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IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients

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Global Standard for Responsible Supply of Marine Ingredients Fishery Assessment Methodology and Template Report V2.0



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Fishery Under Assessment	Sardine <i>Sardina pichardus</i> FAO 34
Date	February 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome

Name: Laayoune Proteins				
Address:				
Country: Morocco		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global Ltd		
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/Re-approval	Whole fish/ By-product
Jim Daly	Virginia Polonio	0.5	Re-approval	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	Ministre de l'Agriculture et de la Pêche maritime (Maroc); EU; Russia
Main Species	Sardine <i>Sardina pilchardus</i>
Fishery Location	FAO 34
Gear Type(s)	Seine, pelagic trawl, artisanal
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	APPROVE
Recommendation	APPROVE

Assessment Determination
<p>In Morocco the small pelagic fishery has a range of target species of which sardine is by far the most important. The sardine fishery is managed as part of a multi-species fishery with two management zones: The zone 'Atlantique centre' (central zone, zones A+B) and the zone 'Atlantique sud' (south zone, zone C) (Figure 1).</p> <p>Total sardine catch in 2016 went up by 18% compared to that of 2015 from around 908,000 tonnes to over 1,067,000 tonnes. More than 69% of catches are taken in the Moroccan zone and over 9% from the Mauritanian zone. The FAO Working Group (2018) considers that the <i>S.pilchardus</i> stock in Areas A, B, is not fully exploited.</p> <p>Three fleets prosecute this fishery: The coastal seiner fleet (all zones); the Refrigerated Sea Water (RSW) trawler fleet (zone C) and the EU / Russian freezer trawler fleet operating under agreements with Morocco (zone C). The fishery in zone C is managed under a plan which includes a TAC (all pelagic species combined), bycatch limits, species restrictions, spatial zoning and closed areas. The fishery in zones A+B is also managed via a management plan, but using limits on effort rather than a TAC.</p> <p>There are also regulations in place to limit landings of bycatch and to protect endangered species (monk seals, some sharks). Management measures are applied to the fishery but it is not clear the extent to which these are species-specific. However interaction of the Moroccan and Mauritanian small pelagic fisheries with protected species is poorly documented, and further study is needed. There are no related MSC Certifications.</p> <p>The European pilchard (<i>Sardina Pilchardus</i>) is a species of least concern (IUCN Red List) and is not on the current list of CITES endangered species (websites accessed 21.02.19)</p> <p>The European pilchard (<i>Sardina Pilchardus</i>) is approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 standard (by-products).</p>
Peer Review Comments
Agree

Notes for On-site Auditor

Note: This table should be completed for whole fish assessments only.

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Sardine <i>Sardina pilchardus</i>	N/A	PASS	
Category D				

[List all Category A and B species. List approximate total % age of landings which are Category C and D species; these do not need to be individually named here]

HOW TO COMPLETE THIS ASSESSMENT REPORT

This assessment template uses a modular approach to assessing fisheries against the IFFO RS standard.

Whole Fish

The process for completing the template for a **whole fish** assessment is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table, to determine which categories of species are present in the fishery.
2. ALL ASSESSMENTS: Complete clauses M1, M2, M3: Management.
3. IF THERE ARE CATEGORY A SPECIES IN THE FISHERY: Complete clauses A1, A2, A3, A4 for **each** Category A species.
4. IF THERE ARE CATEGORY B SPECIES IN THE FISHERY: Complete the Section B risk assessment for **each** Category B species.
5. IF THERE ARE CATEGORY C SPECIES IN THE FISHERY: Complete clause C1 for **each** Category C species.
6. IF THERE ARE CATEGORY D SPECIES IN THE FISHERY: Complete Section D.
7. ALL ASSESSMENTS: Complete clauses F1, F2, F3: Further Impacts.

A fishery must score a pass in **all applicable clauses** before approval may be recommended. To achieve a pass in a clause, the fishery/species must meet **all** of the minimum requirements.

By-products

The process for completing the template for **by-product raw material** is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table with the names of the by-product species and stocks under assessment. The “% landings” column can be left empty; all by-products are considered as Category C and D.
2. IF THERE ARE CATEGORY C BYPRODUCTS UNDER ASSESSMENT: Complete clause C1 for **each** Category C by-product.
3. IF THERE ARE CATEGORY D BYPRODUCTS UNDER ASSESSMENT: Complete Section D.
4. ALL OTHER SECTIONS CAN BE DELETED. Clauses M1 - M3, F1 - F3, and Sections A and B do not need to be completed for a by-product assessment.

By-product approval is awarded on a species-by-species basis. Each by-product species scoring a pass under the appropriate section may be approved against the IFFO RS Standard.

SPECIES CATEGORISATION

The following table should be completed as fully as the available information permits. Any species representing more than 0.1% of the annual catch should be listed, along with an estimate of the proportion of the catch each species represents. The species should then be divided into Type 1 and Type 2 as follows:

- **Type 1 Species** can be considered the ‘target’ or ‘main’ species in the fishery. They make up the bulk of annual landings and are subjected to a detailed assessment.
- **Type 2 Species** can be considered the ‘bycatch’ or ‘minor’ species in the fishery. They make up a small proportion of the annual landings and are subjected to relatively high-level assessment.

Type 1 Species must represent 95% of the total annual catch. Type 2 Species may represent a maximum of 5% of the annual catch (see Appendix B).

Species which make up less than 0.1% of landings do not need to be listed (NOTE: ETP species are considered separately). The table should be extended if more space is needed. Discarded species should be included when known.

The ‘stock’ column should be used to differentiate when there are multiple biological or management stocks of one species captured by the fishery. The ‘management’ column should be used to indicate whether there is an adequate management regime specifically aimed at the individual species/stock. In some cases it will be immediately clear whether there is a species-specific management regime in place (for example, if there is an annual TAC). In less clear circumstances, the rule of thumb should be that if the species meets the minimum requirements of clauses A1-A4, an adequate species-specific management regime is in place.

NOTE: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in the CITES appendices, it **cannot** be approved for use as an IFFO RS raw material. This applied to whole fish as well as by-products.

TYPE 1 SPECIES (Representing 95% of the catch or more)

Category A: Species-specific management regime in place.

Category B: No species-specific management regime in place.

TYPE 2 SPECIES (Representing 5% OF THE CATCH OR LESS)

Category C: Species-specific management regime in place.

Category D: No species-specific management regime in place.

Common name	Latin name	Stock	% of landings	Management	Category
Sardine	<i>Sardina pilchardus</i>	FAO 34	N/A	Ministre de l’ Agriculture et de la Pêche maritime (Maroc); EU; Russia	C

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment. In a by-product assessment, Category C species are those which are subject to a species-specific management regime, and are usually targeted species in fisheries for human consumption.

Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name		Sardine <i>Sardina pilchardus</i>	
C1	Category C Stock Status - Minimum Requirements		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
Clause outcome:			PASS

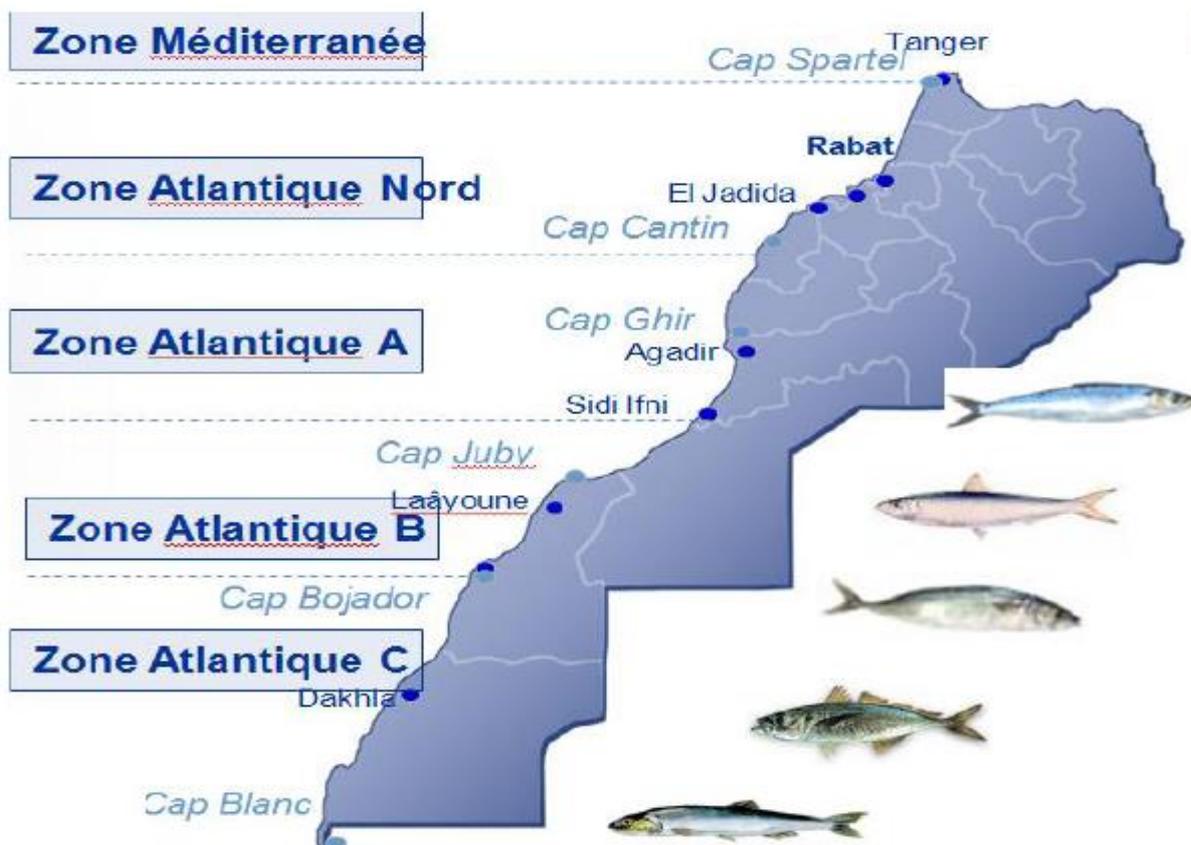


Figure 1 Fishing zones for management purposes off the Moroccan Coast **R4**

Evidence

C1.1:

Licensed vessels are required to submit logbooks and landings declarations, and there appear on this basis to be good statistics on catch and effort. There is no evidence of significant problems of fishing by unlicensed vessels. One issue may be the under-declaration of catch by the artisanal fleet, which is usually very difficult to monitor (small vessels landing mixed catches at many small landing sites). There is also regular sampling of length composition in the catch.

Annual acoustic surveys are conducted by the Moroccan research vessel N/V Al Amir Moulay Abdellah (Institut National de Research Halieutique (INRH). There have also been international research surveys (FAO) carrying out other biological work such as estimates of recruitment. Russian scientists have worked on size-age relationships in this stock, via analysis of otoliths (INRH 2012 and 2015, CECAF 2012). The latest summary FAO report was published in 2014 and used data until 2013.

The Committee for Eastern Central African Fisheries (CECAF) and INRH use a Schaefer dynamic production model to evaluate stocks, but have also experimented with other models and may expand to use more up-to-date Bayesian analysis techniques in the future.

Landings data are collected such that the fishery-wide removals are known. **The species passes Clause C 1.1:**

Table 1: Landings data (small pelagic fishery) Morocco 2014 **R4**

Species	landings by zone 2014 (t)		% of total landings for the zone made up by each species, 2014		
	Centre	Sud	Centre	Sud	Both
sardine	573 904	283 096	93 %	48 %	71 %
mackerel	24 340	204 913	3.9 %	35 %	19 %
sardinella	285	58 640	0.05 %	10 %	4.9 %
horse mackerel	9 436	39 296	1.5 %	6.7 %	4.0 %
anchovy	11 327	19	1.8 %	0 %	0.94 %

Fishery removals of the species in the fishery under assessment are included in the stock assessment process.

The species passes clause C.1.1

C1.2:

The total biomass of small pelagic (sardines, anchovies, horse mackerels, mackerels and sardinella) in the Moroccan EEZ, estimated in autumn 2015, amounted to 7.45 million tons. The volume of catches made on this biomass in 2016 was around 1,457,000 tons, rising by 11% in 2016 compared to the previous year. Biomass of small pelagic stocks in the two central and southern zones was estimated at 4.45 million tons, showing a decrease of 30% compared to autumn 2015. Sardine (*S.pilchardus*) biomass alone accounted for 67% of total small pelagic stock in these zones.

Based on the Biodyn method, the sardine stock in 2016 is indicated to be less than fully exploited, (B2015 is 48% over the limit reference point); though the ASPIC model with CPUE result is far less optimistic, with B2015/Bmsy estimated at 67% (33% under the limit reference point). Fishing mortality relative to the target reference point F0.1 (F2015/F0.1), ranges from 44% (Biodyn model) to 128% (ASPIC with CPUE) (INRH 2016).

Zoning, biological rest and vessel monitoring systems, as well as favourable hydro-climatic conditions are credited for improving the status of small pelagic stocks in the North-West Africa area (INRH 2016). Trends for the majority are assessed as positive; and the different stocks of sardine are indicated to be in conditions of full or less than full exploitation, with the exception of the Mediterranean stock, which is deemed overexploited. The INRH considers sardines and mackerel in the Central Zone to be in a state of non-full exploitation.

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), and **passes Clause C 1.2.**

References

- R1** FAO Fishery and Aquaculture Profiles <http://www.fao.org/fishery/facp/MAR/fr>
 - R2** Fishsource *S.pilchardus* https://www.fishsource.org/stock_page/779
 - R3** Ministre de l'Agriculture et de la Pêche maritime <http://www.agriculture.gov.ma/>
 - R4** Institut National de Research Halietique (INRH) 2016. Etat des stocks et des pêcheries Marocaines <http://www.inrh.ma/fr/publications/etat-des-stocks-et-des-p%C3%A4cheries-marocaines-2016>
 - R5** FAO Casablanca Morocco (2011) Working group on the assessment of small pelagic fish off northwest Africa 267pp <http://www.fao.org/docrep/017/i3135b/i3135b.pdf>
 - R6** Jo Gascoigne Moroccan Sardine FIP Assessment in relation to the MSC Standard (2016) 28pp pdf
- Standard clauses 1.3.2.2*