Planet Tracker

TACKLING OVERFISHING: PREVENTING YELLOWFIN TUNA COLLAPSE IN THE INDIAN OCEAN

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Key Takeaways

- Yellowfin tuna in the Indian Ocean is overfished and heading for a collapse by 2026. Collapse is defined in this context as at least a 70% decline in adult biomass over 10 years.
- If collapse occurs, developing coastal states will be disproportionately affected.
- To avert this scenario and for Indian Ocean yellowfin tuna stock to remain viable, a 20% reduction in catch from 2014 levels must be observed. The Indian Ocean Tuna Commission (IOTC) can ensure this happens at its upcoming meeting in March 2021.
- The Commission is hampered by a lack of political consensus, no effective cross-boundary regulatory authority and a limited deployment of key monitoring techniques.
- However, if IOTC members agreed to improve data quality and transparency, it would be possible for financial instruments to be constructed to support recovery and long-term management.

Why the Overfishing of Yellowfin Tuna in the Indian Ocean Matters

The State of Yellowfin Tuna Stocks

In 2020, 65% of commercial tuna stocks were identified to be at a healthy level of abundance, 13% were overfished and 22% at exploited just at or above sustainable catches. Of all global tuna stocks currently overfished, yellowfin tuna accounted for one-third in 2020.[i]

ANALYSIS
March 2021

In 2018, the global catch of major commercial tunas was 5.2 million tonnes. Yellowfin tuna was the second largest species of tuna in terms of catch level - see Figure 1.

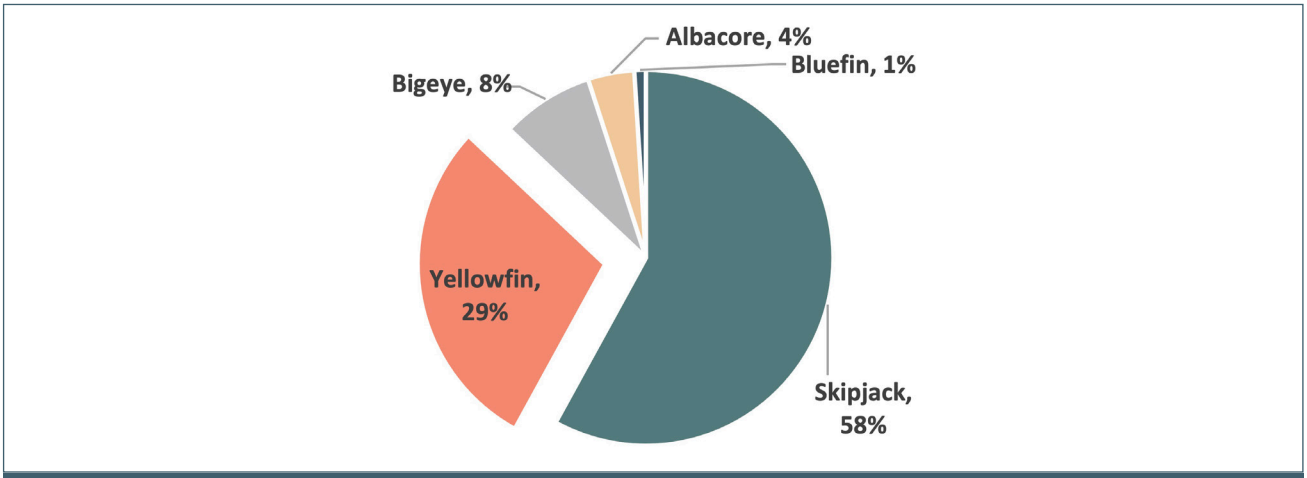

Figure 1: Breakdown of Global Tuna Catch by Species, 2018 [ii]

Yellowfin Tuna is Currently Overfished in the Indian Ocean

Yellowfin tuna (Thunnus albacares) are found in the subtropical and tropical areas of the Atlantic, Indian and Pacific Oceans. The Indian Ocean fishery is one of two fisheries (the other is in the Atlantic Ocean) which exceeds the Maximum Sustainable Yield (MSY) for yellowfin tuna. Table 1 shows that both the Indian and Atlantic Ocean fisheries have annual catches higher than the MSY. This means tuna stocks are declining year on year.

If we examine the spawning stock biomass relative to sustainable levels, we note that the Indian Ocean has a ratio of under one. See SSB current over SSB MSY in Table 1. This suggests that the yellowfin tuna stock is becoming less able to regenerate and therefore is unsustainable at current rates of exploitation.

Table 1: Yellowfin Tuna Catch by Region.

Area	MSY (Tonnes)	2019 Catch (Tonnes)	% of total catch	SSBcurrent/ SSBMSY*
Western and Central Pacific Ocean (WCPFC)	1,091,200	681,000	46.06%	2.43
Indian Ocean (IOTC)	**403,000**	**424,226**	**28.69%**	**0.83**
Eastern Pacific Ocean (IATTC)	288,000	241,000	16.30%	1.57
Atlantic Ocean (ICCAT)	121,300	132,200	8.94%	1.17

**SSBcurrent/SSBMSY is the spawning stock biomass relative to sustainable levels (below 1 is unsustainable) MSY is the maximum take before stocks are subject to overfishing.*[iii]

Five Countries Account for the Majority of Yellowfin Tuna Catches in the Indian Ocean

The Indian Ocean Tuna Commission (IOTC) is one of four Regional Fisheries Management Organizations (RFMOs) charged with managing yellowfin stocks. All four RFMOs were established under the framework of the United Nations Convention on the Law of the Sea (UNCLOS).[iv] 31countries are members of the IOTC - see Table 2.

Table 2: The Countries of the IOTC.[v]

Countries					
Australia	France	Korea	Mozambique	Sierra Leone	Thailand
Bangladesh	India	Liberia* (F)	Oman	Somalia	United Kingdom
China	Indonesia	Madagascar	Pakistan	South Africa	Yemen
Comoros (F)	Iran	Malaysia	Philippines	Sri Lanka	
Eritrea	Japan	Maldives	Senegal*	Sudan	
European Union	Kenya	Mauritius (F)	Seychelles	Tanzania	

** Non-contracting parties. (F) Flags of convenience are a business practice whereby a ship's owners register in a country other than thatof the ship's owners. A ship operates under the laws of its flag state, so vessel owners may register under other flags, aiming to leverage reduced regulation, lower administrative fees, and more compliant ports.*

In 2019, the top 5 and top 10 fishing nations in the IOTC for yellowfin tuna constituted respectively 54% and 87% of the total catch. When viewed as a bloc, the EU has the largest share, accounting for 17% of recorded yellowfin tuna catch in 2019. But as indicated by Figure 2, Spain and France are the predominant national European-flagged fleets - see Figure 2.

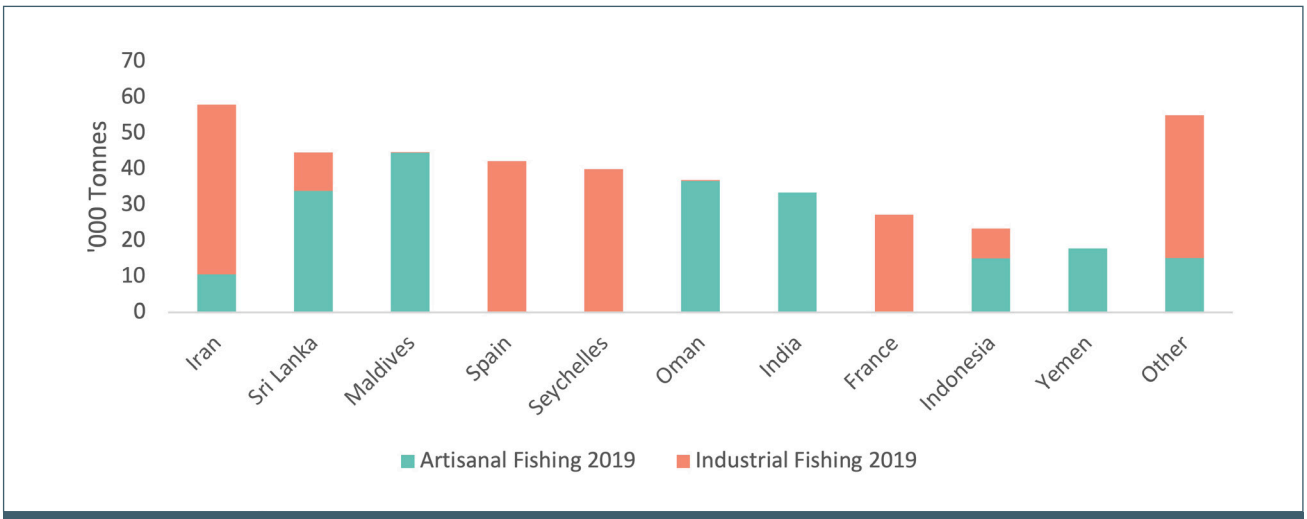

Figure 2: Percentage of Yellowfin tuna catch by country, 2019.[vi]

There is a Solution to Avoid a Collapse

If Catch Levels Are Cut by at Least 20%

Collapse is defined here as at least a 70% decline in adult biomass over 10 years.[vii] Under a business-as-usual scenario, yellowfin tuna stocks in the IOTC are at high probability of collapse by 2026.[viii]

The minimum requirement for the stock in the Indian Ocean to recover is a 20% reduction in catch relative to 2014 levels. Under the business-as-usual scenario, the biomass of female yellowfin tuna able to reproduce will drop by 91% between 2016 and 2026, potentially leading to a significant drop in spawning biomass and an 80% reduction in catch by 2026.

Fishing for Yellowfin Would be Unprofitable if Stocks Collapse

The volume of fuel and time at sea required to catch one tonne of catch has increased as yellowfin stock health has deteriorated. Over a 40-year period, catch per unit effort (CPUE) declined by 40%, despite technological advancements that, all else equal, should actually increase fishing efficiency - see Figure 3.

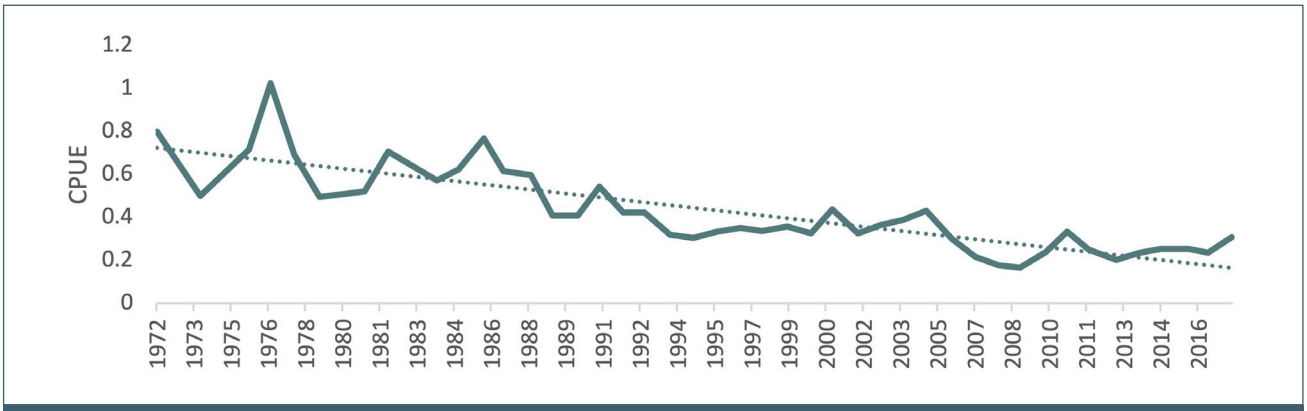

Figure 3: Catch per Unit Effort (CPUE) for Indian Ocean Yellowfin tuna Longline Fleets.[ix]

Planet Tracker assumes that as stocks decline, significantly more time at sea will be required to catch the same volume of fish, drastically increasing the operational cost of fishing for yellowfin tuna. A rapid drop of around 80% in catch would significantly impact CPUE and likely make fishing exclusively for yellowfin tuna unprofitable.

A knock-on impact of this would be that fishers may switch to catching skipjack tuna, which could simply exacerbate the problem because juvenile yellowfin tuna are often inadvertently caught in skipjack fisheries. This is especially the case in fisheries using Fish Aggregation Devices (FADs).[x]

In Table 3, we show the impact on a commercial fishing business which is reliant for yellowfin tuna for the majority of its catch. We assume it generates a 10% operating margin and that 65% of its costs are variable (fuel, staff, materials, etc.). Furthermore, our scenario assumes that volumes of yellowfin tuna drop by 80% to simulate the effect of a stock collapse. In this instance, a 116% increase in price would be needed for the business to break-even. To maintain a 10% EBIT margin, a 140% price increase would have to be observed. And if one assumes tuna fisheries are more profitable than they currently are, for example operating on a 20% EBIT margin, the required price increase to simply breakeven is 92% - see Table 3.

Table 3: Required Price Increases in Event of Yellowfin Tuna Collapse.[xi]

	Present	No Price Increase	Required price increase to generate 10% margin	Required price increase to break-even
Volume (% of catch relative to 2019)	100	20	20	20
Price (USD/kg)	2.5	2.5	6	5.4
Revenue (USD)	250	50	120	108
Variable Costs (USD)	-146.25	-29.25	-29.25	-29.25
Fixed Costs (USD)	-78.75	-78.75	-78.75	-78.75
EBIT Margin (%)	10%	-116%	10%	0%
EBIT	25	-58	12	0
Yellowfin Tuna Price Increase Required			140%	116%

A Collapse in Stocks will be Socially Unfair: Developing States and Near-shore Fleets will be Disproportionately Impacted.

In 2019, the average price of frozen yellowfin tuna was USD 2.50 per kg - generally this price was higher when exported by developed nations and lower when exported by smaller coastal developing nations. If production declines by 80% by 2026 relative to 2014 levels, a 500% increase in price would have to occur to keep the value of trade consistent for nations dependent upon the Indian Ocean. We calculated global exports of frozen yellowfin tuna (HS Code 030342), taking into account the percentage of IOTC yellowfin tuna in each nation's total yellowfin landings. Dependence on the Indian Ocean for yellowfin tuna can be seen in Figure 4.

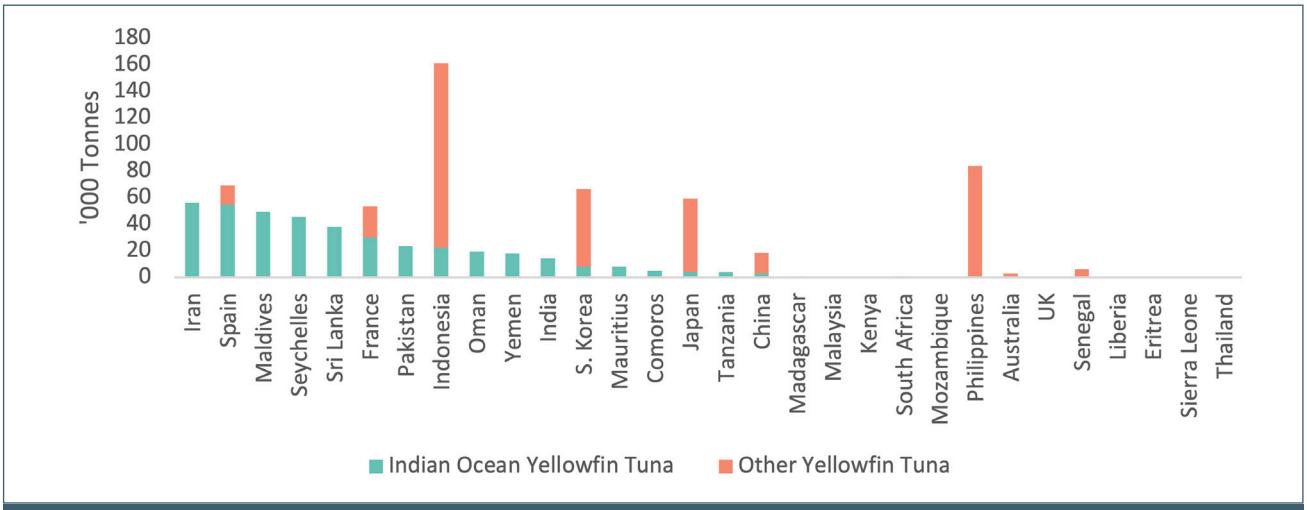

Figure 4: Yellowfin tuna breakdown by fishing region, 2017.[xii]

Developing coastal nations do not have access to foreign catch quotas or significant deep-water fleets, and so a collapse of yellowfin species damages their trade balances. Developing coastal states are also more dependent on yellowfin tuna as a total percentage of exports. For example, in the Seychelles and Maldives frozen yellowfin tuna constituted 9.4% and 9.2% respectively of the country's total export value in 2018 and tuna products across species constituted over 55% for both.[xiii] Collapse in yellowfin tuna could lower current trade balances of current net exporters – such as the Seychelles and Maldives – lowering national fiscal health, see Figure 5.

Figure 5: Trade balance for frozen yellowfin tuna (HS Code 030342), 2019.[xiv]

If an 80% drop in catch by 2026 relative to 2014 levels was observed, nations most reliant on the Indian Ocean for yellowfin tuna would be adversely affected - see Figure 6.

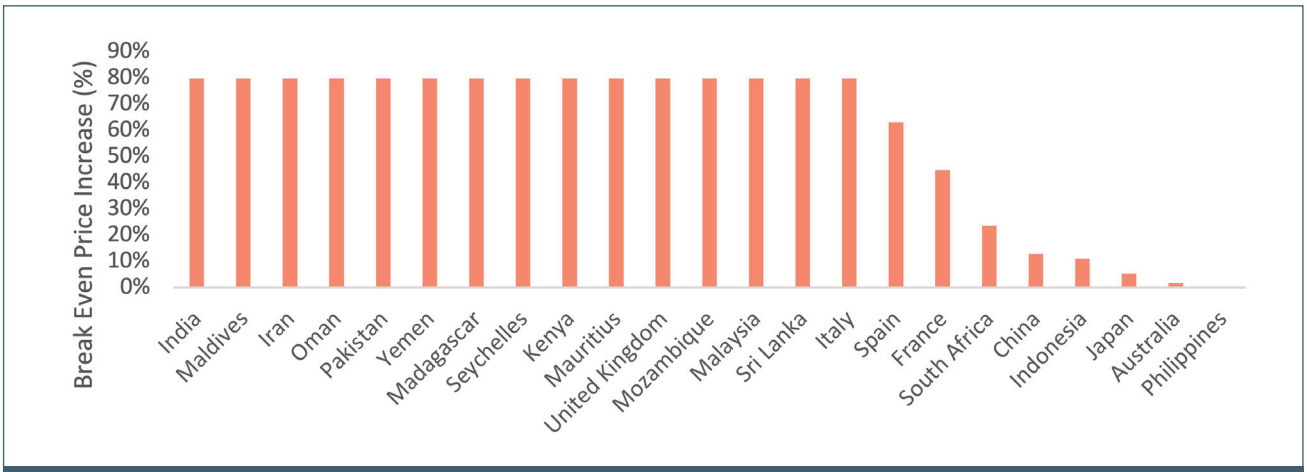

Figure 6: Required Price Increase to Maintain Trade Balance Values in the Event of an 80% reduction in catch.

The likes of India, the Maldives, Iran and Oman would require an 80% price increase to just maintain frozen yellowfin tuna trade balance values, while China would require only a 13% rise, Indonesia 11% and Japan 5%.

The Difficulties with Implementing Catch Reductions

Is This an Opportunity for the IOTC?

The solution is clear.

A 20% reduction in annual catch of yellowfin tuna from 2014 levels must be agreed to and enforced in 2021 for two years to allow stocks to replenish a sustainable stock size.

The IOTC is the oversight organisation for the Indian Ocean stocks and is presently the best vehicle to address overfishing and stock sizes quickly.

However, the IOTC has constraints. The IOTC is the only RFMO which is an FAO body, and some have argued this has slowed modernisation of the agreement.[xv] In addition, with a myriad of sovereign interests it has complicated member state pressures.

On March 8th, a meeting of all members of the IOTC will be held to discuss a reduction in catch for recovery in yellowfin tuna stock.

Will the IOTC members be able to reach agreement on the necessary cut in catch levels and avoid a collapse in stocks?

A challenging negotiation

Fairly allocating tuna stocks across contracting parties and co-operating non-contracting parties (CPCs) taking into account the transboundary nature of tuna, both in EEZs and beyond, distribution, gear complexities, scientific uncertainties and geopolitics is in itself a monumental task. Even with reporting on confirmed catch, it is estimated that up to 35% of catches are not reported in time (30 days for industrial fleets, 60 days for artisanal fleets) for effective decision-making to occur.[xvi]

Article 62 of UNCLOS allows coastal states to permit other states to fish for the resources within their Exclusive Economic Zone (EEZ) through fishing access agreements, often granted because of a lack of domestic fishing capacity. The European Union (EU) has tuna access agreements with Madagascar, Seychelles and Mauritius in the Indian Ocean. Japan, China and South Korea also have access agreements, but these agreements are not publicly available.[xvii] For catch reductions which involve nations' fleets being more transparent and effective, it is important to understand the volume of tuna caught by foreign vessels flying domestic flags.

Tension between member states and governing bodies (e.g. the IOTC and regional fishing bodies) hinders data sharing, which in turn slows stock assessments preventing timely decision-making and allocation of responsibility for recovery.[xviii] For long-term stock management to be achieved, data must be accessible, digestible and timely. The IOTC publishes catch volumes and vessel licensing data regularly, but these expose yet more barriers in implementing a catch reduction scheme, such as highlighting non-complaint fleets, illuminating areas in which Illegal, Unregulated and Unreported (IUU) activity is likely occurring, and underlining the difficulty in establishing a system across a large marine ecosystem which is adaptable, enforced, fair and equitable - see Figure 7.

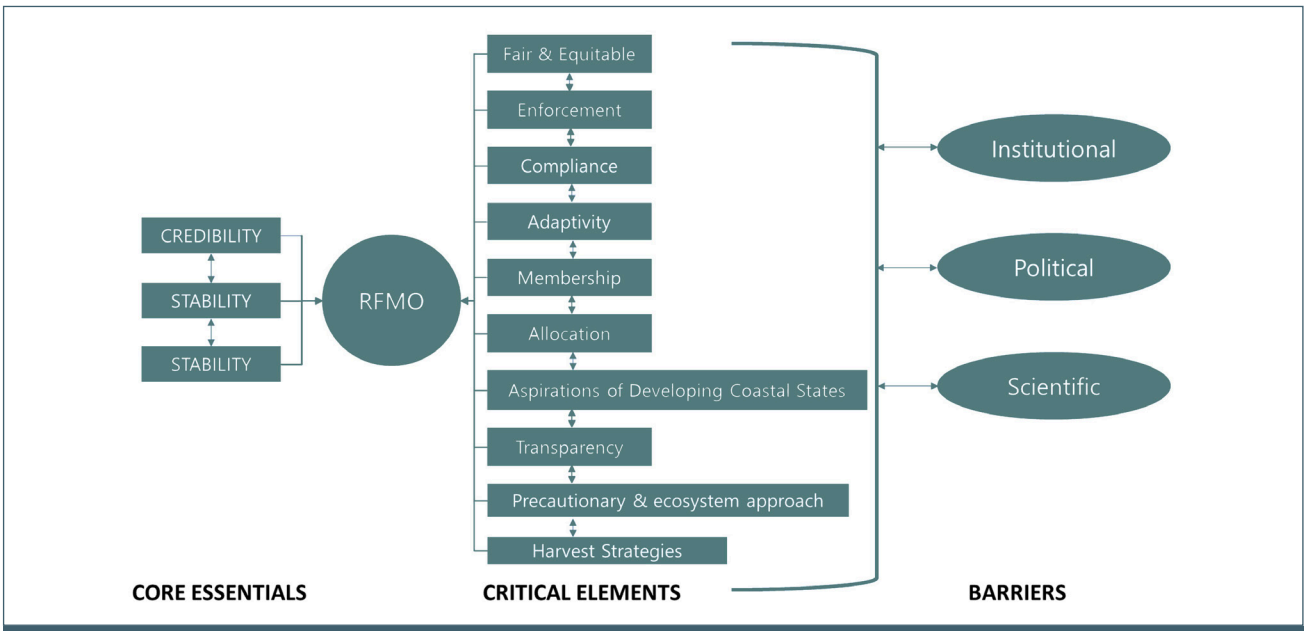

Figure 7: Core essentials and critical elements for an effective performance of Regional Fisheries Management Organisations and the barriers that prevent such effectiveness in the IOTC.[xix]

Fleets Hinder Potential Recovery from Previous Catch Reduction Attempts

To accurately set and enforce Total Allowable Catch (TAC) quotas, clear and transparent reporting of gear type, nation and beneficial owner of vessels is required. However, there are many complexities in identifying all actors involved in yellowfin tuna fishing in the Indian Ocean. Not all vessels are reported; vessel ownership is opaque; countries' true catch can be hidden and embedded within the reported catch of smaller countries - reducing the efficacy of stipulating reductions in catch of by nations and gears - and no regulatory action appears to be able to prevent or punish maligned actors. All these factors mean that overarching solutions are not feasible and localised actions cannot address the issue at scale or scope adequate to reverse decline.

One example of this complexity can be demonstrated by examining the accomplishments of Resolution 16/01. Resolution 16/01 set out gear-specific catch reductions for fisheries which surpassed specified catch thresholds in 2014, specifically for fleets catching above 5,000 tonnes per year which were required to reduce their respective catches by 5-15% depending on gear type [xx] - see Table 4.

Table 4: Yellowfin tuna catches in 2014 and 2019, with relative change in catch.[xxi]

Country	Reported Yellowfin Catch 2014 (Tonnes)	Reported Yellowfin Catch 2019 (Tonnes)	Change in Catch 2014-2019 (%)
Iran	46,216	58,044	25.6%
Sri Lanka	37,769	44,756	18.5%
Maldives	49,208	44,702	-9.2%
Spain	58,229	42,318	-27.3%
Seychelles	25,079	39,993	59.5%
Oman	7,208	37,033	413.8%
India	33,427	33,541	0.3%
France	34,126	27,871	-18.3%
Indonesia	25,275	23,473	-7.1%
Yemen	29,000	17,935	-38.2%
Mauritius	4,908	12,681	158.4%
South Korea	10,345	10,790	4.3%
Taiwan	12,285	9,427	-23.3%
Pakistan	14,452	6,721	-53.5%
Tanzania	3,441	3,904	13.4%
Kenya	71	3,464	4,757.6%
China	1,078	3,212	198.1%
Japan	4,072	2,584	-36.6%
Madagascar	735	715	-2.7%
Malaysia	77	428	453.2%
South Africa	83	389	368.4%
Mozambique	5	162	2,901.7%
Australia	19	45	133.8%
United Kingdom	88	17	-80.6%
Total	**397,219**	**424,226**	**6.8%**

While some of the fleets subject to Resolution 16/01 succeeded in making the required catch reductions, nations such as Sri Lanka and Iran both increased their respective longline and gillnet catches, offsetting the reductions made by other complying fleets. In addition, many fleets which did not meet the criteria increased their yellowfin catches again in 2019. These include:[xxii]

- Sri Lankan "other gears" fleets increased their catches by 97%, from 15,280 tonnes in 2014 to 30,076 tonnes in 2019
- Omani "other gears" fleets increased their catches by 413%, from 4,912 tonnes in 2014 to 25,219 tonnes in 2019
- Mauritian purse seiners increased their catch by 154%, from 4,844 tonnes in 2014 to 12,290 tonnes in 2019
- Omani gillnet fleet increased its catch by 408%, from 2,268% in 2014 to 11,516 tonnes in 2019
- Indonesian purse seiners increased their catch by 75%, from 5,598 tonnes in 2014 to 9,775 tonnes in 2019 (however, this was offset by the 35% decrease in catch by the Indonesian longline fleet in the same year)
- Iranian "other gears" fleets increased their catches by 16,263%, from 57 tonnes in 2014 to 9,385 tonnes in 2019
- Seychelles longline fleet increased their catch by 192%, from 1,616 tonnes in 2014 to 6,984 tonnes in 2019
- Indian gillnet fleet increased its catch by 32%, from 5,153 tonnes in 2014 to 6,801 tonnes in 2019

As a result of these and other increases the total catch in 2019 was 424,226 tonnes, 4% higher than the original 2017 catch figure of 409,567 MT upon which the 25% reduction requirement was based - see Figure 8.

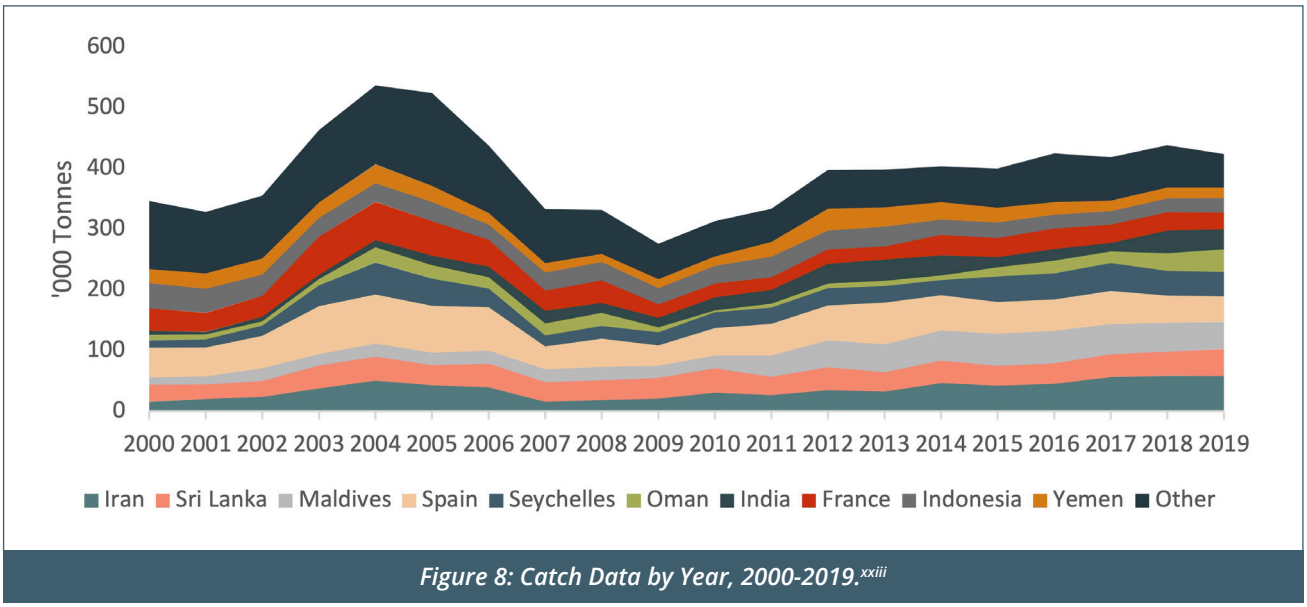

Figure 8: Catch Data by Year, 2000-2019.[xxiii]

Closing the Net on IUU Activity Would Boost Recovery Potential

Alongside increasing visibility of legal fleets, the IOTC must tackle Illegal, Unreported and Unregulated (IUU) fishing within their area of competence to aid in effective stock management. Three case studies listed below demonstrate how each type of IUU fishing is occurring in the IOTC, and what the impact may be.

Illegal: Iran - Somalia has 2,000 miles of coastline, the largest in Africa, but years of political and economic instability have left it unable to effectively police its waters. In 2020, a large fleet of 192 Iranian vessels, six times the size of the licensed Chinese fleet in Somali waters, was identified operating illegally in Somali waters for over a year.[xxiv] Depletion of fish stocks occurred in an area where the population is already experiencing multiple threats to food security, approximately 33% of people already face acute shortages of food.

Unreported: Spain - In 2016, according to Sea Around Us, up to 11% of the catch of bigeye, yellowfin, and skipjack in the IOTC was unreported.[xxv] According to the IOTC, Spain reportedly caught 172,843 tonnes of tropical tuna (bigeye, yellowfin and skipjack) in the Indian Ocean in 2019 - more than any other country in the Indian Ocean.

As part of IOTC Resolution 16/01 Spain's yellowfin quota was reduced to 45,682 tonnes by the EU in 2017. According to the catch data reported to the IOTC by the EU, the Spanish purse seine fleet exceeded its quota by 19% in 2017, catching 54,513 tonnes in 2017. However, the EU dismissed claims of overfishing, submitting catch data which indicated only a 5% haul above set limits, low enough to avoid repayment schemes set out in Article 105 of Regulation (EC) No 1224/2009. However, avoiding penalties for overfishing did not curb the behaviour thereafter.

Investigation by the Blue Marine Foundation found that Spain's purse seine yellowfin tuna catch for 2018 was 31% higher than was reported by the EU, and 12% higher than the average for the nation over the last 5 years.[xxvi] Despite this, several different estimations of catch have been reported for the fleet. The IOTC, NGOs and two Indian Ocean countries – South Africa and the Maldives – have raised questions about the many inconsistencies in Spain's catch reporting over multiple years.

For stock management to occur long-term, catch data must be independently verified to stop unreported fishing from undercutting regulatory efforts. Lack of penalties for unsustainable fishing exacerbate unsustainable behaviours and can incentivise opacity, misreporting and illegal activity.

Unregulated: China - As part of Resolution 18/03 on establishing a list of vessels presumed to have carried out IUU fishing in the IOTC, vessels caught fishing illegally are recorded and published by the RFMO,[xxvii] as illustrated by the case study below:

Case Study: CNFC Corporation, Zhongyu Global Marine Food and Shun Chang No.3.

C4ADS was able to examine the ownership structure of IOTC listed IUU vessels. In the instance of Shun Chang No. 3, a vessel previously caught illegally fishing in the Mediterranean, it was discovered that the vessel was managed, owned and operated by two large Chinese based firms - China National Fisheries Corporation, a subsidiary of the Chinese Government, and Zhongyu Global Marine Food, a subsidiary of CNFC Overseas Fisheries company. The company owns another 11 recorded vessels which are still fishing - see Figure 9.

Even though vessels owned and connected to the CNFC Overseas Fisheries company had been caught illegally fishing, this did not prevent others from being authorised in the area, vessels such Jin Sheng No.2., which was operating in 2020. Identification and exclusion of specific boats caught illegally fishing currently does not impact the ultimate beneficial owners from deploying fleets, in part due to coastal state nature of EEZs.

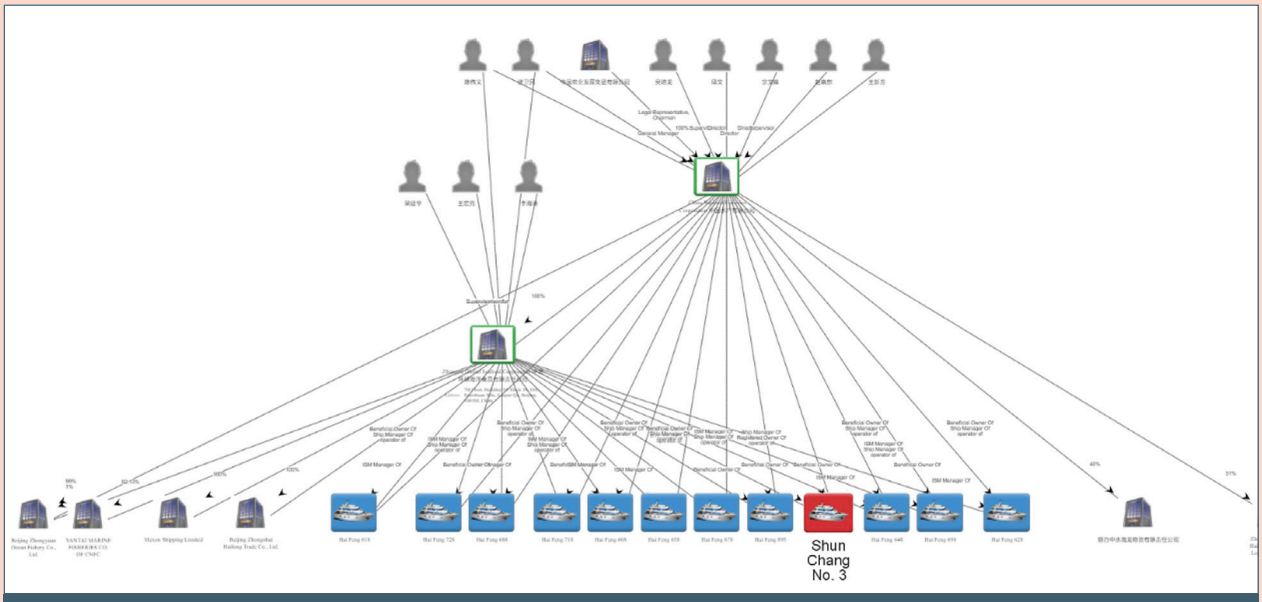

Figure 9: Beneficial Ownership Structure of Illegal Vessels in the IOTC.[xxviii]

Finance Could Come to the Rescue but the IOTC Must First Improve Accountability and Data

We believe that significant interest could be generated to invest in "blue finance" instruments aimed at fostering an ocean recovery. Planet Tracker assessed the viability of several financial instruments to support a recovery in yellowfin tuna stocks:

- the financing of a voluntary catch reduction by companies (in the form of a blue bond - see **Can Blue Bonds Finance a Fish Stock Recovery?**
- sustainability-linked bonds to ensure better monitoring (see for instance Thai Union's issuance of a c. USD400mn bond partly linked to achieving 100% monitoring at sea on its tuna supply chain [xxix])
- Special Purpose Vehicles - entities structured to finance specific projects[xxx] - in which the tuna stock across EEZ's can be 'owned' and securitized as an asset, which can then be used to generate funding for monitoring and management, leading to the recovery of the stock, and in turn leading to higher income for the asset owners and member states.

In all cases prerequisite conditions must be met to foster trust from the capital market. The crucial factor is confidence in the underlying data (high complexity, low transparency) and its quality. An additional complicating issue could be the previous misappropriation of funds associated with former in tuna bonds.

To assist in tackling the IUU issues outlined above, it would require coastal nations to sign the Port State Measures Agreement (PSMA). This measure aims to prevent, deter and eliminate IUU fishing by intercepting illegal catch at ports, preventing the catch from reaching national and international markets.[xxxi]

Confidence in Data Key to Establishing Trust

Under resolution 19/04, concerning the creation and maintenance of vessel records authorised to operate in the IOTC area, vessels which meet the following criteria must be recorded:

1. larger than 24 metres in length overall, or
2. in case of vessels less than 24m, those operating in waters outside the economic exclusive zone of the flag state, and that are authorised to fish for tuna and tuna-like species in the IOTC Area (hereinafter referred to as 'authorized fishing vessels', or AFVs)

Vessels that are not entered into the record are deemed not to be authorised to fish for, retain on board, tranship or land tuna and tuna-like species.[xxxii] Gear type by overall ship tonnage of yellowfin tuna vessels has increased since 2010, and correlates with a general increase in reported catch by the management body. However, certain net types - such as gillnets - have not been reported since 2018, and several key nations such as Oman and India report no vessels according to the published database.

Despite this, gillnet fishing has remained consistent, and the volume of handline catch is significantly larger than the reported fleet capacity, as many of this type of vessel are near-shore and below the threshold 24m size - see Figure 10.

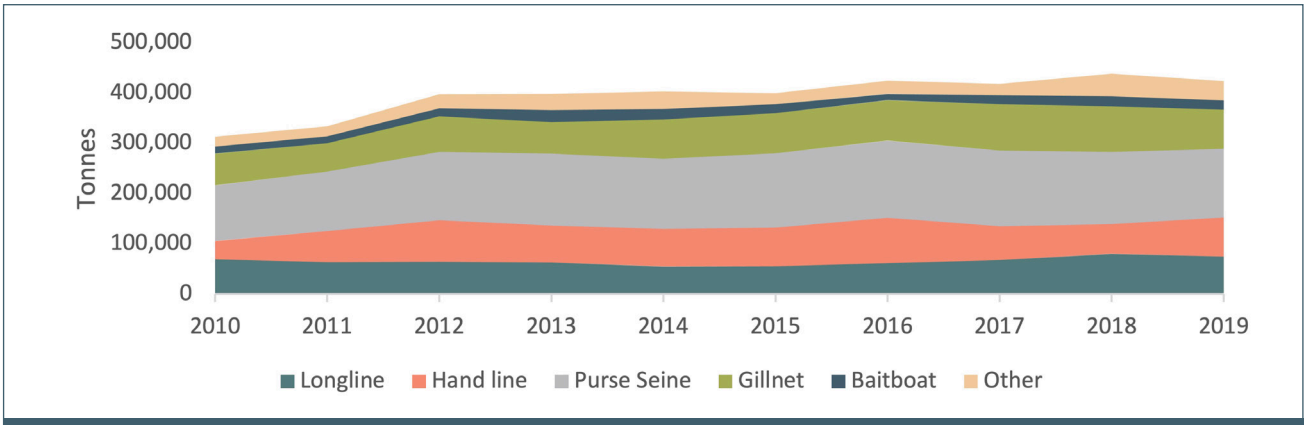

Figure 10: Catch by Gear Type, 2010-2019.[xxxiii]

When assessing catch by gear type against aggregated vessel data, using reported gear type and gross tonnage, the overall tonnage of the fleet matches catch levels, but does not provide an accurate cross-check to the reported catch - see Figure 11.

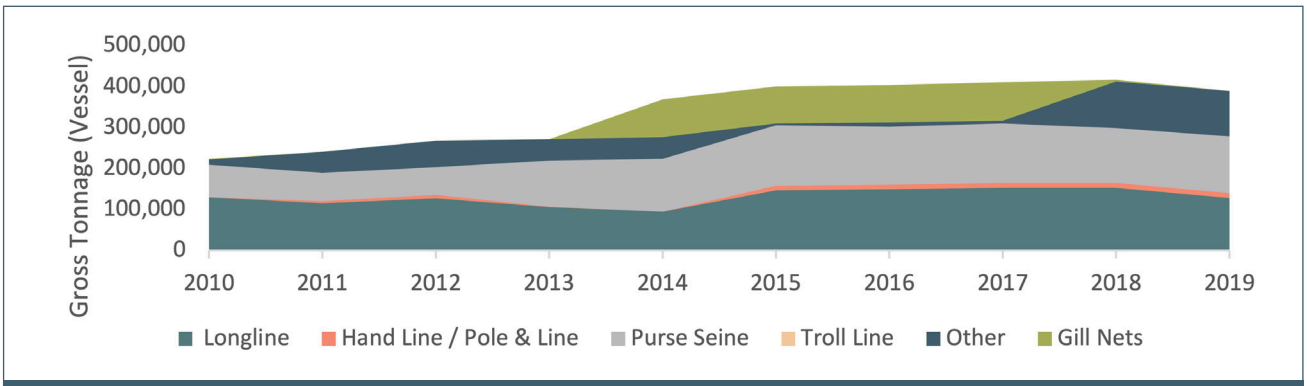

Figure 11: Aggregate Gross Tonnage of IOTC Yellowfin Tuna Vessels by Gear Type. 2010-2019.[xxxiv]

Data Quality Needs to Be Improved

The importance of this can be expressed by a breakdown on reporting effectiveness by gear type. Correlation between the two datasets only exists for a single metric - purse seine fishing. Reported yellowfin landings from purse seine vessels in 2019 was 132,697 tonnes and the aggregate gross vessel tonnage for reported ships in the IOTC in the area was 138,001 tonnes. This is primarily due to average large size of purse seine vessels (above 24m), and overall well-regarded catch data, as seen below. Nominal Catch, catch-and-effort and size frequency data are most accurately recorded on purse-seine vessels, compared to other gear types - see Figure 12.

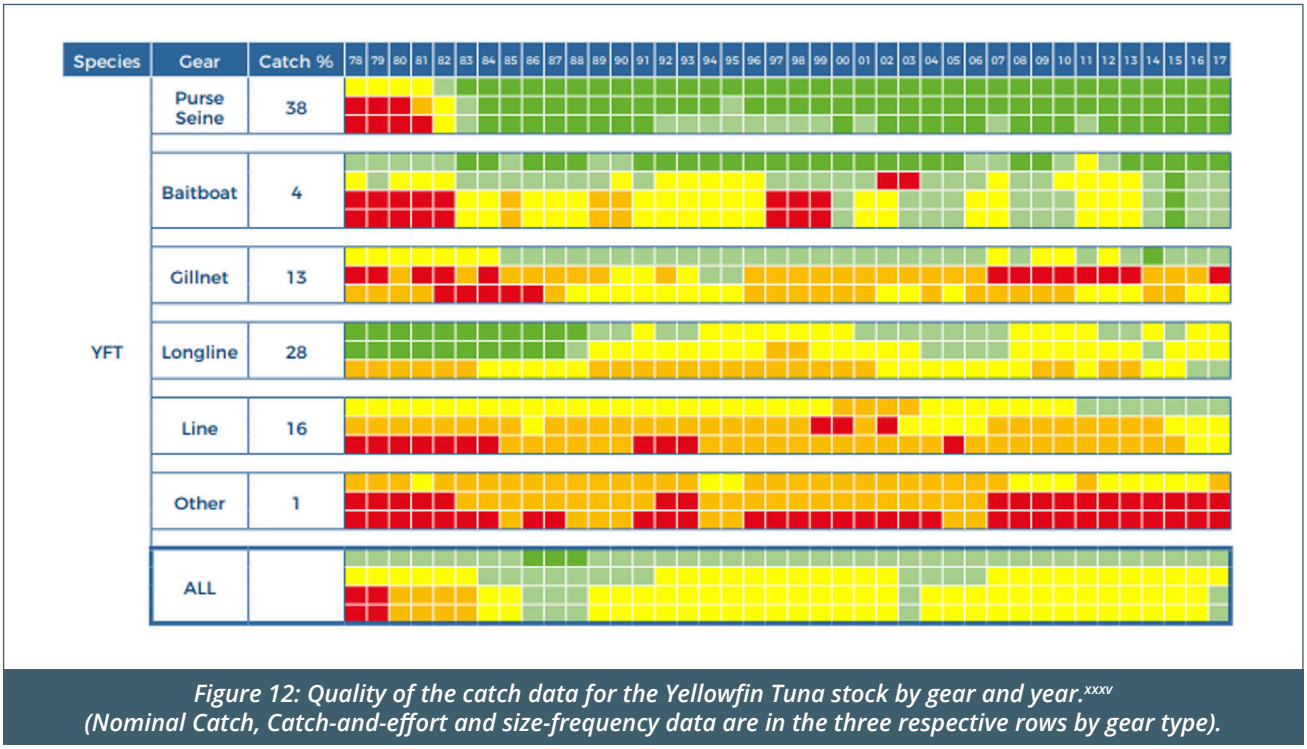

Figure 12: Quality of the catch data for the Yellowfin Tuna stock by gear and year.[xxxv]
(Nominal Catch, Catch-and-effort and size-frequency data are in the three respective rows by gear type).

The disparity between longline gross vessel tonnage and reported tonnage of landings would indicate that either many of the vessels are large and inefficient, switching between different catch regimes, or that landings are not being reported properly. This demonstrates that more stringent reporting frameworks must be introduced and enforced.

Steps have been taken to increase the coverage of monitoring tools, such as Resolution 15/03, which extends standards previously requiring Vessel Monitoring Systems (VMS) use only in ships above 24m to all vessels operating in the IOTC. However, the IOTC VMS system currently is a completely decentralised system in that it does not require, facilitate, or incentivise any degree of routine data sharing amongst member parties or with the IOTC Secretariat.[xxxvi]

On top of this, the RFMO has no strict reporting procedures in case of VMS failure and no viable penalties in case of non-compliance.[xxxvii] Even if a centralised and aligned system was in place, non-compliance does not incur a penalty. Electronic data collection becomes critical when human observer coverage (Resolution 11/04)[xxxviii] is low, and the already low requirement of 5% observer coverage for longline fleets is not being met. Due COVID-19 recovery, the observer scheme has been paused, and so must be reformed before reintroduction.[xxxix]

It is the IOTC's responsibility to assist each member party to effectively monitor and evaluate tuna stocks and introduce steps to mitigate non-compliance.[xl] We note that some current IOTC policies are lagging behind the best practice in other RFMOs - for example, the International Commission for the Conservation of Atlantic Tunas (ICCAT) requires all vessels above 12m to report data, leaving only subsistence fleets exempt, and to have VMS installed and on while at sea.

The more stringent ICCAT requirements increase visibility on compliance with catch reduction schemes regardless of fishing grounds and assist in locating specific fleets responsible for overfishing.[xli]

Alongside this, the IOTC should be encouraged to push for widescale adoption of Electronic Monitoring Systems (EMS) to assist in verifying volumes, species and regions of catch. Digitising catch records allows for mass-scale data collection and distribution, allowing for increased agility in supporting recovery.

Lesson from the Past

Previous financial market interventions in Indian Ocean tuna fisheries have not ended well. USD 2 billion in debt was issued by Credit Suisse, Russian Bank VTB and underwritten by BNP Paribas [xlii,xliii], to Mozambican state-owned companies between 2013 and 2016 to fund the modernisation of the Mozambique tuna fleet.[xliv]

This modernisation was rationalised, in part, to phase out existing foreign fishing pressures in favour a domestic fleet. In 2013, 0.7% of the licensed tuna vessels in Mozambique were flagged as Mozambiquan - i.e. one vessel.[xlv] USD 500 million from Credit Suisse and USD 350 million from VTB - 6% of Mozambique's GDP – was borrowed by EMATUM, the state-owned tuna fishery, and required a 200,000 per annum catch of tuna to make the debt serviceable.[xlvi]

This quota was not met, and the some of the funds were allegedly used to purchase armed boats and aircraft.[xlvii] Of the total amount, around 10% (USD 200 million) was allegedly diverted into bribes and kickbacks for at least 20 people involved in the scheme, including Mozambique's former finance minister, Manuel Chang, and at least USD 500 million (25%) could not be accounted for.[xlviii]

The state-owned companies missed more than USD 700 million in loan payments after defaulting in 2016 and 2017.[xlix] This in turn led to a 33% drop in the value of the local currency, the Mozambique metical (MZN), in 2016.[l] Eventually, the scheme led to the arrest of Manuel Chang, as well as three bankers from Credit Suisse. The subsequent breakdown in trust between Mozambique and its creditors caused international donors, the IMF and the World Bank to suspend all financial aid.[li]

To facilitate future financial market interventions, it would be reasonable for potential investors to demand significantly higher levels of transparency and monitoring before agreeing to new bond investments.

CALL FOR ACTION: EIGHT RECOMMENDATIONS

Opportunity exists for investors and fisher communities in the development of novel financial instruments aimed at incentivising recovery in the oceans. But, for markets to have confidence in these products, greater monitoring and transparency and enforcement is needed at national, international and deep-sea levels.

For the IOTC to improve their alignment with their own core functions as outlined in Article V of the IOTC Agreement, we provide recommendations for IOTC Members against each of these core functions listed as follows:

To gather, analyse, and disseminate trends and conditions of fishery stocks, catch and effort statistics and other relevant data.

1 Develop and adopt minimum standards for electronic monitoring systems (EMS) and an e-reporting information system both for logbooks and observers for all gears in 2021.

2 All vessels engaged in at-sea transhipment, regardless of gear type — are required to have 100% observer coverage within five years, as recommended by the International Seafood Sustainability Foundation and the Global Tuna Alliance.[lii]

3 Bring VMS reporting requirements to at least parity with other tuna RFMO's – i.e., ICCAT requires all vessels above 15m to report location at intervals of 4 minutes.[liii]

To encourage, and coordinate research and development activities for fish stocks within the area of management.

4 Centralise and standardise data reporting so all member states can provide science-based solutions to overfishing, as well as identify hotbeds of illegal activity.

To adopt conservation and management measures based on scientific evidence.

5 Implement and enforce a 20% reduction of yellowfin tuna catches for two years.

6 Leverage the links between the IOTC and the FAO to encourage PSMA implementation[2] for member states at ports, as proposed by the Global Tuna Alliance in their 5-year strategy[liv] - see Table 5.

Table 5: IOTC Members split by PSMA signatories and those yet to sign.[liv]

PSMA Members			Non PSMA Members	
Australia	Liberia	Seychelles	China	Yemen
Bangladesh	Madagascar	Sierra Leone	Comoros	
European Union	Maldives	Somalia	Eritrea	
France	Mauritius	South Africa	India	
Indonesia	Mozambique	Sri Lanka	Iran	
Japan	Oman	Sudan	Malaysia	
Kenya	Philippines	Thailand	Pakistan	
South Korea	Senegal	United Kingdom	Tanzania	

To review the economic and social aspects of fisheries, especially for developing coastal states.

7 Review economic incentives in driving decline, such as tariff-free imports to European countries, to primarily safeguard food security in developing coastal states over short-term financial gains.

8 For lending institutions in particular: Analyse the role of forecasted catch requirements to meet fishery debt levels (i.e., loan convenance) in the IOTC.

[2] The Port State Measures Agreement (PSMA) was approved by the FAO conference in 2009 and is the first binding international agreement to specifically target IUU fishing. Its objective is to prevent, deter and eliminate IUU fishing by preventing vessels engaged in IUU fishing from using ports and landing their catches.

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