Indian Ocean tuna - purse seine (Dongwon Industries) FIP Three-Year Audit Report

Version 1.2, September 2021

FIP Information

Target species scientific name(s) and common name(s) [state target stock(s), if relevant]	Skipjack – Eastern stock (*Katsuwonus pelamis*) Yellowfin (*Thunnus albacares*) Bigeye (*Thunnus obesus*)
Fishery location	Area 51 (Indian Ocean, Western) Area 57 (Indian Ocean, Eastern)
Gear type(s)	Purse seine
Estimated FIP Landings (weight in tons)	15,030 tons (2021)
Vessel type(s) and size(s)	Large purse seine vessels
Number of vessels	Two purse seine vessels
Management authority	Indian Ocean Tuna Commission (IOTC) – Management of tuna stocks (RFMO) National management authorities (Seychelles and Mauritius)
Auditor name(s)	Jose Peiro Crespo
Auditor Organization/Affiliation	Naunet Fisheries Consultants
Date of report completion	21/03/2024

FIP Background (Optional)

The fishery targets three species of tuna: skipjack tuna (*Katsuwonus pelamis*), yellowfin (*Thunnus albacares*) and bigeye (*Thunnus obesus*). The fishery is currently carried out by 2 purse seine vessels. The total catch of tuna species in 2021 was 15,030 tons (SKJ represented 82% of the total). This FIP includes both the FAD and free school components of the fishery. The fishery has recently started certification for the skipjack tuna (ACDR report published in April 2023) although due to some problems with the data collected by the observer program, the site visit has been delayed several times and the assessment process has not progressed.

Stakeholder Consultation & Meetings

Name	Affiliation	Date and Subjects Discussed
Emily Wardrop	FIP coordinator	6th March 2023 Introductory call • Scope of the FIP (number of vessels, etc), scope of the audit, deadlines, etc. • Main activities carried out by the fishery (observer data, FAD management plan, shark finning policy, etc). • Issues identified in the MSC assessment of the fishery. • Progress on Principle 1 and Principle 3 (stock assessments, HCR, management at the national level, etc).
Mr James Kim[1]	Client's representative – Dongwon	

[1] No other stakeholders have been identified in this FIP.

Summary of Findings and Recommendations

This report presents the findings of the three-year audit of the Indian Ocean tuna - purse seine (Dongwon Industries) FIP. This FIP started in March 2021 and the target end date is March 2026. The fishery recently entered assessment under the Marine Stewardship Council (MSC) with the end goal of achieving certification for SKJ tuna under the Fisheries Standard.

In regard to Principle 1, recent stock assessments have been conducted for SKJ, YFT and BET. The most recent stock assessments for YFT and BET, conducted in 2021 and 2022 respectively, indicated that the biomass of those species was below the SSBMSY (SB2020 YFT/SBMSY = 0.87, and SB2021 BET/SBMSY = 0.90). In the case of SKJ, a stock assessment was conducted in 2023, the results of that assessment indicated that the stock was above the MSY (SB2022 SKJ/SBMSY = 2.30).

A number of engagement activities have been undertaken by the FIP addressing P1 related issues (such as sending supporting letters to national authorities and the IOTC) but so far progress for the main target species is limited. Some work is being done by the IOTC on this regard. For example, resolution 21/03 On Harvest Control Rules for Skipjack Tuna were adopted in 2021 and a Management Procedure for bigeye tuna was adopted in 2022. An interim plan for rebuilding the Indian Ocean yellowfin tuna stock (Resolution 21/01) is also in place. Some issues persist with catches above the defined HCR limits for both SKJ and YFT. Management measures for BET were adopted in 2022 (IOTC Res. 22/03).

In regard to Principle 2, the actions conducted by the Dongwon tuna FIP are aimed at reducing the impact of FADs on ETP species and habitats (reducing beaching of FADs and ghost fishing). A FAD policy in line with ISSF best advice and the IOTC recommendations has been developed and adopted by the fleet. All vessels in the fleet are now using non-entangling FADs. A waste management policy has also been recently drafted. It has resulted in a number of P.I. improving their scores based on those actions.

In regard to Principle 3, if only the management of the target tuna stocks at the regional level (IOTC) is considered, management of tuna resources in the area seems to be broadly adequate, reaching >80 score for the majority of P.I.s under that Principle. The FIP has engaged with national authorities (Seychelles and Mauritius) through letter in order to collect information on the management of fisheries resources at the country level and P3 scores re-scored based on the information received. Scores at the national level have been also reviewed based on the results of some other MSC assessments (CFTO, SAPMER) conducted in the area.

In general, as indicated previously, the actions of the FIP seem very much focused on the implementation of policies to improve P2 issues (a FAD management plan/policy, the use of non-entangling bio-FADs and the implementation of an adequate bycatch collection system). Actions conducted for addressing P1 and P3 issues are more limited.

Summary of MSC Performance Indicator Scores

Note: scores for all target species have been provided in the table below. It is understood this information will help to track progress for each species.

Principle	Component	Performance Indicator		Previous Score 2023	Current Score 2024	Rationale or Key Points
1 (UoA1: SKJ)	Outcome	1.1.1	Stock status	>80[2]	>80	A new stock assessment was carried out for skipjack tuna in 2023 using Stock Synthesis with data up to 2022. The outcome of the 2023 stock assessment model is more optimistic than the previous assessment (2020) despite the high catches recorded in the period 2021-2022, which exceeded the catch limits established in 2020 for this period. The assessment indicated that the stock was above the MSY (SB2022 SKJ/SBMSY = 2.30). Subsequently, based on the weight-of-evidence available in 2023, the skipjack tuna stock is determined to be not overfished and not subject to overfishing (the stock is in the green section of the Kobe plot with a 70% of probability). **SG80 is met**.
		1.1.2	Stock rebuilding	NA	NA	NA
	Management	1.2.1	Harvest Strategy	>80	60-79	MSC defines a harvest strategy as a combination of monitoring (PI1.2.3), stock assessment (PI1.2.4), a harvest control rule (PI1.2.2a, b) and management tools (PI1.2.2c). Monitoring and a stock assessment process are in place for the target stock. A harvest control rule, reference points for Indian Ocean skipjack are defined by the recently implemented IOTC Res. 21/03. The catch limit calculated applying the HCR specified in Resolution 21/03 is [628, 606t] for the period 2024-2026, higher than in the previous period. A number of other indirect measures that limit catches of the species are in place in the area (Res. 19/02 for managing the number of FADs, Res. 19/04 maintaining a list of authorised vessels, Res. 19/05 banning discarding, Res. 19/06 managing transshipments, Res. 19/01 limiting yellowfin catches, etc.

[2] The scores given in this column for SKJ and BET are the ones given at the time of the pre-assessment (Collinson et al., 2021) as the scores for those species do not appear on the FIP profile

						However, although the most recent stock assessment seems to indicated that the stock seems is in better status than previously thought, in recent years the commission has been unable to enforce their own catch limits, **SG80 is not met.**
		1.2.2	Harvest control rules and tools	60-79	60-79	For skipjack tuna in the Indian Ocean, there is a well-defined HCR in place which ensures that the exploitation rate is reduced as the LRP and Bsafety are approached. The HCR set in resolution 21/03 have five control parameters set as follows: A) Threshold level, the percentage of B0 below which reductions in fishing mortality are required, Bthresh = 40%B0. If biomass is estimated to be below the threshold level, then fishing mortality reductions, as output by the HCR, will occur. B) Maximum fishing intensity, the percentage of Etarg that will be applied when the stock status is at, or above, the threshold level Imax = 100%. When the stock is at or above the threshold level, then fishing intensity (I) = Imax C) Safety level, the percentage of B0 below which non-subsistence catches are set to zero i.e. the nonsubsistence66 fishery is closed Bsafety= 10%B0. D) Maximum catch limit (Cmax), the maximum recommended catch limit = 900,000t. To avoid adverse effects of potentially inaccurate stock assessments, the HCR shall not recommend a catch limit greater than Cmax. This value is based upon the estimated upper limit of the MSY range in the 2014 skipjack stock assessment. E) Maximum change in catch limit (Dmax), the maximum percentage change in the catch limit = 30%. To enhance the stability of management measures the HCR shall not recommend a catch limit that is 30% higher, or 30% lower, than the previous recommended catch limit. Therefore, the above resolution defines clear objectives and reference points in the HCRs, which recommend total annual catch limit. However, available evidence does not indicate that the tools in use are appropriate and effective in achieving

						the exploitation levels required under the HCRs yet, as the new catch limits have been recently set. **SG80 is not met.**
		1.2.3	Information and monitoring	>80	>80	A good amount of data is available for the skipjack tuna stock in the Indian Ocean, including biological information such as growth, maturity and mortality, fleet composition, standarised CPUEs, acoustic buoy time series, size-frequency catch data, which is available for the stock assessment (Fu, 2020). **SG80 is met**.
		1.2.4	Assessment of stock status	>80	>80	As indicated above, a new stock assessment was carried out for skipjack tuna in 2023 using Stock Synthesis with data up to 2022. The assessment is appropriate for the stock and for the harvest control rule and estimates stock status relative to reference points which are appropriate for the stock. **SG80 is met.**
1 (UoA2: YFT)	Outcome	1.1.1	Stock status	60-79	60-79	No new stock assessment was carried out for yellowfin tuna in 2023 and so the advice is based on the 2021 assessment. The 2021 stock assessment was carried out using Stock Synthesis III (SS3), a fully integrated model that is currently used to provide scientific advice for the three tropical tunas stocks in the Indian Ocean. According to the information available in 2021, the total catch of the stock has remained above the estimated MSY since 2012 (i.e., between 399,000 t and 448,642 t), with the 2019 catch (448,642 t) being the largest since 2010 (for details see WPTT23 report). Overall stock status estimates do not differ substantially from the previous assessment. Spawning biomass in 2020 was estimated to be 31% on average of the unfished (1950) levels. Spawning biomass estimates have been generally declining over time and particularly since 2011. Spawning biomass in 2020 was estimated to be 87% of the level that supports the maximum sustainable yield (SB2020/SBMSY = 0.87). Current fishing mortality is estimated to be 32% higher than FMSY (F2020/FMSY = 1.32). The probability of the stock being in the red Kobe quadrant in 2020 is estimated to be 68%. On the weight-of-evidence available since 2018, the yellowfin tuna stock is determined to remain overfished and

						subject to overfishing (in the red section of the Kobe plot with a 68% of probability). **SG80 is not met.**
		1.1.2	Stock rebuilding	<60	<60	Assuming a natural mortality of 0.35 - 0.8 yr-1, the yellowfin generation time should be around 3.75 – 5.9 years, and 2 generation times 8-12 years (GSA2.2.4: Goodyear 1995). Catches of the stock have decreased in the most recent years, from 442,205 t and 450,788 t caught in 2018 and 2019 respectively to 427,156 t and 416,614 t in 2020 and 2021 respectively but they are not yet enough to rebuild the stock (Resolution 21/01 requires reductions in 2022 catches based on 2014 catch levels, which, if fully implemented, will achieve a reduction to around 400,000). Reductions need to be achieved by CPCs and vary by fleet from 0% to 21%. Bearing in mind at least a two-year delay before reductions occurs and probably, based on the resolutions, a 10% reduction in practice will be achieved (i.e., 80% projected catches compared to current levels), there would be approximately >70% probability B2023<BMSY after 3 years and >50% probability B2030<BMSY after 10 years (Urtizberea et al. 2021, see figure 3 in Annex 1). Catch reported for 2021 remained above the catch limitation specified in the rebuilding plan and requiring substantial reduction to give more confidence that the stock can be rebuilt. The Working Party on Tropical Tunas continued to express concern that increases in catches by some CPCs and objections by other CPCs are offsetting the reductions achieved by compliant CPCs (IOTC-2022-WPTT24R). Based on the implementation of Resolution 2021/01, the score for this P.I. was increased for some fisheries from <60 to 60-79 but it is important to note that some countries with significant yellowfin catches are not bound to this latest resolution and catches have not been decreased enough yet. Therefore, the auditor considers that **SG60 is not met.**
	Management	1.2.1	Harvest Strategy	<60	60-79	The IOTC's harvest strategy objective is to maintain stock levels at or above the biomass which would produce MSY. This was established as an interim threshold reference point under 15-10. Scientific advice has been formulated relative to

						a harvest strategy relative to MSY reference points and is responsive to that state of the stock and to limit and target reference points commonly used for yellowfin and other tropical tunas. Resolutions 16/01, 17/01, 18/01, 19/01 and 21/01 established interim plans for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence. However, the effectivity of the strategy is unclear as a number of provisions, like well-defined catch limits, are still in development and have not been implemented yet. As indicated above, catches have regularly exceeded the estimated MSY since 2012. The 2021 estimate of MSY was 349,000 t while the average catch 2016-2020 = 434,569 t, suggesting that the current strategy is not working well (enforcement is lacking). **SG80 is not met.**
		1.2.2	Harvest control rules and tools	<60	<60	MSC Fisheries Standard v2.01 stipulates two conditions for acceptance of HCR being 'available' instead of being in place to justify scoring at the SG60 level. The first is through SA2.5.2a where the guidance indicates that teams shall accept 'available' HCRs in cases where, "…*Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species and is not predicted to be reduced below BMSY within the next 5 years*". The second condition is through SA2.5.3b where the guidance indicates that teams shall recognize HCRs as being available if "*an agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below BMSY*". In the case of yellowfin, the stock has declined and based on projections in the assessments before 2015 was likely to fall below its target point. The most recent assessments confirmed that this indeed had happened. Based on resolutions 16-01/17-01/18-01/19-01/21-01 a number of tools for controlling catches were adopted including percent reductions in purse seine, gillnet and other gear catch and reduction in FADs. Catches have been broadly

						reduced in some fleets subject to the controls, albeit the reduction has not yet met the target level over the last 5 years. Fleets exempt from such requirements have increased their catch, and the overall catch has therefore increased in 2020 to around the 2016 level and has remained significantly higher than the target. Resolution 19/01 threatens overages to catch limits be carried forward to 2021 and resolution 21/01 has increased the catch reductions. Several countries have objected to Res. 19/01 and to Res. 21/01. As CPCs are unwilling or unable to apply the catch limits being set out in resolutions, there is no evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs. **SG60 is not met.**
		1.2.3	Information and monitoring	>80	>80	The IOTC-2023-WPTT25(DP)-07.1_Rev1 summarizes the standing of a range of data and statistics received by the IOTC Secretariat for tropical tunas. Data available includes information on catches, geo-referenced catch and effort data, size frequency data, tagging data, socio-economic data. A scoring system has been implemented to assess the quality of the retained catch, catch-effort, and size-frequency data available at the Secretariat for all IOTC species. Overall, the reporting quality for industrial fisheries covered by this FIP is better than artisanal fisheries, mostly because larger vessels are generally monitored with logbooks and recording systems at landing. Some issues were identified for the reporting of YFT and BET in the EU fleet but it is considered that the available information is broadly adequate to assess the status of both stocks. **SG80 is met.**
		1.2.4	Assessment of stock status	>80	>80	The most recent full assessment of YFT was carried out in 2021 using Stock Synthesis III (SS3), a fully integrated model that is currently used to provide scientific advice for the three tropical tunas stocks in the Indian Ocean. The model used in 2021 is based on the model developed in 2018 with a series of revisions that were noted during the WPTT in 2018, 2019 and 2020. The model uses four types of data: catch, size frequency, tagging and CPUE indices. The

						proposed final assessment model options correspond to a combination of model configurations, including alternative assumptions about the spatial structure (2 options), longline CPUE catchability (2 options on the effect of piracy), weighting of the tagging dataset (lambda = 0.1 or 1), steepness values (0.7, 0.8, and 0.9), natural mortality values (2 options), and growth parameters (2 options). The model ensemble (a total of 96 models) encompasses a range of stock dynamics. **SG80 is met.**
1 (UoA3: BET)	Outcome	1.1.1	Stock status	>80	60-79	The most recent stock assessment for bigeye tuna (2022) was carried out using two models – Statistical Catch at Size (SCAS) and Stock Synthesis III (SS3) (Fu 2022). The reported stock status is based on the SS3 model formulation using a grid of 24 model configurations designed to capture the uncertainty on stock recruitment relationship, the influence of tagging information and selectivity of longline fleets. According to the stock assessment, current (2021) spawning biomass is estimated to be below SBMSY (SB2021/SBMSY = 0.90) and fishing mortality is estimated to be above FMSY (F2021/FMSY = 1.43). The new 2022 assessment model indicated substantially lower spawning biomass and stock status than the prior assessment model (2019) due to the inclusion of the revised and updated longline CPUE data and high juvenile mortality due to the use of FADs. On the weight-of-evidence available in 2022, the bigeye tuna stock is determined to be overfished and subject to overfishing (in the red section of the Kobe plot with a 79% of probability). **SG80 is not met.**
		1.1.2	Stock rebuilding	NA	60-79	Given the life history characteristics of bigeye, it seems that the stock has the potential to recover relatively quickly (within a 5–10-year period) with appropriate management measures (Medley et al., 2023). The TAC recommended from the application of the MP specified in Resolution 22/03 is 80,583 t/year for the period 2024-2025, a 15% below the 2021 catch. The management procedure approved for the species is designed to achieve: a 60% probability that the bigeye tuna spawning stock biomass achieves the target

						reference point of SB_{MSY} by 2034-2038 (12 years). The rebuilding time frame of 2034 is within the 20 years or 2 times the approximate generation time. However, the projections shown in annex 1 indicate a 60% probability of violating the MSY target point for 2028 with catch levels similar to the one set by Resolution 23/04 for the period 2024-2025 (see explanation below). Moreover, catch limits set for other tuna species (SKJ, YFT) in the IOTC have not been complied with by the CPCs and it is unclear how this catch limit will be enforced for BET. Therefore, on that basis it is considered that **SG80 is not met**.
	Management	1.2.1	Harvest Strategy	60-79	60-79	The adopted management objectives of the Commission set out in Resolution 15/10 are to: 1) maintain the biomass at or above levels required to produce MSY or its proxy, 2) maintain the fishing mortality rate at or below FMSY or its proxy, and 3) avoid the biomass being below BLIM and the fishing mortality rate being above FLIM. This basic harvest strategy is understood and is expected to achieve stock management objectives consistent with BMSY. The strategy consists of periodic stock assessment updates (every three years) providing management advice. Current management resolutions being applied consist of managing FADs (Res. 19/02), maintaining a list of authorised vessels (Res. 19/04), banning discarding (Res. 19/05) and managing transshipment (Res. 19/06). Indirect effects of limiting yellowfin catches (Res. 19/01) and the use of FADs (Res. 19/02) may also help limit exploitation on bigeye. In 2022, IOTC adopted a Management Procedure (MP) for bigeye in Resolution 22/03 (known as MP1 Harvest) for setting a TAC for the species for the period 2024-2025. The management procedure is designed to achieve: a) a 60% probability that the bigeye tuna spawning stock biomass achieves the target reference point of SBMSY by 2034-2038;

						b) the bigeye tuna spawning stock biomass avoids breaching the interim limit reference point specified in Resolution 15/10 with a high probability; and operates with the following constraint: c) the maximum increase or decrease in the TAC shall be 15% relative to the previous TAC.The IOTC Commission adopted a management procedure for bigeye tuna at its 26th session in 2022 (IOTC-2022-S26-RE). A review of evidence for exceptional circumstances, was also conducted following the adopted guideline (ref SC 2021 report appendix 6A) as per the requirements of Resolution 22/03. The review covered information pertaining to i) new knowledge about the stock, population dynamics or biology, ii) changes in fisheries or fisheries operations, iii) changes to input data or missing data, and iv) inconsistent implementation of the MP advice. The evaluation concluded that there were no exceptional circumstances requiring either further research or management action on the TAC calculated by the MP. Application of the MP in 2022 results in a recommended TAC of 80,583t per year for 2024 and 2025 (a 15% below the 2021 catch constrained by the maximum TAC change). But due to the recent implementation of the TAC, no evidence exists that it is achieving its objectives yet (1.2.1.b), **SG80 is not met** (the HS is not responsive to the state of the stock).
		1.2.2	Harvest control rules and tools	<60	<60	As indicated above, in 2022 IOTC adopted a Management Procedure (MP) for bigeye in Resolution 22/03 (known as MP1 Harvest) for setting a TAC for the species for the period 2024-2025. A 80,583 t/year TAC has been set for the period 2024-2025. After 2025, the TAC will be applied in each of the subsequent three years following the year it is set by the Commission (ISSF 2023). Resolution 23/04 adopted at the 27th commission adopted a TAC for BET for the years 2024 and 2025 but no specific restrictions are set in the resolution to reduce fishing effort. Other measures in place in the area are Resolution 21/01 on yellowfin request CPCs to gradually reduce supply vessels by

						31 December 2022. Resolution 19/05 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels. Resolution 19/02 established procedures on a FADs management plan, including a limit of 300 operational buoys at sea at any one time per vessel. It is understood that those measures would help to reduce the catch of bigeye, although their effectiveness so far is unknown. However, there is no available evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs (the IOTC has struggled to enforce catch limits for YFT and SKJ). **SG60 is not met**.
		1.2.3	Information and monitoring	>80	>80	The IOTC-2023-WPTT25(DP)-07.1_Rev1 summarizes the standing of a range of data and statistics received by the IOTC Secretariat for tropical tunas. Data available includes information on catches, geo-referenced catch and effort data, size frequency data, tagging data, socio-economic data. A scoring system has been implemented to assess the quality of the retained catch, catch-effort, and size-frequency data available at the Secretariat for all IOTC species. Overall, the reporting quality for industrial fisheries covered by this FIP is better than artisanal fisheries, mostly because larger vessels are generally monitored with logbooks and recording systems at landing. Some issues were identified for the reporting of YFT and BET in the EU fleet but it is considered that the available information is broadly adequate to assess the status of both stocks and support the harvest strategy. **SG80 is met.**
		1.2.4	Assessment of stock status	>80	>80	No new stock assessment was carried out for bigeye tuna in 2023 and so the advice is based on the 2022 assessment. In the 2022 assessment, two models were applied to the bigeye stock (Statistical Catch at Size (SCAS) and Stock Synthesis (SS3)), with the SS3 stock assessment selected to provide scientific advice. The reported stock status is based on a grid of 24 model configurations designed to capture the uncertainty on stock recruitment relationship, longline selectivity, growth and natural mortality. **SG80 is met.**

2	Primary species	2.1.1	Outcome	>80	>80	Main primary species identified in the fishery (in the UoAs where they are not included as targeted) are SKJ, YFT and BET. The three species are highly likely (80th percentile) to be above the PRI. In the case of YFT and BET, the species are not around the MSY level. No other main primary species have identified in the catch although due to lack of data on catches during recent years, the 'other' species have not been analyzed. **SG80 is met**.
		2.1.2	Management strategy	>80	>80	A number of measures in the IO are aimed at managing the main tuna stocks including inter alia. • Resolution 23/04 On Establishing Catch Limits for Bigeye Tuna in the IOTC Area of Competence • Resolution 22/03 On a Management Procedure for Bigeye Tuna in the IOTC Area of Competence • Resolution 21/01 On an interim plan for rebuilding the Indian Ocean Yellowfin tuna stock in the IOTC Area of Competence which sets out separate catch limits (expressed as reductions from 2014 levels) for purse seine, gill net, longline and other gear fisheries. • Resolution 16/02. Resolution 21-03 established a biomass limit reference point of 20% of unfished spawning biomass, a biomass target reference point of 40% of unfished spawning biomass (MSY proxy) • Resolution 22/04 On a Regional Observer Scheme • Resolution 15/01 On the recording of catch and effort by fishing vessels in the IOTC area of competence • Resolution 15/02 Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPC's) • Resolution 15/06 On a ban on discards of bigeye tuna, skipjack tuna, yellowfin tuna and a recommendation for non-targeted species caught by purse seine vessels in the • Resolution 15/10 On target and limit reference points and a decision framework • Resolution 15/11 on the implementation of a limitation of fishing capacity of Contracting Parties and Cooperating Non-Contracting Parties

						• Resolution 14/02 for the conservation and management of tropical tunas stocks in the IOTC area of competence. • Resolution 14/05 concerning a record of licensed foreign vessels fishing for IOTC species in the IOTC area of competence and access agreement information • Resolution 10/08 concerning a record of active vessels fishing for tunas and swordfish in the IOTC area The three stocks are highly likely to be above the PRI. As such, it is considered that there is a partial strategy in place that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI. **SG80 is met.**
		2.1.3	Information	>80	60-79	There is quantitative information for the catch of 'main' and 'minor' primary species (landings and discards) from a range of fishery dependent (logbooks) and independent sources. IOTC Resolution 22/04 requires CPCs to ensure that all fishing vessels of 24 meters length overall (LOA) and above and under 24 meters, if they operate outside the exclusive economic zone (EEZ) of the flag CPC and in the IOTC area of competence, comply with the minimum observer coverage of 5% as defined by the number of operations/sets. The UoA has a 100% observer coverage (by onboard or electronic observers). However, when translating this coverage to data availability, this percentage usually decreases due to a lack of recovery the trip data or the no compliance with the standard quality required for the data to be included in the database. In particular, the assessed fishery has had problems in recent years with the SFA which manage that data. **SG80 is not met** (until the observer data for recent years is available).
	Secondary species	2.2.1	Outcome	>80	>80	Neither in the pre-assessment of the fishery nor in the recent ACDR published for the fishery, 'main' secondary species are identified in the catch (no main secondary species are identified in the updated catch review published in 2022). **SG80 is met.**
		2.2.2	Management strategy	60-69	>80	No 'main' secondary species are identified in the catch which means that for SIa, b, c and e SG80 are met by default.

						In the case of shark finning, IOTC Resolution 17-05 On the conservation of sharks caught in association with fisheries managed by IOTC requires CPCs to take necessary measures to fully utilise their catches of sharks, with the exception of species prohibited by the IOTC. For sharks landed fresh, IOTC Resolution 17-05 requires CPCs to prohibit the removal of shark fins on board vessels and the landing, retention on-board, transhipment and carrying of shark fins which are not naturally attached to the shark carcass. Furthermore, various shark species are prohibited from being retained in the IOTC region (thresher sharks – see Resolution 12-09, whale sharks – see Resolution 13-05, oceanic whitetip sharks – see Resolution 13-06), and in fisheries that do not target sharks (including the UoA vessels), IOTC Resolution 17-05 requires that, to the extent possible, CPCs encourage the release of live sharks, especially juveniles and pregnant sharks that are caught incidentally and are not used for food and/or subsistence. The Korean Government has formulated a National Plan of Action (NPOA) for Sharks (see; https://faolex.fao.org/docs/pdf/kor207694.pdf), which has been implemented since 2011 and applies to distant water fisheries in IOTC. It notes that vessels do not target shark species and through the DWFDA must apply relevant conservation and management measures for sharks adopted by RFMOs. According to the Dongwon Industries Ocean Protection Guidelines (see: https://www.dwml.co.kr/eng/contents/sustainable/protection), intentionally targeting sharks, shark finning and retaining shark species on board is prohibited. The UoA fleet is required to release and discard all shark species and report accurate numbers caught in logbooks and to RFMOs. Furthermore, the Guidelines require implementation of crew best practice handling techniques for release of sharks as outlined in the ISSF Skippers' Guidebook to Sustainable Fishing Practices.

						Compliance of the fishery with the above measures is considered to be adequate (no non-compliance incidents were identified at the UoA level and the vessels listing on the ISSF ProActive Vessel Register provides further confidence around shark finning compliance). **SG80 is met.**
		2.2.3	Information	>80	60-79	There is quantitative information for the catch of 'main' and 'minor' primary species (landings and discards) from a range of fishery dependent (logbooks) and independent sources. IOTC Resolution 22/04 requires CPCs to ensure that all fishing vessels of 24 meters length overall (LOA) and above and under 24 meters, if they operate outside the exclusive economic zone (EEZ) of the flag CPC and in the IOTC area of competence, comply with the minimum observer coverage of 5% as defined by the number of operations/sets. The UoA has a 100% observer coverage (by onboard or electronic observers). However, when translating this coverage to data availability, this percentage usually decreases due to a lack of recovery the trip data or the no compliance with the standard quality required for the data to be included in the database. In particular, the assessed fishery has had problems in recent years with the SFA which manage that data. **SG80 is not met.**
	ETP species	2.3.1	Outcome	<60	60-79	As indicated above, the fleet has observers aboard. A number of ETP species interacting with the fishery have been considered, including sharks (oceanic whitetip shark, common thresher shark and whale shark), rays (giant manta ray, reef manta ray, giant devil ray and devil and manta rays), marine turtles (olive ridley turtle, loggerhead turtle, leatherback turtle, hawksbill turtle and green turtle) and cetaceans. A recent review conducted by the FIP coordinators (Key Traceability 2022) using data from 2021 indicated that the main species interaction with the fishery is silky shark (10.27%). Interactions with other species seem to be limited. No more recent data was available to assess the impact of the fishery on those species due to some problems with the data collected by the observers and logbook and at-sea bycatch observer data has not been be cross-checked.

						A number of measures have been implemented in the fishery to mitigate the impact on ETP species such as the implementation of a FAD management policy (aligned with IOTC Resolution 19-02), which includes the use of non-entangling and biodegradable FADs, and mentions the use of best practice bycatch handling to incorporate onto vessels to ensure that any interactions with important ETP species, including sharks and turtles, result in high survivability rates). This has been verified through ISSF ProActive Vessel Register (PVR), which according to the latest audits performed in January 2023, both UoA vessels are following ISSF's best practices on non-entangling FADs and FAD management plans. Therefore, interactions with sharks, sea turtles and other ETP species in the fishery are expected to be low, but with no more recent data on the catches of those species, **a score of 60-79 is given.**
		2.3.2	Management strategy	60-79	60-79	The IOTC has a series of conservation and management measures in place to address ETP species: • Resolution 23/06 On the conservation of cetaceans • Resolution 15/01 on the recording of catch and effort by fishing vessels in the IOTC area of competence sets out the minimum logbook requirements, including sharks. • Resolution 15/02 Mandatory statistical requirements for IOTC Members and Cooperating Non-Contracting Parties (CPC's) indicated that the provisions, applicable to tuna and tuna-like species, are applicable to shark species. • Resolution 13/02 prohibits deliberate purse seine sets around cetaceans and requires reporting of interactions. However, "CPCs having national and state legislation for protecting these species shall be exempt from reporting to IOTC but are encouraged to provide data for the IOTC Scientific Committee consideration." • Resolution 13/06 on a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries prohibits, as an interim pilot measure, the retention onboard, transshipment,

						landing or storing any part or whole carcass of oceanic whitetip sharks. • Resolution 11/04 on a Regional Observer Scheme requires data on shark interactions to be recorded by observers and reported to the IOTC within 150 days. • Resolution 12-04 (which supersedes various prior measures) is specific to the conservation of sea turtles, and requires a range of measures including, to the extent practicable to avoid the encirclement of turtles and to safely release all turtles, including those observed entangled in FADs and to provide data on turtle bycatch to the SC. • Resolution 17/05 Concerning the conservation of sharks caught in association with fisheries managed by IOTC includes minimum reporting requirements for sharks, calls for full utilization of sharks and includes a ratio of fin-to-body weight for shark fins retained onboard a vessel. • Resolution 19/03 on the conservation of mobulid species caught in association with fisheries in the IOTC was adopted. This resolution prohibits all vessels from intentionally setting any gear type for targeted fishing of mobulid rays and retaining onboard, transhipping, landing, storing, any part or whole carcass of mobulid rays caught in the IOTC Area of Competence. A FAD management policy was produced for the FIP to ensure that the vessels are using only non-entangling and biodegradable FADs during their trips. This policy was developed to minimise the interaction with ETP species like sharks and turtles by prohibiting the use of meshed materials and nets, as well as to reduce the FIP's contribution to ocean plastic pollution by encouraging the use of biodegradable materials. The policy also mentions the best practice bycatch handling to incorporate onto vessels to ensure that any interactions with important ETP species, including sharks and turtles, result in high survivability rates. Therefore, it is understood that there is a strategy in place for managing the UoA's impact on ETP species.

						In January 2023, recent observer data was analysed by Key Traceability to assess the fishery's interaction with sharks to identify if there was the potential for shark finning to take place. A shark finning policy that includes a FNA requirement was produced and introduced to the vessels in February 2023. All shark and release is carried out by trained crewmen. Shark finning does not take place in the fleet as confirmed above. However, a management strategy for silky shark, which together with ocean white tip shark, are the main ETP species affected by the fishery in the Indian Ocean is not in place. Therefore, it is considered that **SG80 is not met.**
		2.3.3	Information	60-79	60-79	At the IOTC level, there is sufficient information about ETP species and there is also arguably quantitative information about some ETP stocks/populations (e.g. various shark, rays and marine turtle species) that interact with this type of fishery under assessment. The reports of the Working Party on Ecosystems and Bycatch of the IOTC (WPEB) provide a updated source of information in relation to bycatch of all types of species and interactions with ETP species in Indian Ocean tuna fisheries. Although a 100% observer coverage seems to be in place, complete data on interactions with ETP species has not been provided. The SG60 scoring guidepost indicates "*Qualitative information is adequate to estimate the UoA related mortality on ETP species*". Qualitative data (and previous quantitative data) is available. However, the auditor cannot check the quality of the recent data collected both in logbooks and by observers, **SG80 is not met.**
	Habitats	2.4.1	Outcome	60-79	>80	The purse seine is performed in midwaters. The FIP has developed a FAD management plan that prohibits any meshed or netting material to be used in their construction. These non-entangling FADs reduce the risk of becoming entangled on coral reefs or other vulnerable marine ecosystems (VMEs). Likewise, the FIP is trialling the use of biodegradable jelly FADs to determine if these are suitable to use, which will further reduce the long-term impacts of lost

						or discarded gear. Therefore, it is considered that the UoA is highly unlikely to reduce structure and function of the commonly encountered and VME habitats (in line with the score given at the ACDR of the fishery). **SG80 is met.**
		2.4.2	Management strategy	>80	>80	The IOTC conservation management measure (CMM) 19/02 outlines a formal FAD limit of 300 units per purse seine vessel operating in the Indian Ocean (and the client is complying with these limits per vessel). A FAD management policy has been implemented by the client to ensure that all materials used in the construction of FADs are fully non-entangling, including prohibiting any form of mesh or net from their construction (reducing the likelihood of ghost fishing if they become lost or discarded). Therefore, **SG80 is met.**
		2.4.3	Information	60-79	60-79	For the commonly encountered and minor habitats it is unlikely that the gear deployed by the UoA fleet (purse seine) will have significant impacts and VMS and logbook data from the UoA fleet provides sufficient information to track fishing operations and determine any increase in risk to these habitats. Regarding VME, there is sufficient documentation on the distribution of coral reefs in the Indian Ocean (e.g., Obura et al., 2020), and research studies, particularly in the Seychelles EEZ, provide a broad understanding of the spatial extent of FAD loss, beaching events, and their impact on VME habitats (e.g., Imizlen et al., 2021; 2022). However, there is still a lack of understanding about the number of lost FADs, retrieval rates, and the proportion that end up beaching, as well as their impact on coral reef habitats in the UoA. More information is necessary on the impact of beached FADs on the ecosystem. **SG80 is not met.**
	Ecosystem	2.5.1	Outcome	60-79	>80	The impacts of tuna fishing on the ecosystem are complex and not fully understood. Tuna are high trophic level predators so there is some concern their removal could lead to trophic cascades, negatively impacting the ecosystem. There has been a range of models of the structure and functioning of the pelagic ecosystems developed that support the main tuna fisheries and their responses to fishing and

						climate change (e.g. Allain et al. 2007, Allain et al. 2015, Kitchell et al. 1999, Lehodey et al. 2013, Leroy et al. 2013, Sibert et al. 2006, see references in Anhalzer et al., 2022). A desk-based review about this last issue was conducted by KT for this FIP which concluded that FADs do have a major impact on the behavior of tunas and by-catch species, acting as an ecological trap; and FADs tend to hold or move tuna and other fish to artificial habitat areas. Although more research needs to be conducted on both issues in order to understand that exact impact of tuna fisheries on the ecosystem, the UoA has clear measures in place to limit the number of FAD deployments through IOTC Resolution 19-02 and the Dongwon non-entangling and biodegradable FAD policy (to 300 operational buoys per vessel, with an annual maximum number of 500 instrumented buoys (deployed or in stock) at any time). Therefore, the auditor considers that base don the low number of vessels included in the UoA (only 2), **SG80 is met**.
		2.5.2	Management strategy	60 – 79	>80	A number of measures are in place in the Indian Ocean in order to address the impact of fisheries on the different elements of the ecosystem, such as IOTC Resolution 19/02, requiring a limitation on the number of FADs; a ban on discard on tunas (Res 19/05). The IOTC has also created a Working Party on Ecosystems and Bycatch (WPEB), which aims to review and analyse matters relevant to bycatch, byproduct and non-target species, which are affected by IOTC fisheries for tuna and tuna-like species. Non-entangling FADs are used by the fishery and a waste management policy has recently been implemented. Although those measures are not specifically designed to manage impacts on the wide ecosystem, the range of measures in place is considered to represent a partial strategy that works to achieve the intended outcome. **SG80 is met** (in line with other recent assessments in the areas).
		2.5.3	Information	>80	>80	Several studies contributing to the understanding of the potential ecological effects of the Indian Ocean purse seine fishery on the structure and functioning of the ecosystem in

						the western Indian Ocean have been conducted in recent years (e.g. Andonegi et al. (2019), Juan-Jordá et al. 2019a and b and Shahifar et al. 2019b) as well as the ecological trap theory (e.g. Dagorn et al. 2010; 2013; Dupaix et al. 2021)). Information on fishery removals is also available and the main target species are regularly assessed. Although it has been pointed out that the impact of FADs on the ecosystem is not completely understood, it is considered that information is adequate to broadly understand the key elements of the ecosystem and the main impacts of the fishery on those elements, **SG80 is met.**
3	Governance and Policy	3.1.1	Legal and customary framework	>80[3]	>80	Fishing for tuna and tuna like species in the area of the assessment, both on the high seas and in zones of national jurisdiction, is governed by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Indian Ocean Tuna Commission (IOTC) which provides an organized and effective international cooperation framework regarding scientific data collection and sharing, stock assessment and the development of scientific advice and well as monitoring and control. Its objective is to "promote cooperation among the Contracting Parties (Members) and Cooperating Non-Contracting Parties (CPC)" with a view to ensuring, through appropriate management, the conservation and optimum of stocks covered by the IOTCs establishing Agreement and encouraging sustainable development of fisheries based on such stocks" (IOTC, 2016). IOTC conservation measures are adopted as resolutions to deliver management outcomes consistent with Principles 1 and 2. Those CMM are binding at national levels on all CPCs that do not object to them. Seychelles and Mauritius are both IOTC contracting parties. The Republic of Korea also cooperates with the IOTC, and the obligations of CPCs are integrated into its national legislation, through regular updates of the Distant Water Fisheries Development Act (Korea, 2021) and its

[3] The scores shown for Principle 3 on the online fishery profile refer to the Mauritius element of the fishery. Recently this P.I. was re-scored to 80 but not updated on the fishery profile.

						Enforcement Decree of 2019. Cooperation at IOTC is well organized, and is considered to be effective to deliver outcomes consistent with both Principles 1 and 2. Dispute resolution mechanisms exist at RFMO and all flag states jurisdictional levels: IOTC (Article XXIII of the Agreement (Interpretation and Dispute Settlement), Seychelles (through the Seychelles Fisheries Authority (SFA) which has the power to cancel or revoke licences and there is an appeal board that resolves disputes, and its procedures are defined); and Mauritius (through the Mediation and Arbitration Center - MARC). **SG80 is met.**
		3.1.2	Consultation, roles and responsibilities	60-79	>80	At the regional level, organizations and individuals involved in the management process have been identified. IOTC Rules of Procedure specify consultation processes and roles and responsibilities. It is the responsibility of CPCs and the Secretariat to ensure that CPCs understand their areas of responsibility and interaction. This approach is considered successful in many areas, including providing basic catch data and catch sampling, implementing research programs and developing initial stock assessments and scientific advice (Medley 2023). The Government of Seychelles has recently published the 'Seychelles Fisheries Sector Policy and Strategy 2019' (MFAg 2019a) and a Fisheries Comprehensive Plan' (MFAg 2019b). The policy indicates that the "The Seychelles Government is committed to working with all stakeholders to improve the management and development of sustainable fisheries and aquaculture industry". Seychelles is currently implementing the Fisheries Transparency Initiative (FiTI), a national multi-stakeholder group (NMSG) has been created and information on the 12 FiTI's transparency requirements is regularly published and assessed by the MSG.A tuna FMP which includes an extensive stakeholder consultation is also being drafted. Therefore, it is understood transparency and consultation has improved in the country. Specific information about Mauritius is more scarce but other assessments conducted in the area (CFTO, SAPMER,

						ANABAC) consider that role and responsibilities are understood and the consultations mechanisms in the country are appropriate (Sieben & des Clers 2023)**. SG80 is met.**
		3.1.3	Long term objectives	60-79	>80	The long-term objectives that guide decision-making consistent with MSC fisheries standards and the precautionary approach are those established by the IOTC which in its founding agreement signed in 1993 indicates as objective: "*to promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks (art.5)*". Resolution 12-01 also requires that clear long-term objectives are set "*in applying the precautionary approach, the Commission shall adopt, after due consideration of the advice supplied by the IOTC Scientific Committee, stock-specific reference points ... and associated harvest control rules …"* (see Resolution 16/02). For Korea, the long-term high seas tuna fishing development and management objective is to maintain sustainable fishing and appropriate use of tuna resources. **SG80 is met.**
	Fishery specific management system	3.2.1	Fishery specific objectives	60-79[4]	>80	This PI seeks information about specific management objectives designed to achieve outcomes expressed in MSC's Principles 1 and 2; and whether these objectives are implicit, explicit and/or well defined and measurable. The long-term objective of the IOTC Agreement is to "ensure, through appropriate management, the conservation and optimum utilisation of stocks covered by the mentioned Agreement and encouraging sustainable development of fisheries based on such stocks and minimising the level of bycatch". There are a large number of resolutions in the IOTC that relate directly to P1 and P2 outcomes, which are in line with that objective, such as Res 19/02 on FADs, Res 19/05 on the prohibition of discards of BET, SKJ, YFT and non-target species, Res 21/03 on harvest control rules for SKJ tuna (which explicitly includes both long-term objectives and short-term objectives, well-defined, and measurable).

[4] Re-scored in 2023 but not updated in the fishery profile

						Korea has also included specific provisions in its primary and secondary legislation that vessels licensed by RFMOs including IOTC, should abide by all CMMs (Korea, 2021). The **PI meets SG80.**
		3.2.2	Decision making processes	60-79	>80	Decision-making processes use the precautionary approach and are based on best available information. This PI scores **SG80.**
		3.2.3	Compliance and enforcement	60-79	60-79	The jurisdiction relevant to assess monitoring, control and surveillance (MCS) mechanisms for both UoAs are i) IOTC as tuna-RFMO, ii) Korea as flag state, iii) Seychelles as coastal state (UoA2) and iv) Seychelles and Mauritius as Port State. At the regional level, IOTC's strategy to improve compliance started with the formation of a Compliance Committee which monitors the actions of the CPCs and has made resolutions for technical improvements. Resolution 16/12 establishes a permanent Working Party on the Implementation of Conservation and Management Measures (WPICMM) which shall act as an advisory body to the Commission via the Compliance Committee. A number of financing mechanisms (EU-Smartfish and €coFish, World Bank SWIOFish projects) have supported coastal and island states to strengthen their MCS capacities as CPCs and those of the IOTC Secretariat that are key to the fishery's MCS system, including vessel licensing and registration, VMS, electronic logbooks, on-board observer and camera coverage, the implementation of Port State Measures and monitoring of landings. Port State Measures Agreement (PSMA) have been implemented in Seychelles and Mauritius. The Korea-flagged vessels in the UoAs comply with all requirements from IOTC, checked regularly by the MOF through the Fisheries Monitoring Centre (FMC), in order to obtain or keep their Distant Water Fishing Licence. For vessels authorized to fish by IOTC, prosecutions and sanctions fall under the responsibility of the flag state (Resolution 19/04), in particular regarding any IUU fishing activities (Resolution 18/03). In Seychelles, the Fisheries Act

						(2014) defines enforcement and sanctions. Under this law (Section 8 of Part II), the SFA maintain a record of fishing vessels that have been granted a licence, permit or authorisation. Although, generally speaking it is considered that a MCS system is in place with which the UoA is compliant, the IOTC has not the ability to enforce their own management measures and the level of enforcement in Seychelles and Mauritius is unknown. **SG80 is not met.**
		3.2.4	Management performance evaluation	60-79	>80	IOTC has in place mechanisms to evaluate all parts of the management system. This is demonstrated by the various committees and working groups that meet regularly and report their findings to the Commission. The performance of the management system was last reviewed in 2015 (IOTC–2016–PRIOTC02–R[E]). The review noted that lack of data continued to hamper the work of the IOTC, in particular the Scientific Committee. Although progress has been made concerning data collection and sharing requirements as well as capacity building, there is still a problem with many non-compliant CPCs. Other issues identified that needed further work were those related to capacity management, catch limitations including their allocations, MCS and follow-up on infringements. A Performance Review of the IOTC is scheduled to take place every 5 years, but it seems that the 2020 review was not conducted, the reasons are unclear. Technically, the commission and its subsidiary bodies annually review progress made in implementing each of the recommendations arising from the Performance Review and updates are included in the commission reports. At the national level, some of the countries involved, such as Seychelles, Madagascar and Mauritius are joining the Fisheries Transparency Initiative (FiTI) to which they have to submit annual reports. At EU level, the CFP is reviewed every 10 years, the EU-SFPA protocols are usually in force for 5 years and an evaluation ex-post and ex-ante is conducted prior to any renewal (Goulding et al., 2019). This issue was already assessed as >80 during the pre-assessment

						and no issues have been identified in recent years. **P.I scores >80.**

Environmental Workplan Results

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
The FIP has engaged with national authorities and has sent positions letters and taken part in IOTC meetings to make sure that management measures for the target species are implemented and enforced.	IPG 1.1 - Assess the success of the yellowfin interim rebuilding plan	1.1.1 and 1.1.2.	During recent years the FIP has produced several position statements to the Indian Ocean Tuna Commission urging the RFMO to implement/enforce a number of measures to recover and manage the main target species (rebuilding plans for yellowfin tuna, develop harvest control rules for skipjack, and improvements in management for all tuna species) (the last position statement published in May 2023 specifically asks to ensure the catches of SKJ and BET do not exceed the limits set in Res 21/03 and Management Procedure 22/03 respectively and ensure compliance with other management measures (rebuilding plan for YFT, shark finning, prohibition on the use of large-scale drifnets)).
As above	IPG 1.2 - Promote the development of a well-managed harvest strategy and harvest control rules (HCRs) for all three tuna species by the IO	1.2.2 and 1.2.1	As above.
Observer data is being **collected and an updated analysis of the impacts of the fishery was conducted in 2022**	IPG 2.1 - Data collection, review and analysis relating to the FIP vessels (UoA)	2.2.2, 2.3.1, 2.3.3	The fishery has a 100% observer coverage. An analysis of the impacts of the fishery was conducted by Key Traceability in August 2022, based on the data provided by the Seychelles Fishing Authority (although observer coverage in 2021 was lower than in 2021 due to COVID/19 restrictions, the data collected was used to identify primary, secondary and ETP species were identified) (Key Traceability 2022a). However, the recent MSC assessment of the fishery identified some issues with the data (it seems that the Seychelles Fishing Authority (SFA) has the data collected by the observers, but it has not shared with the client and the MSC assessment team which has resulted in the MSC assessment process being delayed several times).

A FAD Management policy has been produced and approved. A waste management policy has been drafted. The FIPs conducts annual skipper training on species identification and new policies.	IPG 2.2 – FAD management and data collection	2.3.1, 2.3.2, 2.3.3, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 2.5.2, 2.5.3	In 2023, the FIP produced a position statement for the IOTC special session aligned with the requests of the International Seafood Sustainability Foundation (ISSF), including science-based limits on FAD deployments/sets, FAD markings, tracking, and requiring biodegradable materials used in FAD constructions. The FIP conducts regular annual skipper training to inform them about any new policies and to conduct species identification training. A FAD Management policy in line with the ISSF Best Practice guide and using recommendations from the IOTC was produced and implemented by the fishery. The Policy also outlines the commitment of the FIP to use fully non-entangling materials to reduce bycatch of ETP species and ghost fishing. A waste management policy has been also recently drafted.
As above. The FIP has signed an agreement with NTC to guide sustainable fishing practices	IPG 2.3 - FAD design and construction	2.3.1, 2.3.2, 2.3.3, 3.2.3	As above. Moreover, the FIP has partnered with the Nature Conservancy (TNC) to align their commitments to using sustainable fishing practices with the guidance from a conservation charity.
As above	IPG 2.4 - FAD habitats and beaching	2.4.1, 2.4.2, 2.4.3	As above.
A report on the 'ecological trap hypothesis' was conducted	IPG 2.5 - FAD ecosystem impacts	2.5.1, 2.5.2, 2.5.3	A report on the 'ecological trap hypothesis' has been prepared by Key Traceability and published on the FIP profile (Key Traceability 2021). It sheds some light on the impact of FADs on the fishery (tuna migration, etc) and the wider 'ecological trap hypothesis.' A waste management policy is also being developed by the FIP coordinator.
A shark finning policy has been produced	IPG 2.6 - Shark finning policy	2.3.1, 2.3.2, 2.3.3	In January 2023, recent observer data was analysed by Key Traceability to assess the fishery's interaction with sharks to identify if there was the potential for shark finning to take place. A shark finning policy that includes a FNA requirement was produced and introduced to the vessels in February 2023. All shark and release is carried out by trained crewmen.
A waste management policy has been produced (January 2024)	IPG 2.7 - Waste management policy	2.3.1, 2.3.2, 2.3.3, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 2.5.2, 2.5.3	A waste management policy was recently drafted by Key traceability for the fishery (January 2024) which is in accordance with MARPOL Annex V and the MSC standard v3.0. It makes specific reference to waste, plastics, fishing gear, etc; and good management practices for FADs.
Letters have been sent to the Seychelles Fishing Authority (SFA) and the	IPG 3.1 - Legal and customary framework for Mauritius	3.1.1	The fishery has engaged with national authorities (Seychelles and Mauritius) in order to meet them and learn about the management of fisheries resources

Ministry of Blue Economy, Marine Resources, Fisheries, and Shipping in Mauritius			in both countries. Based on the information provided, P3 scores for Mauritius were reviewed (Key Traceability 2023b).
As above	IPG 3.2 - Consultation, roles and responsibilities for Mauritius and Seychelles	3.1.2	As above
As above	IPG 3.3 – Long-term objectives for Mauritius	3.1.3	As above
As above	IPG 3.4 – Fishery-specific objectives for Mauritius	3.2.1	As above
As above	IPG 3.5 – Decision-making process for Mauritius and Seychelles	3.2.2	As above
	IPG 3.6 - Compliance and enforcement for Mauritius and Seychelles and Korea	3.2.3	As above
As above	IPG 3.7 - Management performance evaluation for Mauritius	3.2.4	As above

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Annex 1: Supporting tables and figures.

Stock status target species

Skipjack tuna (SKJ)

Table 1. Status of skipjack tuna (*Katsuwonus pelamis*) in the Indian Ocean

Area[1]	Indicators		2023 stock status determination[3]
Indian Ocean	Catch 2022[2] (t)	666,408	70%*
	Mean annual catch 2018-2022 (t)	613,061	
	$E_{40\%SB0}$ [4] (80% CI)	0.55 (0.48–0.65)	
	SB_0 (t) (80% CI)	2 177 144 (1 869 035–2 465 671)	
	SB_{2022} (t) (80% CI)	1 142 919 (842 723–1 461 772)	
	SB_{2022} / SB_0 80% CI)	0.53 (0.42–0.68)	
	SB_{2022} / $SB_{40\%SB0}$ (80% CI)	1.33 (1.04–1.71)	
	SB_{2022} / $SB_{20\%SB0}$ (80% CI)	2.67 (2.08–3.42)	
	SB_{2022} / SB_{MSY} (80% CI)	2.30 (1.57–3.40)	
	F_{2022} / F_{MSY} (80% CI)	0.49 (0.32–0.75)	
	F_{2022} / $F_{40\%SSB0}$ (80% CI)	0.90 (0.68–1.22)	
	MSY (t) (80% CI)	584 774 (512 228–686 071)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2] Proportion of 2022 catch fully or partially estimated by IOTC Secretariat: 18.1%
[3]2022 is the final year that data were available for this assessment.
[4] $E_{40\%SB0}$ is the equilibrium annual exploitation rate (Etarg) associated with the stock at Btarg, and is a key control parameter in the skipjack harvest control rule as stipulated in Resolution 21/03. Note that Resolution 23/03 did not specify the exploitation rate associated with the stock at Blim
*Estimated probability that the stock is in the respective quadrant of the Kobe plot (defined in resolution 21/03 and shown below), derived from the confidence intervals associated with the current stock status

Table 2. Probability of stock status with respect to each of four quadrants of the Kobe plot. Percentages are calculated as the proportion of model terminal values that fall within each quadrant with model weights taken into account, as defined in resolution 21/03

	Stock overfished (SB_{2022} / $SB_{40\%SB0}$<1)	Stock not overfished (SB_{2022} / $SB_{40\%SB0}$≥ 1)
Stock subject to overfishing (F_{2022} / $F_{40\%SB0}$≥ 1)	8%	21%
Stock not subject to overfishing (F_{2022} / $F_{40\%SB0}$≤ 1)	1%	70%
Not assessed / Uncertain / Unknown		

Figure 1 Status of skipjack tuna in the Indian Ocean and Probability of stock status with respect to each of four quadrants of the Kobe plot (Source: adapted from IOTC 2023a)

Yellowfin tuna (YFT)

Table 1. Status of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean

Area[1]	Indicators		2021 stock status determination[3]
Indian Ocean	Catch 2022[2] (t)	410,332	68%*
	Mean annual catch 2018-2022 (t)	429,421	
	MSY (1,000 t) (80% CI)	349 (286-412)	
	F_{MSY} (80% CI)	0.18 (0.15-0.21)	
	SB_{MSY} (1,000 t) (80% CI)	1,333 (1,018-1,648)	
	F_{2020} / F_{MSY} (80% CI)	1.32 (0.68-1.95)	
	SB_{2020} / SB_{MSY} (80% CI)	0.87 (0.63-1.10)	
	SB_{2020} / SB_0 (80% CI)	0.31 (0.24-0.38)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2]Proportion of 2022 catch fully or partially estimated by IOTC Secretariat: 17.2%

[3]2020 is the final year that data were available for this assessment

Colour key	Stock overfished (SB_{2020} / SB_{MSY}<1)	Stock not overfished (SB_{2020} / SB_{MSY}≥ 1)
Stock subject to overfishing (F_{2020} / F_{MSY}≥ 1)	68%	2%
Stock not subject to overfishing (F_{2020} / F_{MSY}≤ 1)	13%	17%
Not assessed / Uncertain / Unknown		

Figure 2 Status of yellowfin tuna in the Indian Ocean and Probability of stock status with respect to each of four quadrants of the Kobe plot (Source: adapted from IOTC 2023b)

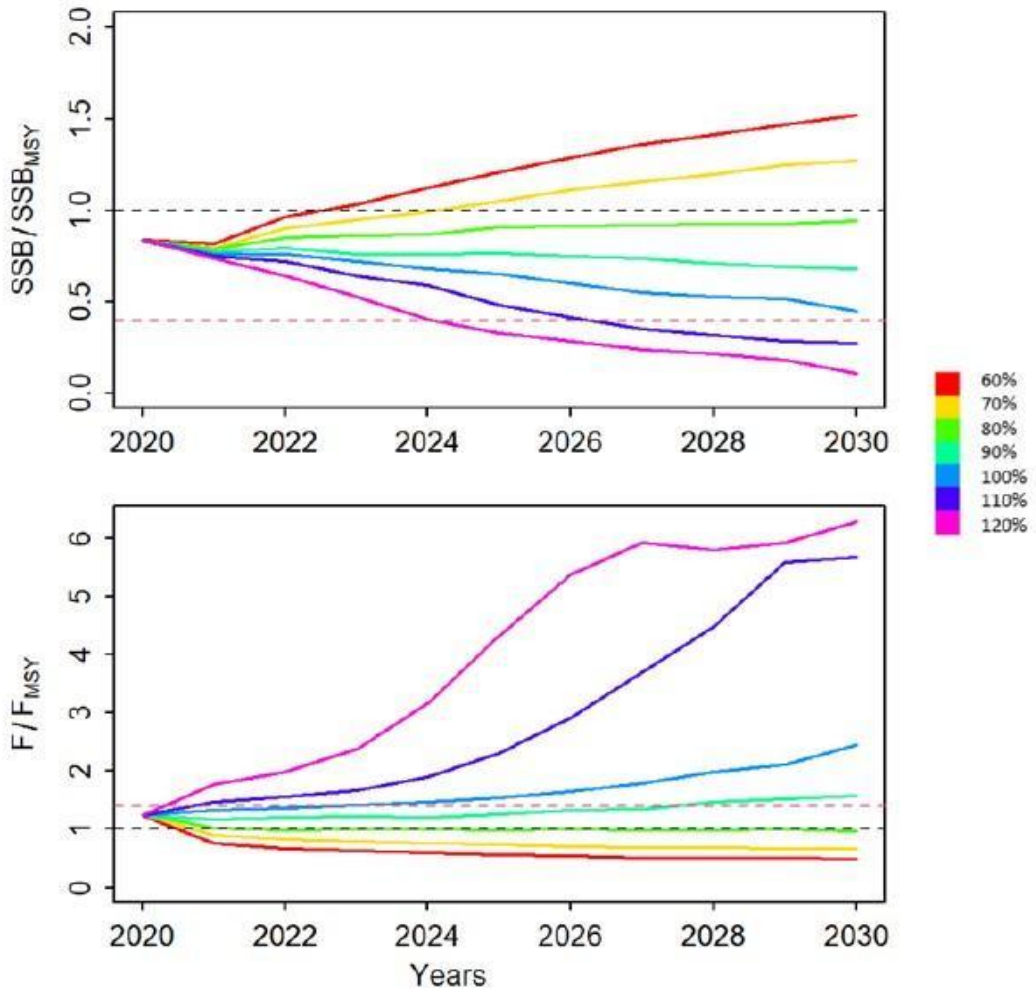

Figure 3 Average trajectories of relative biomass (SSB/SSBmsy) and fishing mortality (F/Fmsy) for yellowfin tuna (Source: Urtizberea et al., 2021)

Bigeye tuna (BET)

Table 1. Status of bigeye tuna (*Thunnus obesus*) in the Indian Ocean

Area[1]	Indicators		2022 stock status determination[4]
Indian Ocean	Catch 2022[2] (t)	102,266	79%
	Mean annual catch 2018-2022 (t)[3]	92,687	
	MSY (1,000 t) (80% CI)	96 (83 – 108)	
	F_{MSY} (80% CI)	0.26 (0.18 – 0.34)	
	SB_{MSY} (1,000 t) (80% CI)	513 (332 – 694)	
	F_{2021}/F_{MSY} (80% CI)	1.43 (1.10–1.77)	
	SB_{2021}/B_{MSY} (80% CI)	0.25 (0.23 – 0.27)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2]Proportion of 2022 catch fully or partially estimated by IOTC Secretariat: 18.7%
[3]Including re-estimations of EU PS species composition for 2018 (only requested for stock assessment purposes)
[4]2021 is the final year that data were available for this assessment
*Estimated probability that the stock is in the respective quadrant of the Kobe Plot (**Table 2**), derived from the confidence intervals associated with the current stock status.

Table 2. Probability of stock status with respect to each of four quadrants of the Kobe plot. Percentages are calculated as the proportion of model terminal values that fall within each quadrant with model weights taken into account

	Stock overfished (SB_{2021} / SB_{MSY}<1)	Stock not overfished (SB_{2021} / SB_{MSY}≥ 1)
Stock subject to overfishing (F_{2021} / F_{MSY}≥ 1)	79%	17%
Stock not subject to overfishing (F_{2021} / F_{MSY}≤ 1)	2%	2%
Not assessed / Uncertain / Unknown		

Figure 4 Status of bigeye tuna in the Indian Ocean and Probability of stock status with respect to each of four quadrants of the Kobe plot (Source: adapted from IOTC 2023c)

Table 1 Bigeye tuna: Stock Synthesis base case Indian Ocean assessment Kobe II Strategy Matrix. Probability (percentage) of violating the MSY-based target (top) and limit (bottom) reference points for constant catch projections (relative to average catch level from 2018 (81,413 t); -10%, -20%, -30%, -40%) projected for 3 and 10 years (Source: IOTC-2019-SC22-ES02)

Reference point and projection timeframe	Alternative catch projections (relative to the catch level from 2018) and weighted probability (%) scenarios that violate reference point				
	60% (48,848t)	**70%** (56,990t)	**80%** (65,130t)	**90%** (73,272t)	**100%** (81,413t)
$B_{2021} < B_{MSY}$	51.1	53.3	54.2	57.1	58.9
$F_{2021} > F_{MSY}$	7.3	17.8	32	47.9	62.8
$B_{2028} < B_{MSY}$	8	19.5	35.1	49.1	60.8
$F_{2028} > F_{MSY}$	1.1	6.9	19.8	37.7	55.6

Reference point and projection timeframe	Alternative catch projections (relative to the catch level from 2018) and probability (%) of violating MSY-based limit reference points (B_{lim} = 0.5 B_{MSY}; F_{Lim} = 1.3 F_{MSY})				
	60% (48,848t)	**70%** (56,990t)	**80%** (65,130t)	**90%** (73,272t)	**100%** (81,413t)
$B_{2021} < B_{LIM}$	0	0	0	0	0
$F_{2021} > F_{LIM}$	6.0	11.0	17.0	28.0	39.0
$B_{2028} < B_{LIM}$	0.0	0.0	6.0	11.0	22.0
$F_{2028} > F_{LIM}$	0.0	6.0	17.0	22.0	39.0