretariat of their intention to transship upon entry into the convention area, a quarter reported having such measures in place. Finally, 12.5 percent reported to have a mechanism in place for the Commission to review / approve transshipment authorizations by flag States.

TABLE 7
Responses to non-compliance

Non-compliance measures implemented by RFMO towards:	%
Individual vessels	100.00
Individual Contracting Parties	62.50
RFMO secretariat follows up with Contracting Party action on cases of non-compliance by vessels	87.50

With respect to measures in response to non-compliance with transshipment regulations (Table 7), all RFMOs reported to have non-compliance measures in place for individual vessels, while 62.5 percent reported having measures applicable to individual Contracting Parties.

With regard to MCS measures implemented by RFMOs on transshipment operations in 2017 (Table 8), the most commonly used measures were at-sea and port inspections (both 75 percent). MCS measures such as GSM / GPRS VMS, VTMIS, VTS and catch certification schemes were reported as not used. It should be noted that one RFMO reported that they did not use any MCS measure on transshipment operations as no events were reported in 2017.

TABLE 8
MCS Measures used to control transshipment operations in 2017

MCS measures	%
Sea inspections (both within EEZs and on the high seas)	75.00
Port inspections	75.00
Mandatory use of designated ports	71.43
Port State Control Measures as per PSMA	71.43
Satellite VMS	62.50
Authorizations including transshipments	62.50
Prior notifications including intention to transship	62.50
Observer reports submitted to RFMO secretariat and made available to other parties	50.00
Routine cross-checking of different sources of data	50.00
Access to illicit or irregular lists	50.00
Prior notification of landing	50.00
Observers - catcher vessels (implementation and percentage coverage)	37.50 (6.67)*
Observers - carrier vessels (implementation and percentage coverage)	37.50 (100.00)*
Landing inspections	37.50

TABLE 8 (CONTINUED)

MCS measures	%
Joint Inspection Agreements with other countries	37.50
Observers' independent estimate of quantities transshipped	37.50
Information Exchange Agreements with other countries	37.50
Fishing license	37.50
Catch Documentation Scheme	37.50
Surface surveillance (Ship)	25.00
Fisheries Monitoring Centre	25.00
Coordination of MCS resources	25.00
Tagging of catch and other traceability measures	25.00
Satellite sensing	14.29
AIS	12.50
Satellite AIS	12.50
Satellite imagery	12.50
Aerial surveillance (aircraft)	12.50
Risk analysis and management	12.50
Inspection targeting decided upon through risk assessment methodologies	12.50
Labelling of catch	12.50
GSM/GPRS VMS	0.00
VTMIS	0.00
VTS	0.00
Catch Certification Scheme	0.00

* Figures in parenthesis refer to aggregated percentage coverage of vessels with observers

3.1.3 Non-Governmental Organizations (NGOs)

The questionnaire addressing NGOs focused on their professional experience and opinion on various matters concerning the practice of transshipment. These related to: NGO policy on transshipment and number of studies carried out by them, as well as the data used in those studies; their appreciation of whether transshipment has increased or not in the last five years, and whether it is contributing to IUU fishing; the geographical areas NGOs believe are more affected by transshipment. Finally, NGOs were requested to list the primary concerns remaining with transshipment, the management best practices that should be promoted and the primary benefits of improving transshipment management.

Four NGOs responded to the transshipment questionnaire: The International Seafood Sustainability Foundation (ISSF), Pew Charitable Trusts (PCT), Trygg Mat Tracking (TMT) and the Worldwide Fund for Nature (WWF).

NGO policy on transshipment

With regards to each NGO policy on transshipment, ISSF indicated that transshipment at sea should be rigorously and transparently managed to avoid becoming a conduit for IUU fishing. Their work addresses shortcomings in tuna RFMOs transshipment measures, particularly in data collection and reporting. According to ISSF 100 percent observer coverage (human and/or electronic) is essential. The Pew Charitable Trusts support the banning of transshipment at sea until best practice regulatory changes are adopted and implemented. Proper management of transshipment would also help obtain complete and accurate information and data sets on transshipping, which are vital for effective fisheries management and quality science. Authorities should be willing to act on noncompliance and set an appropriate sanction regime. TMT is not a campaigning or policy-focused organization and thus it does not have a policy on transshipment; it provides support to developing States through intelligence and capacity building. Given that transshipment can contribute to IUU fishing, TMT envisions improved control and activity reduction as a more feasible approach to transshipment, rather than an outright ban.

NGO studies

In the last five years, 16 studies on transshipment were conducted by three out of the four NGOs with the exception of TMT. Pew conducted ten studies while ISSF and WWF conducted three each. The NGOs report on the main source of data for these studies. They all used RFMO information and literature review to feed into their studies / publications. Two of them used VMS data and three used AIS. Only TMT used other remote-sensing data sources and light lumens. Two respondent organizations used polling / questionnaires, or other sources of information.

Magnitude and IUU fishing

Except for TMT, the other three NGOs are of the view that transshipment operations have increased in the last five years and that they contribute more to IUU fishing. TMT indicates that it is difficult to quantify, but certainly awareness and knowledge about transshipment has increased.

Measures put in place recently indicate a decrease in transshipment in certain areas (e.g. a ban in EEZs) that could have caused an effort displacement to other areas; as such it is very difficult to quantify overall whether transshipment has decreased or simply displaced to other areas. According to TMT, the only case where it seems clear there has been an increase in fishing and transshipment is in the squid fishery in the Northern Indian Ocean.

Concerning the transshipment contribution to IUU fishing, TMT believes that there are a large number of suspected and confirmed cases of IUU fishing involving transshipment at sea. When reporting on the increase of transshipment operations in recent years, ISSF and Pew based their views on WCPFC, ICCAT and IOTC reports showing a substantial increase.

Geographical areas

Both ISSF and TMT agree in their responses that transshipment happens globally. TMT is more focused on Africa and thus, more aware of cases in that region. For the WWF the main hotspot is the Pacific Ocean, while Pew reports in detail on the various regions and areas covered by RFMOs where transshipment is prominent, thus revealing that it is a very extended practice. Pew also identifies how the overlap of convention areas associated with different RFMOs is an emerging risk of IUU fishing, since the

transshipment measures are often not aligned between RFMOs whose convention areas overlap. According to Pew, the lack of transshipment notification requirements, together with the lack of information-sharing mechanisms specifically including transshipment activities, creates opportunities for unreported catch to go undetected and contribute to IUU fishing.

Primary concerns regarding transshipment

In general, the respondent organizations agreed that a lack of strong regulation and limited information sharing are the main concerns about transshipment in relation to IUU fishing. They also pointed out that transshipment operations can facilitate labour and human rights abuses, which is a matter of major international concern. The ISSF considers the lack of rigorous and transparent management as the main concern in transshipment. Pew suggests that measures to monitor and control transshipment should be globally coordinated, preferably through FAO guidelines, and that information-sharing agreements are essential for cross-checking data, particularly between RFMOs whose convention areas overlap. According to TMT, the lack of official monitoring and oversight of at-sea transshipment activities presents a significant challenge for tackling IUU fishing.

Best practices in transshipment management

It is clear that a suite of management measures have to be implemented together in order to manage transshipment adequately. Some of the more novel measures suggested by respondents include:

- extended information exchange among all those involved in the event, in a similar way to the inspections notification system under PSMA;
- strengthen high seas patrols;
- the establishment of a limited period of time for any vessel to be out at sea without calling at a port;
- extend transshipment measures to bunkering vessels;
- the establishment of clear criteria for flag States to authorize transshipment at sea and a review process of these criteria under the RFMOs;
- ensure clear identification of carrier vessels which transship at sea as fishing vessels so as to be subject to flag State control particularly of an overseas fishing fleet and port State control;
- clear identification of responsibilities in relation to control of reefers/fish carriers involved in transshipment events, together with strong interagency cooperation and capacity building;
- mandated usage of AIS data.

Primary benefits of improving transshipment management

Respondent organizations agreed that improved transshipment management would improve compliance and reduce IUU fishing, trafficking and forced labour, as well as increase vessel safety and both crew and observer welfare. Timely data would allow the verification of information that would bring transparency and trust to these operations. As mentioned above, no responses were received from the 21 industry organizations canvassed for data and information.

3.1.4 Industry stakeholders

Rationale and planning

Field missions to selected ports States were decided upon by making use of the collective

3.2 FIELD MISSIONS

knowledge and experience of the study team and other colleagues, references to the published literature (see in particular Hosch *et al.*, 2019) and the examination of vessel behaviour (ports within steaming distance of carrier vessels operating in the vicinity of groups of fishing vessels). The latter was derived from Automatic Identification System (AIS) data available from public web-based platforms. A regional balance was sought. The field trips were designed to undertake localized fact-finding, meeting with a range of competent authorities and stakeholders in order to gather information and data on the type and quantity of transshipment activity taking place, as well as recording the activity's key drivers. Table 9 details the regions, ports and countries visited. Planning and programming were facilitated with the kind cooperation and collaboration of national focal points and colleagues in regional and sub-regional FAO offices.

TABLE 9
Regions, countries and ports visited during the fact-finding field missions

Region	Countries	Ports
Latin America	Ecuador	Manta
	Peru	Callao
	Uruguay	Montevideo
West Africa	Ghana	Tema
Asia Pacific	Thailand	Bangkok
		Samut Sakhon

Ecuador

A field visit was made to the port of Manta, Ecuador from 13 to 17 August 2019. Manta is an important regional hub for tuna, with a large processing industry (FAO, 2020) that demands a constant supply of raw product.

A range of competent authorities and stakeholders were consulted for information and views on transshipment activity in and connected with the port of Manta (Table 10). Following consultations with competent authorities and other stakeholders the following the types of transshipment activity were recorded as taking place in Manta:

- transshipment from catching vessel to refrigerated cargo vessel (reefer) both at sea and within the established port area (including anchorages)
- transshipment from fishing vessel to fishing vessel at sea (national waters)
- transshipment from fishing vessel to transport vessel at sea (national waters)
- arrivals of container vessels bringing tuna from purse seine vessels
- arrivals of reefers with catches transshipped from donor purse seine vessels.

A more detailed discussion of the types of transshipment noted during this study is presented in Section 3.5.

TABLE 10
Authorities and stakeholders consulted in the port of Manta, Ecuador

Entity	Spanish title	English
DIRNEA	Dirección Nacional de los Espacios Acuáticos	Naval Service / Coastguard
SENAE	Servicio Nacional de Aduana del Ecuador	Customs
VMAP	Viceministerio de Acuicultura y Pesca	Fisheries Department
APM	Autoridad Portuaria de Manta	Manta Port Authority
STPTMF	Subsecretaria de Puertos y Transporte Marítimo y Fluvial	The Under-Secretary of Ports, Maritime Transport and Rivers
JCP	Agencia Naviera JCP	JCP Shipping Agents
ATUNEC	Asociación de Atuneros del Ecuador	Ecuadorian Tuna Operators Association

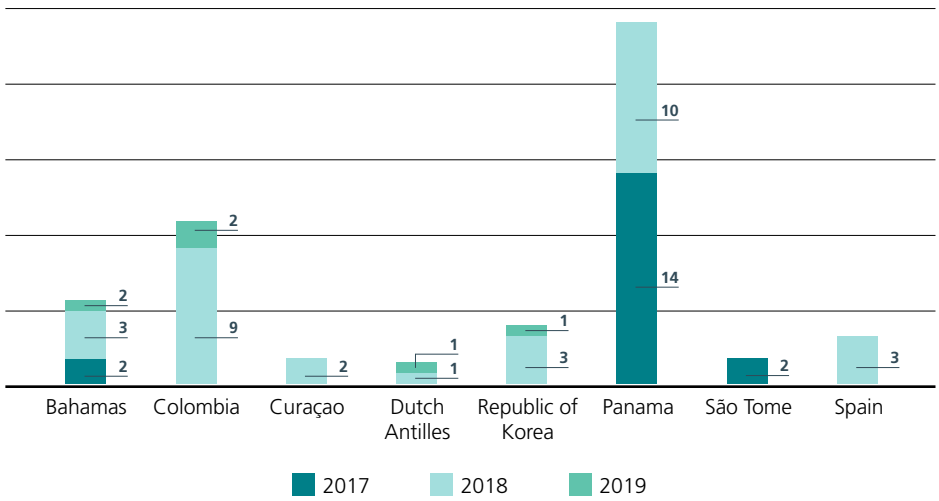
Only a limited dataset of arrivals of reefers in the port of Manta was supplied by the competent authorities for the years 2017 and 2019. For these years there were unfortunately not enough details to allow a more thorough analysis of the data beyond simple trends, presented in Table 11 and Figure 14 below.

TABLE 11
Reefer arrivals by month in the port of Manta, Ecuador
Based on limited datasets for 2017 and 2019 and more comprehensive data for 2018

Month	2017	2018	2019
January	2	5	2
February	2	1	2
March	5	3	2
April	0	4	2
May	1	1	3
June	0	4	0
July	1	1	0
August	1	2	
September	2	3	
October	1	4	
November	3	1	
December	3	3	
Total	**21**	**32**	**11**

Source: VMAP, 2019

FIGURE 14
Arrivals of reefers in the port of Manta, Ecuador with tuna cargo aboard, 2017–2019



Source: VMAP, 2019

*The datasets for 2017 and 2019 are limited

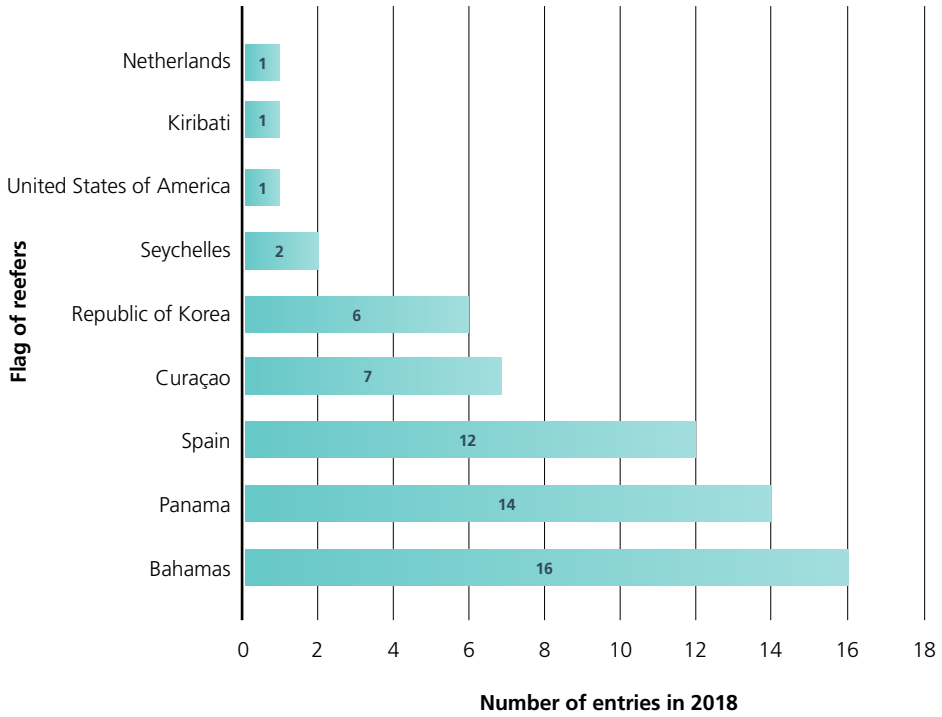
However, for the year 2018 a more comprehensive dataset was provided, which yielded more information about the activity.

Arrivals in the port of Manta in 2018

The data provided show that 40 container vessels and 60 reefers arrived in the port of Manta in 2018, the majority of which (apart from one reefer) were bringing tuna that had been loaded into containers or previously transshipped (reefers). In both cases, details on the place(s) of transshipment or loading of the containers could not be accessed by the study team. The port of Manta (including the private port of Puerto Atún, Jaramijó) was also used by a fleet of 57 foreign-flagged purse seiners.

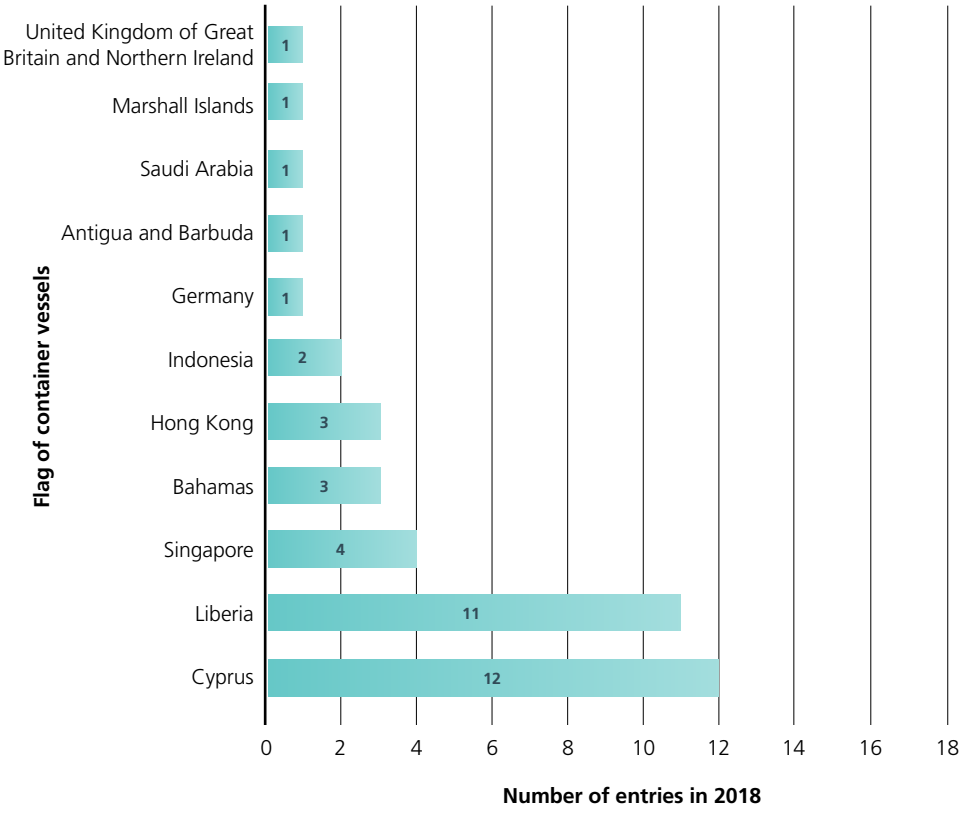
The dataset presented allows a detailed analysis of the arrivals of both container vessels and reefers in terms of flag, the importance of different tuna species and the flag of donor vessels from which the catches originated. As may be expected given that the catches were destined for processing, the donor vessels were all purse seiners and the species of most importance was skipjack tuna (SKJ, *Katsuwonus pelamis*). Figures 15 to 20 provide further details.

FIGURE 15
Entries by reefers into the port of Manta in 2018



Source: VMAP, 2019

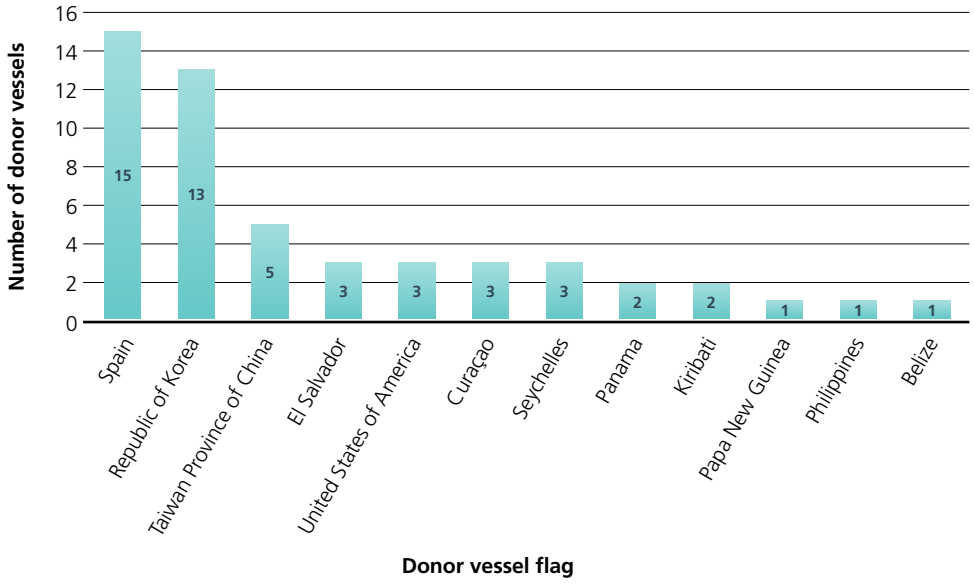
FIGURE 16
Entries by reefers into the port of Manta in 2018



Source: VMAP, 2019

FIGURE 17

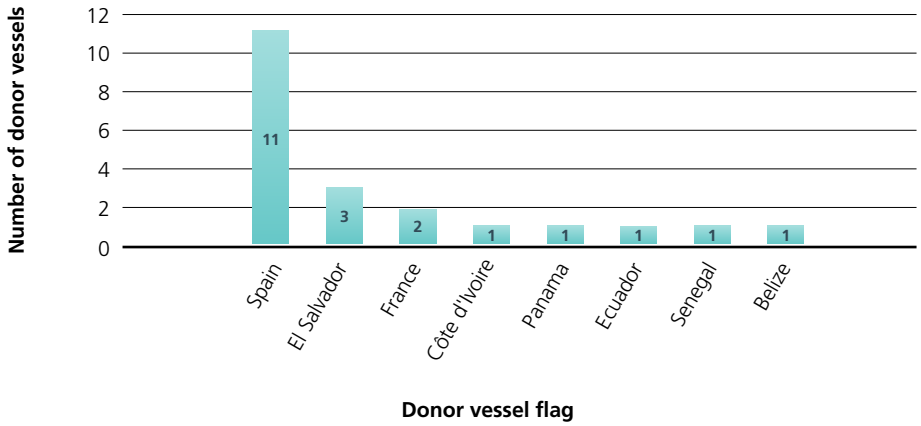
Flag and number of donor purse seiners which transshipped to reefers which had entered the port of Manta, Ecuador with frozen tuna aboard in 2018



Source: VMAP, 2019

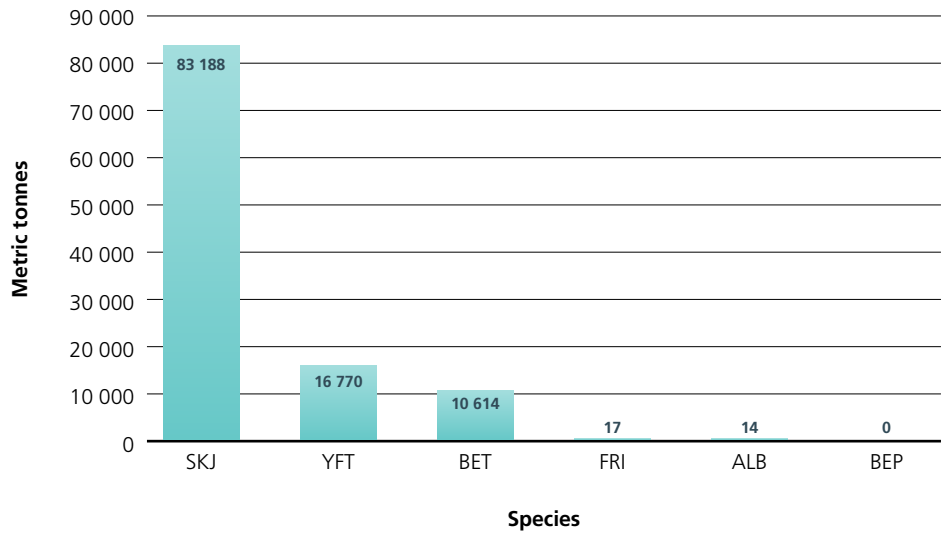
FIGURE 18

Flag and number of donor purse seiners which loaded catches to containers which had entered the port of Manta, Ecuador in 2018



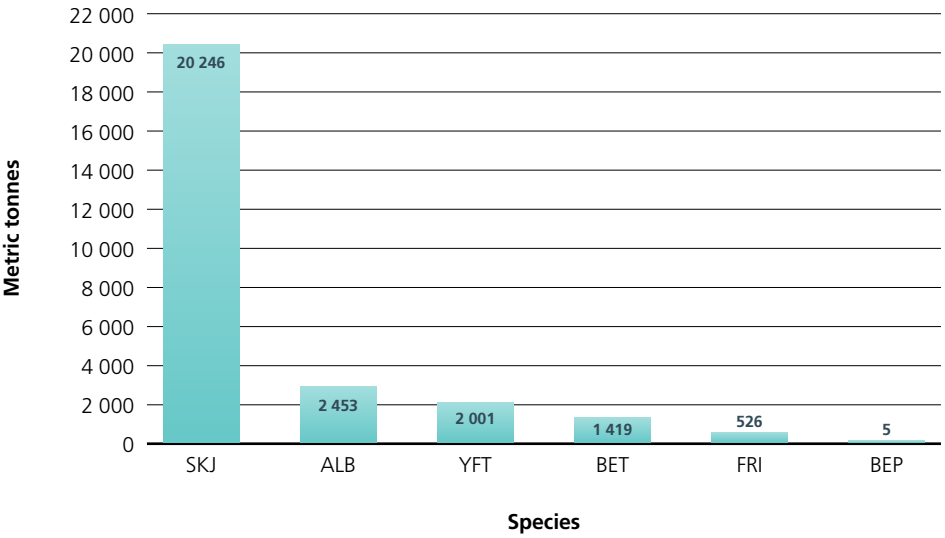
Source: VMAP, 2019

FIGURE 19
Species and quantities brought to the port of Manta, Ecuador by reefer in 2018



Source: VMAP, 2019

FIGURE 20
Species and quantities brought to the port of Manta, Ecuador by container in 2018



Source: VMAP, 2019

Peru

FAO visited Peru over the period from 19 to 23 August 2019. The team met with the following competent authorities and stakeholders to discuss transshipment activity.

The principal ports of interest with regards to transshipment-related activity in Peru are the ports of Piura and Callao (Lima). Originally a visit to the port of Piura was also planned, but having been informed by the competent authorities that little activity was foreseen in that port at the time of the visit and that logistics would prove difficult, the team decided to forego the visit to Piura and focus on gathering information from competent authorities and stakeholders in Lima and the port of Callao. The team requested historical data for both ports, which was supplied later. No activity was observed by the study team during the visit.

Transshipment at sea is not permitted in Peru, so the activity is restricted to catching vessels transferring catches to containers in port, which are then loaded aboard large-scale container vessels and shipped to the port of destination. The Fisheries Directorate General (DGSFS-PA) classifies this activity not as a landing as such, but as a 'deposit on land as merchandise in transit' (*depósito en tierra como mercadería en tránsito*). The customs authority (SUNAT) considers the activity a clear transshipment. Formal landing procedures are not applied. For the dataset presented, the years 2017 and 2018 did not contain species-level information. Table 13 details the number of fishing vessel port calls by flag in 2017, 2018 and 2019 including the total tonnes deposited on land as merchandise in transit / transshipped to containers in port.

Identification of the donor vessels by name in the dataset facilitated the clarification of vessel type. As detailed in the dataset, all vessels engaged in this kind of activity are pelagic longliners (LLD) or squid jiggers (LHM), as per the International Standard Statistical Classification of Fishing Gear (ISSCFG Rev. 1 2013; FAO, 2013). The 2019 dataset presented contained detailed information at the species level which enabled a tentative estimate of the proportional representation of the catches by species transshipped by the pelagic longliners in Peru (see Figure 21).

TABLE 12
Authorities and stakeholders visit during the field visit to Peru

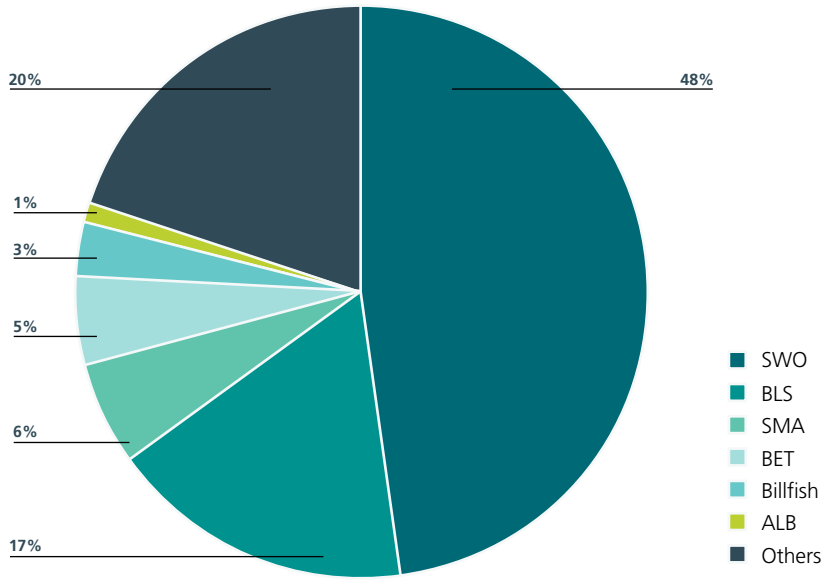
Entity	Spanish title	English
DGSFS-PA	Dirección General de Supervisión, Fiscalización y Sanciones de Pesca y Acuicultura	Directorate General of Supervision, Inspection and Sanctions; Fisheries and Aquaculture
SISESAT	Sistema de seguimiento satelital de embarcaciones	Vessel Monitoring System
APN	Autoridad Portuaria Nacional	National Port Authority
SUNAT	La Superintendencia Nacional de Aduanas y de Administración Tributaria	Customs
DICAPI	Dirección General de Capitanías y Guardacostas	Coastguard and Maritime Service
SANIPES	Organismo Nacional de Sanidad Pesquera	Fisheries Public Health Dept.
TPS	Trans-Peru Shipping S.A.C	Fishing vessel agent
Gyoren	Gyoren del Peru S.A.C	Fishing vessel agent
Oceánica	Marítima Oceánica S.A.C	Fishing vessel agent

TABLE 13
Port visits and amounts transshipped to containers by flag of fishing vessel, ports of Piura and Callao, 2017–2019

2017							
Piura				**Callao**			
FV flag	**Tonnes**	**Port visits**		**FV flag**	**Tonnes**	**Port visits**	
Spain	2 010	14		China	248	3	
Portugal	343	2		Republic of Korea	2 308	9	
Totals	**2 353**	**16**		Spain	9 449	51	
				Japan	1 530	11	
				Panama	606	4	
				Portugal	183	1	
				Taiwan Province of China	1 293	4	
				Totals	**15 617**	**83**	
2018							
Piura				**Callao**			
FV flag	**Tonnes**	**Port visits**		**FV flag**	**Tonnes**	**Port visits**	
Spain	971	10		China	794	4	
				Republic of Korea	4 907	15	
				Spain	8 493	44	
				Japan	1 143	14	
				Panama	656	3	
				Totals	**15 993**	**80**	
2019							
Piura				**Callao**			
FV flag	**Tonnes**	**Port visits**		**FV flag**	**Tonnes**	**Port visits**	
Spain	1 158	8	LLD spp	Republic of Korea	1 127	6	(*Ilex*)
					160	2	(*Pota*)
				Spain	3 774	19	LLD spp
				Japan	625	6	LLD spp
				Panama	230	1	LLD spp
				Cook Islands	121	2	*Langosta*
				Totals	**6 037**	**36**	

Source: DGSFS-PA, 2019

FIGURE 21
Species composition - LLD catches transshipped in Piura and Callao, Peru in 2019



ASFIS 3-alpha code:
SWO: swordfish, **BLS:** blue shark, **SMA:** shortfin mako shark, **BET:** bigeye tuna, **ALB:** albacore tuna

Source: DGSFS-PA, 2019

The largest components of the catch transshipped by pelagic longline vessels consist of swordfish (SWO, 48 percent), blue shark (BLS, 17 percent), shortfin mako shark (SMA, 6 percent), bigeye tuna (BET, 5 percent) billfish (3 percent) and albacore tuna (ALB, 1 percent). The remaining 20 percent (others) is made up of yellowfin tuna (YFT), generic 'tuna', escolar, dolphinfish (DOL), wahoo (WAH), shortbill spearfish (SSP), opah (LAG) and cero (CER). Billfish refer to the marlins and sailfish, but does not include swordfish (SWO, *Xiphias gladius*). From the squid references in Table 13, the *Ilex agentinus* squid were caught in the Atlantic, with the vessel seeking to discharge prior to engaging in the Pacific jumbo flying squid (*Dosidicas gigas*) fishery on the high seas in the Eastern Pacific Ocean. Pota are *D. gigas*.

For a fuller discussion of the increasing trend of discharging catches into containers, please see Sections 3.5 and 5.2 of this report.

Uruguay

FAO visited Uruguay from 26 to 28 August 2019, with a focus on the port of Montevideo. This port is an important regional hub for fisheries and shipping and is connected to all the main shipping routes. Montevideo handles some 14 percent of all South Atlantic marine fisheries production (FAO area 41). During the visit, the study team consulted the following competent authorities and stakeholders.

TABLE 14
Competent authorities and stakeholders consulted in Montevideo, Uruguay

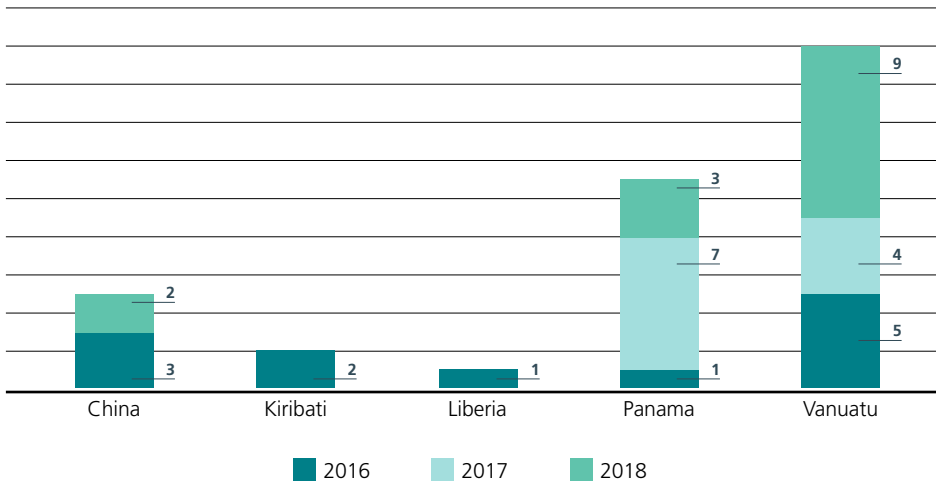
Entity	Spanish title	English
DINARA	Dirección Nacional de Recursos Acuáticos	National Authority for Aquatic Resources
CAPE	Cámara de Agentes de Barcos de Pesca Extranjeros	Association of Agents of Foreign Fishing Vessels
Capitanía	Capitanía de Puerto de Montevideo	Captaincy of the Port of Montevideo
PREMO	Prefectura (Naval) de Montevideo	Coastguard / Naval Service

Uruguay prohibits vessel to vessel transshipment in its waters. There are two main types of transshipment-related activity which take place in Montevideo:

1. Reefers which have transshipped catches on board (mainly involving *Ilex* squid caught on the high seas and to a lesser extent *Loligo* squid from the Falkland Islands (Malvinas) EEZ) and enter port to discharge to containers. These are then loaded aboard container ships for onward shipping. One specific reefer handles krill products sourced from catches in the Southern Ocean and transshipped within the Falkland Islands (Malvinas) EEZ.

2. Demersal trawlers flagged to European Union Member States and Asian countries will discharge catches in port directly to containers for onward shipping. The main fishing grounds from which the catches are sourced are some 250 nautical miles east of the Gulf of San Jorge (Argentina); a smaller fleet of Asian-flagged demersal trawlers work the continental shelf extension seaward of the mouth of the River Plate beyond the Uruguayan / Argentinian EEZ limit.

FIGURE 22
Number of reefer visits to Montevideo, Uruguay by reefer flag, 2016-2018



Source: DINARA, 2019

The competent authorities supplied the study team with data on port entries by reefers for the years 2016–2018. Information on reefer flags, numbers and flags of donor vessels was also supplied. However, unfortunately no information was provided on species transshipped to the reefers except for the Vanuatu-flagged reefer transporting krill products. The other reefers are assumed to have been carrying mainly squid because demersal vessels tend not to transship at sea owing to a more diverse species range, which have different marketing arrangements by species. Figure 22 details the port entries of reefers into Montevideo from 2016 to 2018. The number of transshipment events from catching vessels to reefers prior to their port entry into Montevideo ranged from 2 to 15, with an average of 5 donor events per reefer.

Ghana

FAO visited Ghana from 30 September to 1 October in order to gather information regarding the fishery known as *saiko*.

Saiko fishing began in the 1980s as a kind of 'bartering' arrangement in which small canoes would take freshwater and provisions to industrial trawlers and in return receive unwanted catches by transshipment – which would otherwise have been discarded – for sale ashore. Since these early beginnings, the practice has evolved into a fully developed business strategy selling frozen blocks of 'bycatch' to canoes. The bycatch has evolved into a targeted fishery.

During the two-day visit, FAO met with the following competent authorities and stakeholder organizations.

TABLE 15
Competent authorities and stakeholders consulted during the visit to Ghana

Country	Entity	Full title
Ghana (Accra, Tema)	MOFAD FC	Ministry of Fisheries and Aquaculture Development Fisheries Commission
	MOFAD FC MCS	Ministry of Fisheries and Aquaculture Development Fisheries Commission Monitoring, Control and Surveillance Division
	FCWC	Fisheries Committee of the Western Central Gulf of Guinea
	EJF	Environmental Justice Foundation
	SIF	Stop Illegal Fishing
	GNCFC	Ghana National Canoe Fishermen's Council
	NAFAG	National Fishermen's Association of Ghana

Although the practice is well known and has been variously reported (Afoakwah *et al.*, 2018; EJF and Mpoano, 2019), there appears to be little concrete information on it at the national administration level in terms of estimates of its magnitude and impacts. Industry stakeholders expressed the view that even though the practice is prohibited, operators are exploiting a weakness in the legal framework that allows a varied interpretation of the provisions.

The competent authorities undertake periodic enforcement campaigns dedicated to combating this practice, which tends to suppress the activity for a time. The practice causes a significant degree of sectoral conflict between artisanal and industrial fishers, the former expressing the view that the practice is destroying small pelagic stocks reserved for the artisanal sector and thus important for the food security of coastal communities. See Section 4.2.1 of this report for a discussion on the economic impacts.

With respect to the legality of the *saiko* practice in Ghana, a legal opinion was sought to look at the issue specifically (Taylor Crabbe Initiative (TCI), 2018). The initiative examined the relevant provisions of the Ghana Fisheries Act of 2002 (Act 625) and Ghana Fisheries Regulations of 2010 (L.I 1968) in relation to transshipment of fish in Ghanaian waters. It sought to clarify the legal status of transshipment of fish at sea from local Ghana-flagged industrial trawlers to canoes – referred to as *saiko* – and whether the activity was rendered illegal by Section 33 of the 2010 Fisheries Regulations (L.I 1968) (Taylor Crabbe Initiative (TCI), 2018).

The legal opinion indicated that Section 132 of Act 625 provided for the supervision of transshipment and its intention was to stipulate the "prohibition of transshipment of fish in the fishery waters unless it is done under …supervision[.]" It goes on to say that the scope of transshipment under the Act is within the purview of the Ghana Fisheries Commission, which has the mandate to allow transshipment of any form except those prohibited by law. However, within this scope, transshipment should be authorized in writing and the process supervised by an authorized officer of the Commission. This provision is the benchmark of legal transshipment in Ghana and makes any form of transshipment illegal if it does not satisfy the requirement of authorization and supervision as per Section 132 of Act 625 (Taylor Crabbe Initiative (TCI), 2018).

An NGO, the Environmental Justice Foundation (EJF), has been monitoring the practice and in 2019 released a report estimating the magnitude and value of *saiko* catches to be in the region of 100 000 tonnes (2017) with an estimated value of between USD 40.6 million and USD 50.7 million at the point of first sale (EJF and Mpoano, 2019). EJF estimates there to be some 86 purpose-built transport canoes engaged in this transshipment activity, each with a carrying capacity of up to 26 tonnes.

This practice is also known to occur in the waters of other West African States, although very little concrete information has been reported. The States of the Fisheries Committee for the West Central Gulf of Guinea (FCWC) have commenced a programme of information-gathering on this practice. It is also believed to occur in Southeast Africa (Mozambique).

Thailand

FAO visited Thailand from 16 to 20 December 2019. The visit was kindly hosted by the Department of Fisheries (DOF) and included a mixture of presentational content and field visits. The team consulted the following authorities and entities during the visit.

FAO met with the competent Thai authorities on the first day. The goals of the mission were outlined by the FAO and requests for data and information made. The competent authorities outlined the different activities related to the study that take place in Thailand, detailing responsibilities, management arrangements and highlighting ongoing challenges. Regarding fish arriving to Thailand in containers, the Thai authorities indicated this was a major challenge. It was reported that the Thai authorities had refused entry to 46 containers of IUU fish into Thailand in the previous year.

TABLE 16
Authorities and other stakeholders consulted during the field visit to Thailand

Country	Entity	Full title
Thailand (Bangkok, Samut Sakhon)	DOF	Department of Fisheries
	-	Marine Department
	-	Customs Department
	-	Marine Police Division
	THAI–MECC	Naval Service
		Royal Thai Police (Office of Legal Affairs and Litigation)
		Fish Marketing Organization
		OceanMind (non-profit organization)
		The Thai Overseas Fisheries Association
		Thai Frozen Foods Association
		Thai Tuna Industry Association
		The Environmental Justice Foundation
		Thai Union Ltd.

Recording the views of industry stakeholders (producer associations and a representative body of the overseas fishing sector), the main challenge for them was the assurance of traceability. In that context, the arrival of fish in containers in Thailand was deemed to represent the biggest risk. Unfortunately, owing to an industrial dispute, the National Fisheries Association of Thailand was unable to meet with the FAO team. The team later met with a representative of the EJF.

Port visits were made in Bangkok and Samut Sakhon. During the former, FAO observed operations involving the arrival and discharge of a Korean-flagged reefer. The procedures and documentation relating to the arrival were presented by the competent authorities. The vessel was discharging approximately 3 000 tonnes of a mix of yellowfin (YFT) and skipjack (SKJ) tuna, the origin of which was purse seiners fishing the Western Central Pacific Ocean. The mission team and competent authorities discussed the documentation submitted by the vessel agent, focusing on elements in the documentation which cause doubt or constrain the ability of the port State to assess the legality of the catches aboard the vessel. The same procedures were applied to the arrival of containers of fish caught by Japanese and Taiwan Province of China-flagged catching vessels. The latter case was interesting in the sense that the catches originated from Taiwan Province of China-flagged longliners fishing the Indian Ocean, which had transshipped to a reefer at sea. The reefer subsequently discharged in Taiwan Province of China, during which some 50 tonnes of albacore tuna (ALB) were placed into two containers and later shipped to Thailand for processing.

On the visit to Samut Sakhon port, the FAO team observed the discharge operations of a Thai-flagged reefer. The vessel had brought catches of pole-and-line-caught skipjack and yellowfin tuna from the Maldives, originating from a considerable number of small-scale fishing vessels. What is interesting in this case is that in the Maldives the catches had been in cold storage aboard a vessel being used as ‘floating storage’

rather than being in cold storage ashore. The reefer was loaded by transshipping via an intermediary vessel to the reefer.

Questions were raised regarding the point at which the fish was considered as having been landed, and a note was made of other doubts regarding various elements in the accompanying documentation.

The FAO team and competent authorities also visited a processing factory. The management of the factory gave several corporate presentations with an emphasis on sustainability. The factory produces a range of canned tuna products for a variety of markets, processing some 520 tonnes of tuna per day and operating 300 days per year. Ancillary products such as pet food, fishmeal and fish oil are produced from waste products. The factory management did not express any concerns regarding the traceability of the tuna bought by the company. The company considers transshipment to be essential to its operations, as the main tuna fishing grounds are far from Thailand. Thai Union management Stated that not being able to transship would increase costs to unacceptable levels.

The competent authorities also provided information regarding transshipment activity in national waters. Transshipment between fishing vessels is prohibited in Thai waters. Vessels may only transship to authorized transport vessels. It was noted that there is small-scale activity in the blue swimming crab fishery (*Portunus pelagicus*; SCD) limited to vessels of less than 10 tons. For reasons relating to market access, small-scale vessels fishing for blue swimming crab transship daily to small transport vessels which take the live crabs to market. The fishing vessels generally stay at sea for four to seven days. There are three carrier vessels servicing the blue swimming crab fishery. The following photograph shows one such carrier vessel.

PLATE 1
Carrier vessel involved in transshipments in the blue swimming crab fishery

Source: DOF, 2019

Transshipment also takes place in the demersal fishery in Thai waters. Demersal trawlers transship their target and high-value species to carrier vessels for the purposes of getting the catches to market in order to preserve quality. The carrier vessels also provide services to trawlers such as supplying ice or provisions. Lower value or 'trash' fish are retained aboard the trawlers until the trip end. There are 84 transport vessels supporting the demersal fishery, ranging in size from 10 to 190 tons.

Departmental statistics indicate 88 such transshipment events in 2019 (up to 12 December). Data on transshipment activities was provided by the Thai DOF (see Table 17). Species are mainly blue crab and mixed trawl-caught demersal species.

TABLE 17
Tonnages transshipped by Thai flag Vessels in Thai waters, 2017–2019

Month and Year	2017 Volume (tonnes)	2018 Volume (tonnes)	2019 Volume (tonnes)
January	1 303.25	1 852.58	2 744.52
February	1 719.46	1 489.926	2 210.181
March	1 516.28	1 656.17	3 109.7339
April	1 334.11	1 593.949	3 355.364
May	1 613.39	2 293.29	3 279.774
June	1 967.06	1 993.552	2 617.472
July	1 721.55	1 677.55	2 974.906
August	1 503.74	1 771.581	2 162.504
September	1 356.79	1 899.571	2 259.651
October	1 769.20	2 299.344	3 291.429
November	1 638.53	2 371.127	2 820.883
December	1 081.38	2 278.047	23.37
Total	**18 524.8**	**23 176.7**	**30 849.8**

Source: DOF, 2019

A 1.67 increase in tonnage transshipped is evident between 2017 and 2019. It would be interesting to note the relative trend in terms of numbers of participating vessels and events, but this data was not available.

With regard to the Thai-flagged reefers bringing catches to Thailand from other countries, there are three Thai-flagged reefers servicing the Maldivian pole-and-line tuna fishery and six Thai-flagged reefers bringing demersal catches from Malaysia. All catches are loaded aboard the reefers in port (noting the transshipment activity in the Maldives described above).

The competent authorities also outlined the circumstances leading to the rejection of 46 containers of fish in 2018, which was considered to be linked to IUU fishing operations. The following table provides a chronology of events:

TABLE 18
Events surrounding the rejection of containers of IUU fish by Thai authorities

Date	Event	Remarks
28/06/2018	Request received to import 46 containers	Catches from four demersal trawlers, flag Somalia. Catches put into containers in Djibouti.
28/07/2018	Request denied	The flag State of the vessels (Somalia) confirmed that documentation had been issued without the consent of the Ministry. The Thai authorities found that the previous names of the vessels were on the IOTC IUU list. Thai law requires that the containers should be returned to the port of consignment (Djibouti).
07/08/2018	Transit	Upon departure from Thailand, the containers did not return to Djibouti, but went to Singapore where they were again transshipped to another container vessel. The next destination was Penang, Malaysia. Tracking was done via the bills of lading.
10/08/2018	Information exchange	Thailand advised Malaysia of its findings. Malaysia rejected the containers. The containers were again sent to Singapore. Tracking by bill of lading
30/12/2018	Transit	The containers departed Singapore bound for Dubai. Tracking by bill of lading.
-	Communication weaknesses	Attempts by the Thai authorities to contact the competent authorities in both Singapore and Dubai met with no response.

Source: DOF, 2019

Time-series data

The Thai competent authorities were able to provide a comprehensive time series of statistics regarding the transshipment activity. Table 19 details the requests for entry received from foreign-flagged reefers over the 2017–2019 time series. The main flag of these carrier vessels is Panama, with the main species group transported tunas – largely skipjack and yellowfin tuna.

The Thai DOF maintains an extensive database on the quantities of fish products entering the country by various means (01/01/2016 to date, > 863 000 records, > 700 species, 27 product types). Focusing on the two case studies, the dataset was filtered for deliveries of whole frozen tuna and squid entering Thailand by reefer and in containers (see Figure 23). While the origin of the fisheries products and point of consignment of the containers are recorded in the database, it is not known whether the catches were considered to have been formally landed at the point at which they were consigned to the container. It is for this reason these data are included. Similarly, it is also not known whether the catches were consigned to the containers directly from the catching vessel – as is known to occur in some ports – or after having been transshipped to a reefer.

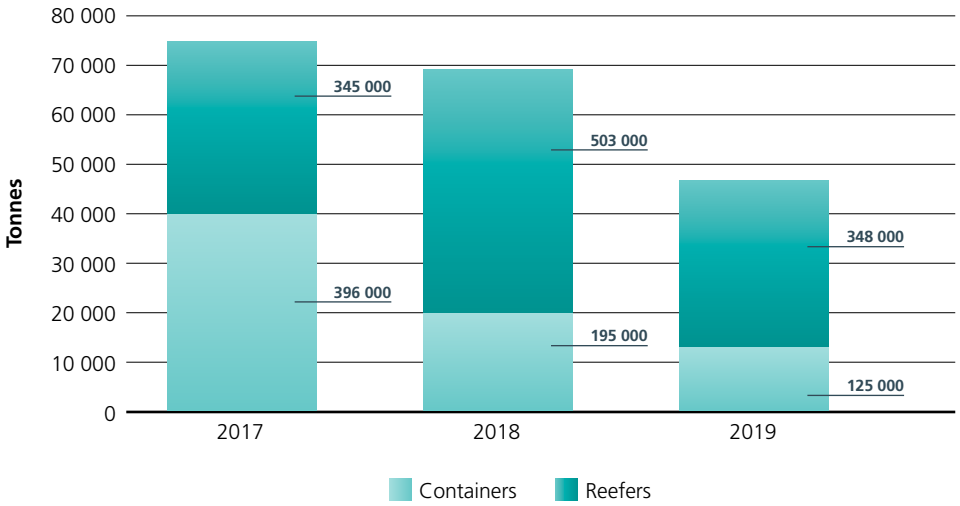
TABLE 19
Foreign-flagged carrier vessels requesting entry to Thai ports, 2017–2019

Flag	FIO (Bangkok)			FIO (Songkhla)			FIO (Samutsakhon)			FIO (Phuket)			Total		
	2017	2018	2019*	2017	2018	2019*	2017	2018	2019*	2017	2018	2019*	2017	2018	2019*
Bahamas	5	4	1	-	-	-	-	-	-	-	-	-	5	4	1
China	-	3	2	-	1	-	-	-	-	-	-	-	0	4	2
Curacao	-	2	-	-	-	-	-	-	-	-	-	-	0	2	0
Japan	-	1	-	-	-	-	-	-	-	-	-	-	0	1	0
Kiribati	6	1	-	1	-	-	-	-	-	-	-	-	7	1	0
Republic of Korea	42	36	45	8	12	5	-	-	3	-	-	-	50	48	53
Liberia	-	-	2	-	-	-	-	-	-	-	-	-	0	0	2
Maldives	2	2	-	-	-	-	-	3	-	-	-	-	2	5	0
Panama	87	97	100	15	10	16	-	-	1	-	-	-	102	107	117
Spanish	1	-	-	-	-	-	-	-	-	-	-	-	1	0	0
Russian Federation	-	-	1	-	-	-	-	-	-	-	-	-	0	0	1
Sierra Leone	-	-	-	-	-	-	-	-	-	2	-	-	2	0	0
Mongolia	-	-	-	-	-	-	-	-	-	-	4	-	0	4	0
Niue	-	-	-	-	-	-	-	-	-	-	-	4	0	0	4
Total	**143**	**146**	**151**	**24**	**23**	**21**	**0**	**3**	**4**	**2**	**4**	**4**	**169**	**176**	**180**

* the data of 2019 during 01 January - 30 November 2019

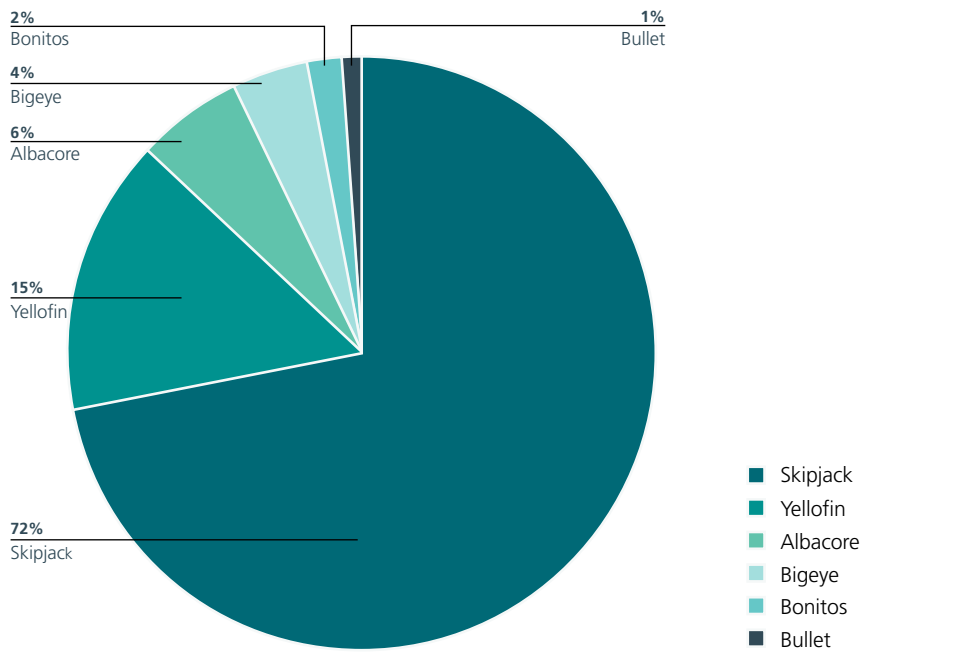
Evidently, such volumes imply that tuna as a raw material is a significant contributor to the Thai economy (based on DOF figures, in 2018 all tuna imports amounted to USD 1.5 billion). Given that the catches are sourced from the Pacific and Indian Oceans, mostly from large-scale purse seiner operations, transshipment and/or other transport solutions such as containers are clearly crucial to these industries.

FIGURE 23
Quantities of tuna arriving in Thailand aboard foreign-flagged reefers and containers , 2017–2019



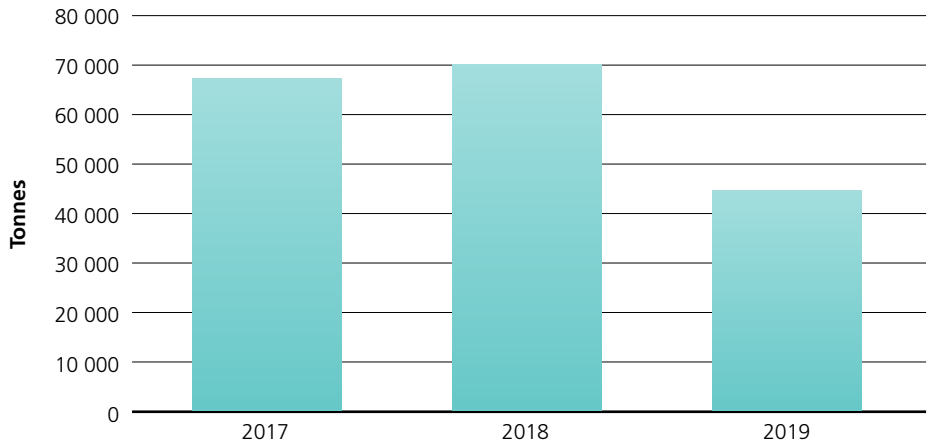
Source: DOF, 2019

FIGURE 24
Proportion by species of tuna entering Thailand from foreign-flagged reefers and in containers, 2017–2019



Source: DOF, 2019

FIGURE 25
Quantities of squid arriving in Thailand by container, 2017–2019



Source: DOF, 2019

The reasons for the fluctuations across the time series are unidentified.

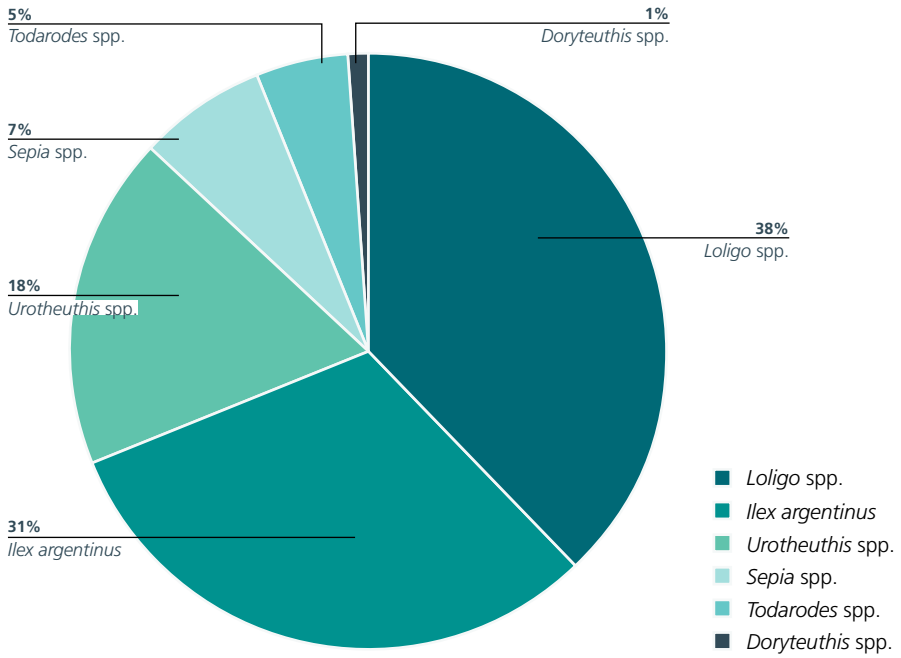
Figure 24 shows the proportion by species in these cargoes. By far the most important species is skipjack tuna (72 percent), followed by yellowfin tuna (15 percent) reflecting the catch production in the purse seine fishery and the destination of the catches for the processing (canning and added value) industries.

Whole frozen squid entering Thailand is almost entirely brought into the country by container. Less than one percent is brought in bulk in reefer vessels. Again, it is not known whether the squid is transferred directly from fishing vessels into containers, or from reefers bringing squid catches from the fishing grounds and transferring the catches to containers in port. Given what is known about squid fishing operations, the latter seems more likely.

Of all squid species imported to Thailand, the largest amounts are *loliginid* squids (38 percent, Figure 26) with the main catching nations (origin) being India (45 percent), Pakistan (21 percent) and China (19 percent). A close second are the *Ilex* squids (31 percent), with China being the main producer (78 percent). The third most imported squid group to Thailand are the *Uroteuthis* (Indian and siboga) squids (18 percent). The principle catching nations (origin) of these catches are India (84 percent) and Pakistan (13 percent).

It is not known how much of this squid is utilized for national consumption and what proportion supplies the processing industries for the creation of value-added products for export.

FIGURE 26
Main species of squid brought into Thailand by container, 2017–2019



Source: DOF, 2019

3.3 RFMO MANAGEMENT AND RISK MITIGATION

Regional Fisheries Management Organizations

According to international law, flag States have primary responsibility for controlling the fishing activities of their flagged vessels, particularly on the high seas, and to ensure that such vessels comply with applicable laws in areas under the national jurisdiction of coastal States. Flag and coastal States also have the duty to cooperate to ensure fisheries sustainability and the conservation of fish stocks (United Nations, 1982). The main mechanism for organizing this cooperation is through international bodies such as RFMOs. States, through the United Nations (UN) and its specialized agencies and programmes have worked to establish regulatory and policy frameworks designed to strengthen fisheries management and combat IUU fishing. Some of the relevant binding instruments include the FAO Compliance Agreement (FAO, 2003)[1] and Port State Measures Agreement (FAO, 2016). Underpinning the Compliance Agreement, and the PSMA – as well as other non-binding international fisheries instruments such as the Code of Conduct for Responsible Fisheries – are the UN Convention on the Law of the Sea (LOSC) and the UN Fish Stocks Agreement (UNFSA)[2] (United Nations, 2001).

[1] Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas

[2] 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

The UNFSA elaborates the duty of States under the LOSC to cooperate either directly or through RFMOs to conserve and manage straddling and highly migratory fish stocks and high seas fisheries. Of relevance and importance to the regulation and control of IUU fishing and transshipment is the Compliance Agreement's call for flag States to exercise effectively its jurisdiction and control over vessels flying their flag, including fishing vessels and vessels engaged in the transshipment of fish and the requirement under Article 18.3(h) of the UNFSA which requires flag States to regulate "transshipment on the high seas to ensure that the effectiveness of conservation and management measures are not undermined", where these measures have been implemented under the framework of an RFMO.

The PSMA primarily elaborates the rights and responsibilities of parties to the agreement in their capacity as port States to combat IUU fishing but also refers to the other States, in particular flag States, in ensuring, albeit indirectly, that their flagged vessels provide information of transhipment activities when requesting entry into and inspections in port.[3] These requirements anticipate that State parties to the PSMA regulate transshipment, including ensuring that transhipments are authorized.

The International Plan of Action to Prevent Deter and Eliminate Illegal Unreported and Unregulated Fishing (IPOA-IUU), a relevant FAO voluntary international fisheries instrument, is more detailed in relation to the need for States, including through RFMOs, to establish measures to fight IUU fishing and to regulate transshipment.

The IPOA-IUU calls on flag States to: ensure the authorization of transhipments, report on certain aspects of transhipment including the location of transshipment, weight and species of the fish transshipped, name, registration and flag of the vessel conducting transshipment, port of landing of transhipped catch, and share information on such transhipments with relevant national, regional and international organizations, including FAO, taking into account applicable confidentiality requirements (see paragraphs 49 and 50; FAO, 2001).

Coastal States are called upon by the IPOA to fight IUU fishing and in particular to ensure that the at-sea transshipments and processing of fish and fish products in waters under the jurisdiction of coastal States waters are authorized by the coastal States concerned, or that such transhipments are conducted in conformity with appropriate management regulations (see paragraph 51.6; FAO, 2001). Management regulations could include the conservation and management regulations of RFMOs.

The IPOA-IUU encourages all port States to introduce port States measures to prevent deter and eliminate IUU fishing and such measures should include the prohibition of landings and transshipment of catch unless the identified vessel can establish that the catch was taken in a manner consistent with applicable conservation and management measures (see paragraphs 78 and 79; FAO, 2001).

Finally, the IPOA-IUU calls on all States to ensure compliance with and enforcement of policies and measures having a bearing on IUU fishing which are adopted by relevant RFMOs and by which they are bound. States should cooperate in establishing RFMOs where none exist and becoming members of such RFMOs, agree to apply measures established by the RFMOS or adopt measures consistent with RFMO conservation and management measures and ensure that vessels entitled to fly their flag do not undermine such measures.

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[3] PSMA - Article 8 (1) and Annex A relating to advance request for port entry and Articles 12 and 13 and Annex B relating to the obligation to determine appropriate levels of inspection including through RFMOs and the information required to be collected during inspections in ports.

The international framework for the regulation of transshipment as described above is clear and potent despite its rudimentary status, in particular in the context of the international policy and legal framework to combat IUU fishing. However, the extent to which the regulatory framework for the management and control of transshipment is further elaborated and applied by RFMOs is somewhat fragmented.

Broadly, the mandates of RFMOs vary from managing fishing for highly migratory species such as tuna and tuna-like species to wider remits of managing the living marine resources of a specific region in general. The geographical size of areas under the competency of RFMOs and number of species managed differs greatly between RFMOs and in many instances there is considerable overlap between RFMO boundaries, implying the need for inter-regional cooperation and complementarity in measures. The wide-ranging mandates and broad areas of application of RFMO management measures provide opportunities for their members to address IUU fishing through the implementation of a broad range of agreed management measures consistent with the applicable international framework, including those directly related to transshipment.

This study focuses, in part, on how 13 of the 17 global RFMOs that primarily govern areas of the high seas work towards managing and controlling transshipment. The legally binding nature of the conservation and management measures (CMMs) of an RFMO is dependent upon the internal structures and mandates to which their members agree. These measures, including those directly related to transshipment, often vary in scope and effect.

UN Sustainable Development Goals (SDGs) and Committee on Fisheries (COFI)

Despite the emergence, relevance and importance of RFMOs, many fish stocks managed under their authority are overfished, with some in serious decline (FAO, 2019; Wold, 2019). IUU fishing contributes to this problem. As such, in recognition of the importance of the sustainable use of marine resources to food security and poverty relief the UN has committed to strengthening fisheries governance and to deliver on 17 specific UN Sustainable Development Goals (SDGs). These SDGs were established in 2015, designed to drive global efforts towards a sustainable and poverty-free world by 2030. The SDGs include Goal 14 to "conserve and sustainably use the oceans, seas and marine resources". There are specific targets within each SDG; for example, Target 14.4 specifically looks to "effectively regulate harvesting, and end overfishing, IUU fishing and destructive practices" (United Nations, 2019). The Thirty-Third Session of the UN Committee on Fisheries (COFI) echoed the importance of strengthening fisheries governance in 2018, by achieving the SDGs, which include issues related to transshipment: "the Committee expressed concern about transshipment activities which, when inadequately regulated, monitored and controlled, can contribute to IUU fishing" (FAO, 2019).

Transshipment and concerns surrounding its activity

While the economic viability of some fisheries depend on at-sea transshipments – especially those of certain distant-water fishing fleets, (Ewell, *et al.*, 2017) (Sala, *et al.*, 2018) (Tickler, Meeuwig, Palomares, Pauly, & Zeller, 2018) (Miller, Roan, Hochberg, Amos, & Kroodsma, 2018) – both governments and civil society have increasingly voiced concerns about this type of transshipment. Many of these concerns relate to the relative lack of transparency of the activity, particularly on the high seas where it may readily take place unnoticed or unmonitored. In addition, the greater use of at-sea transshipment, as well as the increased use of supply vessels, have increased

the fishing capacity of many fleets in terms of time spent actually removing fish from the oceans, even as the number of catching vessels and the fish-holding capacity of these fleets remain constant (FAO, 2010). As there is an obligation to cooperate on the conservation of marine resources on the high seas where the main regulatory jurisdiction is on the flag State, RFMOs are given the mandate to regulate high seas fisheries with management measures adopted by the members; these measures include the regulation of at-sea transshipment.

The concerns related to at-sea transshipment on the high seas refer to its economic, social and environmental impacts (MRAG, 2016). The environmental and conservation concerns include transshipment operations enabling fishing vessels to remain at sea fishing for longer periods and to go further from ports, thereby undermining conservation efforts and encouraging overfishing (PEW, Transhipment in the Central Western Pacific., 2019f) (Skytruth & Watch, 2017). These concerns also extend to undermining the livelihoods of artisanal fishers and local economies as well as negatively affecting food security (SIF, TMT, & NFDS, 2017). Furthermore, the practice of at-sea transshipments enables vessels to stay out at sea close to the fishing grounds for months and even years at a time which can facilitate forced labour and human trafficking, another way to reduce operation costs (Stringer, Whittaker, & Simmons, 2016) (Mendoza, McDowell, Mason, & Htusan, 2016).

RMFOs can also establish rules governing in-port transshipment. While there is a higher risk associated with at-sea transshipments going on unnoticed and thus contributing to the laundering of IUU-caught fish, verification of at-sea transhipment in ports through port State inspections, as well as transshipment in-port and in anchorages also requires a sufficient level of monitoring and control to prevent IUU-caught fish entering the supply chain. Most of the relevant port State measures adopted by RFMOs include a minimum standard for inspections, which help play a role in reducing this risk.

Approaches to the management of at-sea transshipment in RFMOs

The 13 RFMOs reviewed for this study all include at least some mention of transshipment in either their original convention text or in subsequent measures. The measures regulating at-sea transshipment have varying degrees of stringency, with five RFMOs having mandated a general prohibition, while providing exemptions to it. The South East Atlantic Fisheries Organization (SEAFO) is the only RFMO stating that "each Contracting Party shall ensure that its vessels are not involved in transshipment in the Convention Area"'. However, the SEAFO Convention Area is limited to the high seas and is relatively small, with only seven members and less than twenty authorized vessels, and fishing limited to only a few species.

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) authorizes transshipment at-sea,[4] but only in specific areas (International Seafood Sustainability Foundation (ISSF), 2019); it also regulates other types of activities in support of fishing such as refuelling.

Generally, RFMOs approach transshipment management and control in one of three manners. There is either a full prohibition of at-sea transshipment in the respective convention area, as in SEAFO, or a prohibition of at-sea transshipment but with exemptions based on either fleet, species or gear type, as seen in the tuna RFMOs; alternatively, there is an allowance for transshipment at sea. Where there is an allowance for at-sea transshipment, this is typically allowed only under a specific set of conditions,

[4] CCAMLR personal communication, 22 November 2019

or with certain types of transshipment prohibited – as seen in RFMOs that manage species that are not highly migratory. Based on information and data as reported and reflected in compliance reports of the relevant RFMOs, implementation appears to present challenges where transshipment is either allowed or where exemptions are granted. For example, monitoring levels can be low, both for transshipments at sea and in port, and indications of non-compliance, including those reported by observers, are not followed up in all RFMOs on a consistent basis.

A recent study looking at 17 RFMOs whose remit includes governance of areas of the high seas (Ewell, *et al*., 2017) evaluated the RFMO measures in place to regulate transshipment at-sea. The Pacific Salmon Commission (PSC) and the International Pacific Halibut Commission (IPHC) were identified as relatively unique, insofar as their mandates are largely confined to waters under national jurisdiction. Of the remaining 15 RFMOs, PSC, IPHC and the North Atlantic Salmon Conservation Organization (NASCO) only discussed transshipment at sea in their regulations but few other transshipment measures were put in place. The remaining 12 RFMOs all had measures related to transshipment at sea, including such provisions as mandates that transshipments at sea by vessels authorized to transship should be tracked by vessel monitoring systems (VMS), as well as requiring transshipments at sea to be conducted with an observer present (Ewell, *et al*., 2017).

The strictest transshipment regulations, such as a prohibition on transshipment by either specific classes or all fishing vessels, were found to be adopted by only six RFMOs. Besides SEAFO (which has prohibited transshipments at sea for all fishing vessels in its convention area since 2006), a partial prohibition on transshipment at-sea was found to be in place with the General Fisheries Commission for the Mediterranean (GFCM), the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), and the Western and Central Pacific Tuna Commission (WCPFC). Four of these RFMOs have mandates strictly related to the management of tuna and other pelagic, tuna-like species with regulations on transshipment at sea which began from 1997 onward (Ewell, *et al*., 2017). Notably, the partial prohibitions that have been implemented include exemptions for vessel types that represent most fishing vessels authorized by these respective RFMOs, particularly for large-scale tuna longline vessels. This means that most fishing vessels are excluded from the prohibitions to transship at sea that have been put in place, creating doubt as to the effectiveness of the prohibition.

Management of transshipment at sea in the seven RFMOs established for non-tuna species started increasing over the last twenty years with roughly the same timeframe as that of the tuna RFMOs. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the North East Atlantic Fisheries Commission (NEAFC), and the Northwest Atlantic Fisheries Organization (NAFO) all either developed or enhanced their transshipment at sea regulations after the year 2000. GFCM matched its transshipment at sea regulations to those of ICCAT in 2007. The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (CCBSP) also included regulations on transshipment at sea following its original Convention in 1995 (Ewell, *et al*., 2017).

In general, transshipment management within the RFMO context shares similar common elements: (a) general provisions on vessel types and sizes, as well as species covered by the measure; (b) authorization procedures by the flag State to conduct at-sea transshipments; (c) reporting requirements; and (d) observer and other monitoring and control requirements (International Seafood Sustainability Foundation, 2019).

Some weaknesses can be observed in current transshipment management frameworks based on the relevant measures of the various RFMOs. Critically, not all vessels involved in transshipment operations at sea are required to be included on RFMO notified and/or authorized vessel lists or flagged to a member of a relevant RFMO. In some cases, RFMO vessel lists only require fishing vessels be included on the list while in other RFMOs: non-member carrier vessels can be authorized and operate in waters under the competence of a specific RFMO with little to no obligations placed on the flag State authorities over the monitoring and control of those vessels flagged to the non-member. As such, there is little to no obligatory oversight or transparency as to the details of the carrier vessel's activities. Some measures only regulate transshipments in the convention area and do not directly recognize the importance of monitoring and controlling the transshipments of all fish caught in the convention area, irrespective of where it is being transshipped or landed, to reduce the risk of IUU-caught fish entering the supply chain.

Observer programmes can also reveal gaps in terms of consistencies in observer duties and responsibilities, reporting requirements and/or consistent presence on vessels from commencement port to landing port. The measures also appear to have inconsistent requirements for the systematic cross-checking of amounts and species transshipped at sea and landed in port, to ensure compliance with existing rules (International Seafood Sustainability Foundation, 2019) and indeed the overall monitoring and control of the transshipment activities.

Transshipment and risk mitigation strategies

To properly manage and regulate a fishery, an RFMO typically implements a range of fundamental MCS measures to ensure effective functioning, as well as compliance with specific conservation and management decisions the members have agreed to. The purpose of these MCS measures is to mitigate the risks of non-compliance associated with undermining sustainable fisheries management, as well as preventing, deterring and eliminating IUU fishing. This also applies in the context of compliance with measures regulating transshipment, especially when transshipment occurs at sea. Fishing activities come with an *inherent risk* of IUU fishing, which are reduced by applying monitoring and control measures and tools in an effective manner. *Residual risk* remains after a management authority such as an RFMO applies fisheries-specific risk mitigation strategies. The amount of *residual risk* depends on, among other things, the comprehensiveness of MCS measures and tools established, the effectiveness of their implementation and the level of the compliance management system in place.

Transshipment and complementary MCS measures

A 2017 global review of transshipment conducted by FAO noted variations in the regulation of transshipment, suggesting that this may be the result of the global nature of the fishing industry. Additional influences, notably potential logistical difficulties and the economic realities of different fisheries, include the limited availability of ports large enough to support the size of fishing vessels, while the associated port infrastructure and their MCS capabilities may also be a factor (FAO, 2019). With respect to controlling transshipment at sea within the RFMO context, the overall effective management of

the activity not only relies on the rules and regulations of the specific transshipment measure itself, but also on how the compliance of those carrier and fishing vessels subject to the RFMO transshipment measure is assessed. Assessment is conducted through a complementary range of other MCS measures implemented by the RFMO, together with any established compliance assessment procedures. Unfortunately, while some RFMOs have developed a range of MCS measures that can be – and are – applicable to monitoring and controlling transshipment, these complementary MCS measures are not globally coordinated (Boerder, Miller, & Worm, 2018). Such complementary MCS measures include:

- **Observer coverage:** Most RFMOs have established requirements for observers involved in monitoring at-sea transshipments, including their training and certification and designation of tasks. However, neither SEAFO nor CCAMLR have requirements for observers in the management of transshipment. In cases such as CCAMLR and IATTC, the observer programme was established solely for scientific purposes. As such there are notable lacunae in the observer tasks pertaining directly to transshipment monitoring. Although RFMOs that have permitted transshipment at sea have implemented observer programmes that require observers on carrier vessels, there remains a gap in observer coverage on fishing vessels. Most RFMO regulations, especially for longline vessels, require only a minimum of five percent observer coverage. Often, this coverage level is treated by flag States as a target to achieve rather than a minimum level to build upon. These low levels of observer coverage can hamper overall transparency in longline fishing operations and create a real risk of illegal transshipment, especially on the high seas. Moreover, observers are not always required to stay on board the carrier vessel after reported transshipments at-sea and can disembark before a port of landing is reached, leaving a risk of additional transshipments happening unobserved. A further weakness exists in that carrier observer reports are not reported to the RFMO secretariat in a systematic and timely manner or may not be at all. Furthermore, cases of non-compliance are not systematically followed up.

- **VMS requirements:** Only three RFMOs (ICCAT, CCAMLR and WCPFC) apart from SEAFO (which prohibits transshipment at sea in its convention area) *clearly* require VMS on all vessels involved in transshipment. For other RFMOs, there is either a lack of clarity that VMS is required on all vessels authorized to conduct at-sea transshipments – as seen with IOTC – or no direct correlation between the VMS and transshipment measures established by the RFMO, such as is the case with IATTC and the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Currently, only the WCPFC Secretariat has access to a centralized VMS, allowing the independent verification of reported transshipment information by secretariat staff. Other RFMOs such as the South Pacific RFMO (SPRFMO), IOTC and the North Pacific Fisheries Commission (NPFC) are in the process of developing a similar system.

- **Carrier vessel authorization lists:** Generally, the information required to authorize carrier vessels and have them listed in RFMO vessel authorization lists is similar. However, CCAMLR does not have an authorized list of carrier vessels and has no requirement for carrier vessels to be authorized to accept transshipments. This loophole, as well as the fact that in some RFMOs (notably ICCAT, IOTC and CCSBT – three of the five global tuna RFMOs) carrier

vessels may be flagged to a non-member of an RFMO but still be authorized to conduct transshipments by a member, means that any supporting and complementary MCS measures specific to that RFMO cannot be enforced effectively for these vessels. This is particularly relevant as many carrier vessels frequently change flags.

- **Transshipment reporting:** All RFMOs require fishing vessels to notify their flag State in advance of their intention to conduct at-sea transshipment. However, the timeframes required for these notifications differ between RFMOs and range from 7 days to 24 hours prior to the transshipment. In some cases this allows little, if any, time for any type of risk assessment or appropriate MCS response. Nearly all RFMOs require vessels to provide a post-transshipment declaration to their competent authority, as well as the RFMO secretariat, within a prescribed period – usually between 24-hours and 15 days after the completion of a transshipment event. In these cases, only near real-time reporting would allow an appropriate verification and cross-referencing of the information provided. Most RFMOs also require reporting to the port State prior to landing of transshipped catch in that port. Carrier vessels are most often required to report at least 48-hours prior to landing catch in a port State; however, the specific port State may or may not be a member of the relevant RFMO, or the carrier vessel may have been involved in transshipment at sea in waters of multiple RFMOs during a single voyage. Apart from NPFC, RFMOs managing non-tuna species have requirements that landing reports be sent to the relevant RFMO secretariat. However, the five global tuna RFMOs and NPFC only require members to send quarterly or annual summary reports to the RFMO secretariat detailing information from transshipment declarations. By that time, much of the fish will have already entered the seafood supply chain.

- **Port State monitoring:** Most RFMOs have established standards for in-port transshipment, although NPFC and IATTC have yet to implement any kind of port State measures scheme. However, these RFMO port State measures only apply to relevant RFMO members and cooperating non-members, and only to foreign fishing vessels. In addition, monitoring gaps remain related to market States where transshipped fish is often landed, especially where these States are not members of an RFMO from whose waters transshipped fish is sourced. Monitoring and reporting gaps also exist related to landings by flag State carrier vessels in their own ports. In these instances, monitoring and inspection procedures follow those established strictly for vessels under national jurisdiction rather than having been developed with RFMO frameworks and foreign vessels in mind. Port inspections schemes can also be problematic for species that do not have catch documentation schemes in place as vessels can unload these species in any port, including ports of non-members, with no requirement to provide port inspection reports to a relevant RFMO secretariat nor inform the secretariat of the next intended port call. Also, in some cases fishing vessels are not required to submit landing reports to the port State, only to its flag State. In these cases, the port State only receives information from carrier vessels and is unable, as a consequence, to verify the accuracy of information related to the landed catch without first contacting the flag State.

Transshipment management as associated with inherent and residual risk

A critical component of this study and its assessment of transshipment management is consideration of the application of complementary MCS measures by RFMOs as a risk mitigation strategy for the monitoring and control of transshipment and addressing the IUU fishing associated with it. The definition of risk as used in the context of this study is the exposure to any IUU fishing activity that may prevent an RFMO from achieving its conservation and management objectives. To manage these risks effectively, it is important for an RFMO to understand the different types of IUU fishing risks their respective fisheries are exposed to and how to deal with them most effectively.

Inherent risk is the risk that exists in any activity before precautions are taken (Monahan, 2008). Depending on where an activity takes place or how it is carried out, the likelihood that a specific risk manifests itself will be different, but the risk is always there. This is *inherent risk*. An illustrative example of inherent risk can be seen in one of the activities associated with transshipment. There is an inherent risk that some type of illegal activity might occur during the transfer of fish from one vessel to another such as the misreporting or non-reporting of the type and quantity of fish transshipped. However, the likelihood that the risk of misreporting will occur is different depending on whether the activity takes place at sea, out of the sight or knowledge of management or enforcement authorities, or in port, where the activity can be observed and documented via a competent port inspection regime.

Inherent risk can be mitigated by an RFMO in one of several ways. First, an RFMO can just accept the risk. This means the organization can allow a specific fishing activity to continue and accept the inherent risk that comes with the activity, without implementing any conservation and management measure to manage, monitor or control it. An RFMO can also share the risk by implementing a management measure to address the activity. If IUU fishing occurs, an RFMO may still have costs associated with this activity occurring, but flag, coastal and port State RFMO members also share the cost – or share the risk of having to bear that cost. An RFMO implements conservation and management measures to monitor and control fishing activities partly in order to mitigate the inherent risks of IUU fishing. By doing so it ensures all its members likewise share in those risks. An RFMO can also choose to avoid a specific fishing activity. Since inherent risk is just part of doing something, if an RFMO prohibits a specific fishing activity the risk has been eliminated, theoretically. However, practically every fishery experiences a certain level of non-compliance to established rules and regulations. As such, the mere prohibition of an activity does not automatically ensure compliance, and this alone is not a very effective strategy for eliminating risk.

Residual risk is the remaining risk associated with a fishing activity after precautions have been taken to monitor and control the activity (Monahan, 2008). In the case of the management of transshipment, residual risk is the amount of risk that remains after a management measure has been effectively implemented by an RFMO to monitor and control transshipment. It relates to how the compliance of carrier and fishing vessels subject to an RFMO transshipment measure is verified, through a complementary range of other MCS measures implemented by the RFMO. One important aspect to consider is the amount of residual risk that remains when these complementary MCS measures are not applied consistently or uniformly throughout the range of RFMOs, notably when it comes to global transshipment management, and especially where these complementary MCS measures are not globally coordinated.

A good understanding of the residual risk of IUU fishing associated with a specific fishing activity such as transshipment is important for an RFMO, as this understanding provides the opportunity for the organization to take active steps to manage residual risk.

3.4 CASE STUDIES

3.4.1 Tuna

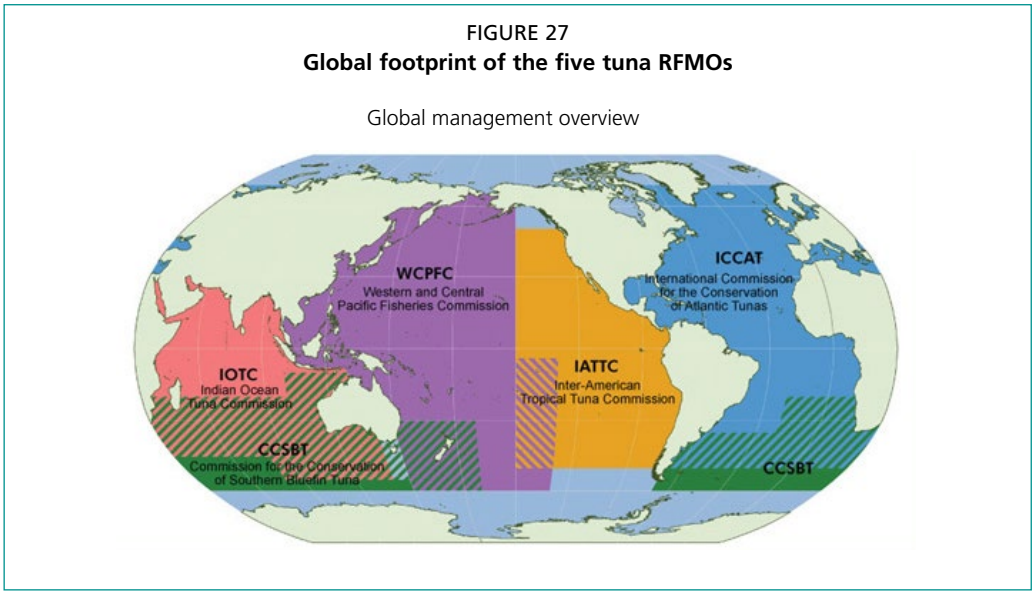
The global importance of tuna fisheries

There are seven major tuna species made up of 23 different stocks, which are commercially fished globally. These are recognized by the five tuna RFMOs (Figure 27) for stock assessment and management purposes (International Seafood Sustainability Foundation (ISSF), 2019). A fish "stock" in this context is defined in fisheries science as "…[a "stock'] describes characteristics of semi-discrete groups of fish with some definable attributes which are of interest to fishery managers…" (Begg & Waldman, 1999).

These species consist of five stocks of skipjack (*Katsuwonus pelamis*), six stocks of albacore (*Thunnus alalunga*), four stocks of bigeye (*Thunnus obesus*), four stocks of yellowfin (*Thunnus albacares*), and four stocks collectively of Atlantic bluefin (*Thunnus thynnus*), Pacific bluefin (*Thunnus orientalis*), and southern bluefin (*Thunnus maccoyii*). Only recently have Atlantic and Pacific bluefin been viewed as separate species by scientists (International Seafood Sustainability Foundation (ISSF), 2019). These collective tuna species and their respective stocks provide markets around the world with an abundant and inexpensive form of canned or packaged protein, as well as higher-value sashimi or sushi-grade tuna, or tuna steaks and loins, to more affluent markets such as those found in Asia, Europe and North America (PEW, 2016).

The volume of landed tuna reported in 2012 was 4.6 million tonnes with an estimated ex-vessel value of USD 12.2 billion. In 2014, the volume of landed tuna rose to 4.99 million metric tonnes with an estimated dock value of USD 9.8 billion.

FIGURE 27
Global footprint of the five tuna RFMOs



Source: PEW, 2012

In 2014 the estimated end value remained the same as in 2012 due to falling fish prices (PEW, 2016). A comparable amount of tuna was harvested just three years later in 2017 (International Seafood Sustainability Foundation (ISSF), 2019). Skipjack, yellowfin and bigeye tunas make up the majority of the tuna catches (FAO, 2020) with skipjack representing 58 percent of the catch of tuna, yellowfin 28 percent, bigeye 8 percent, albacore 5 percent and bluefin at just 1 percent of reported catches (International Seafood Sustainability Foundation (ISSF), 2019).

Skipjack tuna generates the highest estimated amount of revenue based on volume caught, although bluefin is much more valuable in the market, where a single individual bluefin tuna can be worth the same as a tonne of skipjack tuna (PEW, 2016). However, some of the important commercial tuna species, particularly bluefin, have been fished to levels that scientists and managers consider too low (FAO, 2020). Globally, 61 percent of the 23 stocks are at a healthy level of abundance, 17 percent are overfished, and 22 percent are at an intermediate level. One bluefin stock, two yellowfin stocks and one bigeye stock are overfished (International Seafood Sustainability Foundation (ISSF), 2019).

From the perspective of catching methods, 65 percent of the global tuna catch is caught by purse seining, followed by longline at 11 percent, pole-and-line with 8 percent, gillnets at 4 percent and miscellaneous other gears catching 12 percent (International Seafood Sustainability Foundation (ISSF), 2019).

Transshipment in the RFMO context

Except for CCSBT the global tuna RFMOs are not single, species-specific RFMOs but address the management of fisheries for a range of different species of tuna as well as other large pelagic species. While the five tuna RFMOs operate in different regions of the world, their geographic range includes areas of the high seas where the management of tuna fisheries is relevant, and their geographical coverage is comprehensive. Historical experience indicates that nearly the same management principles apply to all of them, with several management challenges understood as common to all RFMOs – transshipment is one such challenge.

The regulation of transshipment, particularly on the high seas, is primarily considered to be a duty of the flag State, as outlined in Article 18 of the UNFSA. Regionally, all the tuna RFMOs have established legally binding management measures upon their members; these either prohibit transshipment or regulate how it occurs between fishing and carrier vessels. Tuna RFMOs have implemented transshipment management measures recognizing the fact that transshipment at sea was a widespread practice in the tuna fishing industry.

This was especially true with distant-water fishing fleets and high seas fisheries: rather than vessels having to leave fishing grounds and return to port each time they fill their holds, at-sea transshipment enabled them to reduce operating costs by offloading their catch while still on the fishing grounds and immediately return to fishing. This practice is consistent in all of the global tuna longline fisheries where the economics of catching high-value species in lower volumes is used as an argument for the necessary continuation of regulated at-sea transshipment (International Seafood Sustainability Foundation (ISSF), 2019). This is particularly pertinent as authorized at-sea transshipment is primarily limited to large-scale longline vessels which chiefly target these high-value species at lower catch rates.

The following sub-sections examine the levels and type of transshipment activity from a regional perspective, framed within the competent tuna RFMOs. Worthy of note is how the preambles of the transshipment management measures implemented by all

five tuna RFMOs echo similar caution. While recognizing that transshipment at sea is a common global practice, the measures underline how the unregulated and unreported transshipment of catches of highly migratory fish stocks at sea – in particular on the high seas – contributes to the non-reporting and misreporting of catch, and also to IUU fishing. For a fuller discussion of RFMO management, see Section 3.3 of this report.

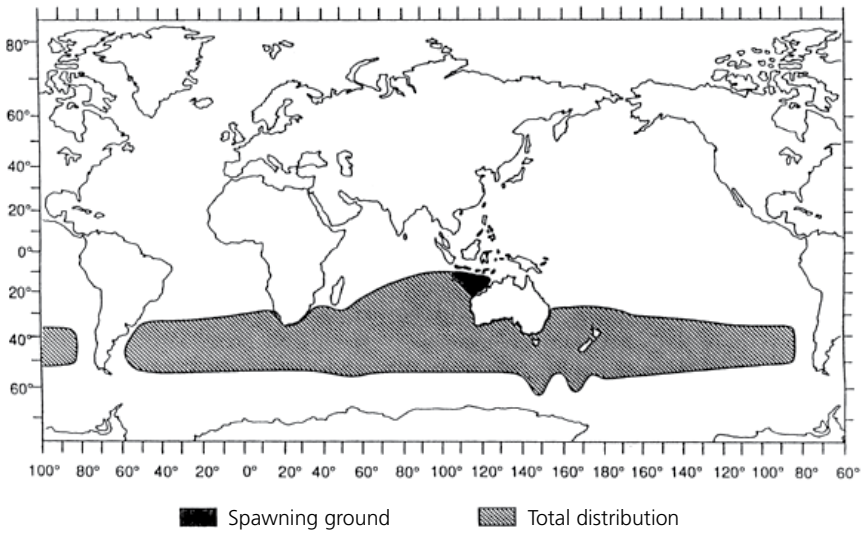
Transshipment in the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) Convention Area throughout its distribution

The CCSBT is a tuna RFMO established to manage and conserve Southern bluefin tuna (SBT) stocks throughout its range of distribution. The CCSBT was established through the Convention for the Conservation of Southern Bluefin Tuna, an agreement signed by Australia, Japan and New Zealand in May 1993. In addition to the Convention's three original members, there are five other members which make up an extended commission (collectively termed "members"). Currently, no countries are considered formal cooperating non-members of CCSBT.

Transshipment of SBT between fishing and carrier vessels under the CCSBT is regulated by the CCSBT Resolution on establishing a program for transshipment by large-scale fishing vessels (CCSBT, 2017) last updated in 2017. In CCSBT, at-sea transshipment of SBT is limited to large-scale tuna longline fishing vessels (LSTLVs), with a freezing capacity of more than 500 kg at -30° C or below. No other fishing vessel gear types are authorized under the resolution to transship SBT at-sea. The resolution does not specify that carrier vessels must be flagged to a CCSBT Member to be included on the CCSBT Record of Carrier Vessels. A total of 37 distinct carrier vessels were authorized by CCSBT in 2017, with most of these vessels flagged to CCSBT non-members.

In 2017, CCSBT reported that 90 transshipments of SBT between LSTLVs and carrier vessels occurred at sea, totalling nearly 2 300 tonnes, while 27 transshipments of SBT totalling nearly 900 tonnes were reported to have occurred in port (CCSBT, 2018). These transshipments involved LSTLVs flagged to three different CPCs.

FIGURE 28
Range of distribution of Southern Bluefin Tuna (SBT)



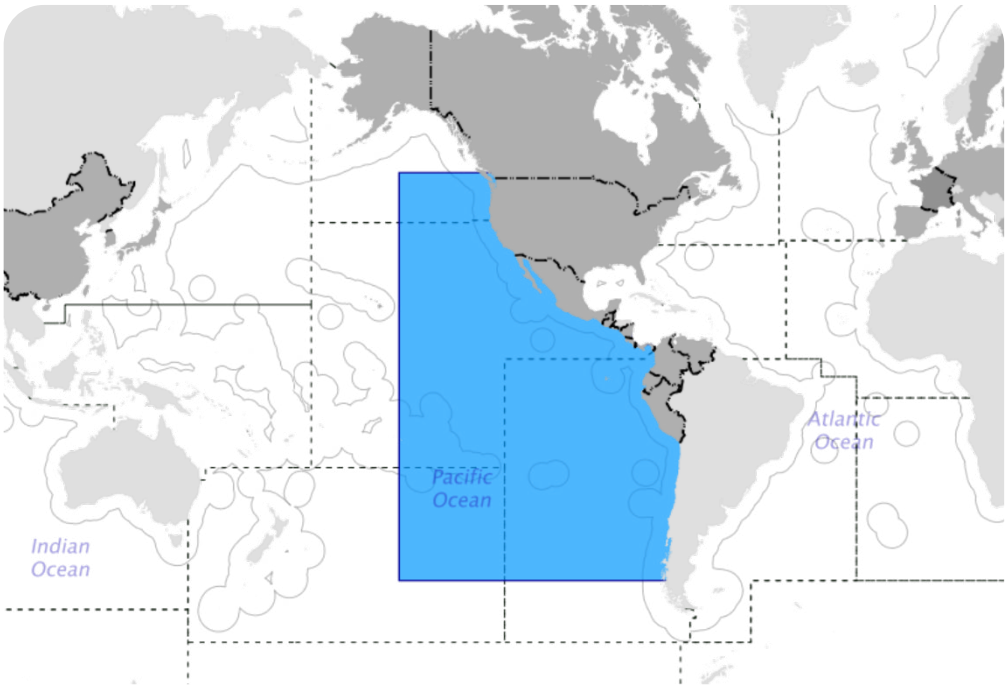
Source: Nishikawa, Honma, Ueyanagi and Kikawa, 1985

This was the largest ever number of at-sea transshipments reported to have occurred during a specific fishing season under the CCSBT transshipment programme and is part of an increasing trend of at-sea transshipments of SBT reported by CCSBT. The three primary fishing fleets involved in transshipment of SBT are flagged to Japan, Republic of Korea and Taiwan Province of China.

The SBT farming industry which began in South Australia as a response to declining SBT catches and quota reductions provides an interesting example in this context. These factors made it difficult for the tuna fishing community in Port Lincoln, Australia, to make a profit from canned tuna sold on the domestic market. By enhancing the weight and flesh quality of juvenile southern bluefin through farming, the product became viable for the Japanese market while allowing the Port Lincoln tuna industry to continue to operate under reduced quotas (van Barneveld, *et al.*, 1997). The tuna farms are located primarily offshore with purse seiners acting as the exclusive supplier to the tuna farming industry. Purse seiners initially capture schools of SBT which are then transferred to specialized tow cages and transported to net pen farm sites. Although the CCSBT does not consider these types of SBT transfers to fall under the umbrella of transshipment, the transfers are all still required to be documented under the CCSBT Catch Documentation Scheme. Nevertheless, there are those who advocate that transfers of SBT from the catching purse seiner to transport cages should be classified as a form of transshipment and documented accordingly.

Transshipment in the Inter-American Tropical Tuna Commission (IATTC) Convention Area

FIGURE 29
Inter-American Tropical Tuna Commission (IATTC) Convention Area



Source: FAO, 2020

The IATTC is a tuna RFMO established to manage and conserve tuna stocks in the eastern Pacific Ocean. The IATTC was established in 1949 through an agreement between the United States of America and the Republic of Costa Rica in the Convention for the Establishment of an Inter-American Tropical Tuna Commission. In 2010 the Antigua Convention entered into force to replace the original 1949 convention. There are currently 21 contracting parties (members) and 5 cooperating non-contracting parties that belong to IATTC, collectively known as CPCs.

Transshipment in the IATTC between fishing and carrier vessels is managed under the IATTC *Resolution C-12-07 Amendment to Resolution C-11-09 on Establishing a program for transshipments by large-scale fishing vessels* which was adopted by IATTC in 2012 (IATTC, 2012) to monitor transshipments at sea. The resolution only applies to large-scale tuna longline fishing vessels (LSTLFVs), not to trolling, pole-and-line or vessels engaged in the transshipment of fresh fish at sea, where "fresh fish" means tuna or tuna-like species that are alive, whole or dressed/gutted, but not further processed or frozen (IATTC, 2012). No at-sea transshipment of tuna and tuna-like species and sharks caught by fishing vessels other than LSTLFVs is permitted.

Six CPCs have LSTLFV fleets that are active participants in the IATTC regional observer programme (ROP) to monitor transshipments at sea. IATTC maintains a public list of fishing vessels authorized to catch tuna and tuna-like species within the IATTC Convention Area via a regional vessel register, but carrier vessels authorized by IATTC are included on a list separate from this regional vessel register. As of 2017 IATTC indicated that this authorized carrier vessel list included 64 carriers.

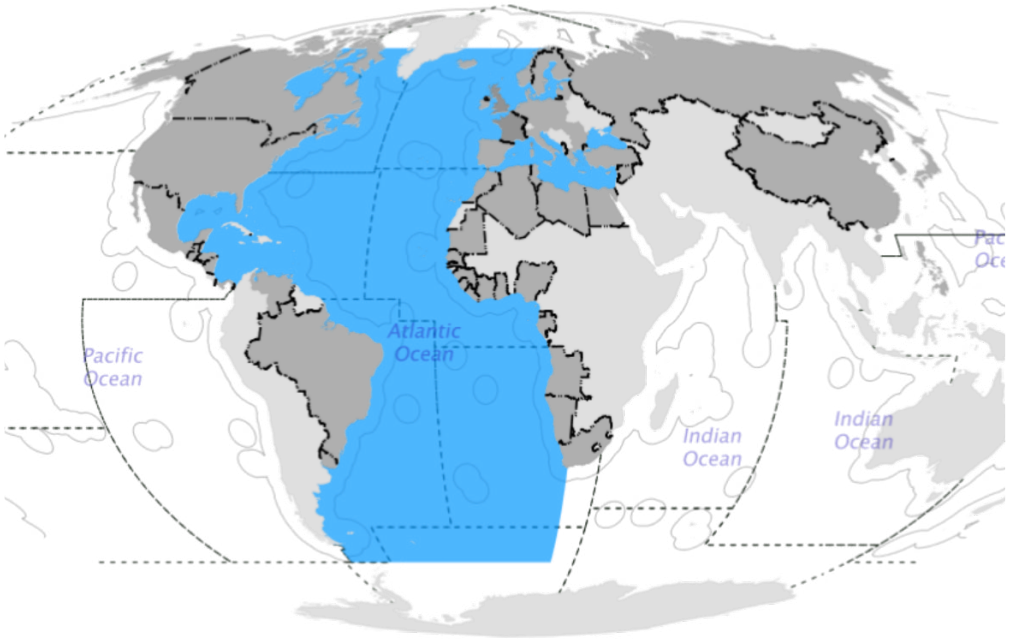
The IATTC carrier vessel ROP was first implemented in 2009. In the following eight years, 4 490 at-sea transshipment events were reported, with 348 449 tonnes of IATTC-managed fish transshipped at sea. Up to 2017 the number of at-sea transshipments reported to have occurred increased by 67 percent per annum – from 371 events in 2012 to 622 events in 2017. The total annual tonnage of catch transshipped also increased by over 38 percent from 29 762 tonnes in 2012 to 41 166 tonnes in 2017. Bigeye tuna –, which is currently experiencing overfishing according to IATTC (IATTC, 2019) – was the most transshipped species in 2017, accounting for 41 percent of all fish transshipped that year. The five primary LSTFLV fleets involved in transshipment of tuna and tuna-like species under IATTC are flagged to China, Japan, Republic of Korea, Taiwan Province of China and Vanuatu (IATTC, 2018).

There is an overlap in IATTC Convention Area waters with the WCPFC. In 2017, 11 820 tonnes of bigeye tuna was reported to have been transshipped in this overlap area (IATTC, 2018). Overlapping convention areas covering the same fish stocks present management challenges for both the RFMOs, which requires strong cooperation. To help address these challenges IATTC and WCPFC established a Memorandum of Understanding in 2006 to cooperate and collaborate on management efforts, including on fishing activities that occur within the overlap area. The current revision of this MOU, however, does not specifically address the activity of transshipment or the exchange of transshipment-related information.

Transshipment in the International Commission for the Conservation of Atlantic Tunas (ICCAT) Convention Area

ICCAT is a tuna RFMO established to manage and conserve stocks of tuna and tuna like species in the Atlantic Ocean and adjacent waters (notably the Mediterranean Sea). ICCAT was established in 1966 and manages 30 different species, including highly migratory tuna and tuna-like species.

FIGURE 30
International Convention for the Conservation of Atlantic Tunas (ICCAT) Convention Area



Source: FAO, 2020

There are currently 53 contracting parties (members) and 5 cooperating non-contracting Parties collectively known as CNPCs. The ICCAT convention area waters in the south of its jurisdiction overlap with waters included in the range of distribution of SBT, which is managed by CCSBT.

Transshipment between fishing and carrier vessels in the ICCAT Convention Area is managed under ICCAT *Recommendation 16-15 by ICCAT on transshipment*, last revised in 2016. Under this recommendation all at-sea transshipment of ICCAT-sourced tuna and tuna-like species, as well as other species caught in association with these species is prohibited, both within the convention area and outside it, except for large-scale pelagic longline vessels – defined by ICCAT as fishing vessels greater than 24 metres long overall (ICCAT, 2019).

When these longline vessels transship, they must comply with the transshipment programme established by the measure. All other transshipments by fishing vessels are required to take place in port, except for harpoon vessels engaged in the transshipment of fresh swordfish, which are exempt from the prohibition.

ICCAT maintains a publicly available record of carrier vessels authorized by their respective flag State and issues a list of fishing vessels authorized to operate with its flagged carrier vessels to the relevant flag State authorities. Unlike IATTC and WCPFC, ICCAT allows carrier vessels to be authorized even if they are flagged to a non-CPC of ICCAT. As of January 2020, there were 179 carrier vessels listed on the ICCAT record of carrier vessels, of which nearly 14 percent were flagged to non-CPCs.

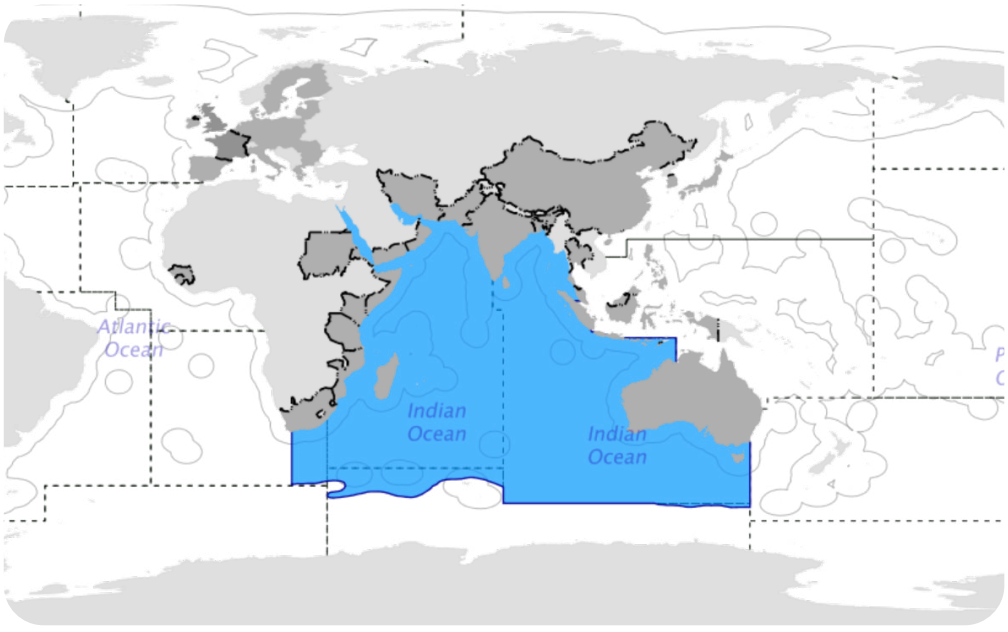
Reported transshipments under the ICCAT carrier ROP indicated that 539 at-sea transshipments occurred in 2017. These transshipments were conducted by 11 distinct

authorized carrier vessels, flagged to four CPCs and one non-CPC. Fishing vessels that appeared to be involved in these transshipments were flagged to eight different ICCAT CPCs (Global Fishing Watch, 2019). According to ICCAT's own biennial reports, the number of reported high seas transshipment events in ICCAT waters rose from 4 031 events in the September 2012–August 2013 period (ICCAT, 2014) to 5 192 events in the September 2016–August 2017 period (ICCAT, 2018); an increase of 28 percent. The reported quantities of catch transshipped increased by 57 percent over the four-year period between calendar year 2012 when 31 924 tonnes of fish were reported to have been transshipped, to calendar year 2016 when 50 163 tonnes of fish were reported transshipped. These numbers may be conservative as there appears to be some CPC reporting deficiencies in transshipment data reporting, as outlined within the ICCAT biennial reports. The nine primary fishing fleets involved in the transshipment of tuna and tuna-like species under ICCAT are flagged to Belize, China, Côte d'Ivoire, Japan, Philippines, Republic of Korea, Senegal, Saint Vincent and the Grenadines and Taiwan Province of China (ICCAT, 2018).

Transshipment in the Indian Ocean Tuna Commission (IOTC) Convention Area

The IOTC is a tuna RFMO established to manage and conserve the tuna stocks in the Indian Ocean. The Agreement for the Establishment of the Indian Ocean Tuna Commission was approved by FAO in 1993 and the agreement entered into force in 1996. There are currently 31 members and two cooperating non-contracting parties that belong to IOTC (collectively termed CPCs). Taiwan Province of China is a major distant-water fishing entity in the Indian Ocean but is not a member of the United Nations and is thus ineligible for IOTC membership. However, Taiwan Province of China does participate cooperatively at the IOTC as invited experts. The IOTC Convention Area waters in the south overlap with those in the range of distribution of SBT managed by CCSBT.

FIGURE 31
Indian Ocean Tuna Commission (IOTC) Convention Area



Source: FAO, 2020

Transshipment between fishing and carrier vessels in the IOTC Convention Area is managed under IOTC *Resolution 19-06 on Establishing a programme for transshipment by large-scale fishing vessels* (IOTC, 2019), last revised in 2019. Unless transshipments occur in accordance with the programme outlined by the resolution, all transshipments in the IOTC Convention Area of tuna and tuna-like species, as well as sharks caught in association with tuna and tuna-like fisheries, must take place in port. However, transshipment operations in the Maldives between pole-and-line fishing vessels and collector vessels flagged to the Maldives are exempt from the data reporting requirements specified in the resolution, providing they are registered on the IOTC record of authorized vessels.

The IOTC programme to monitor transshipment at sea applies only to LSTLVs and to carrier vessels authorized by IOTC to receive transshipments from these vessels at sea. While IOTC maintains authorized vessel lists for fishing and carrier vessels, vessels flagged to non-members are not found on these lists and can only be found on vessel lists maintained specifically by the respective flag States. Like ICCAT and CCSBT, the resolution does not specify that in order to be considered authorized, carrier vessels must be flagged to a CPC of IOTC.

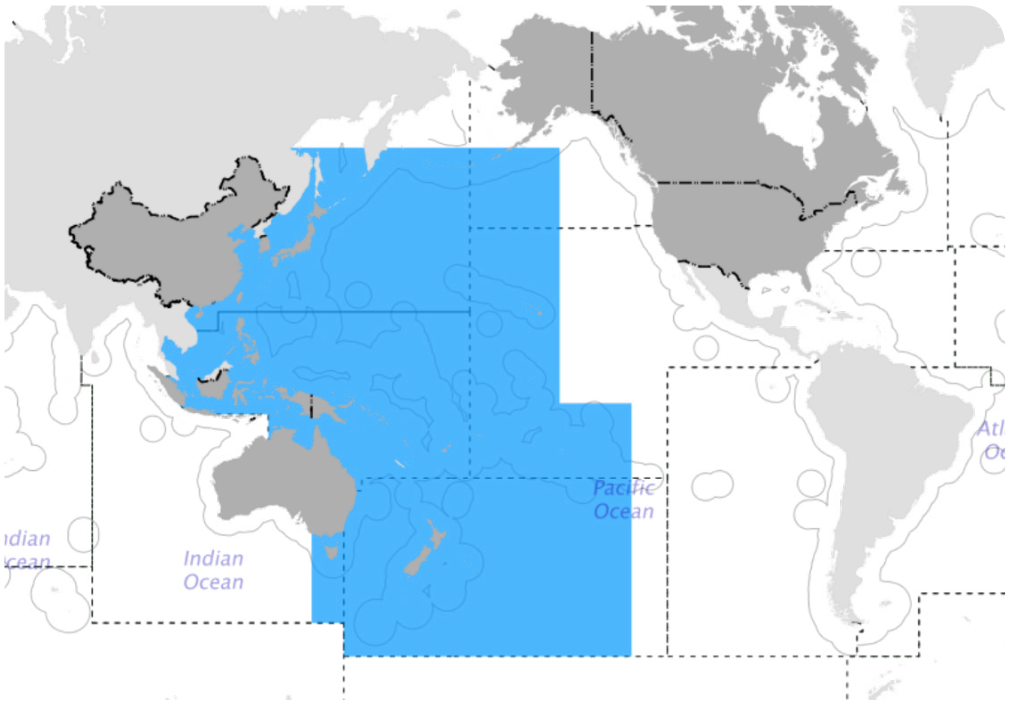
The IOTC Secretariat reported that in 2017 there were 777 fishing vessels flagged to six CPCs and Taiwan Province of China authorized to participate in the IOTC at-sea transshipment programme (Indian Ocean Tuna Commission, 2018). In addition, 88 carrier vessels were authorized to receive at-sea transshipments from the fishing fleets which participated in the programme. A total of 19 carrier vessels flagged to four CPCs and three non-CPCs were reported to have been used by the participating fishing fleets that year for at-sea transshipments (Indian Ocean Tuna Commission, 2018). During that year, it was reported that 1 259 transshipment operations were observed at-sea involving 395 different fishing vessels (MRAG and CapFish, 2018). According to IOTC Secretariat reports, reported at-sea transshipment events increased by 94 percent between 2014 and 2018, and the amount of fish reported as transshipped rose by 54 percent during the same period. The seven primary fishing fleets involved in the transshipment of tuna and tuna-like species under IOTC are flagged to China, Japan, Republic of Korea, Taiwan Province of China, China, Malaysia, Oman and Seychelles (IOTC, 2019).

Transshipment in the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area

The WCPFC is a tuna RFMO established to manage and conserve tuna stocks in the Western and Central Pacific Ocean (WCPO). The WCPFC was established in 2004 by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. There are currently 26 members as well as 7 participating territories and 8 cooperating non-members that participate in WCPFC and are collectively known as CCMs.

Transshipment between fishing and carrier vessels in the WCPFC is managed under the *WCPFC Conservation and management measure on the regulation of transshipment* (WCPFC, 2009) which was adopted in 2009. The measure provides procedures for transshipments that take place on the high seas; elsewhere it indicates that rules governing transshipment in port or in EEZ waters are left to the national laws of the relevant port or coastal State CCM. Unlike IOTC, IATTC and ICCAT, WCPFC has not established a carrier vessel ROP administered by a contracted third party to provide oversight of authorized transshipment activity occurring within the WCPFC Convention Area.

FIGURE 32
Western and Central Pacific Fisheries Commission (WCPFC) Convention Area



Source: FAO, 2020

Instead this responsibility is left directly to the flag, port and coastal State CCM authorities involved.

Article 29(5) of the Convention (WCPFC, 2000) prohibits transshipment at sea by purse seine vessels, except under exemptions granted by the commission. Exemptions currently exist for group seine operations composed of small purse seine boats with a fish hold capacity of 600 tonnes or less, flagged to Papua New Guinea and the Philippines, which meet certain conditions. This is also true of New Zealand-flagged domestic purse seine vessels where the catching, transshipment and landing of fish all take place within New Zealand fisheries waters (WCPFC, 2009).

The measure establishes that no transshipment shall occur on the high seas *except* where a CCM has determined that it is "impracticable" for certain CCM flagged vessels to operate without being able to transship on the high seas. However, to date no guidelines or criteria for determining the "impracticability" exemption have been agreed to by the commission, nor has any CCM officially provided this determination for their flagged vessels. As such, flag State CCMs continue to authorize their vessels to transship on the high seas and the practice has become more a norm than an exception (PEW, 2019f). As of July 2019, the secretariat reported that 2 357 vessels – or 60 percent of all the fishing vessels on the WCPFC RFV – were authorized by their respective flag State to transship on the high seas (WCPFC, 2019).

The WCPFC does not maintain a list of carrier vessels authorized to conduct transshipment separate from authorized fishing vessels. Instead, WCPFC maintains a single list of all fishing and other vessels authorized by their respective flag State to fish within WCPFC convention area waters and publishes this list as the WCPFC RFV. In 2013, WCPFC took the decision to no longer allow non-CCM flagged carrier vessels to be authorized to transship WCPFC-managed species in convention area waters and be

listed on the WCPFC RFV. However, several non-CCM flagged carrier vessels can still be found on the RFV as authorized carrier vessels: these vessels have been sponsored by a CCM and are operating under the commission's chartering scheme.

In 2017, a total of 479 distinct carrier vessels were listed on the RFV and authorized under WCPFC (PEW, 2019f). The secretariat reported that in 2017, 1 092 high seas transshipment events occurred, as reported by 26 different carrier vessels flagged to six different CCMs. The number of fishing and carrier vessels involved in transshipment on the high seas in WCPFC has steadily increased since 2012, when 525 transshipment events were reported involving 19 different carrier vessels and 242 fishing vessels. In 2018, the secretariat indicated that 1 409 high seas transshipment events were reported, involving 29 different carrier vessels and 514 fishing vessels (WCPFC, 2019). The reported quantities of tuna transshipped in 2017 included 58 164 tonnes of bigeye, which represented over 42 percent of the provisional catch estimates for bigeye in 2017 (WCPFC, 2018). Approximately 96 280 tonnes of albacore and 83 399 tonnes of yellowfin were also transshipped; these represented nearly 19 and 12 percent of the provisional catch estimates of those two species of tuna respectively (WCPFC, 2018). Overall, the total quantity of WCPFC-managed catch transshipped at sea has increased since 2012. The five primary fishing fleets involved in transshipment of tuna and tuna-like species under WCPFC are flagged to China, Japan, Republic of Korea, Taiwan Province of China and Vanuatu (WCPFC, 2019).

3.4.2 Squid

The global importance of the squid fisheries

The State of Fisheries and Aquaculture publication 2018 (FAO, 2020) indicates that squid, cuttlefish and octopus occupy a 7 percent global market share in terms of value. Major squid exporters include: China, Peru (jumbo flying squid) and India (Indian and siboga squid (*Uroteuthis spp.*)). China and Thailand are major importing market States, mainly for further processing and re-export.

Following five years of growth in production between 2010 and 2015, data from 2017 and 2018 show a decrease in production for three major squid species (jumbo flying squid (*Dosidicus gigas*), Argentine shortfin squid (*Ilex argentinus*) and Japanese flying squid (*Todarodes pacificus*)), with catches oscillating around 3.6 million tonnes for all cephalopod species in 2017 and 2018 (FAO, 2020). Argentine shortfin squid (*Illex argentinus*), catches showed a sharp decline from more than 1 million tonnes in 2015 to 360 000 tonnes in 2017.

Squid fisheries

Chen, Lui and Chen (2008) undertook a review of the development of Chinese distant-water squid jigging fisheries and identified the most important species and fishing areas as *Ommastrephes bartramii* (neon flying squid) in the northwestern Pacific Ocean, *Illex argentinus* (Argentine flying squid) in the southwestern Atlantic, *Dosidicus gigas* (jumbo flying squid) in the southeastern Pacific, *Sthenoteuthis oualaniensis* (purpleback flying squid) in the northwestern Indian Ocean, and *Todarodes pacificus* (Japanese flying squid) in the Sea of Japan. While these fisheries remain of key importance, it is also evident that fleets exploiting these stocks have grown considerably, raising questions as to sustainability, especially since these squid species are known to be highly susceptible to changes in oceanographic conditions. This of course raises the risk of rapid stock collapse, with uncertain recovery trajectories.

A key text on global squid fisheries was published by Alexander Arkhipkin and colleagues in 2015. The authors note that there are some 290 species of squid, octopus and cuttlefish, although perhaps only 30 to 40 squid species of commercial importance, with landings dominated for the most part by just a few key species. Table 20 provides an overview of the main squid species, their geographical location and the main fisheries.

Viewed from the perspective of transshipment activity, the case study focused on four main large-scale fisheries occurring on the high seas where transshipment is either known to occur or suspected. The fisheries were identified from literature and experience acquired while undertaking field visits.

TABLE 20
Distribution, habitat and fisheries of commercially fished squid species

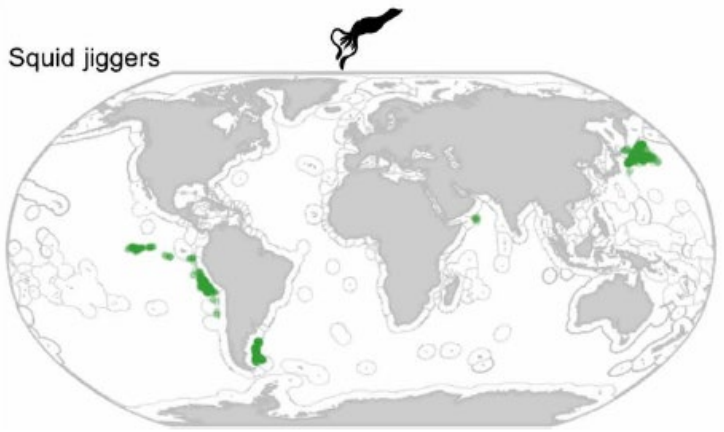
Family	Species	Distribution	Habitat	Fishing method
Ommastrephidae	*Todarodes pacificus*	Northwest Pacific 20°–60°N	Shelf and upper slope	Largely jigging with lights; some bottom trawling and purse seine
	Todarodes sagittatus	Eastern Atlantic 70°N–10°S	Neritic/Oceanic	Bycatch in trawls
	Nototodarus sloanii	New Zealand south of the Subtropical Convergence	Neritic/Oceanic	Jigging with lights and trawling
	Illex argentinus	Southwest Atlantic 22°–54°S	Shelf and upper slope	Largely jigging with lights; some bottom trawling
	Illex illecebrosus	Northwest Atlantic 25°–65°S	Shelf and upper slope	Jigging and bottom trawling
	Illex coindetii	Western Atlantic 5°–40°N and eastern Atlantic 20°S–60°N	Shelf and upper slope	Bycatch in trawls
	Ommastrephes bartramii	Circumglobal, bisubtropical 30°–60°N and 20°–50°S	Oceanic	Jigging with lights
	Dosidicus gigas	Eastern Pacific 50°N–50°S	Largely oceanic but extends over the narrow shelf of the western seaboard of the Americas	Jigging with lights
	Martialia hyadesi	Circumpolar, Antarctic Polar Frontal Zone north to Patagonia Shelf and New Zealand	Oceanic and over continental slope	Jigging with lights

TABLE 20 (CONTINUED)

Family	Species	Distribution	Habitat	Fishing method
Loliginidae	*Doryteuthis (Loligo) gahi*	South America, Gulf of Guayaquil to northern Patagonia Shelf	Shelf	Bottom trawls
	Doryteuthis (Loligo) opalescens	Western North and Central America, southern Alaska to Baja California	Shelf	Drum seine; purse seine; brail net
	Doryteuthis (Loligo) pealeii	Eastern Americas, Newfoundland to Gulf of Venezuela	Shelf	Bottom trawls and trap nets
	Loligo reynaudii	Southern Africa	Shelf	Jigs
Loliginidae	*Loligo forbesii*	Eastern Atlantic, 20°–60°N and Mediterranean	Shelf	Trawls and around Madeira and Azores caught on jigs
	Sepioteuthis lessoniana	Indo-West Pacific, Japan to Northern Australia and New Zealand and to northern Red Sea and Mozambique/ Madagascar, Hawaii	Shelf	Trawls, traps, seines, jigs, hooks, spears, etc.
Onychoteuthidae	*Onykia (Moroteuthis) ingens*	Circumpolar sub-Antarctic north to Patagonia Shelf, central Chile, southern Australia, and North Island New Zealand	Benthic/pelagic	
Gonatidae	*Berryteuthis magister*	North Pacific from Sea of Japan to Southern California via Aleutians	Demersal on continental slope and mesopelagic	Trawl

Source: Arkhipkin *et al.*, 2015

FIGURE 33
Global transshipment activity hotspots associated with squid jiggers



Source: adapted from Boerder, Miller and Worm, 2018

North Pacific Ocean – neon flying squid *(Ommastrephes bartramii)*

A study published in 2018 used AIS data to identify possible transshipment hotspots (Boerder, Miller, & Worm, 2018). One such area was identified in the North Pacific Ocean on the high seas beyond the Japanese EEZ. This activity is associated with a fleet of squid jigging vessels (Figure 33). Cross-referencing this information with Arkhipkin *et al.* (2015), it is possible to identify a substantial fishery for neon flying squid (*Ommastrephes bartramii*).

A rather dated reference in Arkhipkin *et al.*, (2015) from 2002 suggests a fleet of some 500 squid jiggers targeting this stock, many of which were flagged to China. Some years later, Chen (2010) indicated this fleet size to be closer to 400 jiggers, with these vessels accounting for more than 90 percent of the catch. Total annual catches are estimated to have been as high as 200 000 tonnes during from 1994 to 2004, with concerns raised over the need for effective management. Chen (2010) suggested that a Regional Fisheries Management Organization for the region could gather and analyse data on this species; this would improve understanding of the population biology and dynamics, enabling better stock assessment and sustainable management, which did not exist at the time of writing.

In their review of the development of Chinese distant-water squid jigging fisheries, Chen, Liu, and Chen (2008) point out that the maximum output for this fleet (fishing *O. bartramii*) came in 1999, when a peak catch of 132 000 tonnes was taken. Owing to the loss of important fishing grounds as a result of the Sino-Japanese fisheries agreement, the authors report reduced catches, yet this fishery contributes to more than 65 percent of the total Chinese squid catch. From August to November in the 2000–2005 period, Arkhipkin *et al.* (2015) report catches ranging from 64 000 to 104 000 tonnes per year for this fleet, in fishing grounds ranging from 40° to 43° N and 147° to 150° E. Catches for the Japanese and Taiwan Province of China fleets were between 10 000 tonnes and 300–8 500 tonnes, with high variability.

Stock size estimates have used three different methods to arrive at very similar estimates, ranging from 330 000 tonnes to 380 000 tonnes (Arkhipkin, *et al.*, 2015). Using the lower end of this range and applying an escapement management target of 40 percent, (F = 0.6) a catch of up to 200 000 tonnes could be sustainable. However, with short-lived species (± 1 year in the case of *O. bartamii*) heavily influenced by environmental factors, the assessments should be viewed with caution.

On 19 July 2015, the NPFC came into effect, 180 days after the fourth ratification of the Convention on the Conservation and Management of the High Seas Fisheries Resources in the North Pacific Ocean. As cephalopod molluscs, squid fall under the purview of the convention and are hence management by the NPFC. Both *O. bartramii* and Japanese flying squid (*Todarodes pacificus*) are among six listed priority pelagic species (along with Pacific saury, chub mackerel, spotted mackerel and Japanese sardine). A conservation and management measure (CMM-2019-11) was adopted in 2019 for Japanese flying squid (*Todarodes pacificus*). The main features of this measure are a cap on capacity (pending a stock assessment), a Vessel Monitoring System (VMS) obligation and provisions on data submission and information exchange. No specific measures have yet been adopted for *O. bartamii*. Although transshipment has not been reported in this fishery, it seems likely that it occurs, especially given that the fisheries for *O. bartamii* and Pacific saury (*Cololabis saira*) are interchangeable – both species can be fished in the same trip – and pursued by the same vessels (Arkhipkin, *et al*., 2015). Transshipment is known to occur in the saury fishery (although quite possibly not involving the same fleets). The NPFC interim measure on transshipment (CMM-2016-03) currently only applies to "transshipment of fisheries resources or products of fisheries resources taken through bottom fishing (as an initial step)". The measure does not therefore currently apply to the squid or Pacific saury fisheries.

Southeast Pacific Ocean jumbo flying (Humboldt) squid *(Dosidicus gigas)*

Chen, Liu and Chen (2008) report the first interest in this stock by Japanese and Korean vessels in the 1990s. Later, in 2001, the Chinese jigging industry made an initial survey of *D. gigas* resources off of Peru and Costa Rica. Since then, effort has gradually built up in line with market demand, as improved processing techniques enable the purging of ammonium chloride from the meat, which had previous constrained its marketing potential (Arkhipkin, *et al*., 2015). More recently, policy changes in the Latin American coastal States have excluded foreign fishing nations from operating in the waters of Peru and Chile. This policy change has led to a concentration of effort on the high seas beyond the waters under the jurisdiction of the Latin American countries in the southeast Pacific Ocean region. The fishery as a whole is of high economic importance, representing a major fisheries activity in this region.

In terms of fishing effort, discussions with a vessel agent in Peru during one of the field visits revealed that a fleet of some 300 Asian-flagged squid jiggers were working the high seas off Peru (see also Figure 33), supported by an unknown number of reefers undertaking transshipment and support operations. The South Pacific Regional Fisheries Management Organization (SPRFMO) is responsible for the management and conservation of this stock. Discussions with the SPRFMO Secretariat regarding the management of *D. gigas* in the context of the study have clarified that a number of management measures are applied, including lists of authorized catcher and carrier vessels. On the basis of the records held by the SPRFMO Secretariat, the fleet was deemed to be closer to 450 squid jiggers operating in the SPRFMO Area (with 90 percent flagged to China and the remainder flagged to the Republic of Korea, Taiwan Province of China and Panama). The catching vessels are supported by a fleet of around 40 reefers (flagged primarily to Panama and China, with the remainder flagged to Liberia, the Russian Federation and Taiwan Province of China).[5] SPRFMO applies a number of CMMs to the squid fishery, as per Table 21.

[5] SPRFMO Secretariat, personal communication, 21 November 2019

The transshipment measures require annual reporting of transshipment events to the secretariat. Annual catch reporting is also required for the squid fishery. Following an update at the 7th Meeting of the SPRFMO Scientific Committee (SC) in Cuba in October 2019, document SC7-SQ01 indicates the latest accurate catch data year (2017) for the high seas fisheries showed 307 000 tonnes of *D. gigas* as reported as caught by squid jiggers. The three major flag States participating in this fishery are China (96 percent; 296 100 tonnes), Taiwan Province of China (< 3 percent; 7 338 tonnes) and Republic of Korea (< 2 percent; 3 460 tonnes). Panama reported a small catch from the high seas of 289 tonnes.

TABLE 21
SPRFMO conservation and management measures (CMMs) as applied to squid fisheries

CMM	Effective date	Detail of measure
02-2018	05-05-2018	Standards for the collection, reporting, verification and exchange of data
04-2019	28-04-2019	Establishing a list of vessels presumed to have carried out IUU fishing activities in the SPRFMO Convention Area
05-2019	28-04-2019	Establishment of the commission record of vessels authorized to fish in the SPRFMO Convention Area
06-2018	05-05-2018	Establishment of the vessel monitoring system in the SPRFMO Convention Area
07-2019	28-04-2019	Minimum standards of inspection in port
10-2019	28-04-2019	Establishment of a compliance and monitoring scheme in the SPRFMO Convention Area
11-2015	13-05-2015	Boarding and inspection procedures in the SPRFMO Convention Area
12-2018	05-05-2018	Regulation of transshipment and other transfer activities
15-2016	29-04-2016	Vessels without nationality in the SPRFMO Convention Area
16-2019	28-04-2019	The SPRFMO observer programme
17-2019	28-04-2019	Fishing gear and marine plastic pollution in the SPRFMO Convention Area

Source: SPRFMO, 2019

With regards to stock status for *D. gigas*, an assessment was carried out in 2017 and submitted to the 5th Meeting of SPRFMO (Xu, Li, Li, Chen, & Chen, 2017). The authors identified seven fishing nations with interests in this stock (Chile, China, Taiwan Province of China, Ecuador, Japan, Republic of Korea and Peru),[6] with the three coastal States exploiting the stock within their own EEZs, and the other four distant-water fishing nations fishing the stock on the high seas. The assessment used the catch per unit effort (CPUE) of Chinese squid jigging vessels as biomass abundance indices in a Bayesian, State-space surplus production model. The authors calculated a maximum sustainable yield (MSY) of 337.619 × 104 tonnes and concluded that the fishery was not subject to overfishing, and thus not in any danger of being overfished. The authors did note that the stock was subject to environmental influences equal to that of fishing pressure. There are ongoing discussions within the SPRFMO Scientific Committee on the assessment of *D. gigas* stocks.

[6] The latest data for Japan for the high seas fishery detailed in document SC7-SQ01 are for the year 2010.

Southwest Atlantic Ocean – Argentine shortfin squid *(Ilex argentinus)*

From the perspective of this fishery's development, Chen, Liu and Chen (2008) note that after first commencing jigging operations for this species in the southwest Atlantic Ocean in 1997, the fishery rapidly expanded to reach a peak of 95 fishing vessels in 2001, with an annual catch of 99 000 tonnes. The authors reported fishery decline after 2001 owing to poor recruitment. Arkhipkin *et al.*, (2015) provide an excellent treatise on the development of this fishery, noting *Ilex argentinus* as the most important of the region's squid fisheries (84.5 percent of catches over a 60-year time series). They also report boom-and-bust cycles attributable to overfishing, citing as one cause a lack of international collaboration in the region. Catches reached a peak of 197 000 tonnes in 2008 and declined again to 12 000 tonnes by 2011. For the fishery by vessels flagged to Taiwan Province of China, the authors report a level of effort of some 80 vessels in recent years. Catches peaked at 284 000 tonnes in 2007 and have declined since. Large fluctuations in catch have been observed across the fishery as a whole. The most recent period of high abundance for *I. argentinus* was observed during the 2012–2013 period, with catches of the order of 500 000 tonnes. Japanese vessels have not participated in this fishery since 2007. However, owing to the lack of a formal management structure for this region, actual details on fishing effort are elusive. The fishery mainly takes place on the Patagonian shelf.

Although no formal RFMO exists for this region, a bilateral South Atlantic Fisheries Commission (SAFC) was set up in 1990 which included Argentina and the United Kingdom of Great Britain and Northern Ireland (Arkhipkin, *et al.*, 2015). The main purpose of the SAFC was the exchange of data and information, with a view to making recommendations on conservation and management. Trawl surveys were organized to investigate recruitment. Stock abundance was estimated using a modified DeLury model. The SAFC agreed that early closure of the fishery should take place if the Spawning Stock Biomass (SSB) fell below a threshold of 40 000 tonnes for the southwest Atlantic. Such closures were indeed implemented within national waters. Since 2005, the SAFC has ceased to function. Recent press reports however, indicate a reopening of dialogue (Mercopress, 2018). Currently the region is unique insofar as no management arrangement exists for the high seas fishery beyond coastal States' jurisdiction. The only conservation and management arrangements which exist for *I. argentinus* in the southwest Atlantic region are the measures applied by the coastal States within their own EEZs. Arkhipkin, *et al.*, (2015) express the view that this increases the overall stock's vulnerability to overfishing. Given the economic importance of the stock and recalling that *I. argentinus* represents over 85 percent of the squid catches from this region, such uncertainty is undoubtedly cause for concern.

Northwest Indian Ocean – purpleback flying squid *(Sthenoteuthis oualaniensis)*

A 2017 paper by civil society authors raised concerns regarding the build-up of fishing effort in the northwest Indian Ocean, with no specific management arrangements in place for the monitoring of the fishery or the implementation of conservation measures (Stop illegal Fishing, Trygg Mat Tracking and NFDS, 2017). The authors used AIS data to monitor a build-up of activity in a high seas area along the Owen Fracture Zone just outside the Yemeni and Omani EEZs. The fishing fleet appeared to be supported by a number of reefers making trips to and from ports in Asia. The study also used satellite imagery (the Suomi NPP VIIRS sensor instrument) to examine light lumens from 42 such vessels in January of 2017, and concluded they were squid jiggers. The authors highlighted the fact that there is no RFMO in place to monitor for the squid fishery in

the northwest Indian Ocean, raising concerns as to its 'unregulated' status. An increase in vessels participating in the fishery from 4 vessels in 2015 to 53 in 2017 was noted, but as the source was AIS it is unclear whether this represents an increase in fishing effort or an increase in the use of AIS by squid jigging vessels. The requirement to use AIS became mandatory on 31 December 2004 for vessels of more than 300 tonnes making international voyages, as per IMO Regulation 19 (IMO, 2016). It seems unlikely that these vessels had suddenly became AIS compliant, though what may be more likely is that larger vessels with greater capacity began to be used (i.e. small squid jiggers below the 300 -tonne AIS threshold). It is also possible that the fleet increased over this period to take advantage of high abundance of *S. oualaniensis*, owing to favourable environmental conditions coupled with a reduction in piracy activity in the region.

In their 2008 paper on the development of Chinese distant-water squid jigging fisheries, Chen, Liu and Chen (2008) refer to this fishery. Between 2003 and 2005, three fishery surveys were undertaken on this species in the northwestern Indian Ocean with catch rates highly variable, ranging from 0.1 to 36 tonnes per day (Chen X. J., Liu, Tian, Qian, & Zhao, 2007). The fishery itself began in 2005, with a then small-scale fishery producing some 5000 tonnes annually. There are no indications in this paper of the level of fishing effort at that time. In their 2015 review of squid fisheries, Arkhipkin *et al*., (2015) have little to add beyond those elements already described in Chen, Liu and Chen (2008). Clearly, this is a fishery about which very little is known, which could benefit from further study and being inserted into a more formal regional management structure for non-tuna fisheries resources in the northern Indian Ocean. Little is known about the economic importance of this species. Arkhipkin *et al*. (2015) note that *S. Oualaniensis* is used for both bait and human consumption but that the species is discarded in India as there is no market demand. There has however, been an assessment regarding the possible development of a fishery in Indian waters for this species.

3.5 TYPES OF TRANSSHIPMENT

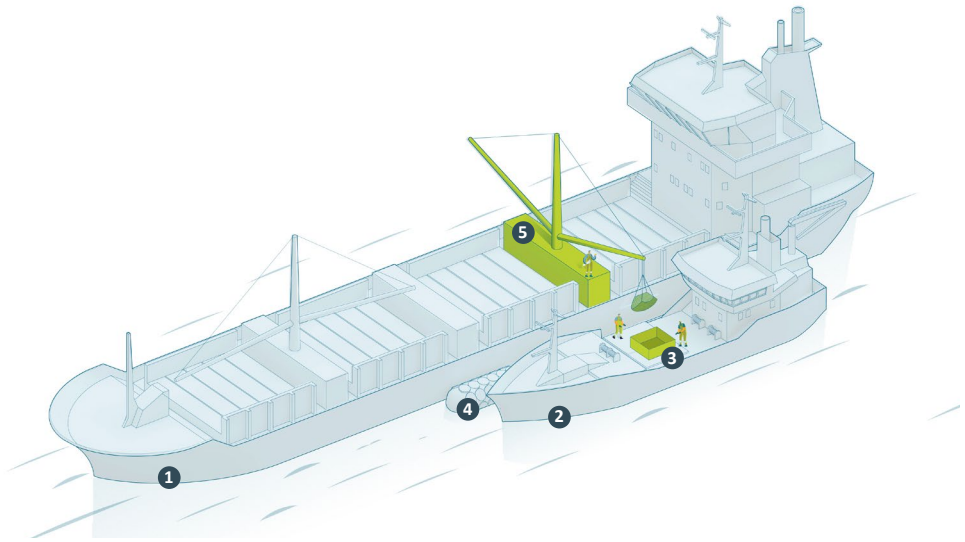
The study has identified five key types of transshipment taking place and a further two types of activity which could be considered a form of transshipment, but which warrant further discussion in this regard.

Catching vessel to refrigerated cargo vessel (Reefer)

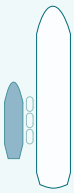
This type of transshipment takes place both at sea and within ports and port areas/ anchorages. It is the most prevalent activity both in terms of numbers of events, volume and value of catches transshipped. The catching vessel will moor alongside the reefer and transfer the catches by crane. Experience shows that in just a few hours considerable volumes of catch can be moved from the catching vessel to the reefer. This type of transshipment is also characterized by a high level of inherent risk; without having comprehensive monitoring and control arrangements in place, when undertaken on the high seas the activity can go largely unnoticed. There are concerns over donor vessels which exhibit rather significant temporal AIS gaps at times; this in turn leaves the competent authorities attempting to ascertain the legitimacy of fishing operations with important knowledge gaps. Furthermore, even when monitored, the ostensibly legitimate activity can be used to launder IUU catches by mixing them with the legitimate catches.

This type of transshipment activity represents a major challenge for port, coastal and flag States in terms of assuring effective MCS arrangements.

FIGURE 34
Schematic diagram of a transshipment event between the catching vessel and a reefer



Key plan:



Legend

1 Reefer (refrigerated cargo vessel)
2 Catching vessel
3 Open fish hold
4 Yokohama fender
5 Crane transshipping the catch from the catching vessel to the reefer

Source: FAO, 2020

Fishing vessel to reefer transshipment is regulated most effectively by coastal States, who are able to enact a prohibition on at-sea transshipment in waters under their jurisdiction; given the capacity to monitor the activity. This type of measure is known to be implemented in a number of coastal States. and RFMOs variously regulate this activity, as detailed elsewhere in this report. Implementation appears to be a challenge in the case of some RFMOs.

From the industrial perspective, transshipment at-sea from fishing vessel to reefer is often considered essential. Fishing grounds may be far from the market destination, and it its claimed that the operations would be economically unfeasible – and result in an unacceptable loss of fishing time – for the catching vessels to steam to nearest ports or indeed the market State (in some cases a voyage of several weeks) to offload the catches. The principal benefit of utilizing transshipment activity as part of the commercial operation is to minimize lost fishing time.

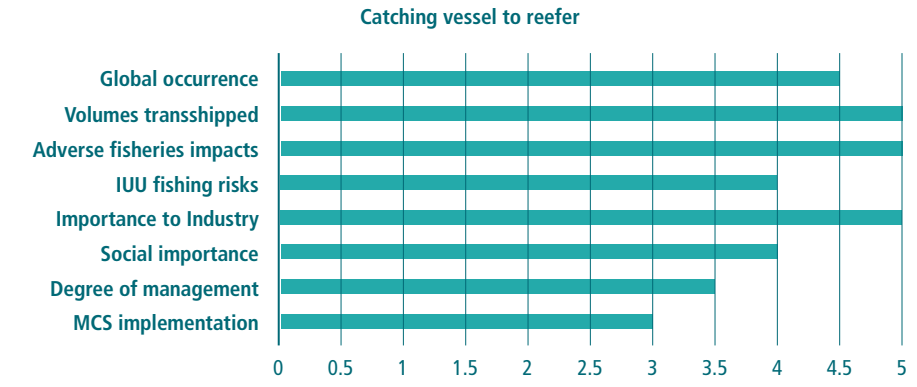
This particular activity has been identified as associated with fisheries for tuna, squid, bottom trawl-caught mixed species, small pelagics and krill. Figure 35 shows a range of indicators presented in terms of their importance and magnitude. An arbitrary index was chosen to depict the relative importance of these indicators, ranging from 0 to 5 (lowest to highest).

TABLE 22
Fishing methods, target fisheries and areas, fishing vessel to reefer transshipment

Fishing method	Target species	Occurrences
Purse seine	Tunas	Pacific, Atlantic, Indian Oceans (high seas and ports), West African waters, Latin American ports
Pelagic trawl	Small pelagics	North Atlantic, West Africa
Pelagic longline	Large pelagics, tunas	Pacific, Atlantic, Indian Oceans (high seas and ports)
Jigging	Squid	Pacific, Atlantic, Indian Oceans (high seas)
Demersal trawl	Mixed demersals	Thai waters

This activity is understood as having a high global occurrence – largely due to its key association with the world's tuna fisheries. Large volumes transshipped and significant potential adverse effects on fisheries also create a perceived medium–high level of risk of the activity being potentially associated with the handling of IUU catches. Similarly, owing to the remote nature of many of the fisheries in which transshipment activity between catching vessels and reefers is a feature, together with the long distances to market States, the activity is considered to be highly important to the industry. While a managerial framework for MCS has been identified, the application of MCS measures presents challenges in terms of their effective implementation, particularly in developing countries. The social importance of this issue is relatively high, as civil society organizations have taken pains to flag the risks inherent in this activity to the public, even going so far as to suggest a complete ban.

FIGURE 35
Indicators for transshipment activity involving a catching vessel transshipping to a reefer

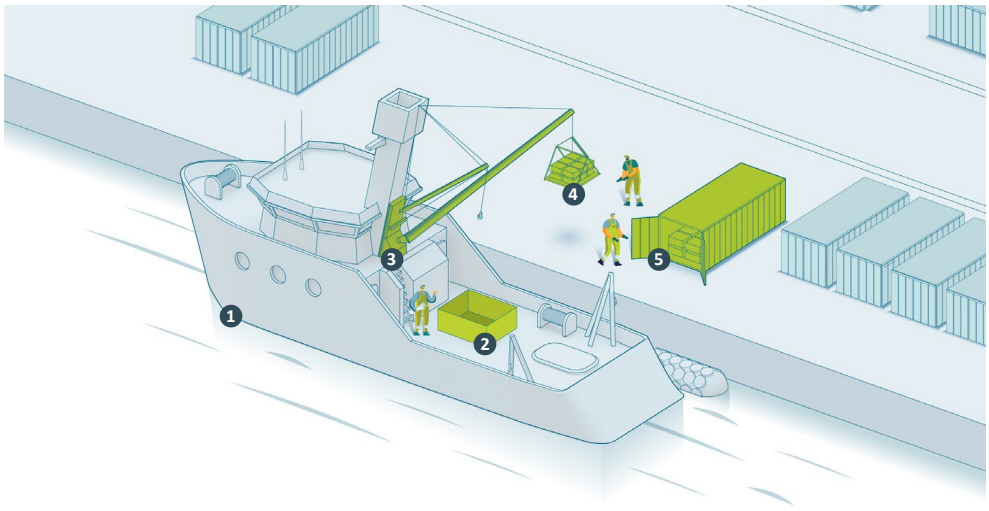


Source: FAO, 2020

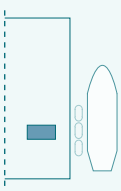
Catching vessel to containers

During the field visits conducted for this study, and in the context of wider capacity development work carried out by the study team, an increasing trend for fishing vessels to load catches directly to containers has been identified. While this activity has been reported taking place primarily in ports, it remains unknown whether it is technically possible or economically feasible to undertake this kind of activity at sea. Costs can also be reduced when this involves the transport of loins instead of whole fish, as loins represent only approximately 60 percent of the round weight of an entire fish (FAO, 2010). Loading catches directly into containers is a concern because it appears that the competent authorities of some port States are not considering this a *landing* as such, but a kind of quasi-transshipment. This means catches pass through the port in transit without undergoing any fisheries-related port State measures, including fisheries inspection. The containers are then loaded aboard large-scale container vessels and shipped to their destination. It remains uncertain whether port State measures would be applied to this activity and if so where, at the port of this activity or the destination port the containers reach. An agent handling fishing vessels transferring fish into containers in Peru indicated the destination ports as Yokohama and Shimizu in Japan, along with Marin in Spain. It was also noted that this activity is taking place in ports in South Africa (Cape Town), Trinidad and Tobago and Spain (Las Palmas).

FIGURE 36
Schematic diagram of catching vessel discharging catches directly to containers



Key plan:



Legend

1 Catching vessel
2 Open fish hold
3 Cargo handling crane
4 Pallet of cartons of frozen catches being craned ashore
5 Container

Source: FAO, 2020

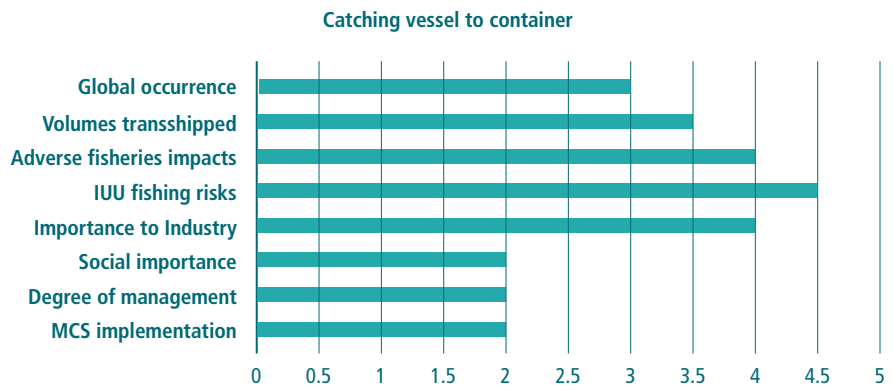
TABLE 23
Fishing methods, target fisheries and ports, fishing vessel to container 'transshipment'

Fishing method	Target species	Occurrences
Purse seine	Tunas	West African ports, Latin American ports, Caribbean Sea ports, Indian Ocean ports,
Pelagic longline	Large pelagics, tunas	Latin American ports, Pacific Island ports
Jigging	Squid	Latin American ports

This activity has been identified as associated with tuna, surface-longline-caught large pelagics, squid and bottom-trawl-caught mixed species. Figure 37 provides a graphical description of the key activity indicators.

The importance to industry of this activity is considered to be high, offering a more rapid access to markets than with conventional means (reefer or catching vessel steaming to the market destinations). With this particular activity a lack of clear definition in terms of transshipment or landing and doubt over the application of port State measures all lead to monitoring uncertainties: this in turn increases the risks associated with unloading catches directly to containers, potentially giving rise to high adverse fisheries impacts. As a relatively new fisheries activity, both management and MCS are going through a phase of adaptation. Volumes handled by this activity are known to be increasing as containers take market share from reefers. This activity has been reported from several distinct parts of the world (Latin America (Pacific and Atlantic), West Africa, South Africa, Europe, the Caribbean and Asia). The social importance of this activity is not considered to be very high.

FIGURE 37
Indicators for transshipment activity involving a catching vessel 'transshipping' to containers



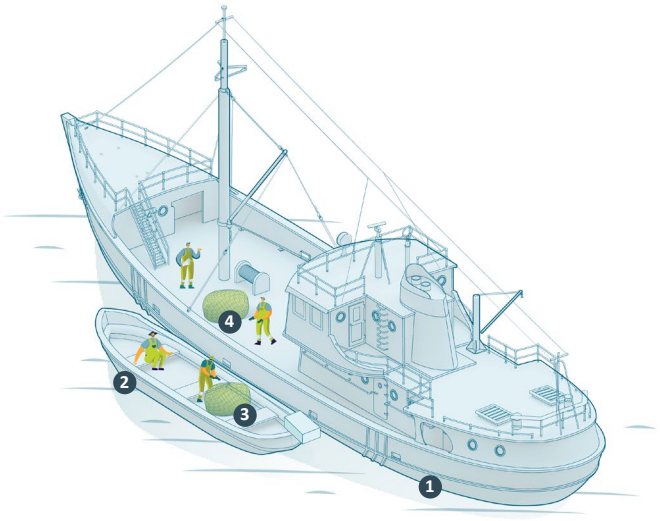
Source: FAO, 2020

Catching vessel to small transport vessel

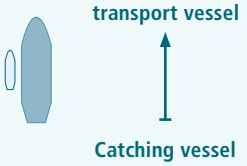
This type of transshipment activity has been reported in Thailand, Latin American countries and in West Africa. The activity may be legitimate (in the case of the blue swimming crab fishery in Thai waters), regulated and monitored. In the West African context, this type of activity is known to take place in several countries; how it is viewed by the competent authorities varies from being completely prohibited (Ghana), to being permitted and monitored (Sierra Leone). Other countries are aware that the activity takes place, but the competent authorities have no concrete knowledge on the specific details of the activity. The Fisheries Committee for the West Central Gulf of Guinea (FCWC) has embarked upon an information-gathering exercise to better understand it. During the field visit the competent authorities in Ecuador reported to the study team that they have information that fishing vessels working in national waters will sometimes transship catches to small transport vessels or indeed other fishing vessels in order to 'steal' catches from vessel owners. In Sierra Leone, large industrial fishing vessels are of a draught which is too deep to access the landing places of the fishing companies which take the fish. In order to solve this constraint, the fish are offloaded to canoes for transportation to the landing site. Although this is clearly a transshipment, catch accounting is attributed to the catching vessels.

This activity is associated with trawl-caught mixed species and small pelagics, conch, rock lobster and crab fisheries. Figure 39 presents a range of activity indicators.

FIGURE 38
Schematic diagram of a catching vessel transshipping to a small transport vessel



Key plan:

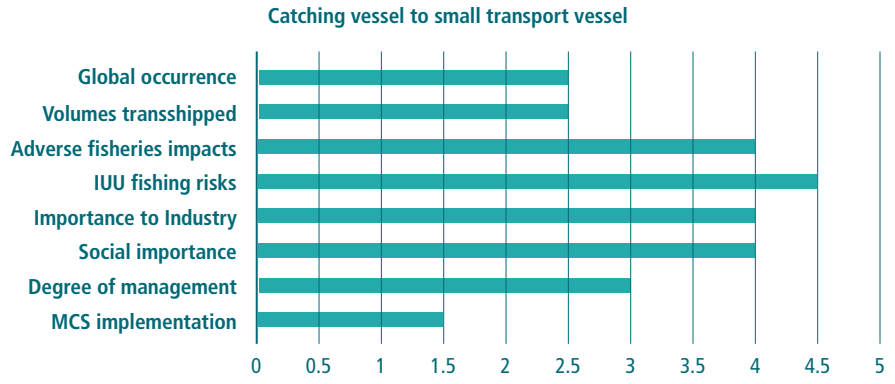


Legend

1 Catching vessel
2 Small transport vessel
3 Storage of cargo aboard the transport vessel
4 Preparation of catches for transshipping

Source: FAO, 2020

FIGURE 39
Indicators for the transshipment activity involving the catching vessel transshipping to a small transport vessel

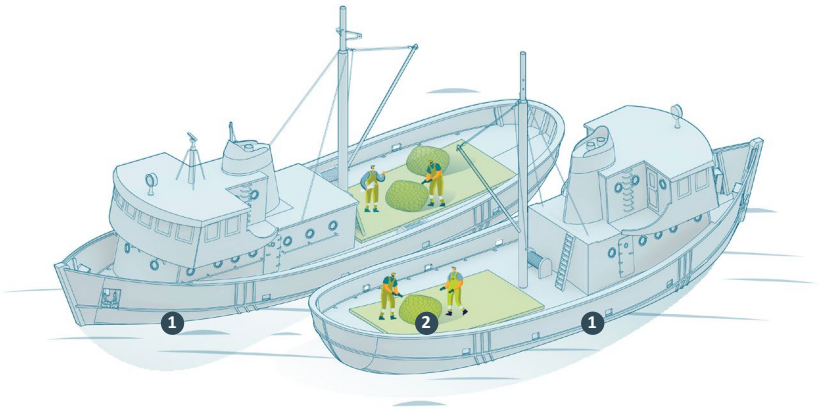


Source: FAO, 2020

In terms of risks and impacts, the importance to industry and social importance are all considered to be high. The importance to industry has both negative and positive connotations depending upon perspective and the particular fishery in question. Social importance is high due to equitable exploitation issues (small-scale fisheries, fisher displacement, sectoral conflicts). Management frameworks exist to a certain extent, although in the regions where the activity is known to be illegal MCS implementation challenges pose a serious constraint to tackling the problem. This creates a high level of risk of IUU fishing activity being associated with this activity.

Catching vessel to other fishing vessel

FIGURE 40
Schematic diagram of a catching vessel transshipping to another fishing vessel



Key plan:

Legend

1 Catching vessel

2 Crew members preparing catches for transshipping to the other fishing vessel

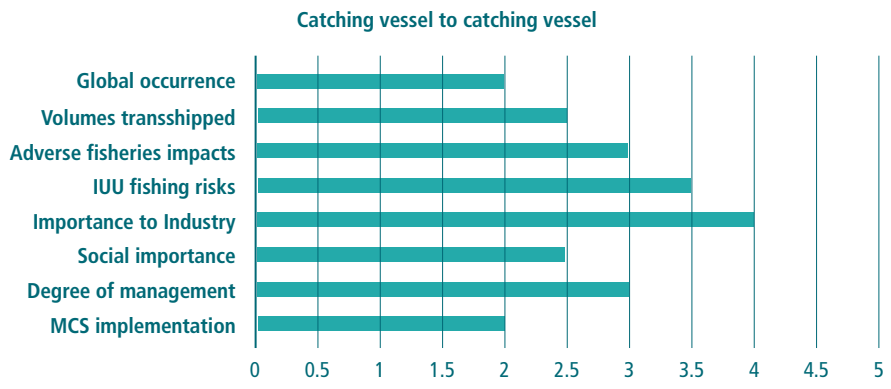
Source: FAO, 2020

While many States maintain a prohibition on this type of transshipment activity, the study team noted several instances where this occurs and that as an activity it is linked with market access. In the Mediterranean Sea, it has been reported that small-scale fishing vessels flagged to non-EU States will transship their catches to EU-flagged fishing vessels in order to gain access to the EU market. Similarly, in the Caribbean Sea, transshipment has been observed taking place from foreign-flagged to local fishing vessels for reasons of market access, as only local vessels were allowed to land fish for export. A similar practice has been reported in Central America with evidence emerging of transshipment activity between purse seiners and longliners. In the north Atlantic Ocean large-scale pelagic trawlers will occasionally transship catches to vessels belonging to the same company, which are heading to port to discharge in order to get the catches to market and allow the donor vessel to continue fishing. In such cases, the receiving vessel is not permitted to undertake further fishing operations after the transshipment operation has been completed (NEAFC regulations). As noted above, in some Latin American waters fishing vessels may transship to other fishing vessels in order to 'steal' catches from vessel owners. It was also reported that larger vessels fishing in national waters in Latin America will transship to smaller fishing vessels in the port area in order for the smaller vessels to land the catches, owing to a lack of wharf space. The catches are attributed to the catcher.

This type of transshipment has been identified as associated with fisheries for bottom-trawl-caught mixed species, small and large pelagics, tuna, rock lobster and conch. Figure 41 presents a range of activity indicators identified by the study team.

Potential, adverse localized fisheries impacts are important relative to the low volumes and the fact that one of the target species (conch) is particularly sensitive to exploitation and listed in CITES Appendix II. Risks are considered medium-high. While management measures exist, the effective implementation of MCS activities presents challenges to the developing States in the regions where these activities take place. In fisheries where the drivers are legitimate (lack of wharf space), the activity is of high importance to industry. Social importance is not considered to be high, largely due to a lack of public information.

FIGURE 41
Indicators for transshipment activity involving a catching vessel transshipping to another fishing vessel



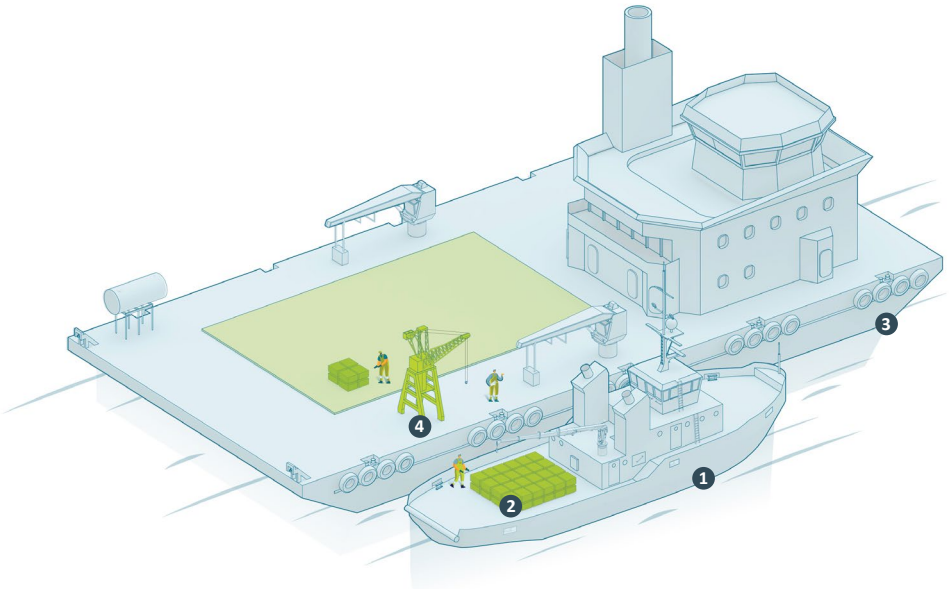
Source: FAO, 2020

Catching vessel to floating storage vessel / Floating storage vessel to reefer

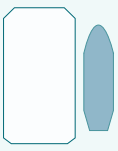
The study identified only two cases involving this type of activity. In one example in West Africa a floating reefer is used as a cold store to receive catches from demersal trawlers owing to a lack of wharf space and facilities ashore. Canoe transport vessels bring frozen catches from the reefer to the fishing company landing sites in accordance with processing needs. This of course presents a unique monitoring and catch accounting challenge for the port State's competent authorities.

The use of a floating barge cold storage facility was also identified in the Indian Ocean. Owing to a lack of land space, a small island developing State uses a floating barge as a cold storage facility to store catches of pole-and-line-caught tuna from small artisanal vessels. Given that this storage facility is indeed a vessel,[7] the placing of the catches aboard this facility cannot be considered a landing as such, but a transshipment from the catching vessel to the floating storage facility. Similarly, when a reefer arrives to transport the catches to a market State, the activity of the reefer taking the catches onboard from the floating storage should also be considered a transshipment. The reefer's arrival to the market State will be where the landing first takes place. In that sense, the market State acts also in the role of the port State.

FIGURE 42
Schematic diagram of a catching vessel transshipping catches to a floating storage facility



Key plan:



Legend

1 Catching vessel

2 Cartons of frozen catches stacked on the deck ready for transshipping to the floating storage vessel

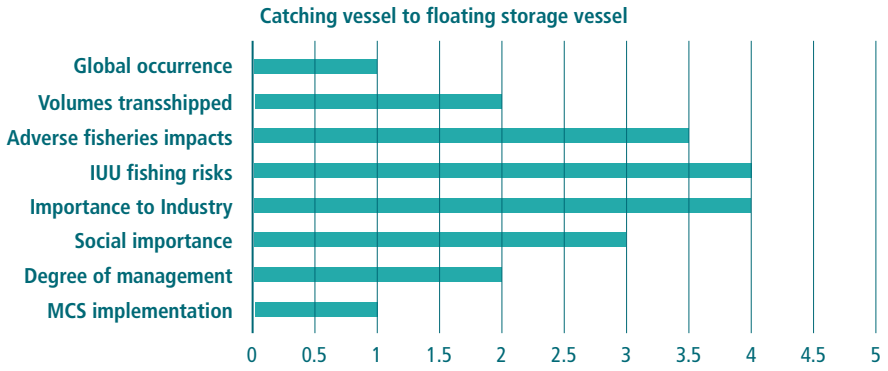
3 Floating storage vessel

4 Cargo handling crane for transshipping catch to the floating storage vessel

Source: FAO, 2020

[7] As per PSMA Article 1(j) "vessel" means any vessel, ship of another type or boat used for, equipped to be used for, or intended to be used for, fishing or fishing-related activities.

FIGURE 43
Indicators for transshipment activity involving the catching vessel(s) transshipping to a floating storage facility



Source: FAO, 2020

Figure 43 presents the activity indicators applicable to these particular cases. In both cases, importance to industry is considered high due to the lack of wharf space and facilities ashore. Risks and adverse fisheries impacts are considered relatively high owing to the developing nature of the port States involved and the unique challenges presented by this activity in terms of monitoring, control and surveillance. More broadly, catch volumes are not significant, but in the absence of adequate management and MCS processes adapted to this activity, the local impacts may be high and associated with potential undocumented removals from the fisheries. These activities are considered to be of moderate social importance.

Main capture methods

The study highlights that the main fisheries associated with transshipment activity are the bulk fisheries for tunas and various species of squid. In terms of capture methods, the tuna fisheries are dominated by purse seine, pelagic longline and to a lesser extent, pole and line. The bulk squid fisheries are largely carried out by vessels using automated jigging machines. Some trawling is carried out for squid, but no strong evidence has emerged that the trawl squid fisheries are engaged in transshipment activity, although in the south Atlantic fisheries this remains possible.

TABLE 24
Fishing gear types by transshipment activity and species

Scenario	Species/group	Fishing gear[8]
Catching vessel - reefer	Tuna	PS, LLD
	Small pelagics	OTM
	Squid	LHM
	Krill	OTM
	Multispecies trawl	OTB
Catching vessel - container	Tuna	PS, LLD
	Squid	LHM
	Multispecies trawl	OTB
Catching vessel – floating storage vessel	Tuna	LHP
	Multispecies trawl	OTB

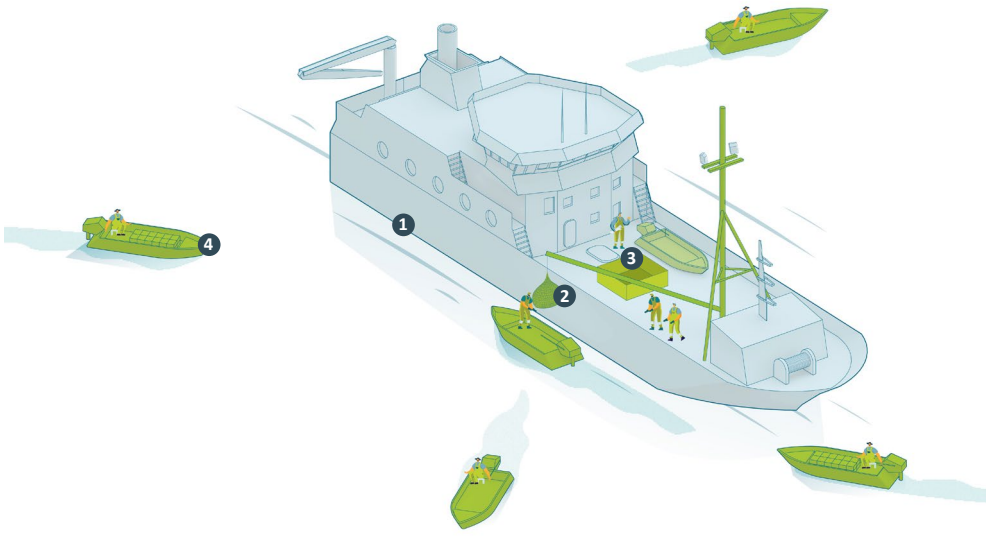
[8] Gear Codes in accordance with the FAO International Standard Statistical Classification of Fishing Gear

TABLE 24 (CONTINUED)

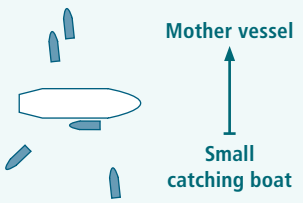
Scenario	Species/group	Fishing gear[8]
Catching vessel – small transport vessel	Small pelagics	PS, OTB
	Conch	MDV
	Crab	FPO
	Multispecies trawl	OTB
Catching vessel – other fishing vessel	Small pelagics	OTM
	Large pelagics	LLD, LTL
	Conch	MDV
	Multispecies trawl	OTB

Transshipment of small pelagic species involves vessels using midwater or pelagic trawl gear in various parts of the world, notably the northeast Atlantic and West Africa. Multispecies bottom-trawl fisheries catching a wide range of both demersal and pelagic species are associated with all types of transshipment activity identified. Albeit to a lesser extent, it also applies to pot fisheries for crab in Thai waters and diving fisheries for conch in the Caribbean Sea, which are still important from social and industrial perspectives. Table 24 presents the fishing gear types for the main fisheries identified which are associated with transshipment activity.

FIGURE 44
Schematic diagram of a typical mother vessel operation involving small catching boats



Key plan:



Legend

1 Mother vessel
2 Loading the catch from the small vessel
3 Open fish hold
4 Small catching boat returning to the mother vessel

Source: FAO, 2020

[8] Gear Codes in accordance with the FAO International Standard Statistical Classification of Fishing Gear

Transshipment grey areas

Two types of activity were identified which could not readily be categorized as transshipment in the sense described above; nevertheless, they should be considered in the discussion because they involve the movement of catches from one vessel to another.

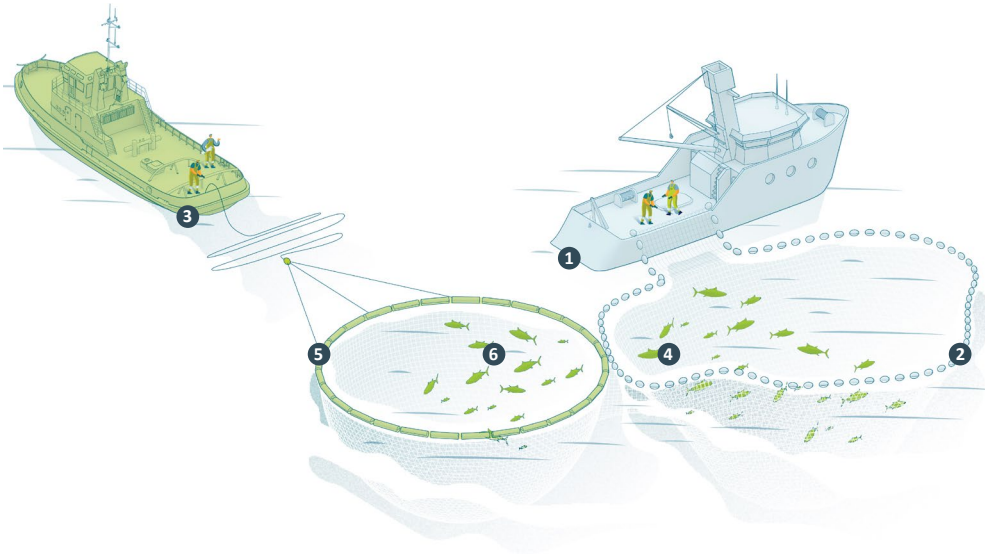
Mother vessel operations

In some regions there are mother vessel operations whereby a large vessel deploys a number of small vessels or dories, which go out reef fishing or longlining during the day and return to the mother vessel later in the day to offload their catches. The point is moot whether this ought to be considered a transshipment operation, or a kind of 'joint fishing operation'. What is key is that all elements are part of one whole and the activity of unloading the catches from the small vessels to the mother vessel is an essential part of the operation.

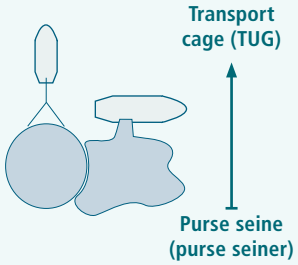
That said, it is known that in some of these fisheries in the Caribbean Sea, the mother ship will also take catches from fishing vessels not involved in the mother-daughter operation. In such cases, it is clear that the operation is a transshipment.

Tuna farming or ranching operations, live bait supply

FIGURE 45
Movement of tuna catches between purse seiner and tug in tuna ranching operations



Key plan:



Legend

1 Purse seine

2 Purse seine net closed at the bottom to secure tuna

3 Tug or towing vessel

4 Tuna being transferred live from the purse seine to the transport cage

5 Rigid framed transport cage

6 Transferred tuna in the transport cage

Source: FAO, 2020

In the Mediterranean Sea and the waters south of Australia both northern bluefin (*Thunnus thynnus*, BFT) and southern bluefin tuna (*Thunnus maccoyii*, SBT) catches are made by purse seine and then transferred to towing cages which transport the live fish to the ongrowing installations. A similar practice is known to take place in Mexico (Baja California), primarily with Pacific bluefin tuna (*Thunnus orientalis*). Again, the point is moot as to whether the movement of live fish from the catching purse seine to the transport cage – and possibly from the transport cage to the fattening cage thereafter – should be considered a form of transshipment. The competent body for BFT, ICCAT, considers the activity a 'transfer' and requires a 'transfer declaration' from the operators. The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) CMM on catch documentation schemes (CDS) includes farm transfer forms which have a section on towing and receiving that might be applicable to this practice. The tuna ranching operations in Mexico are managed as a national competence, in the spirit of the conservation principles established by the Inter-American Tropical Tuna Commission (IATTC), of which Mexico is a key member. A practice which could be considered similar occurs in the small island States of the Caribbean Sea. National vessels will catch bait fish and keep them alive in the net in order to sell them to visiting foreign-flagged vessels as tuna bait. Whether the activity of removing the catches from the retaining net and placing them aboard the tuna vessel constitutes a form of transshipment still requires clarification.

4. Discussion

4.1 OCCURRENCES AND HOTSPOTS

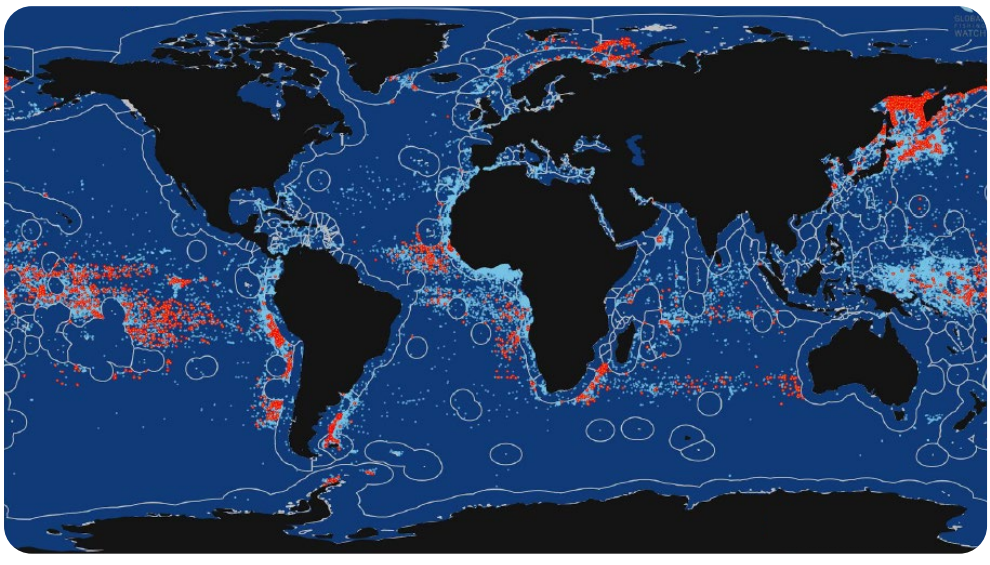
In addition to the spatial findings presented in Sections 3.2, 3.3 and 3.4 of this report, a considerable number of commentators have discussed the spatial aspects of transshipment activity in both published and unpublished literature. The discussions consider both the global situation and the levels of activity specific to certain oceans or regions. The studies generally use non-proprietary data (AIS) as the basis for their analysis, applying a limited range of algorithmic or other model approaches, and applying generally consistent assumptions to vessel behaviour.

The Global Picture

For all studies carried out in the attempt to identify transshipment activity, the source data is for the most part satellite AIS (S-AIS) and study methodologies general assume that reefer loitering activity is indicated by frequent course changes and periods of time operating at slow speeds or adrift. Indicators of possible encounters with fishing vessels include operating at slow speeds in proximity (less than 500 m) for a notable time period.

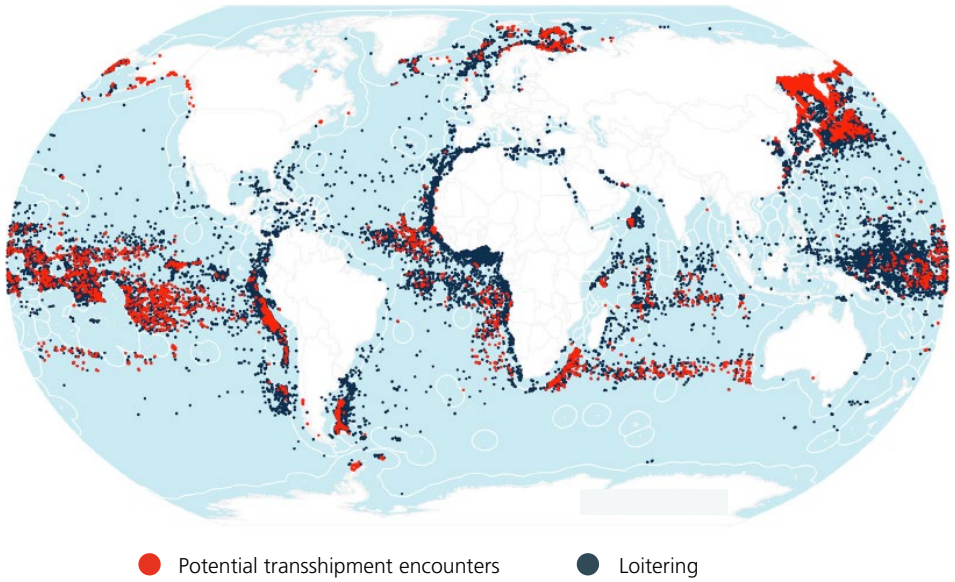
For a degree thesis at Dalhousie University, Christie (2017) analysed Satellite AIS data using ArcGIS 10.3.1, R Studio 1.0.136 and Excel 15.32 to undertake a comparative analysis of reefer activity; the study identified hotspots where reefers were identified as drifting as well as the location of encounters with other vessels. Hotspots were found in equatorial South America, the southwest Atlantic Ocean, western Africa, the northwest

FIGURE 46
Heat map of assumed global transshipment activity



Source: Skytruth and Global Fishing Watch 2017

FIGURE 47
Transshipment activity heat map



Source: Miller, Roan, Hochberg, Amos and Kroodsma, 2018

Pacific and northern Russia. Skytruth and Global Fishing Watch (2017) released revised findings of a similar kind of analysis based on AIS. Although there were some criticisms of the methodology, at the very least the results seem to indicate those areas where reefer activity is concentrated, consistent with the other results (Figure 46). The study concluded that some 5 783 'likely rendezvous' between reefers and fishing vessels had occurred between 2012 and 2017. The authors assert that somewhere in the region of 42 percent of likely and potential encounters between fishing vessels and reefers occur on the high seas.

More recent global studies have indicated similar results. This is likely to be largely because the source data (satellite AIS) and methodologies are similar (Boerder, Miller, & Worm, 2018) (Miller, Roan, Hochberg, Amos, & Kroodsma, 2018). In this regard there are clear similarities between Figure 46 and Figure 47.

Several studies have opted for a more regional or oceanic focus.

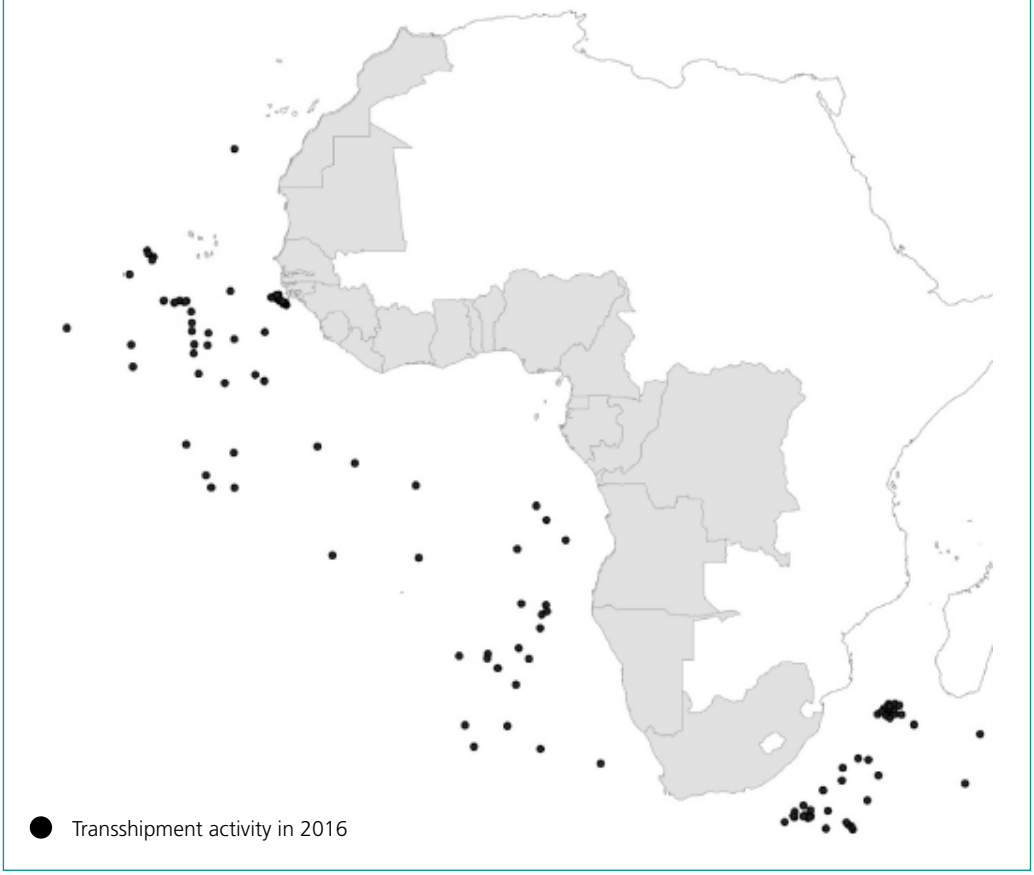
Atlantic Ocean

Two studies focus on the role transshipment plays in supporting IUU fishing operations taking place in the West African context (Daniels, *et al.*, 2016) (Petrossian, 2018). Daniels *et al.*, (2016) report on two main transshipment hubs in the West African context, as identified by the United Nations Office on Drugs and Crime (UNODC). These are centred around a northern hub around Guinea and Guinea-Bissau, which is reported as including Cabo Verde, the Gambia and Senegal. Further south, the Gulf of Guinea countries of Benin, Cameroon, Equatorial Guinea, Gabon, Ghana, Nigeria, Sao Tome and Principe and Togo are identified. What is interesting here is that Côte d'Ivoire does not feature as part of the southern hub, as considerable transshipment activity is known to take place in the area of Abidjan. It is widely known that the West African States have extremely limited capacity to monitor and control fisheries activity in waters under their jurisdiction. Petrossian (2018) used an environmental criminology approach to

identify potential areas of illegal activity based on the desirability of the commodity and the opportunity of carrying out the activity without detection. The authors used data in Kroodsma *et al*. (2018) to produce a map of transshipment activity in waters close to West Africa in 2016 (Figure 48).

Other papers referring specifically to transshipment in the Atlantic Ocean have been written in the tuna context with respect to data held by ICCAT. Global Fishing Watch undertook a comparative analysis of transshipment activity in the ICCAT Convention Area using 2017 AIS data, machine-learning tools and ICCAT documentation. The analysis indicates that in spatial terms, likely encounters identified between carrier vessels and catching vessels (longliners) based on AIS occur mostly between 20°N and 40°S, and on the eastern Atlantic side beyond the EEZs of the West African coastal States. Transshipment activity is only authorized by ICCAT for what are termed large-scale pelagic longline fishing vessels (LSPLFV). While it was generally the case that most 'likely' transshipment encounters occurred throughout this region, some trends were observed by carrier flag. Interestingly, the study shows a low correlation between likely encounters (120) identified via AIS, and ICCAT reported transshipments (539). This is thought to be the result of a relatively low number of vessels using or operating AIS equipment. It is an International Maritime Organization (IMO) requirement for all ocean-going vessels over 300 tons to carry functional AIS equipment, though vessel masters are permitted to switch the unit off for security reasons.

FIGURE 48
Transshipment activity off West Africa in 2016



Source: Petrossian, 2018

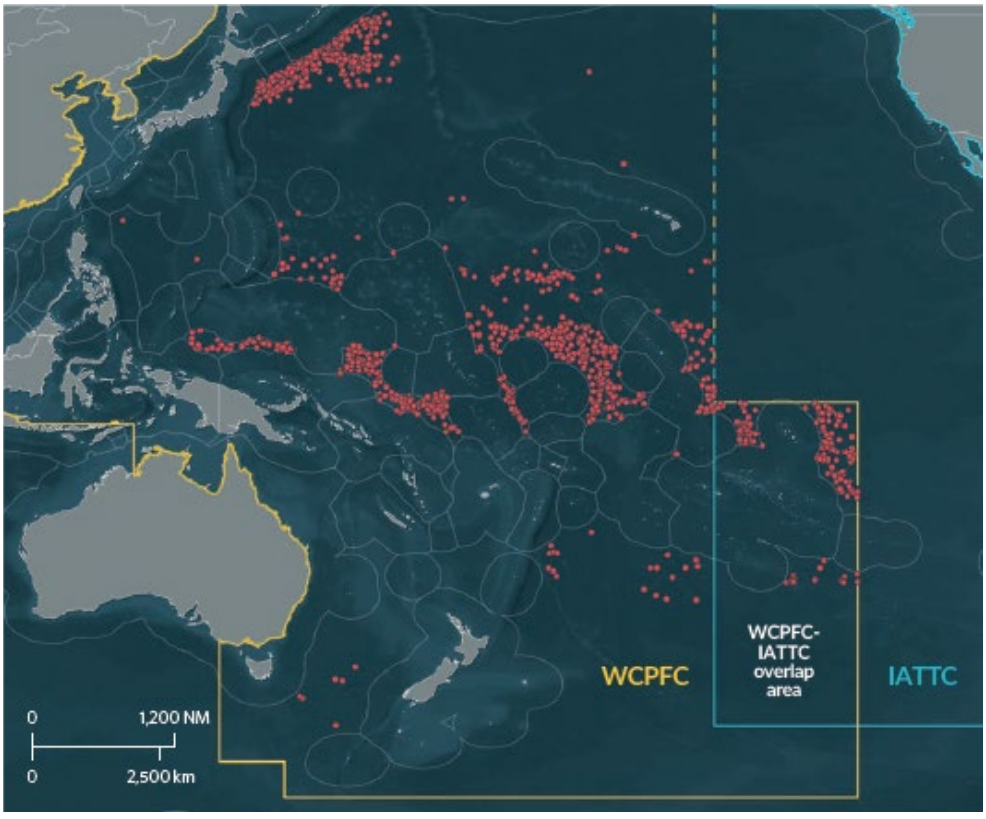
PEW (2019b) report that the number of high seas transshipment events on the high seas in the ICCAT Convention Area increased by 28 percent between 2012 and 2017. Quantities transshipped increased by 57 percent over the period from 2012 to 2016.

Pacific Ocean

Several commentators have raised concerns regarding transshipment of tuna in the Pacific Ocean. Wold (2019) raises concerns regarding the 'impracticality exemption' of the Western and Central Pacific Fisheries Commission (WCPFC) which permits high seas transshipment in practice, in the face of what is ostensibly a general prohibition. PEW (2019f) undertook a study on the same region for the year 2016 using AIS data and machine-learning technology. From the spatial perspective, transshipment event hotspots identified by this study are as indicated in Figure 49.

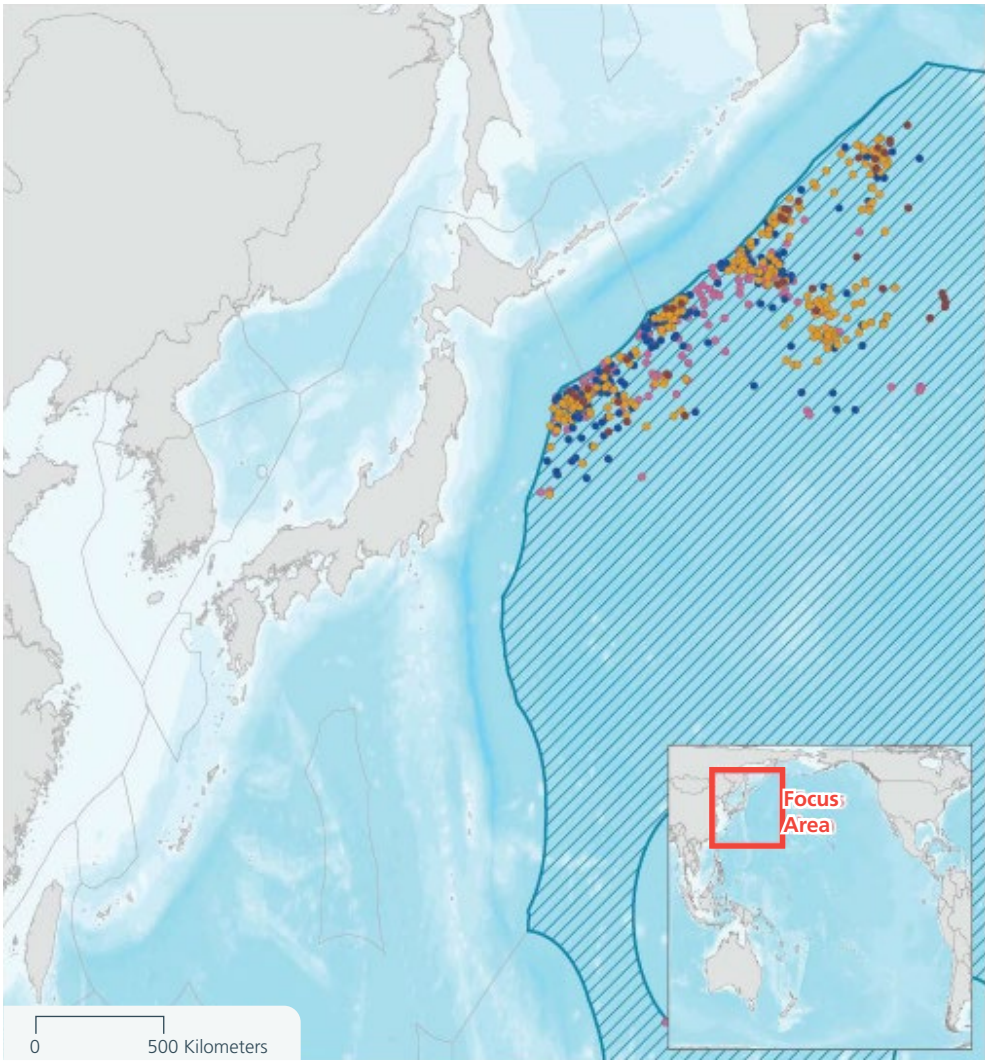
In terms of the movements of carrier vessels, the ports of Busan, Kaohsiung and Bangkok appear to be intrinsically linked to this activity (for Bangkok, see also Section 3.2 of this report). Although only 25 carrier vessels reported high seas transshipment to the RFMO in 2016, the PEW findings indicate that as many as 140 vessels may have been undertaking this activity. A similar study was carried out for the NPFC Convention Area (PEW, 2019d). Findings indicate that 26 carrier vessels may have conducted as many as 600 transshipments on the high seas off Japan in 2016

FIGURE 49
Potential high seas transshipment events in 2016



Source: PEW, 2019

FIGURE 50
Potential high seas transshipment activity on the high seas off Japan in 2016



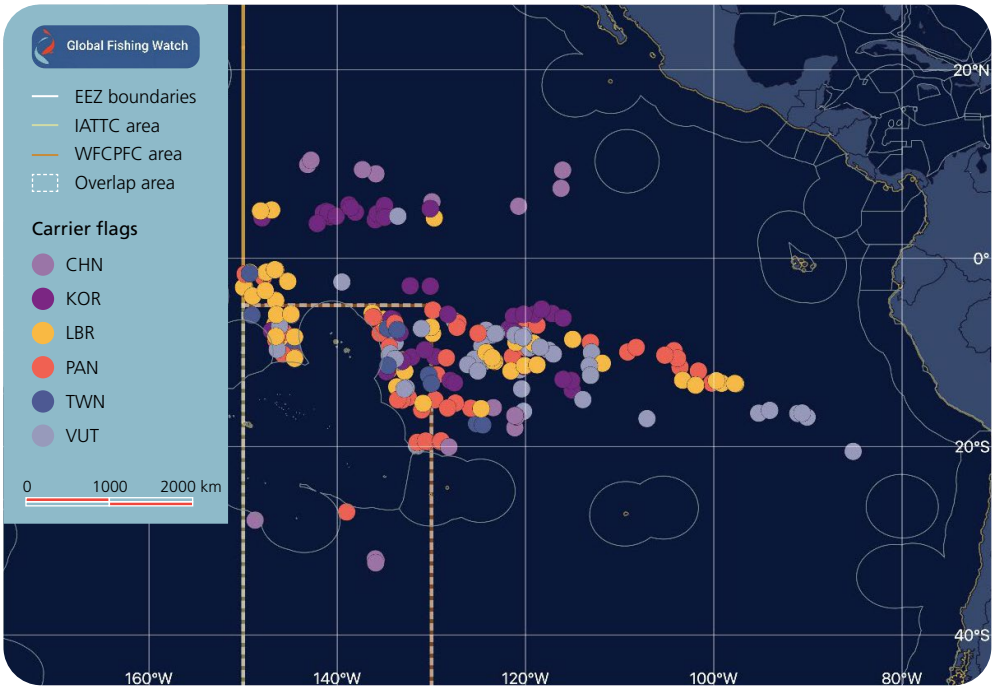
Source: PEW, 2019

(meaning a rate of one event every two weeks per vessel). The authors indicate a high concentration of activity on the high seas off Japan (Figure 50) and express concerns regarding areas of overlap between the WCPFC and NPFC convention areas, with little harmonization of conservation measures between the two organizations.

Global Fishing Watch (2019) undertook a comparative analysis of 2017 AIS data with reported transshipments in the IATTC Convention Area. As with other studies of this nature, an encounter between a fishing vessel and a carrier vessel was inferred when both vessels maintained a speed of less than two knots, for more than two hours, and a proximity of less than 500 metres. It should be noted that transshipment activity takes place with vessels alongside one another, but it remains doubtful whether AIS transmissions facilitate that level of detail, bearing in mind that the positional information is derived from the vessel's navigational equipment. From the spatial perspective the authors conclude from their analysis that 232 encounters took place on the high seas in the IATTC Convention Area during 2017 involving 23 individual carrier vessels and

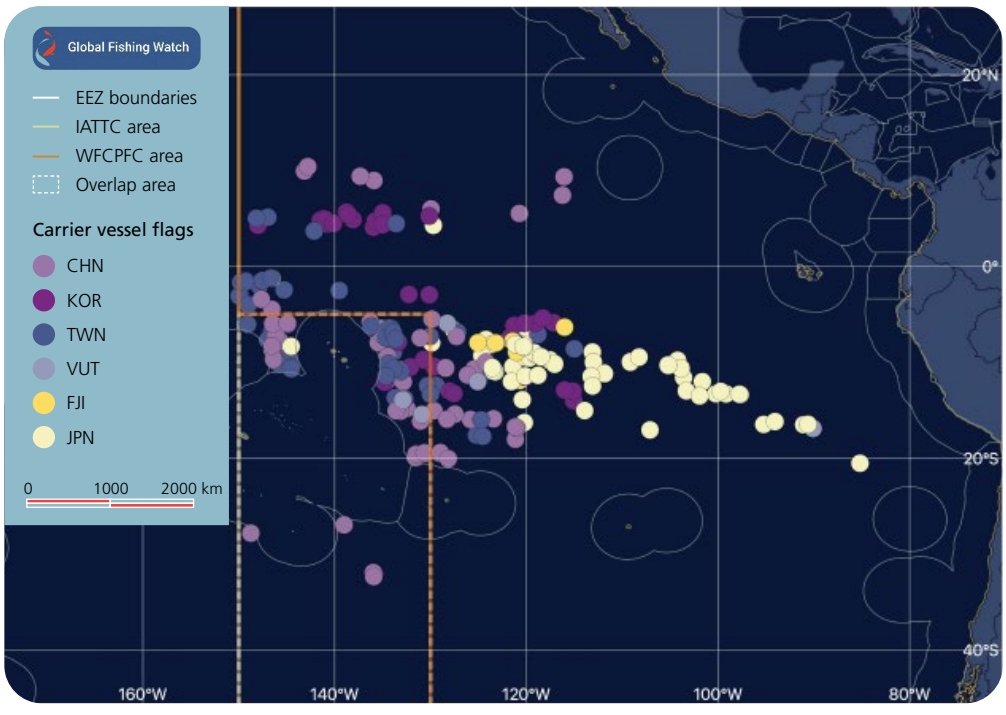
139 individual LSTLFVs. The average duration of the encounters was seven hours. The following two figures reproduced from the study show the spatial distribution of inferred encounters by carrier vessel flag and fishing vessel flag.

FIGURE 51
Spatial distribution of inferred encounters by carrier vessel flag, 2017



Source: Global Fishing Watch, 2017

FIGURE 52
Spatial distribution of inferred encounters by fishing vessel flag, 2017



Source: Global Fishing Watch, 2017

Indian Ocean

On behalf of the IOTC Committee on Compliance (CoC), PEW (2019) reviewed management and reporting trends over a five-year period from 2014 to 2018 as it related to transshipment activity in the IOTC Convention Area. From the spatial perspective, this work found that transshipments on the high seas were increasing with over 94 percent more identified during this time period. At-sea transshipment is generally prohibited in IOTC under the regional observer programme (ROP) monitoring the transshipment at sea. The only exception is for LSTLVs and that under special circumstances. The report notes some compliance concerns.

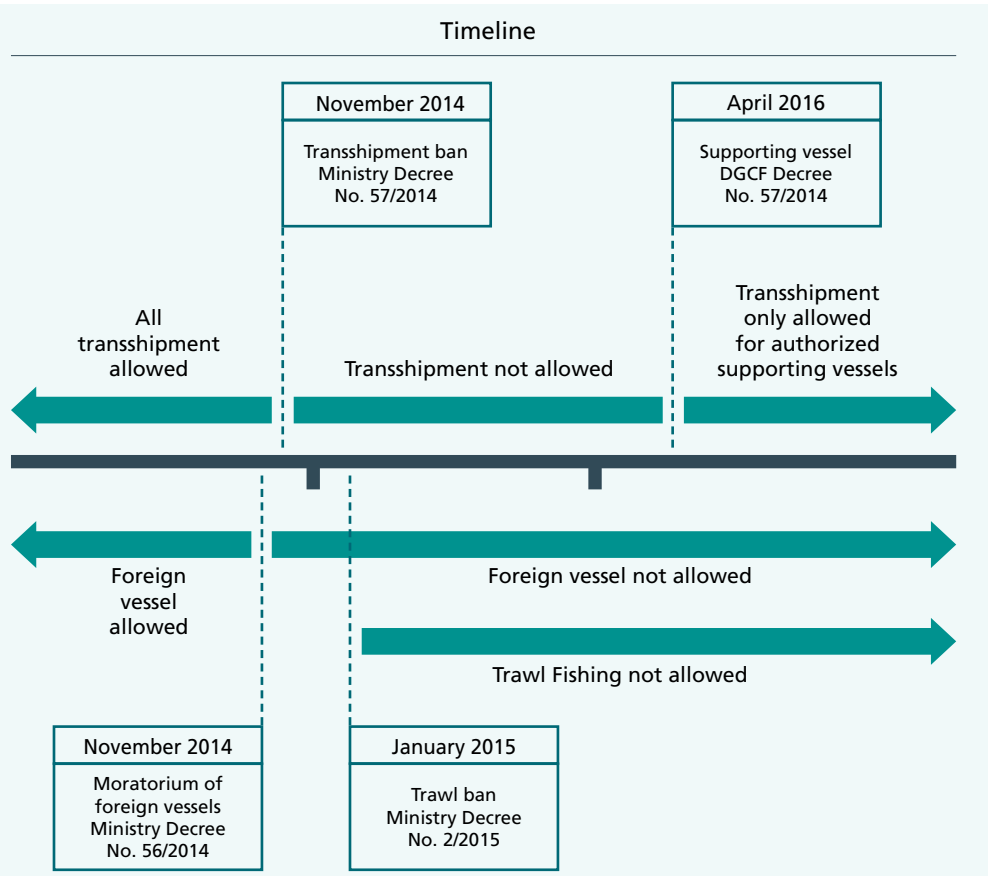
Unconfirmed reports also suggest that unauthorized high seas transshipment in the IOTC Regulatory Area may take place between purse seine vessels and carrier vessels.

Pramod (2010) reports on IUU fishing activity within the Indian EEZ, highlighting the role transshipment plays in unscrupulous activity, both within the Indian EEZ and on the high seas beyond. The report points to the use of two flags by certain vessels in the course of the same voyage.

Indonesia

Two papers published in 2018 discuss transshipment with a focus on Indonesia. Satria, Sadiyah, Widodo, Wilcox and Ford (2018) looked at transshipment activity in light of recent policy changes. Figure 53 (reproduced from this paper) shows a timeline of the transshipment and trawling prohibitions applied to non-Indonesian flagged vessels in Indonesian waters.

FIGURE 53
Timeline of prohibitions applied in Indonesia



Source: Satria, Sadiyah, Widodo, Wilcox, and Ford, 2018

In response to complaints from industry in both the tuna longline and purse seine sectors, Supporting Decree No.12/2016 allowed for limited transshipment activity for the national fleet.

In order to assess the impact of the supporting decree the authors recognized the need for clear indicators of transshipment activity. To that end, they reviewed the available literature and formed a focus group of professionals including fisheries and statistical modelling experts, scientists, managers and MCS specialists. The focus group also consulted national industry stakeholders (Indonesian Tuna Longline Association) to discuss the subject. The group generated of a list of 27 indicators of possible transshipment activity. An extensive, ten-page table of indicators is available in the supplementary information to the paper.

The authors found that there is insufficient MCS capacity to ensure that the conditions of the supporting decree are being complied with. The risks of unintended consequences were highlighted, indicating the challenges facing Indonesia with regards to transshipment activity in terms of its MCS capabilities. The development of the transshipment indicators was highlighted as a prime objective in attempting to get to grips with these challenges.

In a study based on AIS data and using statistical methods (Generalized Additive Models) Ford, Peel, Hardesty, Rosebrock and Wilcox (2018) focused on the Indonesian EEZ and surrounding waters (in the Arafura Sea where the boundaries of Australia, Indonesia and Papua New Guinea meet) to identify what they term anomalous behaviour (loitering). The methodology drew on three metrics: time spent in an area, average speed in an area, and distance travelled in an area. The authors argue that while identifying such behaviour is not in itself an indicator of illegal activity, it could prove useful in identifying areas, times and vessels for the targeting of enforcement actions. In terms of using this approach to identify hotspots of activity, the authors highlighted the area around the three nations' shared EEZ boundary known as the 'dogleg' – an area previously identified as associated with illegal fishing activity (Nurhakim, Nikijuluw, Badrudin, Pitcher, & Wagey, 2008). The authors found that in a subset of 54 vessels displaying low values in any one of the three metrics, fishing vessels and vessels engaged in fisheries related activities had a higher frequency of anomalous metrics than other vessels. In a further subset of 20 such vessels with high-risk time anomalies, eight were foreign-flagged fishing vessels and seven appeared to be reefers and refuelling vessels. The distance indicator also flagged an interesting anomaly – movements across latitudinally rather than longitudinally (Figure 54). In the example shown, the majority of traffic is transiting east to west (black lines), but the vessel track in red is clearly anomalous when compared to this normal pattern.

Ports

The study team sought out literature discussing the main ports used by reefer transport vessels which had transshipped catches from fishing vessels at sea, identifying two papers dealing with this topic in detail.

For a Masters' degree thesis, Bruce (2019) used novel methods applied to non-propriety AIS data to track refrigerated transport vessels (reefers) in order to study the implementation of the FAO Port State Measures Agreement (PSMA).[9] Part of this study involved identifying the ports used by reefers which had transshipped at sea.

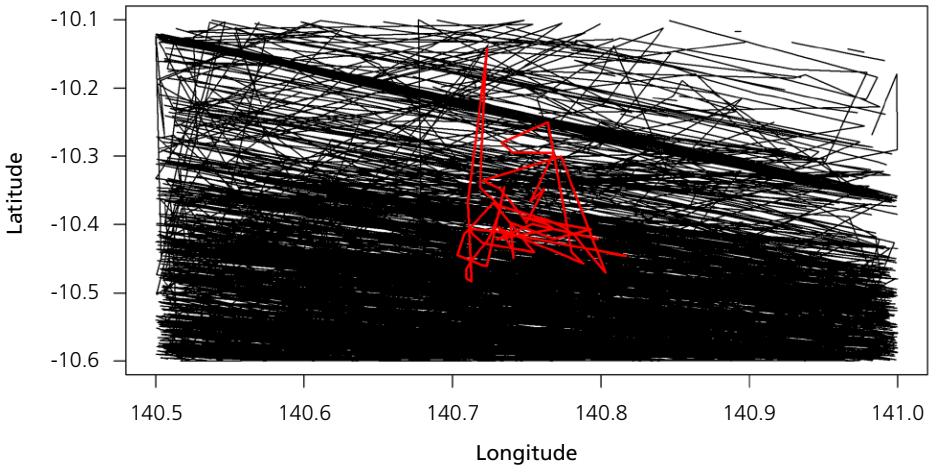
[9] A copy was submitted to the study team as a personal communication.

The study found that in the 2015–2018 period, 784 reefers made 67 308 port calls. A majority of these calls (67.5 percent) were by reefers flagged to States other than the port State (to which vessels the PSMA measures should be applied).

Interestingly, this study examined the ports used in the years 2015–2018 from the perspective of whether those port States are a party to the PSMA. Figure 55, reproduced from Bruce (2019), provides details, which are rather striking.

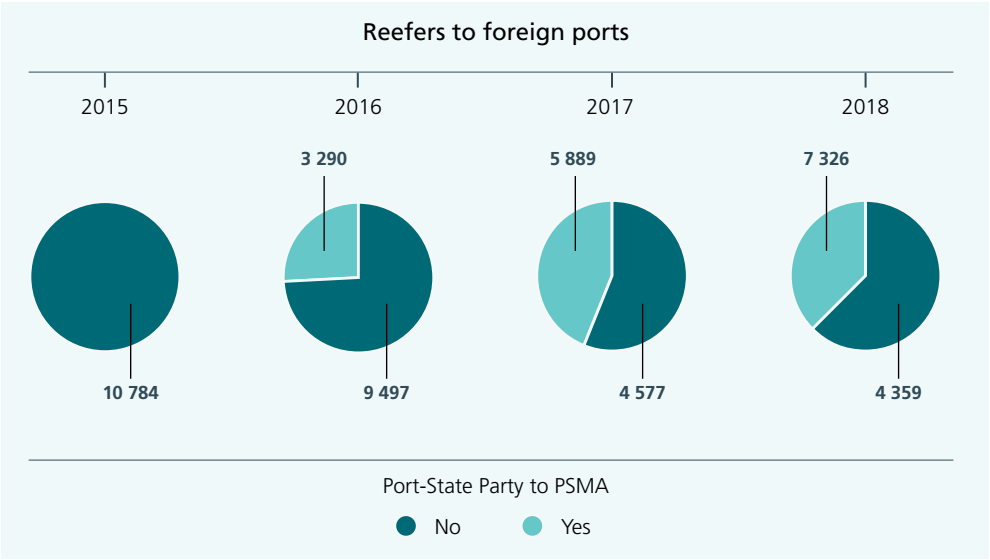
The author points out that as more States become a party to the PSMA, market advantages may incentivize reefer operators both to visit PSMA ports and increasingly flag to PSMA party countries.

FIGURE 54
Anomalous 'distance' track highlighted in red



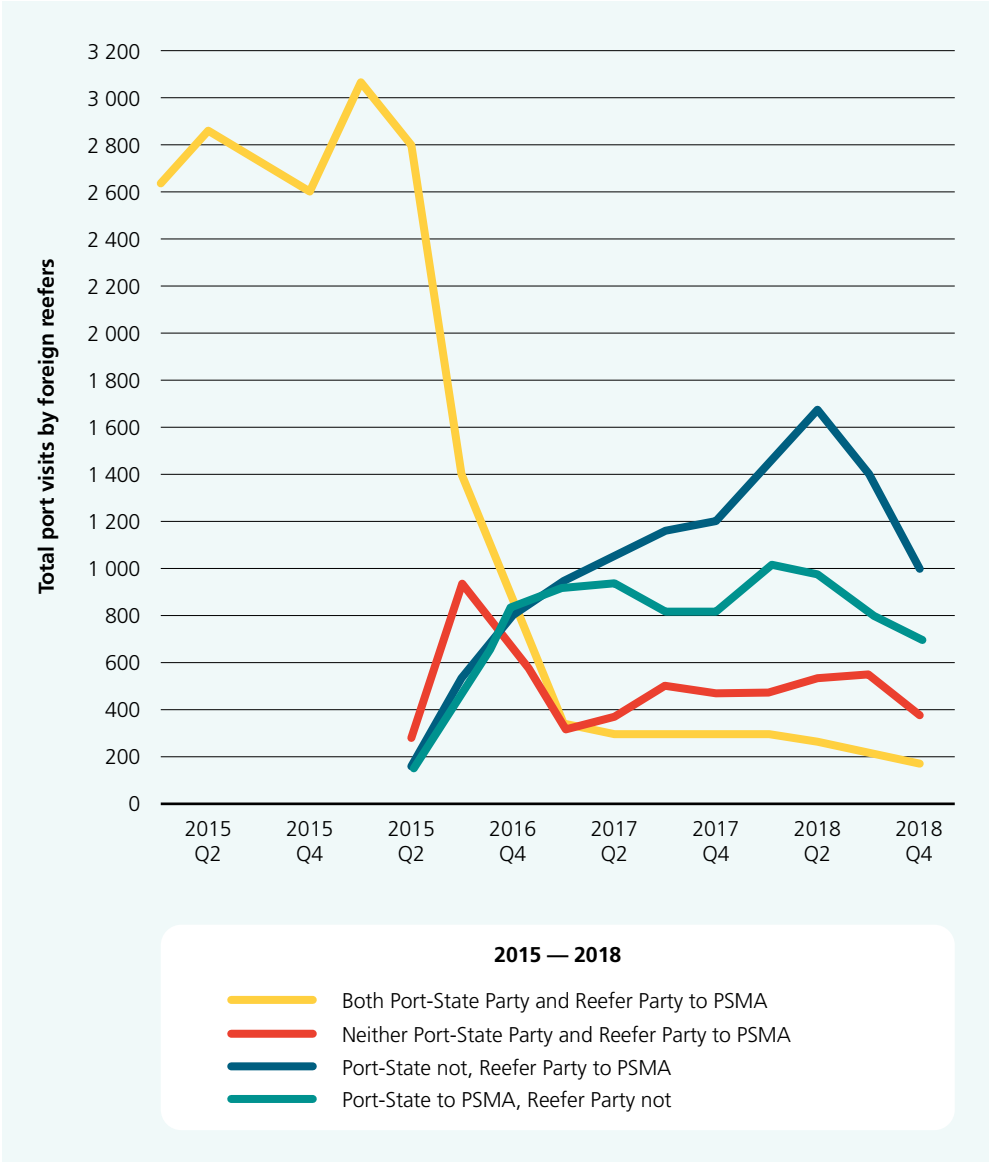
Source: Ford, Peel, Hardesty, Rosebrock, and Wilcox, 2018

FIGURE 55
Reefer visits to foreign ports, PSMA party or not



Source: Bruce, 2019

FIGURE 56
Relationships between ports and reefers



Source: Bruce, 2019

Figure 56 provides further details from the perspective of four possible scenarios.

1. Both port State and reefer flag State are parties to the PSMA
2. Port State not a party, reefer flag State is a party to the PSMA
3. Port State a party to the PSMA, reefer flag State is not
4. Neither port State nor reefer State are a party to the PSMA.

What is interesting is a sharp decrease towards the end of the fourth quarter of 2018, particularly in cases where both the port State and reefer flag State are a party to the PSMA. This is quite possibly linked to the increasing use of containers and/or a move away from the use of PSMA ports for avoidance purposes. In terms of the most frequently visited destination ports for reefers, the study determined the top five ports, as detailed in Table 25.

TABLE 25
Top five ports visited by domestic and foreign flagged reefers, 2015 – 2018

1	Busan – 4,375
2	Vladivostok – 3,853
3	Anchorages in Singapore – 1,446
4	Las Palmas, Canary Islands – 1,159
5	Kaohsiung – 912

Source: Bruce, 2019

Hosch *et al.* (2019) similarly focused their work on ports used by reefers. The study also draws on AIS data from 2017, supplemented with supporting public information sourced from RFMOs to test the utility of public AIS data and thus develop a "global port State IUU risk index". In terms of risk, this was differentiated as either 'internal' – the ability or capacity of the port State to respond to IUU risks – or 'external' – the port State's exposure to IUU risk. In the context of this transshipment study, we place our focus on the 'external' risks. Filtering out known fishing vessels and vessels involved in fish farming, and referencing through various sources, the authors identified 680 reefers from the 2017 AIS database and supporting information.

Table 26 summarizes the main 'external' risk indicators.

TABLE 26
'External' port State IUU risk indicators

Based on AIS?	External risk indicators
yes	Port visits by foreign fishing vessels
yes	Flag of Convenience (FOC) State fishing vessels entering ports
yes	Average flag State Governance Index of fishing vessels entering ports
yes	IUU-listed fishing vessels entering ports
yes	European Union-carded flag State fishing vessels entering ports
yes	United States of America-carded flag State fishing vessels entering ports
yes	Average internal port State risk of fishing vessels entering ports

Source: Hosch, *et al.*, 2019

Note that in this study the reference to fishing vessels in the risk indicators is also taken to mean carrier vessels. The authors differentiated carrier vessels by average hold size, which was determined from known data (fishing vessels and carriers) where available (5 286 vessels); they then modelled from this dataset, using power regression models by vessel type. Based on AIS and supplementary data, the top 15 ports visited by foreign carriers and ranked by average hold size is presented in Table 27.

4.2 OVERVIEW OF DRIVERS

There are several possible drivers for transshipment activity. One of the key drivers is undoubtedly economics, since large-scale commercial fisheries are an economic activity where financial profit is of high importance. That said, there are other drivers behind the activity, some of which may be unscrupulous, and others entirely justified.

TABLE 27
Top 15 ports visit by carrier vessels in 2017

Rank	Port	Country	Hold capacity m³
1	Busan	KOR	4 152 292
2	Las Palmas	ESP	2 397 544
3	Dalian	PRC	1 943 959
4	Zhoushan	PRC	1 391 968
5	Kaohsiung	ROC	1 299 084
6	Abidjan	CIV	1 002 135
7	Majuro	MHL	912 474
8	Rabaul	PNG	908 397
9	Bangkok	THA	826 104
10	Pohnpei	FSM	816 970
11	Tema	GHA	808 808
12	Qingdao	PRC	754 417
13	Cristobal	PAN	687 137
14	Nouadhibou	MRT	686 089
15	Walvis Bay	NAM	624 869

Source: Hosch, *et al.*, 2019

4.2.1 ECONOMICS

FAO has made considerable efforts to combat IUU fishing for many years.[10] It is a problem that affects the sustainable use of the world's fishery resources, and thus threatens the economic stability of future generations on a scale that is difficult to assess but is undoubtedly enormous. Indeed, the portion of resources that enters international trade is worth USD 143 billion alone. In addition, losses in food security and in livelihoods reliant on fishing (fishers, traders, carriers, etc.) are certainly far higher than that direct cost. The fishing industry alone employs more than 40 million people worldwide (FAO, 2020).

Furthermore, the opaque income derived from IUU fishing promotes criminal activities (UNODC, 2011). Not only do the informal channels created by IUU fishing provide an entry point for the laundering of illegal money, bringing IUU fishing closer to criminal networks, the development of distant-water fishing also provides a space where criminal activities such as drugs, arms and human trafficking, are carried out in an environment that is difficult for authorities to control. Reducing IUU fishing may help to reduce the scourges of today's globalized criminal economy.

Despite its social costs, IUU fishing generates short-term benefits for some stakeholders in the fishing industry. This would explain the extent of IUU fishing, which some authors consider accounts for a very substantial share of global landings

[10] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea (1982), Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels Fishing on the High Seas (1993), Agreement relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995), Code of Conduct for Responsible Fisheries (1995), International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (FAO, 2001), Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2016), Voluntary Guidelines for Catch Documentation Schemes (2017), Voluntary Guidelines on the Marking of Fishing Gear (2018).

(Agnew *et al*., 2009; Pauly *et al*., 2014). The driving force behind IUU fishing is an attempt to obtain greater net income, without considering the externalities for the other stakeholders currently exploiting our planet's fisheries resources (or who will be using them, in the case of future generations), resources which, when used properly, could sustainably provide a very large volume of high-quality protein to feed current and future generations.

As in any other economic sector, technological changes in engines, positioning, navigation, fish locating and capture methods, transport logistics, preservation systems, etc. have led to a significant increase in the efficiency of fishing and a more comprehensive exploitation of marine resources. It is possible to increase output while reducing operating costs. These new procedures are not negative in themselves, if they do not become a fraudulent means for exceeding the limits of resource sustainability.

Among such innovations, operations to transship fisheries products are having an impact that is currently under debate. While such operations are a mechanism for increasing efficiency, they also provide an opportunity for avoiding the restrictions and regulations that ensure that fishing remains sustainable. This contradiction has opened a debate in which at the extremes, one camp defends the contribution that such operations make to efficiency, while the other argues that difficulties in adapting regulatory mechanisms to this new situation (Wold, 2019) make it desirable to ban such operations altogether. (Satria, Sadiyah, Widodo, Wilcox, & Ford, 2018).

To ensure a more rational debate, the authors propose to analyse the economic determinants not designed to avoid the externalities of fisheries resource regulations, which explain the use of transshipment in some fisheries.

Why does the transshipment of fish entail major changes?

When literature, regulations, public opinion and the press refer to the transshipment of fish they are referring to a diverse, technologically and logistically complex phenomenon. To analyse it, it is first necessary to explain why it has brought about such major changes to fishing operations. The general modus operandi in the fishing industry is for vessels to put to sea to catch fish using various technologies and then to return to port to land the fish and stock up on supplies (bait, ice, fuel, etc.). Of course, there are many types of fisheries, which may operate at sea for periods ranging from a few hours to several months. Owing to their nature however, fishing operations have always been subject to a set of major constraints.

a. The first constraint is that **fisheries products degrade very quickly over time**. There is therefore an economic interest in selling the fisheries products as fresh as possible to secure the highest possible prices. Although catches can be preserved on board, and facilities for this have improved over the past century, it is expensive in terms of both energy (refrigeration) and working time (gutting, heading, filleting, salting, packing and other types of onboard processing). Fisheries seek to market fishery products either as quickly as possible after a fishing operating cycle has been completed or to take advantage of market price fluctuations, feeding markets with products held in cold storage.

b. The second constraint is that the sea is a hostile place for people. Going to sea is a risky and uncomfortable occupation (whether for paid employment or subsistence). If vessels are small, it is simply not possible to keep up work capacity without access to quality rest, even though trips are shorter While

larger vessels allow access to food and a place to sleep in relative comfort, extended hardship requires increasing wages and improving living conditions onboard in order to offset working without breaks, whereby shifts are frequently worked back-to-back. These factors end up undermining a worker's physical and mental ability to work, their productivity and compromises safety. Human rights abuses are again key in this sense.

c. The third constraint is that **vessels (and frequently fishing gear) have limited autonomy**, primarily in terms of fuel energy but also in terms of water and food for crews. The increasingly complex machinery and fishing gears on modern fishing vessels is affected by a hostile marine environment, which demands ongoing repairs and spare parts.

However, these constraints have been addressed in new ways in recent years. In some fisheries, technological change (in catching efficiency, preservation, navigation, logistics, etc.) and social change (access to a low-wage workforce supported by few fundamental human rights) are being observed, which usher in new procedures that alter the determinants and constraints to which fishing was subject in the past.

One of the procedural changes observed in some fisheries is that, instead of returning to port vessels may unload catches onto, and/or onload supplies and effect crew changes with, other vessels at sea. Such transshipment practices are used for a variety of reasons, all of which are motivated by an economic rationale, which may or may not be legitimate.

Many of the MCS systems developed to date were designed for a fishing process that had a port as its operational base, rather than another vessel. The result is that systems for controlling catches, effort, food safety and species identification remain an issue in light of transshipment: they open the door to a loss of control over the fishery system and possibly even to an increase in IUU fishing, despite international efforts to reduce it.

Why fishing companies use transshipment in their fishing operations?

Evidently the modus operandi of some fishing vessels has undergone changes. Instead of returning to port, they unload catches onto and onload supplies from other vessels at sea. This activity, which has increased in global – and particularly high seas – fisheries is extremely hard to estimate quantitatively, as it may elude statistical records.

A variety of reasons prompt companies to use transshipment practices. Underpinning all of these is a bid to boost the profitability of fishing operations. The underlying factors behind the use of transshipment are as follows:

The high cost of capital invested in the vessel. Large vessels (in their extreme form large, highly mechanized factories) require huge investment; they also have a limited machinery and equipment lifespan owing to the hostile environment and the heavy wear and tear to which they are subjected. Every day of downtime entails a high carrying cost on inventory, which the company wishes to minimize. If the vessel is very large, it can store catches and supplies and provide its workers with more acceptable living conditions, which provides an incentive to keep the vessel operating continuously. In fact, the development of preservation techniques, as well as onboard processing (gutting, heading, filleting, fishmeal plants and packaging) have made it possible to extend product life significantly and hence to postpone the landing of the fish. The biggest cost consideration is not so much that it is cheaper to transship (Wold, 2019) than to land fish at port, but rather relates to the amount of time during which a vessel stops fishing in order to perform its unloading operations. Loss of fishing time is therefore

a key economic consideration. Seagoing fishing vessels are only generating income while they are extracting living resources from the marine environment. In addition to the uncertainty of fishing by its very nature, this creates a very powerful economic incentive for catching vessels to maximize time spent on the fishing grounds.

The distance from fishing grounds to onshore landing and supply points (ports). Transit time is fishing downtime. If the distance is very significant (weeks of travel), it may be more cost-effective to transship to a transport vessel to enable the vessel to continue fishing on the fishing grounds (MRAG, 2019). The economies of scale associated with a transport vessel can offset lost fishing time in travelling to port and the complications of transshipment at sea. At-sea transshipment is done using reefer vessels, which onload fisheries products and deliver supplies and crew, while bunker vessels supply fuel, which allows operators to benefit from cheaper fuel. The physical distance from port is not the only point worthy of note; equally relevant is a vessel's ability to access port services. Any barriers to this, for whatever reason (political blockade or reserved access to nearby fishing grounds, which may even be in international waters close to the port State), encourage transshipments and provisioning at sea.

The opportunity to procure low-paid workers with poor social support. Some fishing nations require their vessels to comply with strict labour laws either as national measures or linked to an international framework.[11] However, the increasing tendency to source crews from developing countries has now made it easier to obtain workers who are willing or can be coerced into working under poorer labour conditions than those stipulated in many national labour markets in the developed world. This encourages the use of vessels flying flags of convenience with lax or non-existent provisions on working conditions (ITWF, 2020). Such conditions create additional economic incentives to use physical capital intensively (i.e. make the fishing vessel work continuously) because low-cost labour is available and the lack of legal obligations on working conditions do not require frequent landings for employment-related reasons (vacations, rest periods, etc.). In a situation where the cost of fixed capital is disproportionately higher than the cost of labour, increasing the availability of labour does not matter because it is very inexpensive – not only because of low wages but also because technology has reduced the need for crew members on board. Under the current legal framework, it suffices for a single State in the world to permit poor onboard working conditions for this to create economic incentives for transshipment because of more precarious working conditions. Transshipment also impedes the possible monitoring of working conditions in ports, since the fishing vessels on which the crews work make fewer port calls.

Technical requirements of transport logistics. Optimal port landing logistics may not be available. In some ports, suitable dock space is not always available, or landing is very time-consuming or expensive because of unloading companies' labour regulations. At-sea transshipment allows for direct vessel-to-vessel transactions on the other hand, where products can be stored in the hold or directly in containers. Not only does it save a ship-land-ship process, but unloading is speeded up because unloading onto a refrigerated cargo vessel (reefer) can be done simultaneously from both sides (port and starboard) using vessel crew instead of dockers, reducing the time and costs of unloading and reloading. Such an operation can take days in port, compared to a matter of hours at sea. Additional costs such as onshore administrative expenses, port costs, and unloading and reloading costs are further factors that encourage transshipment at sea, to which we might add the time lost when queuing and managing permits.

[11] For example, the International Labour Organization Work in Fishing Convention 188, which is binding on parties to the Convention.

Technically the fishing operation requires transshipment. These are complex fishing processes that require product transshipment to operate. There may be a range of reasons, but these multiply with technological innovations and the development of logistics. One case might be where products require processing that cannot be performed on the fishing vessel and so need to be transshipped to another vessel with the required processing capacity, such as freezing and/or filleting. The other vessel with the processing capacity may or may not be another fishing vessel. History shows us that there are precedents to this situation. For example, until the early twentieth century Newfoundland cod was caught in small, flat-bottomed boats (dories) which transshipped the cod to larger vessels where it was cut and salted for storage. Another case is where the fishing operation is linked to a transshipment to keep the catches alive in order to transfer them to fattening areas (bluefin tuna in the western Mediterranean), although within the ICCAT provisions such activity is referred to as 'transfer' as opposed to transshipment *per se*.

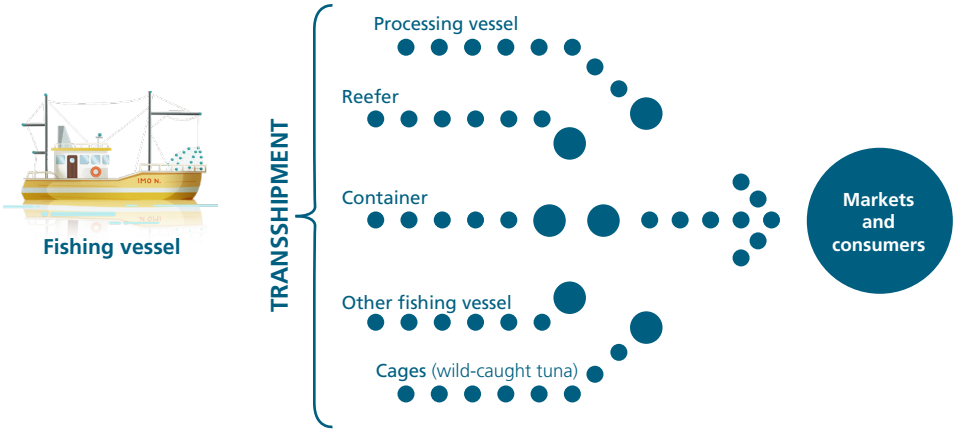
The above reasons explain the main economic drivers of transshipment; it is common for several of them to coexist in a fishery practising at-sea-transshipment. A description of some specific cases the authors observed or learned about while conducting this project may be useful to provide further context from an economic perspective.

Economic discussion of some transshipment cases

Various forms of fisheries product transshipment can be found in today's fisheries, providing a vector for the introduction of fisheries products into the marketing chain, as shown in Figure 57. There are several permutations to these higher-level classifications. A fuller discussion of types of transshipment is presented in Section 3.5 of this report.

(a) Refrigerated transport vessels (reefers). These travel around fishing grounds collecting fisheries products while supplying vessels with fuel, food, bait and crew. From an economic standpoint, it may make sense to optimize the use of such an important portion of a company's fixed capital as a fishing vessel. There are two ways of using reefers. One is to collect fisheries products in one area before taking them to a main

FIGURE 57
Transshipment of fisheries products from catching vessels



Source: FAO, 2019

port for transferral to containers. The other is to use a reefer to take products to the final port of landing. There is no guarantee that the second option is less costly than the first. As Figure 58 reveals, there is regular traffic (at a frequency of less than one week) by container ships travelling between the main international ports of destination, which charge lower transport prices per kilo than a reefer vessel dedicated to long-distance transport. It is estimated that transportation in container ships from the Pacific Islands to the Asian continent costs between USD 60 and USD 70 less per tonne of fish than reefer transportation. (MRAG, 2019).

Reefers generally collect fisheries products at sea and land them in port for transferral to containers, which then enter the regular freight circuit. The critical control point for reefers is when they land fish for transferral to a container. If the provisions of the PSMA are applied, it is possible to guarantee the control of this landing, adjusting the control procedures in port and requiring prior authorization for entry.

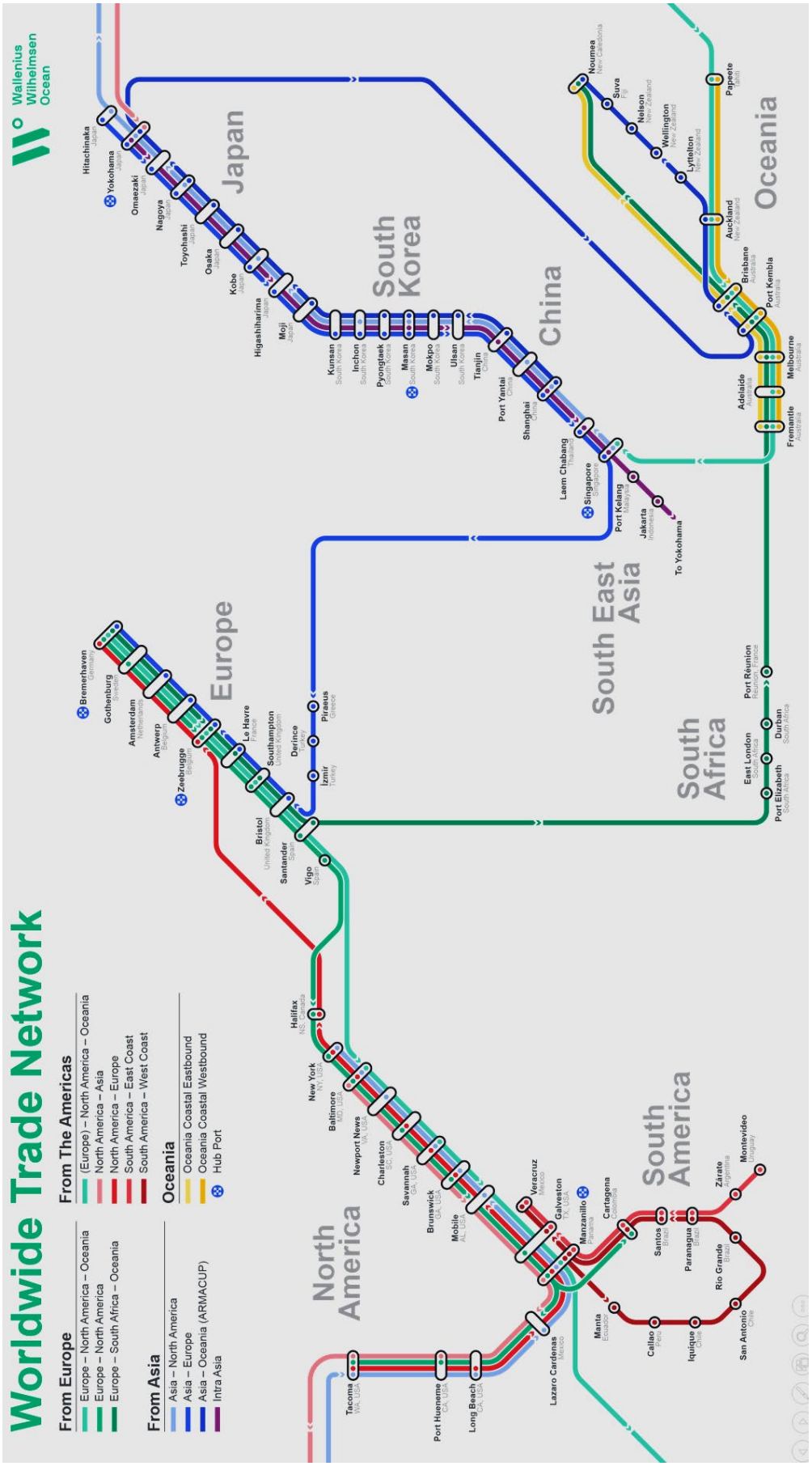
The authors have observed the following differences in companies employing this way of using reefers and in its control in Latin America.

- In Callao (Peru), fishing vessels and reefers must carry a system for monitoring their operations (VMS) in order to receive authorization to land. The authorities have the power and ability to obtain information about the cycle of activities and the source of catches.
- In Montevideo (Uruguay), a landing by a fishing vessel flagged to the European Union was transferred to containers for long-distance transport to Europe in large scale container ships. The control is carried out between the fishing vessel and filling of the container at the dock.
- In Manta (Ecuador), one company's transshipment operation takes place at anchor in the bay adjacent to the port, which is under the administration's control. The company argues that this saves them from waiting to use the dock and that the handling costs between their vessels are lower than the costs of dock workers (since they use vessel crew); they can also take advantage of simultaneous port and starboard transshipment and save time for the reefer, which loads in less than half the time. There is no transshipment to container ships because the destination is close (1 000 km to Cartagena in Colombia). This fishing company in Manta explained that they keep strict control over their vessels to avoid covert transshipment at sea (theft), which could reduce the volume of fish landed for the company.

Foreign-flagged vessels operating outside Ecuadorean waters sometimes take on supplies or periodically undergo repairs in Ecuadorean ports (with no fish on board). Similar situations were found in Peru and Uruguay, although the numbers were small. This means that vessels operating for long uninterrupted periods on the fishing grounds far away from their home port continue to rely on adjacent coastal States for periodic repairs, taking on crew or transporting the sick, etc. The role of the coastal State in this regard is clear.

However, new issues are emerging. In Asia (MRAG, 2019), reefers are evolving to carry containers themselves in order to reduce landing costs. In this case, the fish is stored directly in the reefer in containers, which are transported to a main port before being speedily transferred to a large container ship charging far lower transport rates, thus benefitting from economies of scale. Unless clear port procedures are developed, there is a risk that reefers will switch to operating as merchant vessels that transfer

FIGURE 58
Regular container ship routes



Source: Wallenius Wilhelmsen ASA

containers to another merchant vessel in a free zone, instead of as vessels engaged in 'fishing related activities' for the purposes of the PSMA.

As a market State Thailand is a major importer of frozen fish for supply to the processing industry. Every year around 800 000 tonnes of frozen tuna enter Thailand by reefer and container (see Section 3.2 of this report). Since the catching of this raw material takes place by foreign fleets fishing far from Thailand in the Western Central Pacific and Indian Oceans, transshipment and the use of containers is an essential part of accessing raw material for the Thai processing industry – and equally essential to the catching operations needing to access an important market.

(b) Small-scale vessels obtain bycatch from industrial vessels, which the small vessels then sell in coastal towns (*Saiko* – see also Section 3.2 of this report). In this case, industrial vessels transship bycatch to artisanal fishers on board fishing vessels or purpose-built transport canoes, who then take this bycatch to landing places to be sold in local markets. Industrial vessels argue that this is a way to make use of resources that would otherwise be returned to the sea and lost. However, it is unclear whether this really is bycatch or if it has become lucrative, targeted fishing for industrial vessels, at least during periods when the target species of industrial vessels are not abundant. In any case, it causes serious conflict with local fishing communities, which are competing with industrial vessels for fishing grounds, resources and price (EJF and Mpoano, 2019). Even though the *saiko* practice provides artisanal transport vessels with income it leaves most of the other artisanal fishers without resources and without a market, as the transshipped *saiko* fish is sold at a lower price. This latter effect is also complex: while it enables coastal consumers to access a resource at a cheaper price, it is unclear whether this economic flow will be sustainable and difficult to evaluate overall, because detailed information on this activity is lacking. This in turn makes it difficult to assess the status of resources and the impact of the activity.

(c) Technical transshipment. This is where the fishing procedure makes it necessary to transship fish at sea for processing. The case of bluefin tuna in the western Mediterranean is a good example. Catch quotas for the entire year are met in just a few days. To avoid a price drop, companies transship (transfer) tuna from the catching purse seine to transport cages. From there the tuna are transported to fattening cages. From the cages they are sold gradually throughout the year. To avoid arguments over catch weight, the entire tuna transfer process is filmed and later monitored by inspectors and the specimens are counted individually, estimating their weight by means of camera software computer systems. These fisheries have staged a remarkable recovery in recent years, under the control of ICCAT.

4.2.2 Avoidance of control measures

For unscrupulous or marginal operators struggling to maintain their profit margin, incentives may exist which make the use of transshipment attractive for the purposes of avoidance of the obligations placed upon them. This may be in the form of either international, national requirements or both. Avoidance of statutory safety and security (IMO) or labour-related (ILO) rules may be a driver behind turning to transshipment as a means of avoiding port calls.

Vessel flag and ownership linkages

One recent study (Greenpeace, 2020a) identified and studied 416 carrier vessels from around the world out of a list of approximately 700 vessel identities. These 416 vessels accounted for most of the carrier vessels that had transshipped at sea in global fisheries activity during the 2017-2019 period. Despite the global reach of these vessels, 381 of them were owned by companies from only eight fishing powers: China, Greece, Japan, Netherlands, Norway, Republic of Korea, Russian Federation, and Taiwan Province of China. Of these, transshipping on the high seas or in the EEZs of developing nations in the Pacific and the coast of Africa was dominated by 250 carrier vessels flagged to seven of these eight countries (minus Russian Federation). Interestingly, while the owners of these carrier vessels can be found in these seven countries alone, in many instances the country flag pertaining to the country of ownership was not found flying on the vessel. In order to reduce costs and avoid more stringent environmental and labour regulations, owners of ships of many types are registered in countries that fall under the label 'flag of convenience' (FOC). FOC is a term used when there is no genuine link between a vessel owner and the flag State of the vessel. This practice is particularly prevalent in the carrier vessel business, with 74 percent of the non-Russian carriers identified in the report flagged to FOCs.

Commentators discuss several other elements in the published literature, which may be grouped into several points of focus, as follows:

IUU fishing linked to transnational crimes

Telesetsky (2015) examined IUU fishing in the context of transnational organized crime. The author argues that both organized criminal networks in general, and those devoted specifically to IUU fishing as their core business, are highly adaptable and able to respond rapidly and efficiently to governance changes, whereas effective governance is slow and sluggish by comparison. The author points to poor treatment and payment of crews, the use of transshipment to launder catches and resupply/effect crew changes at sea and thus avoid detection. The use of 'flags of convenience' and 'ports of convenience' are hallmarks of this type of organized criminal activity. The case is made for a change in how IUU fishing is viewed by national authorities and calls for national institutions to enshrine IUU fishing as a transnational criminal offence at the international level, punishable by prison, under the United Nations Convention against Transnational Organized Crime.[12]

This view is supported by additional reports that highlight the connection of transshipment to human trafficking. For instance, a recent report by the High-Level Panel for a Sustainable Ocean Economy (2019) provided a case study involving a fishing vessel seized by the Indonesian navy in August 2015 amid a crackdown on illegal fishing, and an Associated Press investigation later provided evidence of its links to human trafficking in the fishing industry. The vessel was identified, through open vessel tracking sources, as having received illegal Indonesian catch from two fishing trawlers via transshipment. The vessel was subsequently interdicted by the Indonesian navy after returning to Indonesian waters where the captain was detained and a probe launched into suspected human trafficking, transporting illegal fish and illegal offloading catch at sea. The Associated Press investigation eventually resulted in the freeing of more than 2 000 men from Cambodia, the Lao People's Democratic Republic, Myanmar and Thailand, and more than a dozen arrests (High Level Panel for a Sustained Ocean Economy, 2019).

[12] It is generally understood that IUU fishing might be a risk indicator to detect transnational organized crime, but there is no general agreement in the international community about the consideration of IUU fishing as a crime *per se*.

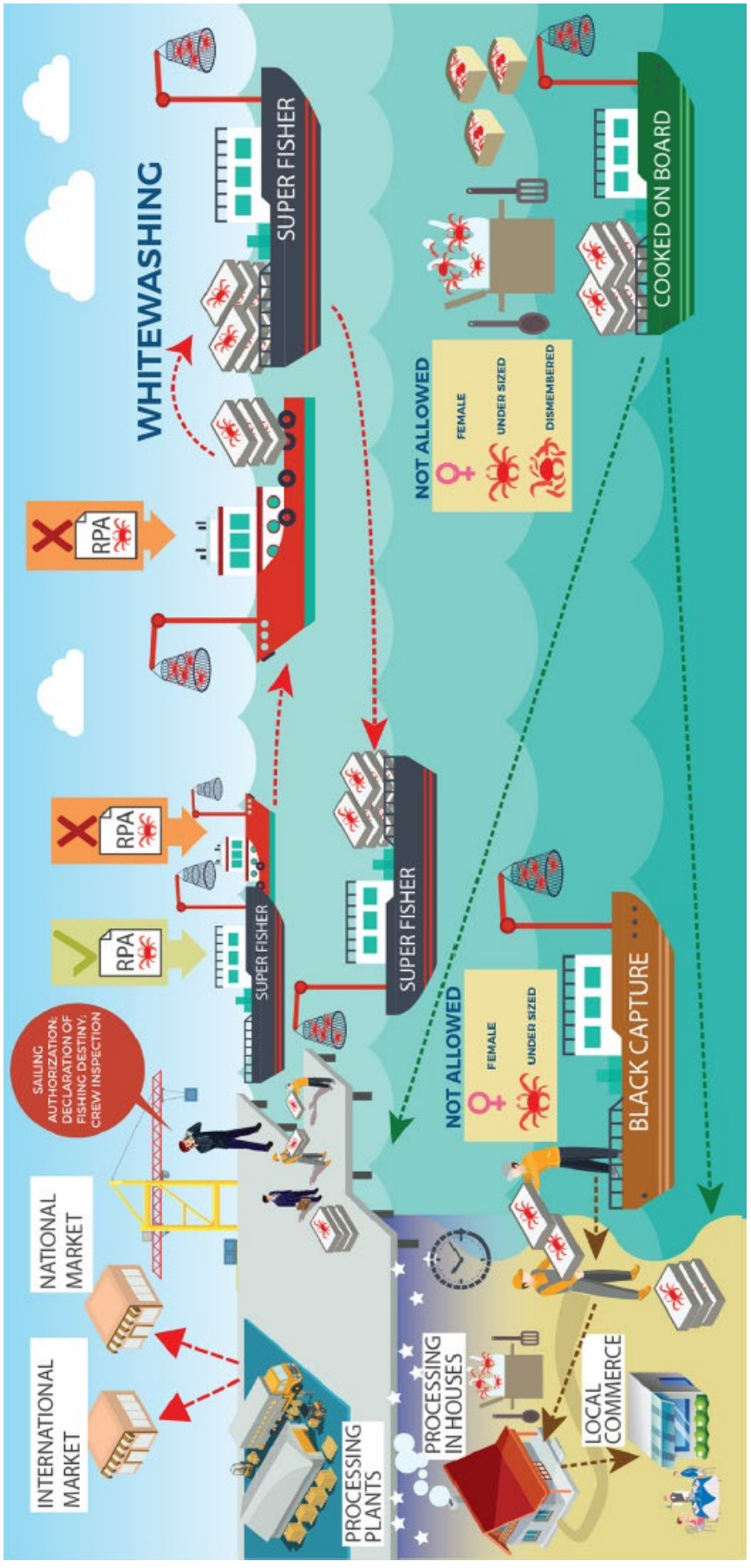
A further study (Center for Advanced Defense Studies (C4ADS), 2019) highlighted how transshipment at sea was widely documented as enabling other crimes such as narcotics, weapons and human trafficking, while also used to facilitate the movement of crew between vessels at sea while avoiding inspection in port. As a result, the practices support the continued exploitation and abuse of crew onboard substandard fishing vessels. Ultimately, transshipment at sea enables vessels to continue operating for months or years without entering port, where they are likely to be subject to inspections of fishing gear and crew working conditions, as well as the typical inspections of vessel authorizations and documentation. The findings of this report are further supported by yet another study, which identified carrier vessels involved in transshipment operations with fishing vessels that were suspected to be involved in IUU fishing and forced labour (Greenpeace, 2020b). Of concern is that at least one of the carrier vessels, which was identified to have been in an IUU case in 2017, was associated with one of the top three tuna traders in the world. While not directly implicated, the carrier operated under the tuna traders' independently verified *sustainability programme* at the time, and yet was still involved in unreported unloading operations. In fact, the lack of specific regulations on transshipment implemented by this tuna trader allows transshipment to take place at sea without thorough transparency and strict control mechanisms in place. This creates loopholes for fish potentially tainted with forced labour and IUU fishing to be introduced into the market (Greenpeace, 2020).

Whitewashing

Also termed 'greenwashing' in the context of environmental offences, this term refers to the process of using legal or even ostensibly legal activities to obscure or 'clean' illegal activities. In the context of the present study it is linked with concerns that high seas and even national transshipment activity can be used to hide illegal, unreported or unregulated fisheries activities. As these are currently incredibly difficult to detect, the international community struggles to get to grips with understanding the extent of such an issue and to identify what can be done to rectify the situation.

In a discussion on the national context, Nahuelhual *et al*., (2018) reflect upon this occurrence in an artisanal king crab fishery in southern Chilean waters. The authors used a survey approach to poll stakeholders in order to identify the key compliance issues in the fishery. One of the stark features of the revelations was the issue of whitewashing. Figure 59 provides a graphical representation of this activity. While it is recognized that the main part of the problem is caused by vessel owners and those operating carrier vessels, some respondents believed the problem is market-driven by demand from processors for cheaper products. The authors explain that this activity occurs in three ways. Firstly, the catches taken by an unauthorized catching vessel are put aboard an authorized vessel and landed (and thus 'laundered') with the legal catches. Secondly, landing documents from a legal catch are passed to a vessel landing illegal catch. Thirdly, the RPA (an artisanal fishing authorization) can be duplicated and placed aboard an unauthorized vessel. Clearly in the last two cases the issue is one of documentation fraud. The authors note that whitewashing is a key problem in terms of catch volume and is one of the most difficult to control, as well as the problem which has the most serious implications for international business (traceability clearly being an issue).

FIGURE 59
Graphical depiction of illegal practices in the Chilean king crab fishery



Source: Nahuelhual, *et al.*, 2018

Lack of a regulatory framework

While documentation of such occurrences is rare, it remains a risk that unscrupulous or marginal operators could seek to exploit unregulated fisheries in order to avoid regulation applying to other fishing activities, as well as the usual obligations applicable in well-managed fisheries. In such cases, flag State responsibility under international law applies. It is worth emphasizing that an unregulated fishery does not necessarily equate to IUU fishing unless it is pursued in a manner, "inconsistent with State responsibilities for the conservation of living marine resources under international law" (FAO, 2001). In the case of the unregulated squid fishery in the northwest Indian Ocean (Stop Illegal Fishing, Trygg Mat Tracking, and Nordenfjeldske Development Services (NFDS), 2017) flag up concerns regarding this operation. Doubts regarding this fishery's compliance with these general principles are particularly pertinent in the knowledge that one carrier vessel identified as associated with the fishery was known to be the subject of an Interpol 'Purple Notice'. The vessel was reported as scrapped in late November of 2017 and subsequently removed from the Trygg Mat Tracking (TMT) combined IUU list.

Reporting obligations

Elsewhere in this report the study team have pointed to the increasing use of containers to move fisheries products to market. With advances in technology, there are risks that this type of logistical activity could be used to circumvent catch reporting obligations, allowing IUU fishing catches to enter the market. As a case in point in the African context, Daniels *et al*., (2016) point to an increasing use of containers to move fish out of the region, and highlight a lack of reporting obligations relative to more traditional fisheries logistics; indeed the authors point out that the fastest growing logistical transport means for fisheries products is subject to the weakest reporting obligations. The study estimates some 84 percent of fish exported from West Africa is transported by container. Key regional hubs for container traffic were noted (2013) in Côte d'Ivoire (Abidjan), Mauritania (Nouadhibou) and Senegal (Dakar). A regional hub handling much of this traffic was identified at the free port of Las Palmas, Gran Canaria. The authors report that 349 trips of containerized frozen fish entered Las Palmas from African ports in 2013, totalling some 118 701 tonnes.

Evasion of monitoring and control

As part of their supporting rationale behind a discussion published on the benefits of a blanket prohibition on transshipment at sea, Ewell *et al*., (2017) make substantial reference to the view that transshipment allows fishing vessels to evade monitoring and enforcement. The authors point out that even though management measures may exist at the RFMO level the issue of enforcement is sometimes lacking, particularly where flag States of carrier vessels have weak capacity to monitor their fleets effectively.

In a 2018 study on transshipment behaviour, Miller, Roan, Hochberg, Amos and Kroodsma, (2018) suggest that enforcement agencies may be slow to "act against a challenge they cannot see". The study analysis (based on AIS data) indicated that loitering and possible encounters between carriers and fishing vessels takes place in regions known to have weak management and enforcement capabilities, suggesting that there may be a clear trend among certain unscrupulous operators to undertake these activities in such regions, thus avoiding scrutiny and enforcement.

In a 2019 study of the Ghanaian *saiko* fishery, EJF and Mpoano (2019) cite weak enforcement as a contributing factor to the problems caused by this practice. The practice takes place in landing sites ranging from 2 hours 30 minutes to 6 hours' drive west of Accra, where the primary competent fisheries authorities are based. It is clear that an element of avoidance is present in these operations. The authors call for enhanced enforcement. The field visit to Ghana reported in Section 3.2 of this report noted that the practice decreases with targeted enforcement campaigns.

4.2.3 Other drivers

Access to markets

Transshipment can become a way to access markets that are not directly accessible for the fishing vessel. Fisheries markets may have a range of different requirements relating to food safety, origin, import authorizations, etc. Even though there could be an infringement of foreign trade law in this case, it does not necessarily affect the sustainability of resources because the products are not always hidden; rather the fisher's national allocation is changed, as nationality is given to a foreigner's products. This flow can be very complicated and paradoxical. For instance, there are cases where products go from a developing country whose fishers are not allowed direct access to the markets of developed countries with strict sanitary and technical access regulations (because they are too distant or impose processing rules that fishers cannot comply with, etc.), however, by selling at sea (for example to European Union fishers in the Atlantic or African Mediterranean), these fishers are able to place their products in the European Union indirectly, and thus obtain higher prices. Conversely, there are cases where an industrial fishing company places its bycatch with artisanal fishers in developing countries, to whose markets it has no direct access (the case of *Saiko* fishing).

The economic outcomes of such access are complex and work in different directions. In some cases, by securing a higher price, artisanal fishers may access income that they could not obtain in their local markets. However, this may have undesirable effects if the catches are managed on the basis of landings control, as it is likely that this transshipped fish will not appear in the statistics concerning the local resources exploited by these artisanal fleets, but rather in those of industrial vessels undertaking the landing of the bogus catches. In this case there is a redistributive phenomenon. A developing country may choose to assign its fishing rights to foreign industrial fleets to obtain public revenues. They can also choose to allow their small-scale fishers to catch these resources and sell them to industrial vessels. In the second case the revenue from resources will reach a section of the population directly, avoiding the risk of it being dissipated through bureaucracy or corruption. However, what is not sustainable is to sell the same resource twice: as an access licence and as a resale from local fishers to foreign industry. This will ultimately degrade resources and dissipate the potential revenue from them. Also, while the higher price of fish provides more income to fishers it may affect the flow of food to the local markets supplying their communities, affecting food security and having perverse effects on the maintenance of quota allocations. Local fishers selling to industrial vessels may get better prices for these catches, but they are reducing supply to citizens in the wider context.

There is also a possibility that by passing catches through a market State and having them processed (canning, preservation, added value) the catching vessel – flying another flag than the market State – gains indirect access to a market which may have been closed to it at an earlier stage in the marketing chain due to trade, regulatory, tariff, sanction or other restrictions.

Finally, some fisheries are so remote from their markets that transshipment is an essential part of operations. Thailand, as a market State with important processing industries for tuna, is a case in point. The country processes around 800 000 tonnes of largely skipjack and yellowfin tuna per annum, and a major fishing area for this raw product is the Western and Central Pacific Ocean. Depending on where the catches were made, based on an online sea-distance calculator (sea-distance.org), the fishing vessels would need to spend from 10 to 20 days in transit to deliver the catches to market if transshipment were not possible. This would result in a return transit time of up to 50 days between fishing trips, which would undoubtedly increase costs and reduce profitability to unacceptable levels.

Wharf space / Lack of facilities

When undertaking the field visits in connection with this study the authors noted that transshipment activity will sometimes be undertaken as a result of a lack of wharf space for the catching vessels and/or because the draught of vessels is too deep to access the landing site. In such cases transshipment activity appears essential to the operation, although it clearly complicates the monitoring and control activities which fall on the competent authorities.

During discussions with a vessel agent in Ecuador the study team noted that transshipment takes place on the high seas to reduce steaming time and owing to a lack of space in ports. Transshipment in port could take up to five days, whereas this time could be reduced to hours at sea. Transshipment at sea can also take place unloading two catchers at the same time, which is not possible if the reefer is alongside the wharf.

4.3 RISKS AND IMPACTS

Transshipment practices at-sea and in-port can increase the risk of IUU-caught fish entering the seafood supply chain and undermine sustainable fisheries management. In extreme cases it can contribute to a considerable over-exploitation of fisheries resources, with negative effects on the marine environment and on the socio-economic wellbeing of legitimate fishers and coastal communities. Transshipment can form a 'weak link' where IUU fish can be laundered into the market if insufficiently regulated, monitored and controlled. This section gives an overview of the associated risks and their impacts. Highlighting these risks provides a basis for developing risk-based approaches to managing transshipment, particularly at-sea transshipment. A comprehensive overview of the risks related to transshipment management in tuna RFMOs and current approaches to mitigate these is given in Van der Geest, 2020.

Historically fisheries management has been built on fisheries models based on the landing of catches by fishing vessels in port. Catches were reported and controlled in the ports, where vessels were resupplied and refuelled, and repairs and crew changes could be arranged. With the increase of transshipment practices as part of fishing operations patterns have changed, and sustainable fisheries management requires additional points of monitoring and control to mitigate the risk that illegally caught or unreported catch enters the supply chain. The first and relatively simple step in this direction was to extend the definition of fishing vessels to reefers carrying catches and landing these in ports; integrating these carrier vessels into fisheries management processes made them subject to the same regulations and levels of monitoring and control as fishing vessels. Moreover, reefers need to land the catch in fisheries ports where the same level of control is ensured as for fishing vessels, including on sanitary and quality control as well as species identification, especially after some form of processing before landing.

In addition to the risk of IUU-caught fish entering the supply chain, transshipment at sea has also been linked to the risk of other illegal and criminal activities (Kroodsma *et al.*, 2018; SIF, TMT, & NFDS, 2017). As has been outlined in previous sections, transshipment at sea allows fishing vessels such as large-scale longline tuna vessels to stay out at sea near their fishing grounds for months or even years at a time, with no possibility for the crew to leave the vessels. It has been shown that this can facilitate violations of labour laws and even human rights (Urbina, 2019).

Failing to follow the rules: compliance issues related to RFMO transshipment measures

While many RFMOs have adopted transshipment measures (see Section 3.3), their implementation remains an issue, as reflected in compliance reports of many RFMOs. The purpose of compliance review mechanisms is to ensure that Members and Cooperating Non-Members implement and comply with their international obligations arising under the RFMO conventions and CMMs, including the transshipment measures and all related MCS measures. However, despite addressing significant compliance issues through these CMMs, compliance review mechanisms can be insufficiently developed to ensure that flag States meet their obligations. Non-compliance with the transshipment measures should lead to consequences that translate into economic pressure, such as: a fine depriving the offenders of the benefits accruing from their illegal activities; IUU listing; a denial of further authorizations by the flag State to transship at-sea; or, a requirement to shift to transshipment in port. If this is not the case, the management system does not apply deterrents that sufficiently outweigh the economic benefits of non-compliant activity (Section 4.2.1).

Risks related to authorizations

To ensure the proper management of at-sea transshipment, RFMOs require **the authorization** of all catching and receiving vessels by the respective flag State, as a first step. Flag States are obliged to ensure that all fishing or fishing-related operations a vessel is involved in are legal, regulated and reported. Transshipment activities by vessels not authorized to conduct transshipment at sea by their flag States are therefore illegal.

However, there are a range of existing weaknesses and gaps linked to the authorization procedures required by different RFMOs to transship at sea:

- Firstly, the information on vessels authorized to transship at sea is not always easily accessible. This is either because there is no publicly available list of vessels authorized to transship at sea, or because there is no permanent and unique vessel identifier for all vessels authorized – the IMO number – which is essential for the effective and reliable and monitoring of the vessel's activities. This lack of transparency facilitates the participation of unauthorized vessels in transshipment at sea.

- Secondly, some RFMOs allow the authorization of vessels flagged to Non-Member States, which means that the flag State of those vessels, and the vessels/operators themselves, are under no obligation to comply with RFMO regulations. Consequently there is no mechanism to review compliance or take action against vessels in the event of their involvement in illegal activities, including illegal transshipments.

- Thirdly, while the criteria for authorizations vary among RFMOs, proper risk assessments ensuring that the authorization is linked to a vessel compliance record are rare. Many examples show flag States failing in this

regard. As no information is being shared with RFMO secretariats ahead of the authorizations, compliance staff in RFMO secretariats cannot support flag States in providing information on vessels' history of being engaged in IUU fishing and fishing-related activities. This would enable vessels that are assessed as high-risk in terms of IUU fishing behaviour to be excluded from being authorized to transship.

Risks related to reporting

The purpose of monitoring, control and surveillance (MCS) is to ensure compliance with applicable national, regional or international laws and regulations. Reporting on transshipment activities should ensure that sufficient time is allowed to enable relevant and effective MCS actions to be taken. This is particularly important in the case of transshipments at sea, which require time to organize MCS action and reach the pre-identified vessel before the catch is being landed in port and enters the supply chain. If reporting timeframes do not allow for this, or if the reporting information does not reach the relevant States or organizations where relevant decisions can be taken and assets deployed, it is impossible to take MCS action against a vessel with a high risk of being engaged in IUU fishing or fishing-related activities.

This applies to reporting requirements both ahead of and after the transshipment event. RFMOs generally require a **prior notification of the intention to transship at sea**. However, if the timeframe is only 24 hours before the transshipment event (as is the case in four of the five tuna-RFMOs) there will be insufficient time for risk assessment and for MCS action to be taken before the transshipment at sea takes place. Moreover, in the case of insufficient reporting requirements, prior notifications may not reach relevant States, such as coastal States, or RFMO secretariats. This can mean that high-risk vessels with a history of non-compliance can continue to be involved in transshipment activities out at sea.

A similar risk arises *after* the transshipment event when **post-transshipment declarations** are not shared soon enough after the completion of transshipment event to allow for sufficient time for the cross-checking and verification of the information, and not with all relevant States and organizations. This includes the flag State but also the coastal State (in the case where the vessel had fished in another EEZ) and/or the port State where the catch is planned to be landed (if already known) as well as the relevant RFMO. All tuna RFMOs require the transshipment declaration to be sent within 15 days. However, 15 days after the transshipment event the carrier vessels receiving the catch may already have offloaded it at a port where the port State will not have access to the information to cross-check whether the amount and composition of the catch transshipped and landed correspond, and therefore whether the fish is likely to be illegally caught or not. Linking transshipment reporting with electronic reporting could help mitigate this risk.

Port State measures have an important role to play to ensure that catch reports can be cross-checked and verified against the transshipment declarations from carrier vessels landing the catch received at sea. When working with the Thai authorities the FAO study team saw the challenges port State authorities face when cross-referencing the relevant information with limited information from fishing vessels that had transshipped catch to the carrier vessel discharging in Bangkok. Without transshipment reports from both the fishing and carrier vessels, the authorities of a port State have limited means to verify the accuracy of the amounts and composition of catch, leading to a risk of IUU-caught fish entering the supply chain.

Risks connected to insufficient reporting are not limited to transshipment at sea. The risk of IUU-caught fish being laundered into the supply chain are generally considered higher for at-sea transshipments because they take place far out at sea and out of direct oversight from MCS and enforcement officials. However, while **transshipment in port** may be easy to observe, it does not necessarily mean that these transshipments are sufficiently and consistently monitored and controlled – or reported on. Moreover, in combination with the limited monitoring and control observed in many ports as vessels transship, self-reporting is of limited value without independent verification (Van der Geest, 2020).

Reporting on transshipments is also incomplete if it is confined to the **species managed under a certain RFMO** and does not include other species also transshipped. For instance, a considerable amount of the fish reported as transshipped in IOTC in recent years is oilfish (*Ruvettus pretiosus*; OIL), an incidental bycatch species which is not covered by IOTC. The species is covered by the Southern Indian Ocean Fisheries Agreement (SIOFA) which has not yet implemented a measure for at-sea transshipment (Van der Geest, 2020).

Gaps in reporting also exist when the transshipment measure is limited to the regulation of transshipment within an RFMO convention area but does not include all fish caught therein, regardless of where it is being transshipped, whether inside or outside of the convention area. This increases the risk of IUU fish entering the supply chain. For example, while SEAFO prohibits any transshipment in its convention area on the high seas, the measure does not regulate transshipment outside of the convention area.

Risks related to monitoring

Within the context of transshipment management in RFMOs, a range of MCS measures and the application of MCS tools are both crucial for monitoring compliance with transshipment regulations. This includes the monitoring of vessel movements and fishing activities through **vessel monitoring systems (VMS)** and additional tracking information via AIS. To be able to observe transshipments at sea, VMS needs to be functional onboard the fishing *and* the carrier vessel – if not functional on both, the risk of IUU-caught fish being transshipped unobserved is significantly increased. VMS measures that do not apply to all vessels authorized to transship at sea therefore come with the risk of IUU-caught fish being laundered into the supply chain. If applicable, VMS data is generally submitted to the flag State and, in the event of a licensing requirement, to the relevant coastal State. However, only WCPFC has a centralized VMS system that allows for the independent monitoring of vessel movements – including transshipment events – by WCPFC MCS officers, increasing transparency with regard to vessel movements.

Much of the information on transshipment at sea is based on self-reporting, for instance in the form of transshipment declarations, which need to be independently verified to ensure that the transshipment was conducted legally and that all information on the amount and composition of the transshipped catch is accurate. **Observer schemes** have an important role to play to ensure the independent verification of information. As outlined in Section 3, RFMO management and risk mitigation, most RFMOs have observer coverage on carrier vessels authorized to receive transshipments at sea. However, significant gaps remain related to the effective monitoring of transshipments at sea by observers. Firstly, the lack of observers on fishing vessels increases the risk of unobserved, illegal transshipments from one fishing vessels to another, which can lead to illegally caught fish entering the supply chain, especially when the fishing vessels' logbooks are not thoroughly checked or are even being deliberately changed.

Secondly, in an RFMO such as IOTC, observers may be allowed to disembark the carrier vessel before the vessel reaches its landing port, increasing the risk of additional transshipments taking place before it offloads the catch in port. Another risk arises if observer reports are not being shared with RFMO secretariats, which would allow for independent verification of information, as well as a strategic use of the information provided by observers in order to take action in the event of inconsistencies or the identification of non-compliance with transshipment regulations.

High seas boarding and inspection at sea, as carried out in WCPFC, CCAMLR and SEAFO, are costly MCS activities. If, however, targeted at fishing vessels that have already been pre-identified as high-risk vessels through other means of monitoring or when applied in areas identified as hotspots for potential illegal transshipments, high seas boarding and inspections can be powerful activities that increase the risk for illegal operators to be detected. In the framework of a risk-based approach, these targeted activities can function as an effective deterrent preventing illegal transshipments.

Conversations with RFMO compliance officers and observations in field missions revealed that when **port State inspections** are not implemented in a comprehensive and effective manner, illegal or unreported catch can slip into the supply chain without being detected. Generally, there remains a lack of clarity with regard to the relationships between in-port transshipment measures and port inspection procedures in many RFMOs.

While authorized transshipments at sea are monitored through full observer coverage on carrier vessels, full inspections of transshipments in port are only being carried out for a small fraction of the foreign-flagged vessels entering port – and sometimes not at all, as landings are being prioritized. Compliance and enforcement officers emphasize that a risk of IUU caught fish entering the supply chain remains for transshipments in various ports, even if there is knowledge about the transshipments taking place. The risk is particularly high when carrier vessels land the catch in multiple ports.

What makes it more severe is that port inspections are at times not possible at all. For example, in some countries visited during transshipment study field missions or as part of FAO's Global PSMA Capacity Development Programme, fisheries inspectors do not get sufficient access or any access at all to privately owned and operated ports. This significantly increases the risk of IUU caught fish entering the seafood supply chain. In extreme cases, fish is directly 'transferred' to containers without any monitoring and control. This practice, sometimes called 'transshipment in transit', deliberately blurs the line between *landing* and *transshipment*, in fact not defining it as either the one or the other. Authorities in the following port will not have clarity whether the catch has been previously landed or not,[13] and no effective port State measures may be applied at any point. In these cases, catch enters the supply chain without any fisheries inspector ever having seen the fish and without any monitoring and control.

In a time of significant developments related to transparency in the fisheries sector, more information on transshipment activities is beginning to be shared with relevant flag, port, coastal and market States, with regional and international organizations – and with the public as appropriate. Such a development, together with accurate cross-referencing and analysis of the information, will contribute to decreasing the risks associated with the laundering of IUU caught fish into the seafood supply chain and to decreasing the profits made through these illegal practices.

[13] Notwithstanding existing definitions of 'landing' and 'transshipment' in points 2.7 and 2.10 respectively of the FAO Voluntary Guidelines for Catch Documentation Schemes.

5. Recommendations

5.1 KEY ELEMENTS FOR CONSIDERATION IN THE DEVELOPMENT OF GLOBAL GUIDELINES

Some of the risks and issues associated with transshipment as it is currently managed and controlled have been identified in Section 4.3 of this study. These collectively represent the remaining residual risk that transshipment could contribute to, and facilitate, potential IUU fishing activity and the introduction of fish from those sources into the seafood supply chain, in spite of the management, monitoring and control frameworks currently in place. The following is an outline of recommended key elements for consideration in the potential development of global guidelines on regulating, monitoring and controlling transshipment. These elements could act as a means of actively managing the remaining residual risk and help ensure the legality and verifiability of transshipment as an authorized fishing activity.

These key elements include:

Definitions

- Transshipment should only take place in cases where there are clear and agreed definitions of what constitutes "transshipment" and "landing". Definitions for these terms are present in the FAO Voluntary Guidelines for Catch Documentation Schemes (VGCDS). It should be noted that those definitions are limited to the scope of the CDS guidelines and describe simple physical acts and places. Within the much broader scope of possible guidelines on transshipment, such definitions would need to be amplified to describe not only physical acts, but formalized and documented processes. A proposal for the two definitions of the two terms are as follows:

  "Transshipment" refers to the transfer of catch (i.e. fish and fish products) from one fishing vessel to another fishing vessel, or other vessel. This transfer happens either directly or indirectly through other vessels, vehicles, points, containers, installations, facilities or premises used for the carriage, storage or facilitating the transfer or transit of such catch prior to the landing.

  In this context, the term "landing" refers to a process through which a shipment or cargo of catch is documented or declared to have been subjected to the prescribed process of entry into a country or to have been cleared as an import by customs or the competent authority of the port State.

- As containerization grows in scale, direct offloads of fish product to refrigerated containers should be clearly considered as either a landing or a transshipment, within the meaning of the two proposed definitions.

- A standardized definition for "large-scale longline fishing vessel" should be established for the tuna RFMOs, in order to ensure consistency in the application of flag State vessel authorizations to conduct transshipment.

Authorizations

- Vessels should not be authorized to act as both a donor and receiving vessel on the same trip.
- Donor and receiving vessels should be included and listed in all appropriate RFMO vessel authorization lists, as well as the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, including the vessel's IMO number and other vessel details.
- Lists of all donor and receiving vessels authorized to transship by their respective flag State should be made publicly available, including historical lists and dates of authorization.
- All donor and receiver vessels authorized to transship at-sea within a specific RFMO area of competence should be required to be flagged to a Party or Cooperating Non-Contracting Party of that RFMO.
- All donor and receiving vessels that conduct transshipment on the high seas and other areas beyond national jurisdiction of the flag State should be authorized by their flag State to conduct transshipment and obtain authorizations to transship from relevant coastal States, if the activity takes place within EEZs and other areas within the coastal State's jurisdiction, prior to carrying out transshipment.
- All donor and receiving vessels eligible to receive an IMO number should be required to have one in order to be authorized by their flag State to transship, regardless of the location of the activity.
- Measures controlling transshipment should be implemented to include specific criteria for how vessels receive authorizations to transship, including:
    - the circumstances under which a flag State authorizes its vessels to transship at sea;
    - the circumstances under which a coastal State authorizes vessels to transship at sea in its EEZ;
    - the MCS measures that must be in place for transshipping to occur;
    - data collection and reporting requirements; and
    - how transshipment is carried out consistent with the management regime of the RFMO or relevant coastal State.
- Transshipment should only take place at sea between donor and receiving vessels that have been notified to the relevant RFMO by their respective flag State as vessels authorized to take part in transshipment.
- Transshipment should only be authorized where competent MCS authorities have access to the information needed to conduct a thorough risk assessment on which to base decision-making regarding a proposed transshipment.
- Transshipment should only be authorized when competent MCS authorities have the capacity to monitor and control the transshipment, including by applying risk assessments separately for transshipments in port and at sea.
- Compliance review processes should be established by RFMOs to assess issued flag State authorizations and transshipment activity.

- Specific reporting procedures should be developed and implemented to account for at-sea transshipments involving partial transfers of fish product, in order to ensure proper accounting of the source, quantity, and type of all fish product at the point of first landing.

Reporting

- Information relating to transshipment events (such as notifications/authorizations, declarations, observer reports and landing reports) should be standardized, based on paragraphs 49 and 50 of the IPOA-IUU and Annexes A, C and D of the PSMA where possible, and required to be reported to:
  a. the flag State authorities of both vessels
  b. any relevant coastal State authority
  c. the relevant port State authority
  d. the relevant RFMO secretariat, and
  e. other relevant national, regional and international organizations including FAO.
- Requirements should be established to ensure the management, reporting and documentation of transshipment is not limited to targeted and/or regulated species, but covers all species transshipped, including bycatch and any unregulated species.

Pre-event notification and record of event

- All donor and receiving vessels intending to carry out transshipments should provide advance notifications of the specific transshipment event within a suitable and published timeframe to all competent authorities and the relevant RFMO secretariat for each intended transshipment. This is to ensure authorities have sufficient time to make informed decisions on acknowledging receipt of the notification, verifying or confirming that relevant vessels have authorizations to tranship or for issuing conditions for a specific transshipment event to proceed and will meet other conditions that may be issued by relevant authorities for the specific transshipment event to proceed or initiating appropriate MCS responses.
- Upon receipt of an advance notification of transshipment from a donor vessel – and prior to acknowledging or confirming that the same could proceed - flag State authorities should verify the vessel's compliance with near real-time VMS reporting and observer carriage requirements and has provided regular reporting on their fishing activities during their current trip, including catch and effort, and will meet other conditions that may be issued by relevant authorities for the specific transshipment event to proceed.
- All donor and receiver vessels involved in transhipments should be required to log and maintain records or certificates of such transhipments.

Post-event reporting

- Post-transshipment reporting including declarations should be required by all vessels involved in transshipment and submitted to all competent authorities and the RFMO secretariat; this should ideally be done immediately after the event, but in any case, in as close to real time as possible.

- Post-transshipment observer reports should be required and submitted as an independent means of verification to all competent authorities and the RFMO secretariat for all transshipment events, regardless of event location, as close to near real time as possible after the event.
- Landings and transshipments of catches sourced from an RFMO convention or regulatory area should be reported to that specific RFMO regardless of where the catch is landed or further transshipped.

Follow-up reporting

- Procedures should be established to verify all reported transshipment data from vessels, flag States and observers. This auditing process may be completed by the flag State, a coastal State in accordance with its laws for transhipments that occur within areas under its national jurisdiction and relevant RFMO secretariat as appropriate.
- Procedures should be established to report and follow-up on and enforce against infractions by vessels involved in transshipment activities, including prosecution and the levying of penalties or other sanctions; where appropriate vessels should also be placed on IUU vessel lists.

Monitoring

- All donor and receiving vessels authorized to conduct transshipment should be required to have an operational VMS system onboard.
- Port-to-port VMS data should be provided to, and shared between, all competent authorities and the RFMO secretariat in near real time in particular when the vessel is present within the relevant convention area.
- Procedures should be established to address vessel reporting requirements in case of VMS malfunction or failure.
- Independent verification of transshipments (such as human observers or electronic monitoring, or a combination of both) should be required on all donor and receiving vessels involved in transshipment for all events regardless of location.
- Independent collection of information and data by observers on transshipment events should be authorized for use for both scientific and compliance purposes.
- Port State measures should be in place and implemented consistent with Articles 12, 13 and 17 of the Port State Measures Agreement for all ports where receiving vessels land their transshipped catch; collected data should be cross-referenced against all available transshipment information.
- Catch documentation schemes or traceability programmes should be established and implemented effectively by the recording of transshipped catch on relevant documentation.

Data and information-sharing

- Formal procedures for sharing transshipment data (such as authorized vessel lists, transshipment notifications, authorizations and declarations, reported catch, landing reports, observer reports, inspection reports, infractions and sanctions) should be established among all competent authorities and RFMO secretariats.

- Formal procedures for sharing transshipment data between RFMOs should be established, especially between RFMOs with overlapping convention area waters, where both RFMOs authorize the same receiving vessels to be involved in transshipment.
- Information related to transshipment activities (such as number of events, locations, amount and type of species transshipped, vessels involved) should be made publicly available on an annual basis for scientific and compliance purposes with due regard for appropriate confidentiality requirements.

Use of existing and new technologies

There are a range of existing and emerging satellite-based and other technologies which can help in the monitoring, control and surveillance of transshipment activities. These may include, *inter alia*, real-time electronic authorization and reporting, remote electronic monitoring (REM) tools such as live-stream closed circuit television (CCTV) and electronic eye systems, WIFI- or Bluetooth-enabled weighing scales affixed to crane hooks and slings, synthetic aperture radar, satellite optical imagery, etc. The value of such technologies is enhanced in the context of occurrences which constrain human resources such as the recent public health COVID-19 pandemic.

Traceability

The global dialogue on seafood traceability has brought about several key data elements related to transshipment (KDEs) within its traceability standard, which could also inform the discussion on guideline development development (GDST, 2020).

5.2 AREAS OF EMERGING AND PERSISTENT CONCERN

It is widely recognized that transshipment operations are used in all world oceans to maximize fishing opportunities and reduce operational costs. This report has provided evidence that the practice can be linked to the risk of IUU catch being laundered and finding their way into the seafood supply chain if insufficiently regulated, monitored and controlled. It is this risk and the possibility of transshipment activities being associated with other fraudulent activities that has caused concern in the international community regarding the current management of the practice. These concerns come at a time when governments and civil society alike are calling for improved transparency in the fisheries sector, as well as for good governance in fisheries to ensure that resources can be sustainably managed for current and future generations.

The last years have seen remarkable developments in this regard. The FAO Agreement on Port State Measures – the first international legally binding instrument to target IUU fishing adopted in 2009 – came into force in 2016, and the number of parties has increased steadily since. The implementation of strict port State measures has advanced in many countries, including in developing countries and small island developing States. Market measures and the threat of trade bans have set incentives to better fulfil countries' international obligations as port, flag, coastal and market States to combat IUU fishing. Strengthened MCS measures in a number of RFMOs have improved the possibilities of identifying vessels engaged in IUU fishing and fishing-related activities. Moreover, a range of automated applications have been developed that integrate multiple sources of tracking, vessel and license information to provide alerts on suspicious vessel behaviour, for further MCS actions. All of these developments have also contributed to raising

awareness about illegal activities in fisheries, particularly out at sea, including on at-sea transshipments.

However, strengthening measures can result in new evasive behaviour, especially since fisheries operations can work in flexible and manoeuvrable networks, and exploit new loopholes when others are closed.

For example, an increase in direct transfers of fish from catching vessels to containers has been observed in different regions of the world. These transfers are variously termed 'transshipment in transit' and happen in bond, without fisheries inspections or any reporting on the landing or transshipment of volumes and species transferred. There is occasionally a lack of clarity on whether these movements of fish are considered a landing, a transshipment or something between. In practice, transfers into containers can be used to circumvent port State measures, especially when the fisheries products are assumed to have been previously landed upon arrival at the containers' destination port. It appears that with the growing number of parties to the PSMA and with strengthened port State measures all around the globe this practice could be chosen by certain industry actors as one way to transfer fisheries products into the market without monitoring or control. Responsible port States have rejected containers where it was clear that this was the case. However, the large number of containers reaching ports and the mix of products within them make thorough control a daunting task given the limited inspection capacity in most countries. It is recommended that the practice of transfers into containers be reviewed in the context of the landing and transshipment definitions, and procedures for monitoring and control of containerized fisheries products developed.

Privately owned and operated ports can provide a barrier to effective monitoring, control and enforcement. In some countries, fisheries inspectors are not even granted access to these ports. In the latter cases there is little or no oversight of the domestic or foreign flagged vessels landing or transshipping in these ports or receiving port services, nor is information available regarding the volume and composition of the catch landed or transshipped. Port and vessel operators may show resistance to any change of procedures as this may result in significant changes to their operations – and possibly economic losses. The introduction of new legislation and procedures allowing for inspections in port will therefore have to be supported by political will and a thorough change-management process. Importantly, all ports, whether public or privately operated, need to ensure that all landing and transshipment of catch is effectively monitored and controlled to prevent IUU catches entering the seafood supply chain.

Poor labour and safety standards, as well as human rights abuses for crews on fishing vessels that stay out at sea, on or close to the fishing grounds for very long periods, have been the subject of public attention for a long time. This has changed thanks to the awareness raising by non-governmental organizations and investigative journalists providing not only information but also footage of substandard working conditions on board. Migrant workers have become common on distant-water fleets, especially on tuna longline fishing vessels involved in at-sea transshipment, and it has been shown that these workers are particularly vulnerable to forced labour and human trafficking. While these practices still exist and fish workers still suffer and die on fishing vessels, influential market players have begun to discuss including social standards in sustainability criteria in order to contribute to improving working conditions through market pressure. The international community has taken important steps, though they require further strengthening: The International Labour Organization (ILO) Work in Fishing Convention 188 of 2007 aims at ensuring decent working conditions for fishers on board fishing vessels. The International Maritime Organization (IMO) Cape Town

Agreement (CTA) outlines fishing vessel safety standards and includes other regulations designed to protect the safety of crews and observers. The CTA has not yet come into force; it is expected to do so on its tenth anniversary in October 2022 (IISD, 2019). Once it has, it will be the first mandatory global safety regulation for fishing vessels of 24 metres or longer operating on the high seas.

Transshipments have also been shown to facilitate crimes associated with the fisheries sector (UNODC, 2011); this refers to crimes that have no direct connection with the fishing operations but take place on the fishing vessels and may even use the fishing operation as a cover. These crimes can include the trafficking of people, wildlife, drugs or arms, and both large-scale and small-scale vessels can be involved in these criminal activities, which are evidently driven by the motivation to maximize profits. Interviews with MCS officers during the field missions and in the context of the FAO PSMA Capacity Development Programme have revealed that there can be knowledge about these activities happening. However, the lack of sufficient capacity in competent authorities makes it impossible to deter and prevent these activities systematically. Effective and well-trained interagency mechanisms can provide powerful tools against illegal operators engaged in a range of criminal activities, even in cases of limited resources, and disrupt the networks on which they rely.

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Annex I
2019 Global survey questions

GLOBAL TRANSSHIPMENT SURVEY

States Edition - 2019

Section 1 - Nature and extent of transshipment - 1

Occurrence of different types of transshipment practices in waters under your jurisdiction or by vessels flagged by your country.

Transshipment type	Does this type of transshipment occur?	Are there management measures that addresses this transhipment practice?	Are these measures effectively implemented?
Catcher to transport			
Catcher to catcher			
Catcher to cage			
Catcher to processing			

Section 2 - Nature and extent of transshipment - 2

Number of fishing and carrier vessels flagged by your country who were authorised by RFMOs to transship at sea in 2017.

Fishing vessels	Total number
Authorized by CCAMLR	
Authorized by CCSBT	
Authorized by GFCM	
Authorized by IATTC	
Authorized by ICCAT	
Authorized by IOTC	
Authorized by NAFO	
Authorized by NPFC	

Fishing vessels	Total number
Authorized by NEAFC	
Authorized by SEAFO	
Authorized by SIOFA	
Authorized by SPRFMO	
Authorized by WCPFC	
Carrier vessels	**Total number**
Authorized by CCAMLR	
Authorized by CCSBT	
Authorized by GFCM	
Authorized by IATTC	
Authorized by ICCAT	
Authorized by IOTC	
Authorized by NAFO	
Authorized by NPFC	
Authorized by NEAFC	
Authorized by SEAFO	
Authorized by SIOFA	
Authorized by SPRFMO	
Authorized by WCPFC	

Section 3 - Nature and extent of transshipment - 3

Vessel types involved in transshipment and the locations of the transshipment events, in 2017.

Gear type of fishing vessels authorized to transship at sea in 2017	**Total number**
Purse Seiner (PS)	
Long liner (LL)	
Squid jigger	
Trawler (TX)	
Pole and Line (LHP)	
Not known (NK)	
Other	

Number of transshipment events in 2017 involving fishing vessels flagged to your country	**Number of events**	**Tonnage transhipped**
In port (convention area)		
In EEZs (convention area)		
High seas (convention area)		

Section 4 - Nature and extent of transshipment - 4

Number of transshipment events at sea by fishing vessels and carrier vessels flagged to your country and authorised by RFMOs, in 2017.

Number of transhipment events at sea from fishing vessels flagged to your country and authorized by an RFMO in 2017	**Number of events**	**Tonnage transhipped**
Authorized by CCAMLR		
Authorized by CCSBT		
Authorized by GFCM		
Authorized by IATTC		
Authorized by ICCAT		
Authorized by IOTC		
Authorized by NAFO		
Authorized by NPFC		
Authorized by NEAFC		
Authorized by SEAFO		
Authorized by SIOFA		
Authorized by SPRFMO		
Authorized by WCPFC		
Number of transhipment events at sea by carrier vessels flagged to your country and authorized by an RFMO in 2017	**Number of events**	**Tonnage transhipped**
Authorized by CCAMLR		
Authorized by CCSBT		
Authorized by GFCM		
Authorized by IATTC		
Authorized by ICCAT		

Number of transhipment events at sea by carrier vessels flagged to your country and authorized by an RFMO in 2017	Number of events	Tonnage transhipped
Authorized by IOTC		
Authorized by NAFO		
Authorized by NPFC		
Authorized by NEAFC		
Authorized by SEAFO		
Authorized by SIOFA		
Authorized by SPRFMO		
Authorized by WCPFC		

Section 5 - Nature and extent of transshipment - 5

Further specifications regarding nature and extent of transshipment

Species transshipped at sea	Tonnage transhipped
Tuna and tuna like species	
Small pelagics	
Other pelagic (please specify species in comment box)	
Sharks (please specify species in comment box)	
Cephalopods	
Demersal species	
Unspecified	
Other	

Overall amount of fish transshipped at-sea by fishing vessels flagged to your country in 2017	Tonnage transhipped
2013	
2014	
2015	
2016	
2017	

Landing ports of used by receiving carrier vessels flagged to your county in decreasing order (2017) and approximate percentage of the total

Port	Name	%
Port 1		
Port 2		
Port 3		
Port 4		
Port 5		

How many transhipments were conducted in your ports in 2017?	Total number
Purse Seiner (PS)	
Long liner (LL)	
Squid jigger	
Trawler (TX)	
Pole and Line (LHP)	
Not known (NK)	
Other	

How many transshipments were conducted in your EEZ in 2017?	Total number
Purse Seiner (PS)	
Long liner (LL)	
Squid jigger	
Trawler (TX)	
Pole and Line (LHP)	
Not known (NK)	
Other	

Section 6 - Nature and extent of transshipment - 6 Further specifications regarding nature and extent of transshipment		
Publicly searchable list of fishing vessels authorized to transship at sea (If "yes", please specify a url link in the comment)		
Fishing vessels		
Carrier vessels		

Fishing vessels	Total number
CCAMLR	
CCSBT	
GFCM	
IATTC	
ICCAT	
IOTC	

Fishing vessels	Total number
NAFO	
NPFC	
NEAFC	
SEAFO	
SIOFA	
SPRFMO	
WCPFC	

Risk assessment: Is the IUU history of vessels checked before authorizing flagged vessels to transship at sea?	

Fishing vessels	Total number
CCAMLR	
CCSBT	
GFCM	
IATTC	
ICCAT	
IOTC	
NAFO	
NPFC	
NEAFC	
SEAFO	
SIOFA	
SPRFMO	
WCPFC	

Responses to non-compliance: Are there sanctions for breaches of the transshipment measures? (please specify sanction in comment box)	

Offloading carrier vessels:

Regional Fisheries Management Organizations	Number of events
Are relevant flag States, coastal States and RFMOs informed about amounts offloaded from carrier vessels?	
Is information on transhipment declarations and landing information cross-checked?	

Section 7 - MCS Measures utilised to control transshipping operations

Please indicate the Monitoring, Control and Surveillance (MCS) measures applied to the transhipment activity in 2017 and inspection results (if any):

Topic	Applied to the 2017 transhipment activities?
Satellite VMS	
GSM/GPRS VMS	
AIS	
Satellite AIS	
VTMIS	
VTS	
Satellite Imagery	

Topic	Applied to the 2017 transhipment activities?
Satellite Sensing	
Surface Surveillance (Ship)	
Aerial Surveillance (Aircraft)	
Fisheries Monitoring Centre	
Risk Analysis and Management	
Coordination of MCS resources	
Sea Inspections (both within EEZs and on the high seas)	
Port Inspections	
Landing Inspections	
Inspection targeting decided upon through risk assessment methodologies	
Joint Inspection Agreements with other Countries	
Observers - Catcher vessels (implementation and percentage coverage)	
Observers - Carrier vessels (implementation and percentage coverage)	
Observers' independent estimate of quantities transhipped	
Observer reports submitted to RFMO Secretariat and made available to other parties	
Information Exchange Agreements with other Countries	
Routine cross-checking of different sources of data	
Access to illicit or irregular Lists	
Authorisations including Transshipments	

Topic	Applied to the 2017 transhipment activities?
Fishing license	
Prior notifications including intention to transhipment	
Prior notification of landing	
Mandatory use of designated ports	
Port State Control Measures as per PSMA	
Catch certification Scheme	
Catch documentation Scheme	
Labelling of catch	
Tagging of catch and other traceability measures	

	EEZ	High seas	Port
Number of inspections carried out:			
Non-compliance citations issued:			
Typologies of non-compliances:			

Section 8 - Spatial distribution

Please indicate by area the number of transhipment reports that you have received differentiated between donor vessels and receiver vessels in 2017.

Marine area identifier	Marine area description	Donor vessel	Receiver vessel	Comments

GLOBAL TRANSSHIPMENT SURVEY

Regional Fisheries Management Organisations Edition - 2019

Section 1 Nature and Extent of transshipping		
Transshipments landing events in 2017	**Number of events**	**Tonnage transhipped**
In port (convention area)		
In EEZs (convention area)		
High seas RFMO Area		
High seas outside RFMO Area		
Location unspecified		
Species transshipped at sea	**Tonnage transhipped**	
Tuna and tuna like species		
Small pelagics		
Other pelagic (please specify species in comment box)		
Sharks (please specify species in comment box)		
Cephalopods		
Demersal species		
Unspecified		
Other		
Amount of fish transshipped at-sea	**Number of events**	**Tonnage transhipped**
2013		
2014		
2015		
2016		

Number of vessels authorized to transship at sea in 2017	Number of vessels
Fishing vessels	
Carrier vessels	
Gear type of catching vessels engaged in transshipment at sea in 2017	**Percentage**
Purse Seiner (PS)	
Long liner (LL)	
Squid jigger	
Trawler (TX)	
Pole and Line (LHP)	
Not known (NK)	
Other	

Section 2

Regulatory Framework

Definitions included:		
Large scale tuna longline vessel		
Fishing vessel		
Carrier vessel		
Transshipment		
Type of vessel	**Publicly searchable list of fishing vessels authorized to transship at sea**	**Is historical information available (on former names, flags, owners etc.)**
Fishing vessels		
Carrier vessels		

Authorization to transship at sea	
Is RFMO secretariat informed prior to/at authorizations for at-sea transshipment?	
Are carrier vessels required to notify the RFMO Secretariat of the intent to tranship at sea upon entry into the Convention Area?	
Is there a mechanism for the Commission to review/approve authorization by flag State?	

Responses to non-compliance - I	**Does the RFMO implement non-compliance measures towards:**
Individual vessels	
Individual Contracting Parties	

Responses to non-compliance - II	**Does the RFMO implement non-compliance measures towards:**
Does the RFMO follow-up with Contracting Party action on cases of non-compliance by vessels?	

Section 3 MCS Measures utilised to control transshipping operations	
Please indicate the Monitoring, Control and Surveillance (MCS) measures applied to the transhipment activity in 2017 and inspection results (if any):	
Satellite VMS	
GSM/GPRS VMS	
AIS	
Satellite AIS	
VTMIS	

Please indicate the Monitoring, Control and Surveillance (MCS) measures applied to the transhipment activity in 2017 and inspection results (if any):	
VTS	
Satellite Imagery	
Satellite Sensing	
Surface Surveillance (Ship)	
Aerial Surveillance (Aircraft)	
Fisheries Monitoring Centre	
Risk Analysis and Management	
Coordination of MCS resources	
Sea Inspections (both within EEZs and on the high seas)	
Port Inspections	
Landing Inspections	
Inspection targeting decided upon through risk assessment methodologies	
Joint Inspection Agreements with other Countries	
Observers - Catcher vessels (implementation and percentage coverage)	
Observers - Carrier vessels (implementation and percentage coverage)	
Observers' independent estimate of quantities transhipped	
Observer reports submitted to RFMO Secretariat and made available to other parties	
Information Exchange Agreements with other Countries	
Routine cross-checking of different sources of data	
Access to illicit or irregular Lists	

Please indicate the Monitoring, Control and Surveillance (MCS) measures applied to the transhipment activity in 2017 and inspection results (if any):		
Authorisations including Transshipments		
Fishing License		
Prior notifications including intention to transhipment		
Prior notification of landing		
Mandatory use of designated Ports		
Port State Control Measures as per PSMA		
Catch Certification Scheme		
Catch Documentation Scheme		
Labelling of catch		
Tagging of catch and other traceability measures		
	EEZ	**High seas**
Number of inspections carried out:		
Non-compliance citations issued:		
Typologies of non-compliances:		

Section 4

Spatial distribution

Please indicate by area the number of transhipment reports that you have received differentiated between donor vessels and receiver vessels in 2017.

Marine area identifier	Marine area description	Donor vessel	Receiver vessel	Comments

GLOBAL TRANSSHIPMENT SURVEY

International Non-Governmental Organization Edition - 2019

Section 1	
1.1	**What is your organisation's stated policy on transshipments in marine fisheries?**
1.2	**In the last five years, how many studies has your organisation carried out or been involved in regarding transshipment and links with IUU fishing?** (Please provide links to the studies in the comment box)
1.3	**What information / data sources did you use for these studies?**

Ans.	**Yes/No**
RFMO	
VMS	
AIS	
Other satellite detection / remote sensing	
Light pollution	
Literature search	
Polling / Questionnaires	
Other (please specify)	

1.4	**In your professional opinion based on your observations, has transshipment activity in the last five years?**
1.5	**In your professional opinion, based on your observations, have transshipment activities contributed to IUU fishing in the last five years?**

1.6	Please qualify your answer with regard to questions 1.4 and 1.5.

1.7	According to your observations, are there any specific geographical areas or regions implicated in this regard?

Section 2	
2.1	In your professional opinion, what are the primary concerns regarding transshipment and links with IUU fishing?

2.2	In terms of best practice, what steps should be promoted towards better management of transshipment activity?

2.3	In your professional opinion, what are the primary benefits of improving management of transshipment activity?

GLOBAL TRANSSHIPMENT SURVEY

Fishing Vessel Owners, Operators, Managers and Processors Edition - 2019

Section 1 Transshipment events involving vessels connected to your organisation / company		
Number of Transshipment events in 2017 involving fishing vessels flagged to your country	**Number of events**	**Tonnage transhipped**
In port (convention area)		
In EEZs (convention area)		
High seas RFMO Area		
High seas outside RFMO Area		
Location unspecified		
Species transshipped at sea	**Tonnage transhipped**	
Tuna and tuna like species		
Small pelagics		
Other pelagic (please specify species in comment box)		
Sharks (please specify species in comment box)		
Cephalopods		
Demersal species		
Unspecified		
Other		

Amount of fish transshipped at-sea	Number of events	Tonnage transhipped
2013		
2014		
2015		
2016		

Section 2

Spatial distribution

Please indicate by area the number of transhipment reports that you have received differentiated between donor vessels and receiver vessels in 2017.

Marine area identifier	Marine area description	Donor vessel	Receiver vessel	Comments

Section 3 General comments relating to transshipment	
3.1	**In your professional opinion, what are the primary concerns regarding transshipment and links with IUU fishing?**
3.2	**In terms of best practice, what steps should be promoted towards better management of transshipment activity?**
3.3	**In your professional opinion, what are the primary benefits of improving management of transshipment activity?**

Transshipment is a widespread practice in marine capture fisheries, that has recently been associated with a possible risk of introducing catches derived from illegal, unreported and unregulated (IUU) fishing into the supply chain. This in-depth study was carried out in order to shed more light on the practice and make recommendations to inform future discussions on the development of international guidelines for the regulation, monitoring and control of transshipment. The report presents a background to the study, its approach and methodology, the key findings including possible elements of the guidelines, and discusses the main issues from the perspective of the risk of transshipment in supporting IUU fishing.

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