Three-Year Audit Template

Introduction to the tool

The three-year audit template was developed by FishChoice and is based on the FisheryProgress FIP Review Guidelines and feedback from the FisheryProgress Technical Oversight Committee. The audit template is designed to present key information about the current performance of the fishery and to verify reported progress on www.FisheryProgress.org. **FisheryProgress requires the use of three-year audit template.**

Text in italics provides additional guidance about information that should be included in each section. Text in red provide examples for possible responses.

Basic FIP information

Fill in the following table. The management authority is the regulatory authority with fishing management responsibilities; there may be multiple authorities where joint jurisdictional responsibilities occur.

Target species scientific name and common name	Anchoveta, *Engraulis ringens*
Fishery location	Peruvian EEZ, Northern-Central stock
Gear type(s)	Purse seine
Catch quantity (weight)	161,521.68 tonnes (2018)
Vessel type(s) and size(s)	Direct Human Consumption fishery. Vessels are 9 – 20 tonnes

Number of vessels	iPrisco – 13 vessels CAC – 12 vessels
Management authority	PRODUCE

Stakeholder consultation & meetings

Fill in the following table and include a high-level summary of the subjects that were discussed. Additional rows may need to be added or modified depending on number of participants and meetings completed.

Name	Affiliation	Date and Subjects Discussed
Miguel Ñiquen	IMARPE	
Cristian Condori Tito	PRODUCE. The FIP representative from PRODUCE was not able to be present at the meeting, a replacement was sent but some specific information was not able to be provided.	**4th December 2019** • Update of IHC & DHC FIP actions • Individual meetings held with all FIP participants to discuss their specific area of expertise with regards to the FIP
Ernesto Godelman	CeDePesca	
Carmen Guerrero	CeDePesca	
Julissa Melo	CeDePesca	
Mayra Palacios	CeDePesca	
Chloe North	MRAG	
Jorge Risi and Ulises Munayla	SNP	
Julia Black	Lovering Foods	
Isabel Valcárcel	CAC	
Juan Alcazar y Roberto Flores	iPrisco	

Milagros Chávarri	Embarcadero Multipropósito Juan Pablo	
Mariano Gutiérrez	Instituto Humboldt	
Francisco Miranda	OANNES NGO	
Ernesto Godelman	CeDePesca	5th December 2019 • Discuss the observer programs • Filling in any remaining information gaps
Carmen Guerrero	CeDePesca	
Julissa Melo	CeDePesca	
Mayra Palacios	CeDePesca	
Julia Black	Lovering foods	
Chloe North	MRAG	
Frank Altamirano	Observer on board of DHC FIP	
Fiorella Solimano	Observer on board of IHC FIP	

Summary of MSC performance indicator scores

Fill in the likely scoring category (<60, 60-79, ≥80) for each performance indicator (PI) and provide a rationale for the score by referring to the text used in v2.0 of the MSC Standard's scoring guideposts for the related Performance Indicator.

Considerations for FIP

Allegations against IMARPE. It is noted that there are currently allegations against the stock assessment scientists at IMARPE for inflating the figures in the stock assessment and increasing the quota. As these allegations are still being looked into by PRODUCE, and have not been proved, they have not impacted the scoring or rational. The situation is one that, of course, the industry in Peru and the FIP practitioners will be well aware of, and involved in the investigation. In May 2020 an international panel will review all the IMARPE procedures to evaluate the anchovy population. Future assessments should take the results of the review into account.

Traceability - A key consideration is the inclusion of vessels within the certification. If limiting the vessels to only those owned by the companies in the FIP, this may make traceability difficult for the fishmeal plants. They will not be able to mix fish, fishmeal or fish oil from a vessel within the certification with that one of outside of the certification.

PI 1.2.1 Harvest Strategy - A second consideration is that currently the pre-assessment only considers samasa under P2, but the fact that the TAC is a joint TAC between anchovy and samasa, the issue of the TAC covering both species should be considered under P1 as well. Therefore, the fishery will need to be able to demonstrate that the joint TAC is able to manage anchovy sufficiently, under P1; and that it is able to manage samasa sufficiently under P2. There has been work discussing separating the TAC and it has been decided it is not a sufficiently high priority to conduct yet, as it could be complex and prohibitively time consuming, compared to the risk that the issue poses.

PI 2.1.1 & 2.2.1 Primary and secondary species outcome - In the pre-assessment for the DHC FIP, samasa is considered a primary species, whereas in the pre-assessment for the IHC FIP, samasa is considered a secondary species. It is understood that this will be harmonised between the two FIPs in the future, and samasa will be considered as a secondary species. In this FIP review for the DHC FIP, samasa has been considered as a secondary species. It could be argued either way, on the one hand technically it is managed with reference points, however these are not based on the population of samasa, rather the population of anchoveta.

PI 2.2.1 Secondary species outcome - The pre-assessment conducted a Productivity Susceptibility Analysis for samasa, to determine the outcome score. Two possible scores were presented based on uncertainty in the spatial overlap, due to the

distributions being variable based on environmental conditions, and the issue that samasa stocks migrate south only during El Nino events. Little information is provided on the extent of either the fishery, or the distribution of samasa. It was decided to choose a score in the middle of the two scores. However, the very nature of using the Risk-based framework, is that, in the presence of uncertainty, one should be precautionary. It is recommended to conduct an analysis on spatial overlap to re-enforce the decision of >80 scoring. It is understood that there is a plan to update the PSA and produce further rational.

Principle	Component	Performance Indicator	Current Score	Rationale and Justification
1	Outcome	Key LTL 1.1.1 A	Stock status. The stock is at a level which has a low probability of serious ecosystem impacts.	60-79	In November 2019, IMARPE (Instituto del Mar del Peru, the government marine research agency) produced a report on the 'Situation of the North-Central stock of Peruvian anchovy, and prospects for exploitation for the second fishing season of 2019'[i]. IMARPE conduct two fishery-independent acoustic surveys of the stock during the closed seasons each year (there are two open fishing seasons annually for the IHC fleet; the DHC fleet are able to fish all year). Throughout the IHC fishing season, IMARPE estimate the biomass between different zones and they know what size individuals make up the population at that time, through real-time fishery-dependent biological data recording.

The bi-annual assessment considers oceanographic conditions, such as temperature, salinity and chlorophyll a, because El Nino plays such a role in the status of the stock. |
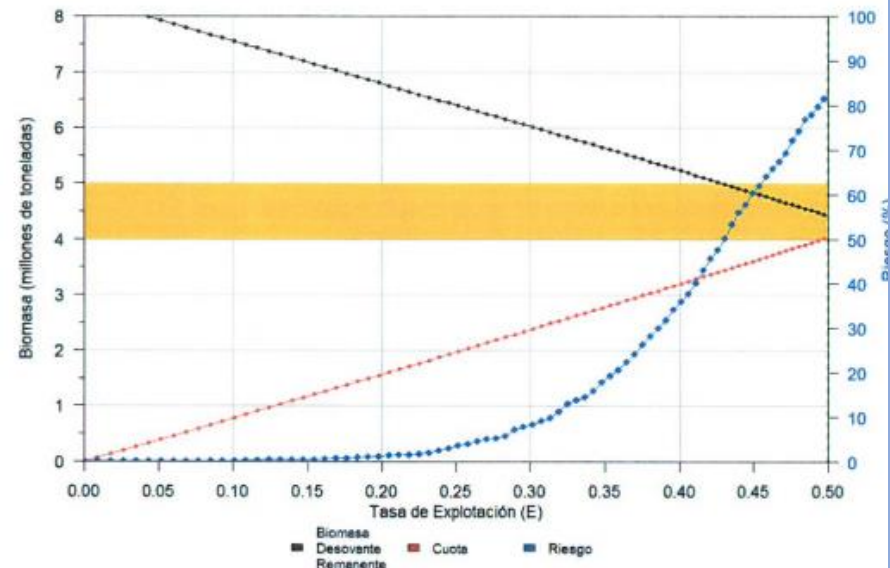
Figure 1. A Graph depicting the decision equations IMARPE use to recommend the TAC

The figure above is the decision table and biological reference points, assuming normal environmental conditions. The x axis is the rate of exploitation, and the Y axis is the biomass. The black line is the spawning stock biomass that would be available following the summer 2020 reproductive season, as a consequence of applying different rates of exploitation, see on the red line (whose scale is on the left-y-axis). The yellow bar shows the objective level of spawning biomass (5 million tonnes as trigger reference point, and 4 million tonnes as the limit reference point) and the necessary limits to maintain the sustainability of the stock. The blue line is the risk of having a spawning biomass of less than 5 million tonnes (whose scale is read on the right-y-axis).

The aim is to keep the biomass above the yellow bar. In October 2019 the North-Central stock was estimated to have a biomass of

				8.34 million tonnes (8 million tonnes is at the top if the graph on the left-y-axis, far above the yellow bar). IMARPE recommends that to determine the quota for the next fishing season, the exploitation rate should be no more than 35%. The biomass was estimated using a "biomass balance" model, because the results of the hydroacoustic survey this year was deemed to not be sufficiently representative of the population. This model has been used in the past when similar situations happened. Scoring Issues a) The stock is at a good level when just considering anchovy on its own. The biomass, estimated at over 8 million tonnes, has a very low risk of being near the biological reference point of 5 million tonnes. However, the trigger reference point does not currently take into account the needs of the ecosystem, and anchovy is classed as a Key Low Trophic Level species. The ecosystem impacts of fishing anchovy at different levels are not known, although at the high current level of the stock biomass is seems likely that the stock is above the point where serious ecosystem impacts could occur. SG60 is likely to be met. b) An ecosystem model is currently being created, which will model the effects on other species in the ecosystem under different scenarios of the fishery and El Nino, e.g. unfavorable and favorable conditions for the anchovy. This model is now due to be completed in March 2020; it is currently not possible to determine whether the stock is at a level consistent with ecosystem needs, therefore the 80 level cannot yet be demonstrated.
		1.1.2	Stock rebuilding		N/A
	Management	1.2.1	Harvest Strategy	<60	In Principle 1, the whole of the stock, and therefore all sections of the Peruvian anchovy fishery are considered.

The anchovy fishery is managed in two parts: the industrial Indirect Human Consumption fishery, which actually consist of two fleets, smaller wooden vessels, and larger steel vessels; and the Direct Human Consumption fishery which consists of small-scale and artisanal vessels.

Both the IHD fishery and the DHC fishery are managed via licenses, mesh size, and minimum landing size. There is also a TAC and quota system, and a spatial and temporal closure system, which is different between the IHC and DHC fisheries.

The anchovy fishery is a closed fishery. There is a limit on the number of licenses and there are no new licenses being issued for either the DHC or IHC sectors. All quota is only distributed to licensed vessels and all licenses are Peruvian-owned, there are no foreign access agreements.

PRODUCE have the ability to close the IHC fishery during the fishing seasons when the proportion of juveniles in the catch is too high. The percentage of juveniles to close the entire fishery varies and is a decision that is taken on a season by season basis. The percentage of juveniles is monitored on a set by set basis through real-time catch reporting and observers. Occasionally the recruitment is so high that the entire catch is juveniles. This has led to the cancellation of the second fishing season in the year, which has occurred four times in the last decade.

There is a regulation banning landing of more than 10% juveniles. In the past, vessels may have slipped the catch because there were sanctions if you did land it. When the catch is slipped, all the fish are dead; and fishermen were not happy about the level of sanctions for something largely out of their control. In 2015, the

regulation changed to incentivise catches not to be slipped; catches can be landed with over 10% juveniles, as long as it is reported immediately so that that specific area can be temporarily closed. The percentage of juveniles is reported for each haul in the electronic logbooks submitted to PRODUCE. If the percentage is higher than 10%, the area could then be temporarily closed within 6 hours or a matter of days. This has reduced the sanction system and placed the priority on data and this form of move-on rule.

This real-time data system is only for the IHC fishery and not the DHC fishery, although the DHC fishery are not allowed to land more than 10% of juveniles. Where they do, the area fished might be temporarily closed. Landings of the DHC fishery are monitored in port by inspectors from PRODUCE. The system of closing the artisanal fishery when the catches of juveniles are high, is not as quick or well-structured as the IHC system. In the second season of 2019, artisanal fishermen staged protests when the catches of juveniles were extremely high but the fishery was not closed[ii]; PRODUCE eventually closed the fishery. This shows a weakness in the Harvest Strategy for the DHC fleet because the management have less ability to close small areas, than they do with the IHC fishery.

The Humboldt Institute is part of the FIP steering group and worked specifically on developing an approach to address the problem of catching juvenile fish. IHMA conducted a workshop to investigate whether the mesh size should be modified. The workshop included representatives from fishing companies and universities, as well as IHMA scientists. The conclusion was that increasing mesh size would still retain the larger of the juveniles, and that the current strategy of a 10% move-on rule is correct. They also concluded to create a working group between government and industry to maintain communication and dialogue

					on the topic. There may also be scope to improve the situation by including different mesh panels, but the law needs to allow dispensations for net trials.
					a) To reach SG60 the management strategy must be designed to achieve stock management objectives in PI 1.1.1, which, as this fishery is a Key LTL species, must maintain the stock at a level that meets ecosystem needs.
					There are parts of the Peruvian marine management system that protect other parts of the ecosystem, such as quota on other species, ETP regulations and Marine Protected Areas (MPAs). However, these measures are not part of the anchovy fishery strategy, and ecosystem needs have yet to be included in the anchovy quota decision table. Therefore, SG60 is not likely to be met.
					b) Evidence exists that management measures, tend to be robust and complied with in Peru for the IHC fleet. The DHC fleet has some issues with non-compliance. Despite this, the management takes IUU fishing into account in the TAC decision, and the stock has been maintained at a good level in the recent past. The strategy is currently achieving its objectives and has been tested in the past through low biomass situations, and measures have always come into effect to protect the stock. During the first fishing season of 2019, over 100 fishing areas were temporarily closed to the IHC fleet to protect the juvenile portion of the stock. And in the second season of 2019, the entire fishery was closed. In 2014 the second anchovy fishing season was not opened to the IHC fleet because of a low biomass situation. It is extremely important for the IHC sector to have a robust harvest strategy as

this fishery is much greater than the DHC fishery (two million tonnes by IHC; 160,000 tonnes by DHC in 2018). The DHC sector also has measures in place to limit expansion of the fishery and to monitor it, vessel licensing and data are evidence of this. SG60 is likely to be met.

c) Monitoring is conducted at sea via compliance observers on the IHC fishery, and scientific observers on both the IHC fishery and the DHC fishery. The percentage coverage of the observer programs would be useful to show for full-assessment. Both fisheries also have to have satellite tracking, via the Peruvian Government's SISESAT system, with the exception of vessels <10m. There is also monitoring of landings at all ports from PRODUCE, the ministry responsible for fisheries management. IMARPE conduct a fishery independent acoustic survey of the stock twice per year. The monitoring is sufficient to determine the state of the stock biannually and the amount and location of juveniles daily. IMARPE also monitors other species within the ecosystem, such as the marine mammals, evidence of this is on the IMARPE website. SG60 is likely to be met.

d) The harvest strategy is undergoing a Management Strategy Evaluation currently. SG100 is not yet met.

e) N/A

f) There has been a review of measures to minimize the catch of juveniles[iii], two gear workshops were conducted and recommendations are being implemented. Although the law is apparently not very flexible to allow for trials of new gear adaptations. SG60 is likely to be met, but the review is not yet regular, therefore SG80 is not likely to be met.

				60-79	From the stock assessment results, the TAC is set for the next fishing season based on a formula explicitly set out in a decision table by IMARPE[iv.] The decision table is based on calculating the risk that the remaining spawning biomass is below the biological limit reference point. This is calculated prior to each fishing season, based on an acoustic survey in the closed season, and on landings data; the TAC is therefore adaptive to the current state of the stock. The TAC has a limit of 6 million tonnes. The average historical value for the exploitation rate is 0.35. This value is maintained as a limit because it has been demonstrated in the past to allow the sustainability of the anchovy fishery. This decision table does not yet take into account the trophic needs of the ecosystem.
		1.2.2	Harvest control rules and tools		The TAC is then divided into a quota for DHC and a quota for IHC, by PRODUCE. There is no transparent method to calculate this division. The proportion is currently based on the historical production of the DHC fleet. NGOs have been working on a model of how to decide the quota proportions between the IHC and DHC fleets.

The IHC quota is then allocated into individual quotas for vessels or companies, and is released in two parts over the two fishing seasons. The quota is calculated using the Northern-Central stock assessment, and is only used to cover the Northern-Central stock. The Southern stock has separate management for the IHC fleet.

The DHC quota is issued for the whole year and is not allocated per vessel. The DHC quota was not adapted in the first years of its existence and remained at 300,000 tonnes. 2019 is the first year the volume of quota changed, this was because the decision for the first time took into account the current processing capacity of the canning/salting and freezing industry, rather than just |

historical production. This is not linked to the state of the stock. The quota for the DHC fleet is calculated using just the biomass of the North-Central stock and then used to cover both the Northern-Central stock, and the Southern stock; this makes it precautionary. In reality, in the south there is not much small-scale fishing for anchovy, because there are not many DHC companies buying fish. Despite the precautionary nature of this quota, the annual limit has not yet been reached by the DHC fleet, therefore the mechanism for management once quota is reached for this fleet has not been tested.

The TAC covers the Northern-Central stock of anchovy, and also long-nosed anchovy (samasa), despite the biomass of samasa not feeding into the TAC decision table. When there is an El Nino event, the sea in Peru is warmer, providing more favorable conditions for samasa. As the anchovy abundance in the areas decrease, the samasa abundance increases, occasionally reaching up to 40% of the catch. The last time the percentage of samasa was this high was around 1998, at this time there was mis-reporting of the species to comply with regulations, which lead to the creation of the regulation that the quota covers both species. The landings of samasa have been relatively low since 1998 (Figure 2), and the biomass of samasa seems stable, with peaks in El Nino year (Figure 3).

The joint quota has been defined by law of the Congress, and modifying it would be very complex and time consuming. The appearance of samasa in Peruvian water is circumstantial and just when there is a Niño. When that happens, the strong restrictions to anchovy landings also protect samasa. As well as this, the available analysis on samasa biomass shows a healthy status. Putting all this together, it was decided that this issue was not a risk to either species and was therefore not high priority in the

short term, given the complexity of changing it. The situation is being reviewed after new government is in place following elections in early 2020.
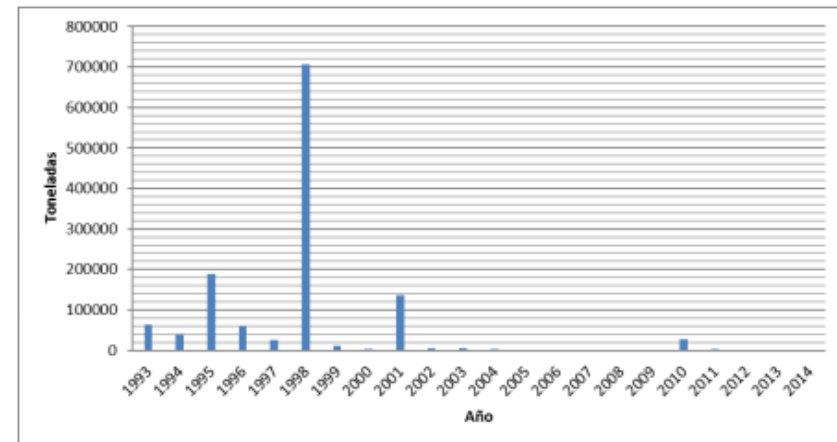
Desembarques de samasa 1993-2014. Fuente PRODUCE

Figure 2. Landings of samasa in Peru over time
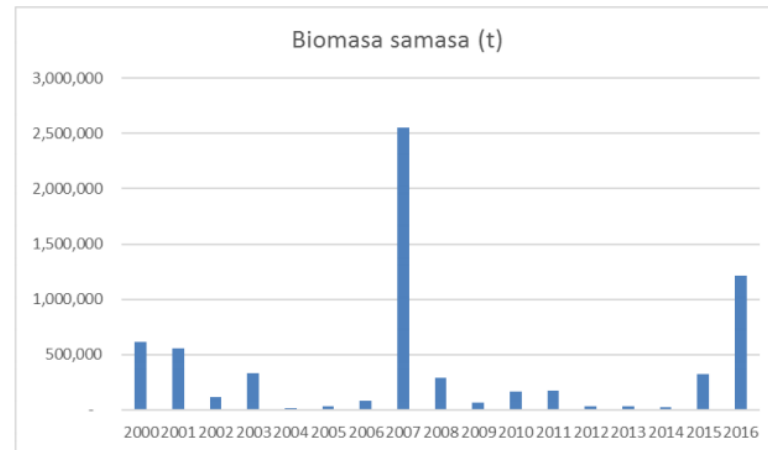
Estimación de biomasa de samasa 2000-2016. Fuente: IMARPE

Figure 3 Biomass of samasa in Peru over time

Figure 2 was provided in the original pre-assessment to demonstrate the low catches of samasa that have occurred since 1998. The updated data should be provided to show that this is still the case.

Scoring issues

a) The HCRs are well defined in the decision table which takes into account the IHC and DHC portions. However, they are not expected to keep the stock fluctuating around a level consistent with ecosystem needs, because these have not been defined yet. SG80 is not met.

b) According to the pre-assessment and communications during the FIP review, IMARPE takes into account an estimate of unreported fishing from the DHC fleet into its stock assessment calculations. This should be demonstrated for the full-assessment.

| | | | | | Environmental variables are also monitored and considered during fishery management. The decision table is used for the TAC during El Nino events as well. SG80 may be met if the input of IUU fishing can be demonstrated in the management decisions.

c) Due to the good state of the stock and the past examples of closing the fishery during low stock situation, there is evidence that the tools in use are appropriate at controlling exploitation in the IHC fleet. The DHC fleet have not reached their quota yet, so the tools are effective at achieving the exploitation level required. It is yet to be demonstrated if the tools would be effective at reducing the exploitation in the DHC fleet, although the entire fishery, including both fleets, has recently been closed due to high proportions of juveniles. SG80 is likely to be met. |
| | | 1.2.3 | Information and monitoring | 60-79 | IMARPE monitors the anchovy stock through a variety of different means. They conduct two fishery-independent at-sea surveys each year prior to the start of the fishing season. They also integrate data such as biometric data from mandatory sampling on board vessels, and data from the satellite vessel tracking system (SISESAT). Every vessel in the IHC fleet must sample 100 fish from every haul and send catch and biological data to IMARPE and PRODUCE on a daily basis via radio or telephone. IMARPE collects catch and size data from all landings of the artisanal fleet at the landing ports, there are no logbooks mandated for the DHC fleet. There is some unreported catch from the DHC fleet from unregistered vessels landing at unregulated sites. This is estimated by IMARPE through indirect means such as looking to the fishmeal exports, converting that in wet weight, and comparing it with the reported catches.

The main research activities of the Pelagic Fishery (both IHC and DHC) Monitoring are detailed below[v]: |

|					
					• Management reports on compliance with conservation measures of the main pelagic resources (recruitment closures, closures for compliance with allowable catch quotas, etc.) • Periodic reports on the development of the Pelagic Fishery on the Peruvian coast. • Daily reports of the Monitoring of the Pelagic Fishery and Percentage of juveniles. • Biweekly Information Notes of the Pelagic Fishery nationwide. • Determine the main fishing areas and location (through the satellite tracking system) of fishing areas of the main pelagic resources. • Determine the catch and effort levels of the main pelagic resources. • Determine the size structure of the main pelagic resources in commercial catches. • Daily biometric sampling and weekly biological anchovy and other pelagic fish. IMARPE has time series of the main reproductive indexes (sexual proportion, spawning frequency, fertility and average female weight) that allow them to identify any changes in the anchovy spawning cycle, and to estimate spawning biomass and potential production of eggs. This allows them to predict recruitment in the coming season. IMARPE run an observer program to collect scientific data. Scientific reports are published on the IMARPE website. 5% of trips are observed by the IMARPE program, they have recently increased the number of observers from 10 to 50 people and they

try to ensure representation according to fleet distribution in all fishing areas.

There is sufficient relevant information related to stock structure, productivity, removals of both anchovy and samasa, and fleet composition to support the harvest strategy for the both fleets. A graph showing catch and quota for both fleets would be useful for full assessment to show whether the TAC has ever been exceeded.

The DHC TAC has never been reached or exceeded, however, the information on the unreported fishery removals from the DHC fleet is still an issue until the situation is rectified. A recent report by Oceana attempted to estimate the amount of unreported fishmeal and fish oil in production in Peru based on the number and capacity of illegal plants identified using satellite technology. A production of 22,000 tonnes of fishmeal per year was estimated, and 5,0000 tonnes of fish oil[vi]. Other estimates are 150,000 tonnes of fishmeal being produced[vii]. Although the estimates vary, there is still significant amounts of raw material being used.

Scoring issues

a) Due to the range of monitoring described above, sufficient relevant information is available. SG80 is likely to be met

b) Stock abundance and removals are monitored with sufficient frequency to support the HCR, and TAC has never been exceeded. Unreported removals are estimated through analysis of fishmeal production and export quantities. However, the unreported removals are an estimation and therefore there is some uncertainty about the total removals from the stock. More information on the confidence around these estimates and how they are verified, would be useful. Actions have been put in place

| | | | | | to reduce the level of IUU fishing in the DHC fleet, in the form of new laws (detailed in Principle3). The Interdiction law is still in the early stages of implementation, monitoring during and after its implementation is required, and a review should be conducted. SG60 likely to be met.

c) There are estimations available of unregistered catch, which range from between 2% - 4% of the landings. This has been improving from 10% in the past due to improved MCS. The Oceana report estimated the unreported catch, and unreported catch estimation is taken into account in the stock assessment. It is currently borderline whether the fishery would reach SG80. To be precautionary, the fishery will achieve a score of SG60 until unreported catch can be reduced with the new Interdiction law. |
|---|---|---|---|---|---|
| | | 1.2.4 | Assessment of stock status | >80 | Scoring issues

a) The stock assessment uses as integrated population model assessment, and calculates indicators such as CPUE biomass, abundance, age, size, spawning biomass and recruitment. From this they estimate spawning stock biomass and other biological indicators. The evaluation is appropriate for the stock and the HCRs. SG80 is likely to be met.

b) They use a target and limit spawning biomass reference point, as well as a limit on fishing mortality. These are defined for the stock specifically. SG80 is likely to be met, although the appropriate of these reference points for key LTL species should be re-evaluated when the ecosystem model is complete.

c) The assessment takes into account the changes in catchability of anchovy during El Nino years when the acoustic surveys are being carried out, as the anchovy tend to hyper-aggregate [viii]. In the |

					protocol for determining the stock, they incorporate uncertainty by generating abundance replicas of the size and biomass estimates using the bootstrap method which incorporate multiple sources of uncertainty. It is assumed that the main sources of uncertainty come from the sampling. Confidence limits are estimated$_{ix}$. The assessment also apparently takes unreported fishing into account, but some more information on how this is done, would be useful. SG80 is likely to be met. d) There is no scoring guidepost at the 80 level. When the Management Strategy Evaluation has been completed, the fishery may reach the 100 level. e) The stock assessment has been reviewed externally in the past. The details of these reviews should be provided for full assessment. The ecosystem modelling work that is currently being conducted related to PI 1.1.1, is due to be peer-reviewed and then made public. SG80 is likely to be met
2	Primary species	2.1.1	Outcome	>80	The total bycatch in the DHC fishery is 1.77%, therefore there are no main species. Primary species are jack mackerel (*Trachurus picturatus murphyi*) and mackerel (*Scomber japonicus peruanus).* In observed trips these represented 0.12% and 0.07% of the catch respectively. Scoring issues a) SG80 is likely to be met by default b) SG80 is met by default.
		2.1.2	Management strategy	>80	Scoring issues a, b, c, e) There are no main primary species, therefore SG80 is met by default.

					d) No sharks have been recorded as bycatch by the observer program, therefore SG80 is likely to be met
		2.1.3	Information	>80	a, b, c) There are no main primary species. Landings are monitored by government representatives at the landing sites, and, similar to the 10% rules for juveniles, there is a 10% rule for bycatch species such as hake and mackerel. SG80 is likely to be met for all Scoring issues.
	Secondary species	2.2.1	Outcome	>80	During the period of catch data collection by the observers in the DHC fishery, samasa (long nosed anchovy, *Anchoa nasus*) constituted 0.19% of the catch. This is a similar case to most years, however there has been times in the past where samasa has constituted over 5% of the catch, and up to 40% in 1998. Therefore, to be precautionary, it will be treated as a main species. There is also debate as to whether it is a primary or secondary species. It is technically managed under the same TAC as anchovy, with reference points. However, the reference points are anchovy reference points, rather than based on the stock status of samasa, which does not have a stock assessment.

Scoring issues

a) The samasa catches are highly variable, which suggests the amount of samasa in the area fluctuates. This does not necessarily represent the size of the stock, as small pelagics are highly mobile, and the samasa may be located elsewhere when they are not appearing in anchovy catches.
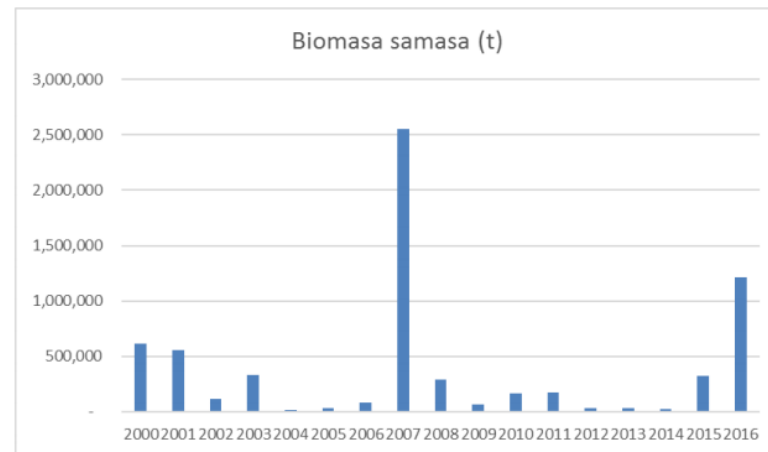
Estimación de biomasa de samasa 2000-2016. Fuente: IMARPE

Figure 3 Biomass of Samasa

Currently there is a biomass assessment but no reference points for samasa (biomass time series in the pre-assessment shows large inter-annual variation). The last time there were high catches of samasa was 20 years ago. Catches of anchovy and samasa are negatively correlated; if anchovy stocks decline, stronger management measures will kick-in which will be very precautionary for the samasa. However, the management is based on the anchovy stock status, therefore, the measures that are effective for anchovy, do not protect the samasa stock. IMARPE has said they are going to start to issue some single-species analysis for samasa, such as spawning stock biomass and more detail on the biological characteristics; although this analysis has not yet been conducted.

The pre-assessment conducted a Productivity Susceptibility Analysis for samasa, to determine the outcome score. Two possible scores were presented based on uncertainty in the spatial overlap, due to the distributions being variable based on

					environmental conditions, and the issue that samasa stocks migrate south only during El Nino events. Little information is provided on the extent of either the fishery, or the distribution of samasa. It was decided to choose a score in the middle of the two scores. However, the very nature of using the Risk-based framework, is that, in the presence of uncertainty, one should be precautionary. It is recommended to conduct an analysis on spatial overlap to re-enforce the decision of >80 scoring. It is understood that there is a plan to update the PSA and produce further rational. b) SG80 will be met by default.
		2.2.2	Management strategy	60-79	Scoring issues a) Samasa is managed under the same TAC as anchovy. This regulation was put in place when there were high catches of samasa around the strong El Nino event in 1998. The regulation is enshrined at a high level in the legal structure of fishery management in Peru, and would therefore be relatively difficult to change. It is still considered something to solve but the regulation has been deemed to not pose an immediate risk to either species. However, there is no documented analysis of how this decision was reached. It can be inferred from the history of catches and the estimated biomass, that the anchovy fishery has not impacted the samasa stock beyond biological limits. A stock assessment would help provide evidence whether the management measures are currently sufficient to maintain the stock above biologically based limits. Without more evidence, the score cannot meet SG80.
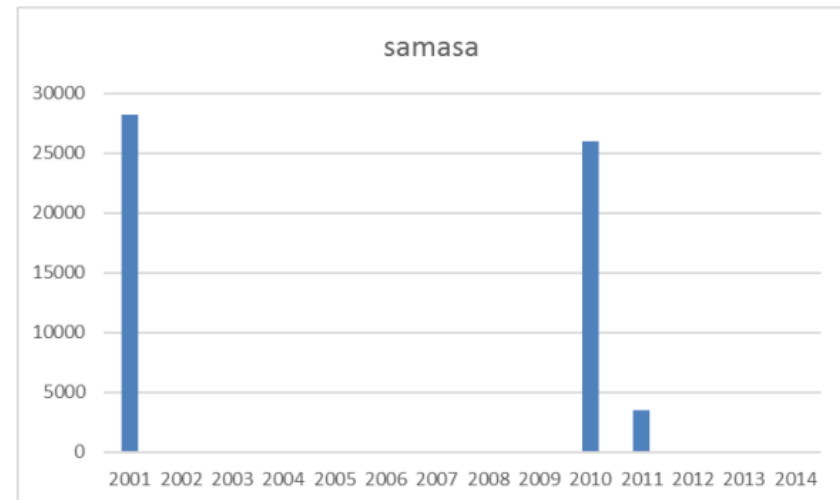
Longnose Anchovy landings 2001-2014. Source: PRODUCE

Figure 4. Landings of samasa over time from the DHC fleet

b) The biomass of samasa fluctuates greatly throughout the timeseries, and is linked to environmental variables. Past experience has shown that fishing pressure at the current level is not controlling the population of samasa, and is unlikely to reduce samasa biomass before impacting the biomass of anchovy first. SG60 is likely to be met.

c) The management measures for anchovy, which include the TAC, licensing, mesh size, closed areas and seasons, may also protect the samasa stock to some extent. Evidence from the anchovy fishery shows that these measures are being implemented successfully. SG80 is likely to be met.

d) N/A

				e) There is no unwanted or discarded catch of samasa, however it is unclear whether there is any unwanted juvenile catch, such as with anchovy. If so, it may be able to be demonstrated that the review conducted for for anchovy may also apply to samasa, if they are of similar size. The rational that the fishery is proposing should be considered before full assessment. SG80 is likely to be met.
		2.2.3	Information	>80	Scoring issues a) There is no legal requirement to record catches in logbooks for artisanal fisheries, therefore catch data is not recorded, but landings data is reported by PRODUCE and IMARPE representatives at the ports. There are landings data over time, and data from the IMARPE acoustic surveys. CeDePesca run a private observer program for both the IHC and DHC fleets, to augment P2 data. IMARPE have developed the CeDePesca data collection protocols in conjunction with CeDePesca and IMARPE works with CeDePesca to ensure the databases are can be integrated; despite this, a conflict of interest is still possible, as CeDePesca are the FIP implementers. An independent review of the CeDePesca observer program is still advisable to negate any potential conflict of interest, it is understood that work has begun to address this using local universities. Since the initiation of the on-board observer program from the DHC fleet, as part of the FIP, data on catches of this section of the fleet has improved. It would be useful to know the percentage coverage of the two observer programs (IMARPE and CeDePesca) over all the trips made by the whole fleet. The RBF was used to score PI 2.2.1 for samasa. Some quantitative information was available and adequate to assess the score.

					However, there was some uncertainty about the spatial overlap of the fishery with the distribution of samasa. The information is most likely available, but nobody has conducted this analysis yet. It is recommended that this is conducted. SG80 is likely to be met. b) SG80 is met by default c) Information on landings of samasa is adequate to support the management measures. SG80 is likely to be met.
	ETP species	2.3.1	Outcome	60-79	The private on-board observer program has been implemented in the DHC fleet during the FIP and has gathered data on interactions with birds, mammals and reptiles, see table 1 at the end of this section. The interaction of the individuals was recorded taking into account mortality and whether or not damage to the animal occurred, regardless of its severity. A total of 162 trips and 226 inshore areas (coves) were observed. The Peruvian booby had the most interactions with 295 occurrences of being trapped in the net, and all were released undamaged. This is an IUCN species of Least Concern. 3718 sea lion interactions were observed, with only 5 being caught in the net, all were released undamaged. Pelican populations are particularly low, and all pelican observations they were swimming or flying and feeding on the school but not trapped in the net. The other species with low population levels is the fur seal, and no interactions of fur seals, with the DHC fleet were recorded. In these trips no ETP mortalities were recorded The Fichas del Impacto document sets out the population status of each ETP species in terms of its current percentage compared to its historical maximum. Pelicans are at 15% of their historical

maximum, and fur seals are at 14%, all other species are at 60 to 100%.The document estimates the food requirements of these ETP species and concludes sufficient anchovy has been left in the stock in recent years to meet this need.

It seems pertinent, given the low population status of the pelican and fur seal, and healthy population status of other species, to mainly consider these two species going forward. Although there may be a high incidence of interactions pelicans, there is a low incidence of mortalities, and no fur seal mortalities. The UoA is likely to not hinder recovery of these ETP species, however, to be sure, the analysis that links the number of negative interactions, such as releases with damage, with the population size, must be conducted. This analysis should include direct and indirect effects. It should be demonstrated that the populations of the ETP species are stable or increasing; if the population is decreasing, the fishery would need to prove why it is not having an effect on that.

Scoring issues

a) N/A

b) Thanks to the observer data, direct effects of the fishery on ETP species can now be quantified. Due to the fact that no mortalities were recorded, it is highly unlikely that the UoA is hindering recovery of ETP species. SG80 is likely to be met.

c) Indirect effects include ecosystem effects, such as removing food source. Indirect effects could also be stress related, which may be more of an issue for the DHC FIP, than the IHC FIP because the DHC vessels fish closer in to shore and therefore may be more likely to fish near nesting and breeding areas. Indirect effects specific to this UoA have not yet been considered.

					The document 'Impact study of the anchovy fishery on by-catch and protect species' describes correlations between various different species populations, and the anchovy population, or correlations between the amount of food available at certain times of year for reproduction. This document estimates the food requirements of various ETP species, with regards to anchovy and the objective population level of the ETP species. It is estimated that the requirements of these species have been available in recent years, and therefore that the anchovy fishery is not having a negative effect on the recovery of species. It is noted that this document is not specific to this UoA and is used as rational for both the IHC FIP and the DHC FIP. Indirect impacts from disturbance and stress are reduced through spatial management measures. The closed areas around Guaneras Islands prohibit fishing activities around nesting and reproductive/resting areas for birds and mammals. The detailed ecosystem model is due to be complete imminently and from this it will be possible to discern whether the UoA is *highly likely* to not have an impact on ETP species. SG80 is not likely to be met.
		2.3.2	Management strategy	60-79	Scoring issues a) The national protection and management of ETP species involves marine protected areas around islands and guaneras areas, as well as prohibition on hunting sea lions, and a prohibition on the possession, trade, transport or export of ETP species. Various government departments monitor the population status of ETP species.

In Peru, multiple different government departments have responsibility for different aspects of ETP management. MINAGRI, the Ministry for Agriculture prohibits the catch and transport of ETP species, SERNANP is the department responsible for protected areas, and SERFOR manages forests and fauna outside of protected areas. Hunting sea lions is prohibited, birds associated with the production of guano are protected. There is a system of MPAs prohibiting fishing around guaneras islands and points.

IMARPE promotes the adoption of Dolphin Safe practices and certification of fisheries. SERFOR and the Peruvian government has recently published a National Plan for the Conservation of Marine Turtles, approved in December 2019.

IMARPE has a department called the Office of Research on Superior Predators. One of their objectives is to develop indicators of changes in the marine environment. They conduct activities such as the estimation of population abundance, the study of the ecology of food and the study of reproductive parameters of guaneras birds, the evaluation of the population abundance of sea lions on the Peruvian coast and monitoring of sea turtles. They conduct research cruises to study the distribution and abundance of birds and cetaceans.

There are overarching national measures designed to protect ETP species. The IHC fishery is not allowed to fish within 5 nm of the coast. This area is allowed to be fished by the DHC fishery. This measure protects many of the islands that are habitat to ETP species, from the disturbance of industrial fishing.

The FIP has implemented a private on-board observer program with the following aims:

					• Characterize and estimate the bycatch of the fishery. • Identify and quantify the species of birds and marine mammals that interact with the fishery. • Collect information to identify the habitats on which it would be impacting the fishery. There is a kit which is in development/being given to crew which includes devices to aid the release of turtles, dolphins and sharks. There should also be a summary of the release training and release kit work that has been occurring, to understand whether this has been applied to all FIP vessels yet. Specific to the UoA, the FIP has developed a number of measures to minimize mortalities, and there is monitoring of interactions and mortalities. However, there should also be a review of population status of the ETP species in relation to UoA-related mortalities, and a system of review and adaptability of the program. A single strategy document would be useful to bring the FIP work together, and achieve the SG80 level. b) N/A c) The fishery has not prevented the recovery of populations of guano birds, penguins and sea lions (noting effects of El Nino years). Information specific to the UoA says that there is little to no UoA-related mortality of the vulnerable ETP species (pelicans and fur seals). There are many ETP interactions but most individuals are released alive and in good condition. It would be useful to know what proportion of the fleet have had release technique training, and some analysis of the impact of this. SG80 is likely to be met.

					d) Evidence of releases are is being collected by the observers. All vessels above 10m must be part of SISESAT tracking system, and therefore must abide with the closed areas. SG80 is likely to be met. e) A release-kit and training program are being rolled out, which, presumably, had some research to create it. And the document on justification of scoring change describes that reviews have been conducted over the years which have led to new measures. Evidence of this will be necessary for full-assessment. A review should also be conducted of alternative gear modifications to minimize ETP catches, and alternative fishing methods or areas. SG80 is not met
		2.3.3	Information	>80	Scoring issues a) IMARPE conducts an observer program, and the FIP has also implemented a further private on-board observer program in the IHC and DHC fleet to collect more data. The FIP observer data collection has been designed so that the two datasets can be integrated, however, as yet, the information has not been shared with IMARPE and IMARPE have not analysed the datasets together. One of the objectives of the private on-board observer program that is being implemented within the DHC fleet, is to identify and quantify the species of birds, mammals and reptiles that interact with the fishery. The observer program has been improved over the course of the FIP. The on-board weighing equipment now has a lower margin of error. The data now includes invertebrates to species level and

which provides more data for habitat interactions. The database now includes photos. A species ID guide has been created.

Interaction data is collected as 'direct interaction' when an animal is trapped, or 'indirect interaction' when an animal is observed but not trapped. If the interaction is direct, the data records whether they were released in a good or bad condition and alive or dead.

According to the pre-assessment IMARPE and SERNANP monitor the population status of guaneras birds and sea lions through a census. The results of this should be made available for full-assessment.

Quantitative information is available to assess UoA related mortality and to determine impact on the recovery of species. SG80 is likely to be met.

b) Information is adequate to measure trends and support the strategy. SG80 is likely to be met.

				60-79	Scoring issues
	Habitats	2.4.1	Outcome		a) It is often assumed that fishing pelagic fish means the fishery has no benthic habitat interaction. Some pelagic fishing has pelagic habitat effects, such as the use of FADs, although these are not used in small pelagic fisheries like anchovy. Anchovy, and other small pelagics, can be found quite close in towards the shore and fishing can sometimes occur in shallow areas. Anchovy usually swim close to the surface, to a maximum of around 9 m deep (observer report). As part of the FIP, it was necessary to gather data to analyse whether the net does come into contact with the seabed and with what frequency. The FIP has initiated data gathering on habitats to understand the situation better.

					The observer program recorded no sediment present on the net in 100% of areas where fishing was observed between April 2018 - March 2019. The depth that they recorded the seabed was never shallower than the height of the net. In the 14 species of bycatch identified, none of them were benthic-living species.

The various types of observer data showed no evidence of seabed interactions in the DHC fleet in both areas where the observer program has been implemented, Chimbote and Sechura. SG80 is likely to be met.

The Captains use echosounders when fishing but can also sometimes gather data from the echosounders that gives an idea of sediment type. This information is given to the observers, and all areas were recorded as sandy; this is corroborated in a sediment map proposed in Velazco 2015 (Observer report), which characterizes the Peruvian inshore area as sand and silt. This would be classed as the commonly encountered habitat, if there were seabed interactions.

b) Seeing as there has been no seabed interactions in the observed trips, it is unlikely that the UoA will reduce structure and function of VME habitats. However, not all areas are covered by the observer program, and VMEs have not been explicitly mapped and considered. SG60 is likely to be met.

c) A higher resolution of detail would be necessary to define if there were any minor habitats sufficient to meet SG100. |
| | | 2.4.2 | Management strategy | >80 | Fishing is prohibited around certain islands, designed to protect their ecological status as islands for birds or marine mammals. This may also help to reduce habitat interactions in these areas. There |

					is no specific habitat management for this fishery because it has few habitat interactions. SG80 is likely to be met by default, as a management strategy is not necessary.
		2.4.3	Information	>80	The observers collect data on whether there is any sediment or remnants of the seabed on the net when it is brought out of the water. They also collect data on the seabed type, from the vessel's echosounder, if it is able to tell that type of information. Data on bycatch is gathered, which, when the species are benthic, allows inference of the type of benthos and sediment in that area, especially now that invertebrate species are identified and counted in the data. SG80 is likely to be met for all SIs
	Ecosystem	2.5.1	Outcome	60-79	The Humboldt current system is a highly productive marine area with many top predators. The top predator species in an ecosystem are indicators of the changes that have occurred at different trophic levels. The ecosystem is supported by large base of primary consumers, namely, krill, pelagic squat lobsters, and anchovy. The ecosystem as a whole, undergoes large shifts with the El Nino/ La Nina Southern Oscillation. Anchovy populations can be managed within this oscillation in terms of fishing pressure. The fishery management attempts to maintain the stock above a minimum biological reference point at all times, which has been demonstrated throughout the timeseries to be a sufficient level to support the ecosystem. IMARPE are currently attempting to quantify the actual needs of the ecosystem to add further evidence to this assumption. The results of the ecosystem modelling work are due to be completed in March 2020.

					Ahead of the completion of the ecosystem modelling, some research was conducted estimating the needs of various species in the ecosystem, with regards to anchovy as food. It is estimated that the requirements of these species have been available in recent years, and therefore that the anchovy fishery is not having a negative effect on the recovery of species. Scoring issues a) It is likely that this PI will reach SG80 when the results of the ecosystem modelling have been produced. Currently it reaches 60-79.
		2.5.2	Management strategy	60-79	Scoring issues a) There are measures in place to protect the different levels of the ecosystem, such as the marine protected areas around islands which protects nesting and haul-out areas for marine mammals and birds, from disturbance from fishing vessels. Guaneras areas are also included in the protected area system, understanding that guano birds create an important ecosystem themselves. These species are indicators of the healthy functioning of the ecosystem and populations of them are monitored. Anchovy populations are highly monitored and regulated as well. The DHC TAC is currently not set based on the needs of the ecosystem, but it is set in a precautionary way. These measures take into account potential impacts of the UoA on the ecosystem but do not form part of a partial strategy for the DHC fishery. SG60 is likely to be met. The DHC fishery are allowed to fish within 3nm from the coast, whereas the IHC fishery are not. The DHC fishery have various different gear restrictions, increasing mesh size the closer to shore

					they fish. This protects inshore areas from local depletion, to protect anchovy nursery areas, and also to protect the food for other organisms based on or near the shore. b) The populations of various parts of the ecosystem are continuously monitored and IMARPE are currently conducting an ecosystem modelling exercise. SG80 is likely to be met. c) The population status of anchovy and of top predators are known. There is compliance with the regulations on protected areas and fishing quotas. SG80 is likely to be met.
		2.5.3	Information	>80*	IMARPE monitors all levels of the ecosystem, from algae up to marine macro-fauna, top predators, marine mammals and birds. Data is also collected be the observer programs. IMARPE are currently compiling all datasets into one ecosystem model to be able to model the impact of different fishing pressures of the UoA. *On completion of this exercise in early 2020, all SIs are likely to meet SG80.
3	Governance and Policy	3.1.1	Legal and customary framework	>80	Scoring issues a) The fisheries legislation is based around the General Fisheries Law 25977 of 1992[x], which sets the framework for how the fishery is managed. The law lays out a limited entry system, which is now completely closed to the creation of new licenses for both the industrial and artisanal sectors. The law also sets out the 5nm limit which is closed for industrial vessels. Supreme decrees are created to implement further specific regulations, such as Legislative Decree 1084 which implemented the quota system for the industrial fleet, and Legislative Decree 010 2010, which is the regulation for the DH fleet. Other key management tools within the regulatory system are the fishing seasons, MPAs and the gear regulations. PRODUCE cooperates with regional governments and

					with other governmental departments to deliver the different aspects of the management system. SG80 is likely to be met. b) The Regulations of Fisheries and Aquaculture Inspections and Sanctions (Decreto Supremo N° 017-2017-PRODUCE)[xi] sets out the legislation for inspections, what can be sanctioned and the scale of the sanction. This can be disputed in the mechanism set out in articles 26-32. SG80 is likely to be met. c) The General Law of Fishing (Decreto Ley 25977) sets out: Article 45. Concessions, authorizations, permits and licenses will be granted prior payment of the corresponding rights, whose amount, method of payment and destination, will be fixed by ministerial resolution. The income generated by the payment of such rights, constitute own resources of the Ministry of Fisheries. There are exceptions for paying for these rights, individual people or legal entities are exempt that develop research activities are exempt, and those dedicated to artisanal and subsistence fishing activities. SG80 is likely to be met.
		3.1.2	Consultation, roles and responsibilities	>80	Scoring issues a) There are various documents that explicitly define roles and responsibilities of management bodies. These are: • Regulation of Organization and Functions - ROF • Organization and Functions Manual - MOF[xii] • Manual Classification of Charges • Table of Equivalences of Charges SG80 is likely to be met.

					b) PRODUCE publish their proposed regulations and consult on them before they become official regulations. This was described by stakeholders at the FIP review meeting. Some evidence of this would be useful for full-assessment.
					The Oannes network is a communication network for the fishing industry. There are 30,000 users in this network and email list. Oannes runs social networks for the fishing industry to generate dialogue. They also represent the fishing industry in meetings with government and in FIP meetings, they can use the information from their networks to express what the sector desires. The networks contain fishermen from all sectors as well as scientists.
					Since September 2019, there has been a technical consultation meeting every two weeks, which involves SNP, relevant government departments and the national industry society. Anyone in the group can put something on the agenda for discussion. This is the main conflict resolution system, and examples were provided of the system solving disputes.
					There is a 'Forum for sustainable fisheries and aquaculture' (http://www.fpas.pe/) whose objective is to promote dialogue and research among the different actors in fisheries and aquaculture in Peru. Forum members include regulators, NGOs, companies and academics. The forum organizes multiple meetings per year both in Lima and regionally to discuss relevant topics such as management issues. There is also an electronic suggestions platform. This forum has increased the ability for all parties to be involved.
					b) The management system includes consultation processes and there are many ways the government engages with forums and

				representative groups to gather opinions and solve issues. SG 80 is likely to be met. c) The private industry network run by Oannes, and the and the public-private forum involves fishers from all sector and provide opportunity for all affected parties to be involved. The management system itself has informal and formal mechanisms by which all interested parties can be involved. Government meet with stakeholders and receive their proposals as standard practice. SG80 is likely to be met.
		3.1.3	Long term objectives	>80	The long-term objectives are described in detail in the IHC pre-assessment and are applicable to the DHC fishery. The General Fishing Act is clear about the sustainable development and responsible use of fishery resources. SG80 is likely to be met.
Fishery specific management system		3.2.1	Fishery specific objectives	60-79	The fishery-specific management system has explicit protocols for establishment of the TAC to maintain the stock within certain boundaries of sustainable biological levels, consistent with Principle 1. The artisanal fishery law dictates rational and sustainable exploitation of the stock, in accordance with the general Fishing Act. There is a bycatch limit of 5% by weight of other species for the DHC fishery. However, the ETP and habitats objectives are not fishery specific. Also, the fishery specific objectives do not consider the needs of the ecosystem when managing the size of the anchovy stock, consistent with P1 for key LTL species. SG60 is likely to be met.
		3.2.2	Decision making processes	60-79	Scoring issues a) The decision table used by IMARPE to establish the TAC for the anchovy stock is published and transparent. The PRODUCE decides what percentage of this TAC is allocated to the IHC fleet and the

DHC fleet, this decision is not based on an established decision-making procedure. SG60 is likely to be met

b) The TAC and quota for DHC is set each year and released at one time. There is a system for real-time management of percentage of juveniles. If the representative from IMARPE or PRODUCE who is inspecting the catch at the port note too high a percentage, the area will be temporarily closed. It is not clear how many closures happen due to the DHC fleet compared to the IHC fleet. There has been reports in the media early in 2020 of artisanal anchovy fishermen in Peru protesting because the fishery had not yet been closed despite high catches of juveniles[xiii]. The fishery was then closed, but this may be highlighting that decisions are taken less quickly when it is regarding the DHC fishery. More details about the reasons for this situation and how to avoid it in the future, should be investigated. SG60 is likely to be met.

c) Decisions are made based on the best available information and the recommendations from IMARPE which appear to be precautionary, even if this is not explicit. SG80 is likely to be met.

d) The protocol for establishing the TAC is transparent. However, detailed information, such as DHC landings, information from the stock assessment, such as fishing mortality and spawning stock biomass is more difficult to find. The decision on how to allocate the TAC between the IHC fleet and the DHC fleet is also not transparent. SG60 is likely to be met.

e) The management system complies in a timely fashion with judicial decision, an example from 2015 is given in the pre-assessment. More recent examples may be useful for full-assessment. SG80 is likely to be met.

| | | 3.2.3 | Compliance and enforcement | 60-79 | There is a processing regulation on the DHC fishery, that all landings must be processed for human consumption, with the exception of 10% on landing that can be processed for fishmeal due to poor condition of the fish. At the DHC factories, another 30% can then also be allocated for fishmeal based on condition. Within this system there is the potential opportunity for misreporting, as processing fishmeal is highly lucrative. There is also the existence of entirely illegal fishing, processing, transport and export operations.

According to a report published by Oceana[xiv] in 2019, they identified 62 fishmeal production plants suspected of illegally producing fishmeal in Peru. The report claims that publicly-accessible production figures are unreliable which allows opportunity for illegal production and mis-reporting. They claim 15,000tonnes of raw material is used illegally in this way

SITRAPESCA is a new traceability system for the DHC factories that will combat illegal production of fishmeal. The SITRAPESCA system is one platform which allows for the collation of fishing permits, places and volumes of catch, and to promote transparency through online information, free access to the public, and channels for reporting. The companies have to input weekly statistics for their use of raw material, who they bought it from back to the vessel level. Consorcio and iPrisco, two of the DHC FIP participants has trialed the new system, it is thought to be being made mandatory for all DHC factories in the next year.

The illegal processing industry is fed raw material by unlicensed vessels. The Peruvian government is working to reduce the unlicensed fishing. Decreto Legislativo 1392 is the artisanal fisheries law, created in 2010, which mandates that artisanal fishers to obtain the fishing permit, following compliance with |

certain requirements, and can be boarded and inspected. Improvements have been made to the artisanal fisheries law; these are described below.

DS 006-2015:
The main objective of this decree is to strengthen the fisheries management of the anchovy resource through the following measures:

- Registration in the Register of Fishing Vessels.
- Implementation of fishing quota for DHC
- Prohibition of boat building
- Supply agreements

DS 05-2017
The provisions being the following:

- Have a fishing permit, sanitary protocol, satellite monitoring and be in the national vessel registry.
- Comply with conservation measures (mesh size and capture, percentages of bycatch and fishing areas from 3 nautical miles).
- That the plant that processes the raw material has a license, environmental certificate, health protocol, and prove the origin of the capture.
- The receipt of raw material not suitable for CHD will be at most 10% of the total. And in the production line up to 40% can be allocated to CHI in case the matter is not meet the criteria of size, weight or quality.
- The plant must provide destination information. Production data, selection, discards and waste.
- Licenses are now adapted to the activity the vessel is performing

					The artisanal fisheries laws have been implemented by PRODUCE in two stages, the first was to verify the vessels and get all vessels to register on a list. 3500 vessels were registered. The second stage was to issue new licenses to the vessels on the list who applied for a license. 2000 vessels applied for a license. The process will be completed by the end of 2020 and no further licenses will be issued. The government's aim was to have a legal tool to formalise the fishery in terms of licenses, and then another legal tool to control illegal practices. To this end, at the end of 2018, the Interdiction law was passed. Interdiction is the act of preventing the movement of a prohibited commodity. The interdiction law gives more power to the coast guard allowing them jurisdiction on land, and more power to the Prosecutors Office, allowing them to stop the production of new vessels without a license. The ports communicate to each other when there are reports from fishermen about unlicensed vessels at sea. The coast guard carries out the implementation of the law on the ground, with other institutions together. The government has allocated more resources to the coastguard to implement this law, such as fuel. The law covers all fisheries, not just anchovy.

Before a vessel in the DHC fleet is able to go to fish, the coastguard issues a permit. The SISESAT satellite tracking system has been running since 1998. This includes satellite and radio monitoring and communication with vessels. All vessels have to transmit their position every 15 minutes.

SISESAT is mandatory for the DHC fleet above 10m vessel length; there is an alternative for the smaller vessels (<10m) in development using low-cost GPS.

The data from the observers records biological and scientific data but is not used for compliance purposes. There are PRODUCE representatives at the landing sites who gather compliance data.

Scoring issues

a) The legal framework now exists to give more appropriate levels of power to the surveillance bodies such as the coastguard. The interdiction law is very recent and therefore there has not yet been a review of its implementation although there have been arrests already. There is a mandatory satellite tracking system (with the exception of <10m vessels) and staff from PRODUCE at the legal landing points. The mechanisms now exist, and due to the high level of control of other fleets such as the IHC anchovy fleet, there is a reasonable expectation that they will be effective. This Scoring Issue is borderline due to the fact that the interdiction regulation is so new and that its implementation has not been realized yet. It is likely to meet SG60, although more time is required to implement the new regulation and conduct a review of its implementation.

b) The reasons for sanctions and levels they are set at are laid out in the law of Inspection and Sanction for the Activities of Fishing and Aquaculture 017-2017-PRODUCE[xii]. A review of the sanctions that are applied since the introduction of the Interdiction Law, will add evidence to the application of sanctions within the DHC fishery. SG60 is likely to be met.

c) Measures are being implemented to address the situation of unregistered vessels and unreported catch; many vessels are now licensed, although it is not known how many unlicensed vessels there still are. There is some evidence of a section of the fishery that is unlicensed and producing illegal product, however this

section is getting smaller as the new Interdiction Law is being implemented. SG60 is likely to be met.

d) There is a level of non-compliance in terms of landings, although the large majority of the fleet operates legally. Oceana claim there is possible around 15,000 tonnes of unreported raw material being used annually; this is compared to the reported volume of the DHC fishery, which is 160,000 tonnes, the unreported part of the raw material would be 8.5%. SG60 is met be default. Evidence to show compliance of regulations on no fishing around guano islands, and reduced IUU fishing would assist the fishery in proving a score of 80.

| | 3.2.4 | Management performance evaluation | 60-79 | A fishery-specific Management Strategy Evaluation (MSE) is currently being performed by IMARPE. It is assumed this will include the DHC section of the fishery. The results were expected in the second half of 2019 but have yet to be presented. Once completed, this is likely to meet SG80 if there is a mechanism in place to ensure that the review is conducted regularly by PRODUCE and IMARPE, and occasionally conducted externally. |

ESPECIE	Interacción Indirecta (No sufrieron daños)		Interacción Directa (Sufrieron daños)		Post-Captura	Total de Individuos
	I-N/S	I-A/E	D-D1	D-D2	P-C2	
Albatros de las Galápagos - *Phoebastria irrorata*	32	9	295		295	41
Cormorán guanay/Guanay - *Phalocrocorax bougainvilii*	20	153				173
Gaviota de frankiln - *Leucophaeus pipixcan*	320	950				1270
Pelicano peruano - *Pelecanus thagus*	290	1004				1294
Piquero peruano - *Sula variegata*	575	6478				7348
Zarcillo - *Larosterna inca*	2642	893				3535
Total de individuos	**3879**	**9487**	**295**		**295**	**13661**
Lobo chusco - *Otaria flavescens*	53	3660		5	5	**3718**

Total de individuos	53	3660	5	3718
I-N/S	Nadando o Sobrevolando la embarcación			
I-A/E	Atacaban el cardumen y/o evadieron la red pero escaparon ilesos			
D-D1	Durante - Atrapado en la red y/o subió a cubierta			
D-D2	Durante - Herido en algún grado y/o logró escapar			
P-C2	Liberado sin daño			

Table 1. Interaction of marine mammals, birds and reptiles with the DHC fishery, as observed by the observer program

Workplan results

Fill in the following table by reviewing the FIP's workplan and summarizing the key results that have been achieved over the last three years (or since the last audit took place) as a result of the FIP's workplan. Provide an explanation of steps that the FIP participants took in supporting and achieving each result.

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
1.1. Hire a highly regarded professional to analyze whether the fishery complies fully with the MSC requirements for LTL species. Complete 1.2. Elaborate a document analyzing the role of anchovy in the ecosystem and the trophic needs of species that prey on it. In Progress but behind schedule 1.3. Elaborate a document together with the specialist hired in Task 1.1 to analyze whether the fishery complies fully with the MSC requirements for LTL species. Not Started, behind initial schedule. Will come after 1.2 is complete	1. Demonstrating that the management system considers the ecosystem needs.	1.2.1, 1.1.2, 1.1.1, 2.5.3, 2.5.1	1.1 The FIP Steering Group has hired an MSC specialist, Dr Ian Scott, who will conduct an in-depth analysis of whether the fishery complies with PI 1.1.1. The analysis has not been conducted yet; it is due to begin once IMARPE has finished conducting their trophic research. 1.2 IMARPE has not yet produced the results of the ecosystem research, although they are almost complete. This work is has taken longer than originally estimated; it was initially due to be completed in August 2017, according to the first FIP workplan (2017); and then in the second workplan (2018-2019), it was due to be complete by June 2019. The most recent estimate for the work to be presented is on January 15th 2020. Once the work is complete, the FIP will need to consider whether the current formula for setting the TAC leaves sufficient resource to fulfill the energy needs of the ecosystem. IMARPE have contracted two external experts to assist them with this work, Dr. Moritz Stabler and Dr. Mark Tylor. 1.3 Has not been initiated yet. There should also be a plan of how to address the outcome of the analysis, if the TAC-setting formula does need to be changed. PRODUCE always set the TAC according to the advice of IMARPE; therefore, it is in the hands of IMARPE to add the results of the ecosystem modelling into their TAC-

			estimation protocol and decision table, and include fulfilling the needs of the ecosystem into the objectives of the fishery management.
2.1 Draft a proposal that ensures that harvest control rules under a low biomass scenario and the management objectives regarding the ecosystem are explicitly considered. Not Started, behind schedule 2.2. Promote the adoption of differentiated catch quotas or similar measures for longnose anchovy during the El Niño warm events. De-prioritised 2.3. Develop, from a methodological standpoint, a Management Strategy Evaluation for the Peruvian anchovy fishery. In Progress but behind schedule 2.4. Hold meetings with officials and authorities to encourage the implementation of measures in line with	2. Promoting improvements for the Management System.	1.2.2, 1.2.1, 1.2.3, 2.3.2, 2.5.2, 2.4.2, 2.1.2, 2.2.2, 3.2.3, 3.1.2, 3.2.1, 3.2.4	2.1 This action has not been started yet, as the ecosystem analysis has not been completed. The HCR in a low biomass scenario has been deemed to be sufficient; the industrial fishery has been closed in the past, although what would occur in the DHC fishery is unclear. 2.2 This issue was discussed by the FIP working group and it has been decided it is not of sufficient priority at the moment because it has been concluded that the current regulation does not pose a risk to either species. 2.3 An expert group has been contracted to complete the MSE, with IMARPE in conjunction with the University of Washington. The MSE is underway and results are expected soon, although they are slightly behind schedule. 2.4 The implementation seems to be going well, according to stakeholders and the evidence of the closures occurring. The authorities (PRODUCE & IMARPE) attend the FIP meetings, therefore there are regular meetings held, although these are not specific just to the implementation of measures. It is not clear whether any meetings have been held with other officials involved.

the proposal. In Progress			
3.1. Conform wide alliances between stakeholders interested in solving the issue of unreported fishing and illegal vessels in the fishery. Complete 3.2. Draft a report about the implementation of the DS 006-2015 and DS.005-2017, as well as about supply agreements for canned and frozen food plants. Complete 3.3. Conduct workshops with stakeholders to define the IHC/DHC catch ratio and draft a proposal to define the quota proportion between IHC and DHC. Complete 3.4. Conduct workshops to improve the inter-institutional coordination between PRODUCE, DIREPROs and DICAPI. In Progress 3.5. Disseminate the results of the	3. Promoting actions to minimize unreported fishing and the number of illegal vessels in the fishery.	1.2.2, 1.2.1, 1. 2.3, 3.2.3, 3.1. 2	3.1 Alliances were created between IMARPE, DIREPROs (regional government), DICAPI (coast guard), SNP and CeDePesca, The Prosecutors Office (responsible on land for control of the shipyards). The Executive branch of the Peruvian Government also became involved and two laws were created which strengthen inter-institutional actions to combat illegal activities. Two workshops have been held, one in Chimbote and one in Pisco to investigate how the communication can be strengthened between all parties.

A number of inter-institutional agreements have been made. DICAPI and the Prosecutors Office can work together and now have a formal agreement to share vessel lists. PRODUCE have a database for the licensed fleet, which can now be used by DICAPI offices as well. University of ICA now has an agreement with CAC, the students go out on vessels to collect data.

The Interdiction law gives more power to for local governments and coast guards, their jurisdiction is extended onto land to make arrests to combat the whole illegal industry. Previously it was not illegal for shipyards to build new ships, even though no new licenses are being issued. Now the illegal shipyards can be prosecuted. Data is held by the coastguards

3.2 The report is available on the Fishery Progress website.

3.3 A quota workshop has been conducted to discuss the proportion of DHC and IHC quota. Participants included: PRODUCE, IMARPE, SNP, Producer companies, CAC, iPrisco, |

workshops. In Progress			Walton, Oceana, EDF and WWF. A proposal has now been sent to PRODUCE from CeDePesca, who are currently following up with PRODUCE for a response. 3.4 Inter-institutional meetings were held where participants set out their obstacles in implementing regulations and recommendations to improve their execution, see action 4.1. A Workshop on the implementation of the Interdiction Law is planned to be held. This action is ongoing and due to be complete in March 2020. 3.5 The results of the inter-institutional meetings (4.1) and the IHC/DHC quota workshop (4.3) have been published on Fishery Progress. It is unclear whether the results have been disseminated to the workshop attendees yet. This action is ongoing and due to be complete in March 2020
4.1. Establish a protocol for data collection. 4.2. Recruit and train two on board observers. Complete 4.3. Implement a private Onboard Observers Program in 2017, 2018 and 2019. Complete 4.4. Extend the scope of the private Onboard Observers Program to Sechura in 2018 and 2019. Complete 4.5. Analyze and publish the outcomes of the observer	4. Determining the impacts of the fleet on ETP species and other ecosystem components and mitigate them, if necessary.	2.3.3, 2.3.2, 2.3.1, 2.5.3, 2.5.2, 2.5.1, 2.4.3, 2.4.2, 2.4.1, 2.1.3, 2.1.2, 2.1.1, 2.2.3, 2.2.2, 2.2.1	4.1 The protocol for data collection has been established in line with the data collection carried out by IMARPE scientific observers. 4.2 Two on-board observer are trained and active for the DHC fleet. 4.3 There have been observer reports from all years 2017-2019 inclusive. 4.4 The observer program now covers both the areas of Sechura and Chimbote, and the results from both have been reported together. 4.5 Reporting has been occurring annually. The reporting is not standardized and seems to vary each time which leads to confusion when reading through results. It is now necessary to

program. Continuous and ongoing 4.6. Promote mitigation measures for the impacts, in case it is deemed necessary in light of the analysis of the collected information. In Progress			analyse the observer data with the population status of the species. The key aspect will be to analyse the impact of the fishery on ETP species, and ensure this analysis is available to the FIP and the full-assessment team. 4.6 Some interim mitigating steps have begun to be implemented, such as training on release techniques for observers. Observers then teach the crew onboard vessels. Kits with devices to aid in release have also been recommended.

i http://www.imarpe.pe/imarpe/archivos/Informe-correspondiente-Oficio-635-2019-IMARPE-CD.pdf

ii https://www.undercurrentnews.com/2020/01/10/peru-anchovy-season-likely-to-close-with-just-35-quota-caught/?utm_source=Undercurrent+News+Alerts&utm_campaign=47f90faf1f-Europe_briefing_Jan_10_2020&utm_medium=email&utm_term=0_feb55e2e23-47f90faf1f-92676149

iii https://fisheryprogress.org/sites/default/files/documents_actions/2018%2012%2012_Informe%20Selectividad%20SNP-IHMA.pdf#overlay-context=node/3546/improvement

iv http://www.imarpe.pe/imarpe/archivos/informes/imarpe_elabo_limite_maximo_captura_norte_centro_anch.pdf

v http://www.imarpe.gob.pe/imarpe/index.php?id_seccion=I0170010201000000000000

vi https___peru.oceana.org_sites_default_files_anchoveta_corregido2_0.pdf

vii https://peru.oceana.org/es/blog/el-desvio-ilegal-de-anchoveta-en-el-peru

viii https://fisheryprogress.org/system/files/documents_assessment/2017%2008%2014_CeDePesca_anchoveta%20CHI_actualizaci%C3%B3n%20de%20an%C3%A1lisis%20de%20desempe%C3%B1o%20MSC.pdf

ix http://www.imarpe.pe/imarpe/archivos/informes/imarpe_elabo_limite_maximo_captura_norte_centro_anch.pdf

x https://www.peru.gob.pe/docs/PLANES/14303/PLAN_14303_2015_LEY_25977_LEY_GENERAL_DE_PESCA.PDF

xi https://cdn.www.gob.pe/uploads/document/file/136833/81122_1.pdf

xii https://www.peru.gob.pe/docs/PLANES/13771/PLAN_13771_MANUAL%20DE%20ORGANIZACION%20Y%20FUNCIONES%20(PARTE5)_2009.pdf

xiii https://www.undercurrentnews.com › 2020/01/10 › peru-anchovy-season-lik...

xiv file:///C:/Users/cnorth/Downloads/https___peru.oceana.org_sites_default_files_oceana_factsheet_plantas_referencia_artefinal.pdf