Food and Agriculture Organization of the United Nations

This programme is co-funded by the European Union

Catch Monitoring Survey at Marine Landing Sites, Cambodia

MaFReDI Technical Report

©FAO/CAPFISH-Capture, Marcel Kroese 2021

2023 ANNUAL STATISTICAL REPORT

Marine Fisheries Research and Development Institute (MaFReDI)

This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of Fisheries Administration and do not necessarily reflect the views of the European Union

Contents

List of tables

List of figures

Acknowledgements

This report was prepared with financial support from the EU Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector programme (CAPFISH). The authors would like to express their gratitude to the FAO CAPFISH-Capture project in supporting the development of the methodology, general support for training, and assistance and advise on data collection and analysis and the preparation of this report. The authors also thank the MaFReDI data collector team for their hard work for field data collection and data entry as well as providing additional contributions for interpreting the information. The authors also thank local authorities at different levels for their support during the field work.

Abbreviations

CPUE	Catch per Unit Effort
EU	European Union
ε%	Relative Standard Error
FAO	Food and Agriculture Organization
FCMAS	Fish Catch Monitoring Assessment Survey
FiA	Fisheries Administration
FiAC	Fisheries Administration Cantonment
KHR	Khmer Riel
NSDFA	National Strategy Data collection for Fisheries and Aquaculture
MaFReDI	Marine Fisheries Research and Development Institute
MT	Metric Tons
RGC	Royal Government of Cambodia
SD	Standard Deviation
US$	United States Dollars

Executive Summary

The FCMAS was implemented during June – December 2023, collecting data on 1569 landings at 8 landing sites, covering 352 small-scale vessels and 1217 middle-scale vessels. Small-scale vessels contributed 3.2% of the total reported catch, with trawlers contributing 78.8% of the reported catch and other middle-scale gears contributing 19%. This makes trawlers the most important component in Cambodian fisheries.

Landings at Koh Kong and Preah Sihanouk represent more than 90% of the total reported catch, with Koh Kong contributing 32.9% and Preah Sihanouk 57.4% and contribute 98% of the reported trawl landings. The reported landings show a slight seasonality in terms of total recorded weight and importance of certain species, specifically the importance of shorthead anchovy.

While middle-scale gears mainly operate off-shore (53% of the reported catch), small-scale operations mainly operate in in-shore areas (63% of the catch), within the 20-meter isobath.

Effort sees very little variation between small-scale or middle-scale operations and gears, with most operators targeting full-time fishing. However, the CPUE sees a large variation, with Trawl (207.6 kg/day) and mackerel gillnets (153.4 kg/day), reporting very high catches with a high statistical confidence. CPUE for small-scale fishing is generally lower for the same gears used also by middle-scale vessels, a consequence of larger vessels being able to deploy more gear units (traps and hooks/lines) or longer gillnets. The highest observed CPUEs for small-scale vessels with a high statistical accuracy is Mackerel gillnet (69.6 kg/day), followed by Fish gillnet (44.8 kg/day) and Mullet gillnet (33.8 kg/day).

While most gears operated both by small- and middle-scale vessels see limited differences, there are large differences between active fishing gears like trawls, with the CPUE for middle-scale trawlers 12-18 meter is estimated at 427.5 kg/day, more than 7 times higher than for 6 -12-meter trawlers at 60.5 kg/day.

The average total monthly estimated catch from June to December 2023, is calculated at 6,983.4 MT. Extrapolating this over 12 months, results in a total estimated catch for 2023 of **83,800.45 MT**. This is almost exactly the same as the cumulative total estimated for individual months. As for the reported catch, by far the largest contribution to the total estimated catch is by trawlers, for a total of 60.5%, with small-scale vessels contributing more than 17.5% and other middle-scale gears contributing 29.0%. Despite some estimates for trawlers 18-24 meter and large-scale vessels > 24 meter, being based on a small number of landings, these vessel-gear categories only contribute around 5% to the total estimated catch, giving a high confidence to the total catch estimate.

Using the average reported price (4143 KHR/kg), the total value of the estimated catch for 2023 can be calculated as **347,185,264,350** KHR or US$ **84,679,333.**

The FCMAS is implemented by MaFReDI in close collaboration with FiAC staff in the coastal provinces and provides valuable data and information on the marine fisheries. However, it is noted that the total catch estimate doesn't match with the 2023 official catch estimate (125,500 MT) or the species composition that is published by FiA. The current MaFReDI estimates for catch and effort have a high level of confidence, but the results from the FCMA are currently not used to complement or adjust the national fisheries statistics. To better support policy development, evaluation and decision making on management interventions, MaFReDI accepts that a number of adjustments need to be made with technical support from FAO CAPFISH for implementation from

2024 onwards. This report includes a number of recommendations prepared in close collaboration with FAO CAPFISH, that will be presented and discussed during the annual FCMAS workshop.

1. INTRODUCTION

With technical assistance from FAO CAPFISH project under EU budget support, Marine Fisheries Research and Development Institute (MaFReDI) has been conducting scientific catch monitoring at landing site in four provinces since June to December 2021. The aim of the survey is to estimate the Catch per Unit of Effort (CPUE) in kg/fishing day, for the main fishing gears used, the monthly fishing effort, species catch and value, as well as the total estimated catch, from data collected at the main landing sites in Kampot, Kep, Koh Kong and Preah Sihanouk provinces. This report describes the main results for marine fish catch monitoring at national level in Cambodia from June to December 2023.

Additional details on findings for individual provinces based on priority needs and requests from fisheries administration cantonment (FiAC) are included in a number of annexes.

2. METHODOLOGY

The methodology, sampling design and survey form for the Fish Catch Monitoring Assessment Survey (FCMAS) is included in a manual, which is available from the FiA web-site:

Fisheries Administration (FiA) 2021. Manual for Fish Catch Monitoring Assessment for Marine Fisheries in Cambodia. Marine Fisheries Research and Development Institute of the Fisheries Administration, Phnom Penh, Cambodia. 38 pages.

The coverage of the FCMAS and methodology have been largely unchanged since the start of the survey in 2021, but a few adjustments have been made to field approach to allow more precise estimates of catch and effort, these changes are included in an updated manual that will be published in 2024 as the basis for future data collection.

Almost all data for 2023 is collected using recall survey from random selected landings at 8 fixed landing sites, for 4 consecutive days towards the end of each month. The survey doesn't conduct direct measurements or species sub-sampling and this needs to be taken into account when evaluating the results. Recall based data has a lower accuracy than direct measurements. However, the data is internally consistent between landing sites and months. FCMAS sampling and survey design will affect how this data can be used and compares with the official FiA fisheries statistics. The current approach is considered to result in highly useful data on status and trends of the Cambodian marine fisheries that can inform the design of future data collection efforts and support formulation and adjustment of fisheries policy and management plans.

3. RESULTS

3.1. Number of vessels/landings recorded in June to December

Data collection from June to December 2023 was conducted at 8 fishing landing sites, two in each coastal province (Table 1). Overall, landings for 352 small-scale vessels and 1217 middle-scale vessels were recorded, representing 22.4% and 77.6%, respectively. Middle-scale vessels include vessel length 12-24 and all trawlers regardless of size, as well as all vessels operating blood cockle dragnet.

Table 1. Number of the landings recorded by province and landing site.

Province	Landing Site	Small Scale		Middle Scale						Total
				Other gears			Trawlers			
		< 6m	6-12m	12-18m	18-24m	>24m	6-12m	12-18m	18-24m	
Kampot	Kampong Kandal		10	16	14		133	23		196
	Trapeang Ropov	1	116	74			5			196
Kep	Ampeng		62	5			128	1		196
	Ou Krasar		45	136	16					197
Koh Kong	Oknha Lyon Phat		29	73	8	3	20	61	2	196
	Thmasar		81	87	5		19	4		196
Preah Sihanouk	Stueng Hav			57		1	11	127		196
	Tumnup Rolok		8	31	4		107	46		196
Grand Total		**1**	**351**	**479**	**47**	**4**	**423**	**262**	**2**	**1569**

For some vessel-gear categories only a very small number of landings were recorded. Vessels smaller than 6 meters only were recorded once, while large-scale vessels only were recorded 4 times and large trawlers (18-24 meter) only 2 times.

3.2. Reported catch

The reported catch is compared between months and provinces in **Figure 1.** Total recorded landed weight (kg) by province and month.Figure 1, it is clear that there are 2 peaks for July and October. While for most months the recorded landed weight for Preah Sihanouk is highest, this changes from October onwards, most likely due to reduced landings of anchovies and other smaller species that are known to form the bulk of the landings at Steung Hav landing site in Preah Sihanouk. While this indicates a clear seasonality in the fisheries for both Koh Kong and Preah Sihanouk, the catches reported from both Kampot and Kep, stay very similar between months. More detail on the observed seasonality in species is included in section 3.7 and Annex 5.

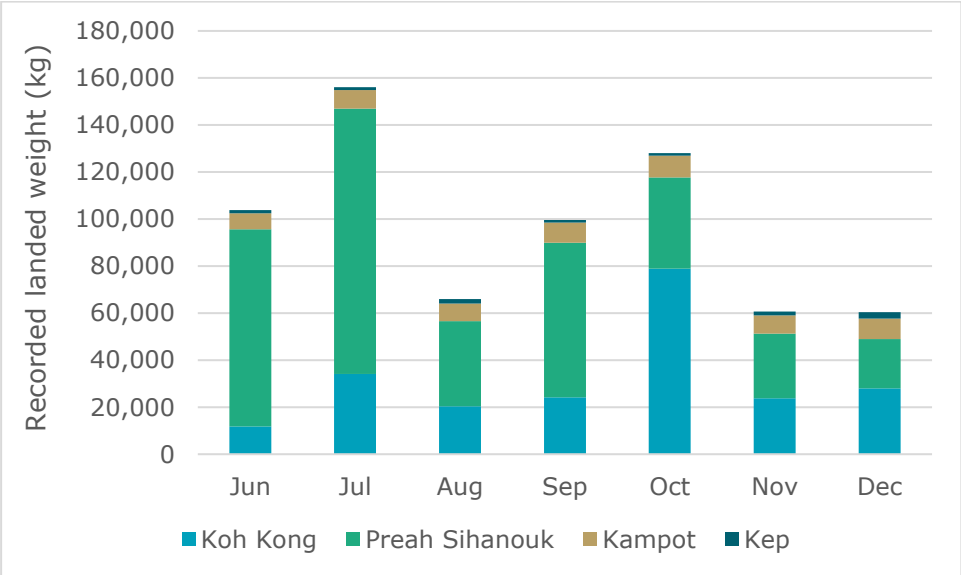

Figure 1. Total recorded landed weight (kg) by province and month.

3.3. Catch per Unit of Effort by main gears

As the FCMAS uses random sampling of landings, the number of records for fishing gears varies between months, but reflect the occurrence and frequency of gears used at the landing sites covered

by the survey. That clearly indicates that trawls are by far the most important gear, representing 56.9% of the recorded middle-scale gears, followed at considerable distance by crab gillnets. For small-scale vessels, the most frequently used gear is fish gillnet that is used in 31.5% of all small-scale landings, followed by crab gillnet (22.5%) and centipede trap (19.4%).

Only gears for which more than 2 observations are present are included in Table 2, as this allows to assess the statistical accuracy by calculating the relative standard error (ε%) of the average CPUE. Half-beak gillnet has the highest observed CPUE, at 245.6 kg/fishing day. But has a high value for the ε% indicating this is not reliable estimate for the real CPUE for this gear, followed by Trawl (207.6 kg/day), mackerel gillnet (153.4 kg/day) and fish trap (153.2 kg/day). The latter again has a high value for ε%, making it an unreliable estimate for the true average CPUE for this gear. CPUE for small-scale fishing is generally lower for the same gears used also by middle-scale vessels, a consequence of larger vessels being able to deploy more gear units (traps and hooks/lines) or longer gillnets. The highest observed CPUEs for small-scale vessels are for Octopus trap longline (84.4 kg/day), which also has a high value for ε%, followed by Mackerel gillnet (69.6 kg/day), Fish gillnet (44.8 kg/day) and Mullet gillnet (33.8 kg/day).

One gear category omitted from Table 2, is the non-specified gears, which has one of the highest CPUE at 279.5 kg/fishing day for middle-scale and 172.2 kg/fishing day for small-scale vessels. Since this is most likely a combination of different gears, this cannot be interpreted as a single gear. It does indicate that more needs to be done to ensure that all gears are properly identified. Out of 1569, 12 landings (0.8%), don't have the gear identified. The non-specified gears are included in the other gears nei category.

Table 2. CPUE (kg/day) and contribution to the reported landed weight, for main small- and middle-scale gears.

Vessel Class	Gear Type	CPUE	N	Landed weight	SD	ε%
Middle Scale	Halfbeak gillnet	245.6	13	1.1%	529.1	**59.8%**
	Trawl	207.6	691	56.9%	322.9	5.9%
	Mackerel Gillnet	153.4	50	4.1%	142.9	13.2%
	Fish trap	153.2	7	0.6%	198.1	**48.9%**
	Octopus trap longline	56.4	67	5.5%	37.4	8.1%
	Fish gillnet	50.3	27	2.2%	33.6	12.9%
	Shrimp gillnet	49.5	54	4.4%	44.1	12.1%
	Squid tow longline	32.2	3	0.2%	11.1	19.9%
	Bottom longline for Squid	26.9	2	0.2%	23.9	**62.8%**
	Crab trap	23.7	74	6.1%	13.9	6.8%
	Push net	20.9	4	0.3%	3.8	9.0%
	Centipede trap	20.7	27	2.2%	11.7	10.9%
	Crab gillnet	18.5	167	13.8%	12.3	5.1%
	Squid trap	14.8	5	0.4%	1.7	5.2%
	Dragged basket for blood cockle	7.7	10	0.8%	4.8	19.9%
	Other gears nei		13	1.2%		
Vessel Class	**Gear Type**	**CPUE**	**N**	**Landed weight**	**SD**	**ε%**
Small Scale	Octopus trap longline	84.4	6	1.7%	105.8	**51.1%**
	Mackerel Gillnet	69.6	9	2.6%	51.9	24.8%
	Fish gillnet	44.8	109	31.5%	28.8	6.2%

Vessel Class	Gear Type	CPUE	N	Landed weight	SD	ε%
	Mullet gillnet	33.8	4	1.2%	15.9	23.6%
	Push net	21.7	10	2.9%	6.8	9.9%
	Fish hook	15.8	4	1.2%	6.0	19.1%
	Centipede trap	15.5	67	19.4%	8.0	6.3%
	Bottom longline for Squid	15.5	11	3.2%	21.6	42.1%
	Fish bottom longline	15.0	2	0.6%	7.1	33.3%
	Crab trap	13.1	31	9.0%	6.4	8.8%
	Shrimp gillnet	11.7	3	0.9%	7.6	37.8%
	Squid trap	10.7	2	0.6%	1.0	6.7%
	Crab gillnet	9.4	78	22.5%	7.2	8.7%
	Hand push net	4.8	2	0.6%	1.1	15.8%
	Other gears nei		8	2.1%		

The value for ε% indicates the statistical precision, or the expected margin of the estimated average CPUE around the real value of the CPUE. If the value for the ε%, is higher than 25%, this indicates that the estimated average value is not reliable and should not be used. As Table 2, shows this only is an issue for a few gears that have a high variation relative to the estimated CPUE, most likely caused by differences in the amount of gear deployed. For most gears, the statistical precision is acceptable, for the gears indicated with orange background the average CPUE is not a reliable estimate for the real CPUE for that gear and is only included for reference.

Table 3. CPUE (kg/day) for trawlers by vessel size.

Trawlers	CPUE	N	SD	ε%
Small 6-<12 Trawl	60.5	423	89.1	7.2%
Middle 12-18 Trawl	427.5	262	354.4	5.1%
Middle 18-<24 Trawl	220.8	2	277.0	88.7%
Large 24+	1340.7	4	1,709.7	63.8%

Gears operated both by small- and middle-scale vessels see limited differences, except for active fishing gears like trawlers. The CPUE for trawlers sees a high difference between vessel size class (Table 3), with the CPUE for middle-scale trawlers 12-18 meter at over 427.5 kg/day, more than 7 times higher than for 6 -12-meter trawlers at 60.5 kg/day. Although the value of the CPUE for trawlers 18-24 meter and > 24 meters, are included, the value of ε%, indicates these estimates are not statistically accurate and should not be used, due to the very high variation and low number of observations.

3.4. Catch proportion by main gears

Trawlers always have the highest contribution to the total catch overall, with fish gillnet the highest contribution to the total catch for small-scale vessels. Middle-scale fisheries, contribute more than 97.8% of the total recorded catch. While the contribution to the value of most gears is higher than the contribution to the weight, this isn't true for Trawlers, that mainly catch low value fish, mainly not used for human consumption. The comparison also shows that some fishing gears are much better at targeting certain species and generate a high value with low volume, e.g. Octopus trap long line, crab and shrimp gillnet and fish and crab traps. The main species targeted by trawling is covered in more detail in the discussion.

Table 4. Proportion of catch by main fishing gear for small-scale and middle-scale gears

Middle Scale	**Catch (%)**	**Value (%)**
Trawl	78.8%	52.0%
Mackerel Gillnet	7.4%	7.7%
Octopus trap longline	2.8%	7.5%
Halfbeak gillnet	2.1%	2.9%
Crab gillnet	0.9%	2.3%
Fish trap	0.9%	6.5%
Crab trap	0.8%	2.1%
Shrimp gillnet	0.7%	4.8%
Fish gillnet	0.6%	3.0%
Squid tow longline	0.2%	0.8%
Other gears nei	2.5%	2.1%
	97.7%	91.7%
Small Scale	**Catch (%)**	
Fish gillnet	0.8%	0.4%
Mackerel Gillnet	0.3%	0.3%
Octopus trap longline	0.3%	0.7%
Crab gillnet	0.2%	1.4%
Centipede trap	0.2%	0.3%
Other gears nei	0.5%	3.7%
	2.3%	6.8%

	Total	**Kampot**	**Kep**	**Koh Kong**	**Preah Sihanouk**
Trawl	529,988	1.3%	0.7%	31.6%	66.4%
Other middle-scale	128,012	32.0%	4.6%	37.5%	25.9%
Small-scale	14,921	44.2%	10.2%	38.6%	7.0%
Total	672,921	8.1%	1.7%	32.9%	57.4%

This excludes landings from vessels using more than one gear

Trawl fisheries contribute by far most of the reported catch, with 78.8% of the catch. With the other middle-scale fishing contributing another 19% of the reported catches. As a consequence, 97.8% of the reported catch is by middle-scale fisheries, with only 3.2% by small-scale fishing.

In addition, when considering the fisheries production by province, from June to December 2023, the vast majority of the trawl fisheries production is reported from Preah Sihanouk followed at considerable distance by Koh Kong, with Kampot and Kep only contributing 2% combined. Most of the production by other middle-scale and small-scale fisheries is by Kampot and Koh Kong (see for additional details Annex 3).

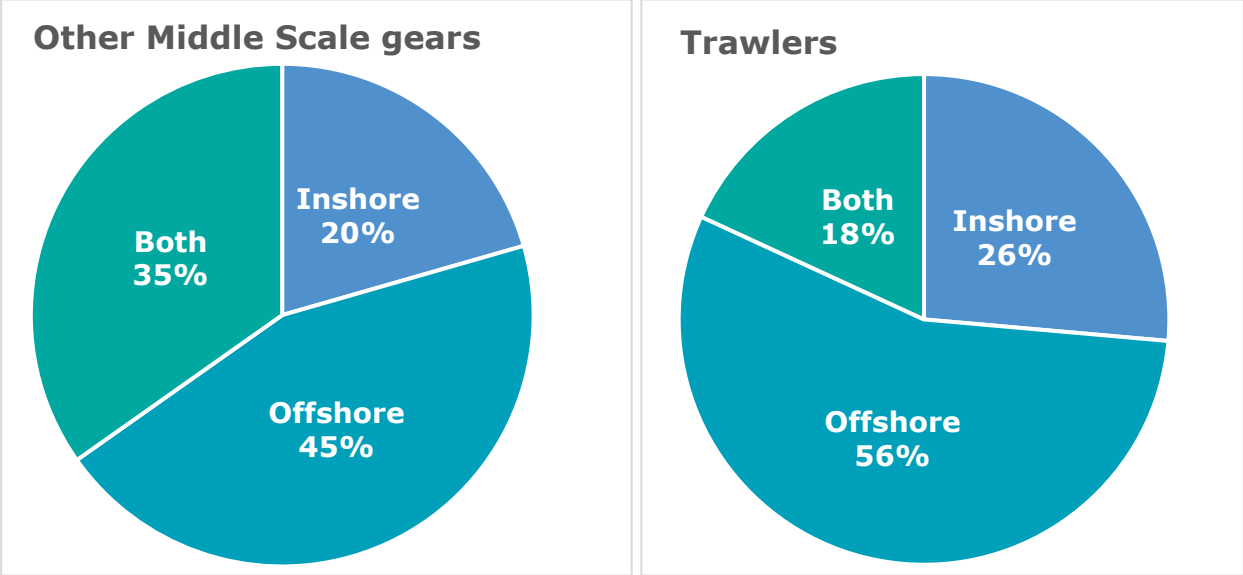

Figure 2. Reported fishing location for all gears combined and separated for trawlers.

The general location where vessels operate, specifically whether the catch was obtained in- or offshore, is reported and is included in **Figure 2**. This suggests that a considerable proportion of the catch is reported from inshore areas (within the 20-meter depth line), even for trawlers. As is indicated in Table 5, unsurprisingly, it is mainly trawlers and other middle-scale gears that report catches from off-shore areas. More detail on differences between provinces is included in Annex 6, but off-shore fishing by vessels landing in Kampot and Kep is relatively unimportant.

Table 5. Catch by main fishing zone and main gear categories.

Main gear categories	Inshore	Offshore	Both	Total reported (kg)
Small Scale gears	63.1%	9.8%	27.1%	15,235.3
Trawl gears	26.4%	55.5%	18.1%	529,988.4
Other Middle Scale gears	20.6%	44.7%	34.8%	129,465.0

3.5. Gear effort

The FCMAS collects data on the number of fishing days, which can be used to calculate the fishing effort, by gear type (**Error! Reference source not found.**). This shows that the fishing effort is very similar for different gears and vessel classes, with only a few outliers that are much higher (squid trap), or much lower (Crab gillnet), than the average fishing effort over all gears with an accurate value for the average effort: 16.5 fishing days for small-scale gears and 18 fishing days for middle scale gears. Fishing effort is largely independent of the vessel-gear category, with most operators targeting full-time fishing.

Table 6. Estimated average monthly fishing days by gear and main vessel class.

Gear	Small-scale		Middle-scale	
	Days	ε%	Days	ε%
Trawl			19.7	1.0%
Dragged basket for blood cockle			18.1	13.2%
Fish trap			16.6	22.1%

Gear	Small-scale		Middle-scale	
	Days	ε%	Days	ε%
Fish hook	9.0	32.4%		
Squid trap	22.5	6.7%	26.4	4.3%
Fish bottom longline	16.0	6.3%		
Crab trap	17.0	6.2%	17.4	3.9%
Hand push net	7.5	33.3%		
Crab gillnet	13.0	5.3%	11.5	4.2%
Bottom longline for Squid	15.0	8.6%	18.0	33.3%
Fish gillnet	19.4	3.2%	15.6	8.8%
Mackerel Gillnet	20.3	10.6%	19.1	4.5%
Mullet gillnet	12.3	6.1%		
Halfbeak gillnet			21.5	10.5%
Centipede trap	15.6	4.3%	16.4	9.6%
Shrimp gillnet	11.7	42.1%	22.4	1.5%
Squid tow longline			18.7	18.9%
Octopus trap longline	15.5	23.1%	16.7	5.5%
Push net	15.2	10.6%	15.3	21.6%

3.6. Species group catch contribution by landed weight

The total reported catch for all species group was 674,760.7 kg, fish dominate the total reported catch with almost 73.7% of total weight followed by Cephalopods 8.8%, Shrimps at 4.4%, Crabs at 2.5% and other species groups at 1.6% (including unspecified species, sharks and rays). see Annex 1 for more details.

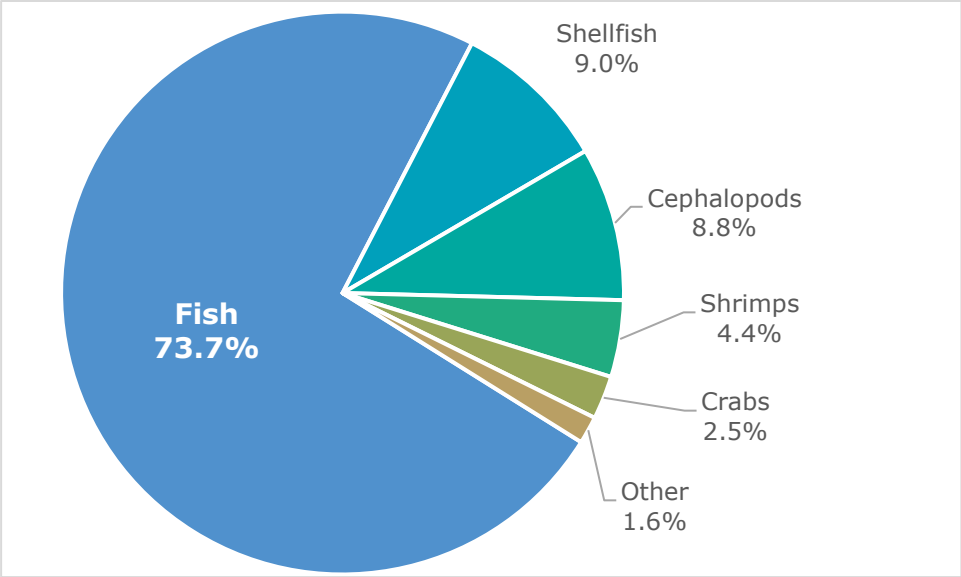

Figure 3. Catch composition by species group for all landings combined.

3.7. Species catch composition by reported catch weight for all landings

The species proportion for the total reported catch for June-December 2023, is shown in Table 7. There are a total of 66 unique species reported in the landings, alongside about 42 species groups[1]. By far the most abundant species is the Shorthead anchovy (*Encrasicholina heteroloba*), which contributes 42.4% of the total reported catch. This is followed by a number of species groups, Other fish nei (11.6%), Shellfish nei (8.6%), trash fish (5.8%) and Octopus nei (3.6%). and Squids nei with 2.9% Short mackerel with 2.8 %. The top 20 species contribute 95.3% of the reported catch.

Table 7. Catch composition by species for all landings.

Scientific name	English Name	Khmer name	Catch (kg)	Catch (%)
Encrasicholina heteroloba	Shorthead anchovy	កាកឹម	286,375.0	42.4%
	Other fish nei	ប្រភេទត្រីចំរុះ	78,184.5	11.6%
	Shellfish nei	ងាចំរុះ	58,131.0	8.6%
	Trash fish	ត្រីជី	38,840.0	5.8%
	Octopus nei	មឹកពីងពាង	24,349.3	3.6%
Decapterus macrosoma	Shortfin scad	ត្រីកាម៉ុងឬត្រីឆ្ពង	22,740.5	3.4%
	Squids nei	មឹក	19,713.0	2.9%
Rastrelliger brachysoma	Short mackerel	ត្រីផ្ដាង ឬត្រីកាម៉ុងខ្លួនខ្លី	19,117.5	2.8%
Portunus pelagicus	Swimming crab	ក្តាមសេះ	13,970.6	2.1%
	Cephalopods (squids/cuttlefish)	ពពួកមឹកស្មូកនិងមឹកបំពង់	11,479.2	1.7%
	Needlefish nei	ត្រីវង្គោង	11,203.0	1.7%
Penaeus sp.	Prawns nei	បង្គា	10,893.5	1.6%
	Other catch nei	ផ្សេងៗ	10,596.6	1.6%
	Shrimps (unsorted)	ពពួកបង្គាគ្រប់ប្រភេទទាំងអស់	6,959.0	1.0%
	Tuna	ត្រីឈាម	5,800.0	0.9%
Rastrelliger faughni	Island mackerel	ត្រីប៉ាឡាំង	5,775.0	0.9%
Metapenaeus spp.		បង្គាខ្ចីខាក់	5,457.2	0.8%
Anodontostoma chacunda	Chacunda gizzard shad	ត្រីកាម៉ង់	5,612.0	0.8%
	Small mixed shrimp nei	គី	4,334.0	0.6%
Rastrelliger kanagurta	Indian mackerel	ត្រីកាម៉ុងខ្លួនដង	4,020.0	0.6%
	Other species		31,209.8	4.6%
Grand total			**674,760.7**	

Unique species contribute 379,434.7 kg (56.2%), while species groups contribute 295,326 kg (43.8%) to the total reported catch.

In terms of seasonality by species, Annex 5, includes the reported monthly proportion to annual species catch for top 20 species, which allows to identify if there are months or periods for which a higher-than-average proportion of the reported annual catch is caught. This is not analysed for the current report and this is included as an example of how the data could be used. Although some species display peaks for certain months (shorthead anchovy, shortfin scad, Tuna, shellfish), it is unclear how this is affected by random sampled landings, that leads to the inclusion or absence of certain gears.

[1] There is some overlap between some species groups, especially for cephalopods, which makes it challenging to establish the exact number of different species groups

Annex 7 includes the main species caught by trawl fishing, where trawl fisheries contribute at least 70% of the total reported annual catch. This indicates that all shorthead anchovy, Tuna, small mixed shrimp nei and shellfish nei, are caught by trawlers, with some of the species and species groups with a large contribution to the total catch, e.g. trash fish (97.8%), other fish nei (91.8%) and squids and cuttlefish nei (91.2%) are almost exclusively landed by trawlers. This suggests that a large proportion of the trawl fisheries yield is not intended for human consumption and consists of low value catch (2000 KHR/kg or less). Shorthead anchovy, other fish nei, shellfish nei and trash fish constitute 85% of trawl fisheries catch.

3.8. Species group contribution by landed value

The total reported value from June to December was **2,795,652,500** Riels, Fish contribute 32.8%, Cephalopods 32.0%, Crabs 15.7% and Shrimps 14.3%, with shellfish contributing 2.7% and other species groups 2.5% (including unspecified species, sharks and rays). More details are included in Annex 2).

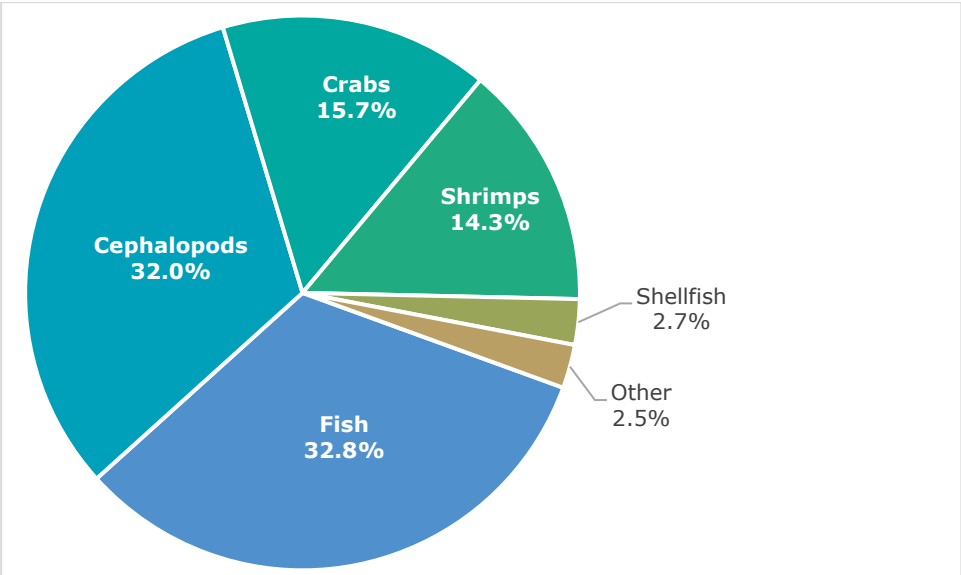

Figure 4. The value of the catch by main species groups for all landings

3.9. Species catch composition by reported catch value for all landings

The value and price for the top 20 species for the period June to December is shown in Table 8. The species (group) with the highest reported value is Swimming crab (13.9%), followed by Squids nei (12.3%) and Shorthead anchovy (8.2%), the high reported weight ensures this has a high contribution to the total catch. Besides a number of cephalopods species groups (Cephalopods and Octopus, other fish nei (7.0%), Prawns nei (5.0%), also are important, either through their bulk or high prices. Other species and species groups outside of the top 20 contribute 9.4% of the total reported value.

Table 8. Total value (1000 Riel) by species for all landing

Scientific name	Khmer name	English Name	Value (1000 Riels)	Value (%)	Price (Riel/kg)
Portunus pelagicus	ក្តាមស	Swimming crab	388,666	13.9%	24,175
	មឹក	Squids nei	347,372	12.4%	17,325

Scientific name	Khmer name	English Name	Value (1000 Riels)	Value (%)	Price (Riel/kg)
Encrasicholina heteroloba	កាកឹម	Shorthead anchovy	228,204	8.2%	750
	ប្រភេទត្រីចំរុះ	Other fish nei	196,055	7.0%	2,750
	ពពួកមឹកស្មុកនិងមឹកបំពង់	Cephalopods (squids/cuttlefish)	178,770	6.4%	15,025
	ពពួកមឹកពីងពាង	Octopus	292,865	6.1%	12,100
Penaeus sp.	បង្គា	Prawns nei	138,477	5.0%	17,225
Metapenaeus spp.	បង្គាខ្នាតតូច		126,291	4.5%	22,225
Decapterus macrosoma	ត្រីកម្ពុងឬត្រីឆ្លាម	Shortfin scad	98,499	3.5%	4,550
Rastrelliger brachysoma	ត្រីឆ្លាម ឬត្រីកម្ពុងខ្លួនខ្លី	Short mackerel	88,656	3.2%	4,750
Suborder Sepiina	មឹកស្មុក	Cuttlefish	69,940	2.5%	15,550
	ផ្សេងៗ	Other catch nei	67,570	2.4%	14,575
	ពពួកបង្គារួមប្រភេទទាំងអស់	Shrimps (unsorted)	67,166	2.4%	8,400
	ខ្យង ម៉ឹក ក្តាមផ្សេងៗ	Shellfish nei	59,486	2.1%	1,525
	ត្រីផ្ដាង	Needlefish nei	48,774	1.7%	7,150
Portunus spp.	ក្តាមសេះ	Swimming crabs	37,806	1.4%	24,275
Rastrelliger faughni	ត្រីប៉ាឡាំង	Island mackerel	30,055	1.1%	5,550
Rastrelliger kanagurta	ត្រីកម្ពុងខ្លួនដំង	Indian mackerel	25,610	0.9%	5,625
	ត្រីជី	Trash fish	22,071	0.8%	800
Rachycentron canadum	ត្រីផ្ដក់សមុទ្រ	Cobia	20,022	0.7%	32,000
		Other species	263,301	9.4%	
Grand Total			**2,795,652.5**		

3.10. Total calculated catch

In view of the importance of trawl fisheries, this is added in three size-based classes[2], in addition to standard FiA vessel classes. Monthly vessel yield is based on independent estimates for the average daily catch and the monthly fishing days, while extrapolation uses number of vessels for each vessel-gear category is based on the 2018 vessel census, while assuming only 85% are operating[3].

The total average monthly catch for the period June to December 2023, is 6,983.4 MT. Extrapolating this over 12 months, results in a total estimated catch for 2023 of **83,800.45 MT**. This is almost exactly the same as estimated for individual months, extrapolating the period of January-May based on the average monthly estimated catch.

As for the reported catch, by far the largest contribution to the total estimated catch is by trawlers, for a total of 60.5%, with small-scale vessels contributing more than 17.5%. Because of insufficient observations for some vessel-gear categories for individual months, the monthly total estimated catch calculation in Table 9, is using the annual average values for the CPUE and Effort for Small-scale < 6-meter, Trawler 18-24 meter and Large-scale > 24 meter. Only a few landings for these vessel-gear classes are recorded over the year, the value for ε% therefore represents the annual values.

Table 9. Average monthly estimated catch by main vessel gear categories.

[2] Trawl gears are not reported by type in the 2023 data
[3] Based on information by FiAC staff

Vessel-gear category	Recorded landings	CPUE	ε%	Effort	Monthly vessel yield (kg)	Active Vessels (85%)	Total Monthly yield (MT)	%Total
Very small<6 meter	1	5.5	7.0%	5.0	27.5	775.2	21.3	0.3%
Small-scale 6-<12 meter	351	27.5	7.0%	16.4	451.6	2658	1,200.3	17.2%
Trawl 6-<12 meter	423	60.5	7.2%	19.3	1,169.4	952	1,113.3	15.9%
Trawl 12-18 meter	262	427.5	5.1%	20.4	8,725.9	339.15	2,959.4	42.4%
Trawl 18-<24 meter	2	220.8	**88.7%**	16.0	3,533.3	42.5	150.2	2.2%
Other gears 12-18 m	479	47.2	11.4%	16.0	755.7	1588.7	1,200.6	17.2%
Other gears 18-<24 m	47	121.6	18.6%	18.9	2,301.9	55.25	127.2	1.8%
Large-scale 24+ meter	4	1,340.7	**63.8%**	17.5	23,462.5	9	211.2	3.0%
Monthly Total Estimated Catch								**6,983.4**

While the values for ε%, for most of the vessel-gear categories is acceptable, even when taking annual estimates, the statistical precision for Trawlers larger than 18 meters and Large-scale vessels > 24 meters is insufficient. However, since these vessel-gear classes combined contribute about 5.2% to the total estimated catch, there is confidence that the total catch is close to the actual value.

Using the average reported price, the total value of the estimated catch for 2023 can be calculated as **347,185,264,350** KHR or US$ **84,679,333**.

3.11. Straddling, highly migratory and transboundary stocks

Cambodia ratified the United Nations Fish Stock Agreement (UNFSA) on 18 January 2020, and MAFF is processing the depository of the document to the UN. United Nations Convention on The Law of The Sea (UNCLOS) defines straddling stocks as "the same stock or stocks of associated species[which] occur both within the exclusive economic zone and in an area beyond and adjacent to the zone", while highly migratory are listed in Annex 1 of UNCLOS. for which signatories are required to take measures to ensure conservation and management. In addition, Cambodia is involved in two Regional Plan of Actions (RPOA) for the management of transboundary fish stocks: 1) RPOA-for the management Indo-Pacific mackerel (*Rastrelliger brachysoma*) and 2) the RPOA on neritic tunas. Both agreements were prepared by the South East Asian Development Centre on behalf of member countries, including Cambodia (SEAFDEC 2015) and carry an obligation to report the amount of catch for straddling and highly migratory stocks.

According to the available data from the 2023 FCMAS, about 3% of the catch consists of species mentioned under the UNFSA and RPOA, Table 10. The proportion of these species found in the FCMAS, can be extrapolated using the total estimated marine catch (either the FCMAS or official FiA estimate). The estimated Total catch included in Table 10, is based on the FCMAS estimate.

Table 10. Reported catch (kg) and estimated total catch (MT) for species included in the UNFSA and RPOA.

Scientific name	English Common	Khmer Name	Reported catch (kg)		Total estimated (MT)
			Total	%Total	
Bramidae	Pomfrets	ត្រីចាប	15	0.002%	1.9
Rastrelliger brachysoma	Short mackerel	ត្រីផ្លាធូ ឬត្រីកាម៉ុង ខ្លួនខ្លី	19,118	2.83%	2,374.3

Scomberomorus commerson	Narrow-barred Spanish mackerel	ត្រីបេកាខ្មៅ ឬត្រីបេកាឆ្នូត	46	0.007%	5.7
Total reported catch			19,521	3.07%	19,179

3.12. Socio-economic data

I suggest this should be included in a separate report

4. CONCLUSIONS AND RECOMMENDATIONS

The FCMAS is implemented by MaFReDI in close collaboration with FiAC staff in the coastal provinces and provides valuable data and information on the marine fisheries. The FCMAS data isn't used to complement or adjust the national fisheries statistics and as a consequence the analysis as included in the monthly statistical reports is mainly done to fulfil the EU target for reporting. The main issue with acceptance of the FCMAS results is that the total catch estimate doesn't align with the official catch estimate or the species composition that is published by FiA. This is more evident for the 2023 data that diverges more sharply than the 2022 estimate (Table 11).

Table 11. Total estimated catch compared between official FiA statistics and FCMAS.

	2022	2023
FiA National Statistics	125,200	125,500
MaFReDI data	114,084[4]	83,800
Difference	**-8.9%**	**-33.3%**

While the FCMAS reports are all cleared internally and published on the FiA web-site, there is significant criticism on the methodology and coverage of the FCMAS within FiA. In part this is a result of the transparency on how the data is collected and how certain assumptions on effort, active fishing vessels and total number of fishing vessels are necessary to calculate the total catch estimate. With the main focus on this total catch estimate and the discrepancy with the official total catch estimate, those outside MaFReDI tend to consider all results as inaccurate or non-representative for the fisheries. In addition, despite the reports all being published and available in English and Khmer, their existence is not widely known. The FCMAS results therefore suffer from both lack of awareness and acceptance, which affects use of the available data that, besides the total catch estimate, has good data on both species catch, gear use, effort, CPUE.

In order to better support policy development, evaluation and decision making on management interventions and make the results more acceptable, MaFReDI accepts that a number of adjustments need to be made with technical support from FAO CAPFISH for implementation from 2024 onwards.

Some of the recommendations including below are challenging for FiA, MaFReDI and FiAC under the current funding and staffing limitations, but should be considered for the long-term National Strategy Data collection for Fisheries and Aquaculture (NSDFA), that FiA is planning to develop during 2024. A genuine discussion on how to improve Cambodian fisheries statistics is needed and development of a long-term plan for data collection needs to be formulated, integrated with the

[4] This is the updated total catch estimate, using the standard approach as recommended by FAO (as used in the current report), this is not yet endorsed by FiA management and different from the originally published total catch estimate for 2022 (232,755 MT)

information requirements for implementation of the MFMP and preparation of policy documents. This should address budget for statistical data collection and decentralisation under the current drive within MAFF and the RGC for digitisation of data and information and evidence-based decision making.

Since there is no longer a requirement for MaFReDI to collect FCMAS data for 2024, if a decision is made to continue the survey, a number of changes are recommended by FAO CAPFISH, both to the implementation and reporting, as included below. These should all be presented and discussed during the annual MaFReDI workshop early 2024 with participation by FiA and FiAC representatives, before the start of data collection. It needs to be clear what the purpose is for continuing the current routine collection of catch and effort data at landing sites and the added value for the existing FCMAS baseline, of another year of data collection

It is recommended to consult with both FiA management and FiAC, during the annual workshop, to identify what information is needed and the best way to obtain this, to make the results of the FCMAS more relevant for use by FIAC and by FiA for monitoring and evaluation of the management interventions under the MFMP.

Essential information:

- CPUE and effort (by gear and more precise location)
- Active fishing vessels
- Species catch/value/price
- Monthly provincial/national estimated total catch

Optional information:

- Disposal (use of catch)
- Cost-income-profit

Whatever is decided, it is highly recommended that FiA, in preparation of the annual fisheries statistics:

- Consider how the results from the FCMAS can be used for supplementing the published fisheries statistics for the coastal provinces;
- Make better use of existing data, e.g. from VMS and SMART for verification of effort and fishing locations to interpret the FCMAS data;
- Implement collection of re-designed logbooks for licensed vessels, to supplement the FCMAS data;
- Verify data based on recorded trade/export, socio-economic data (NIS) and NCDD data as well as verification surveys related to species composition/total catch; and,
- Develop a strategy with DPFIC on handing over the implementation of the FCMAS or a re-designed data collection approach based on the lessons learned with FCMAS, to FiAC and improving the reported data to PDAFF and FiA for preparing the national fisheries statistics.

Furthermore, FAO CAPFISH in close collaboration with MaFReDI, recommends the following, to be discussed and agreed by FiA and FiAC early 2024:

1. A larger focus is needed on collecting data that supports research priorities (e.g. income/cost, socio-economic data, stock assessment, larvae studies, importance of critical habitats) not only routine catch monitoring;

2. In view of the limited use of the FCMAS results, ways need to be found to communicate and present the methodology and main findings to the wider FiA, FiA management and MAFF. This can include:
    a. Ad-hoc briefings to the DG and permanent secretary
    b. Technical workshops and presentation of results during the TWG-Fi;

c. Preparation of scientific articles based on the data set;
d. Publication of a cleaned and anonymized copy of the data set (to protect privacy of fishers and vessel owners) on FIMS
e. Implement visualisation data summaries on FIMS for download;
f. Timely preparation and distribution of the monthly statistical reports within the next month after data collection[5]; and,
g. Preparation of an overview of the results of the marine scientific monitoring survey for catch and effort for 2021-2024.

3. Consolidate the improvements made to the FCMAS methodology in an updated manual that forms the basis for the agreed methodological adjustments for 2024.

4. In view of the results for 2023, to support national monthly catch estimates, the survey needs to employ a more rigorous stratified random sample, to increase the coverage for large trawlers (18-24m), that only covered 2 landings in 2023, Large-scale vessels, for which only 4 landings were recorded, while non-trawler middle-scale vessels need better coverage (or stratification). This is not representative for the number of vessels in each of these categories according to the 2018 vessel census or their importance for the fisheries, potentially leading to issues with using this data for estimating the total estimated catch. Based on 2022-23 data, target monthly sample size is between ±180-360, from 224 currently (Table 12).

Table 12. Recommended monthly sample targets based on 2022-23 observed variation.

Vessel-gear category	2023 Monthly Recorded landings	2023 Monthly Vessel yield	Total catch contribution (%)	Minimum Monthly Sample Size	Optimal Monthly Sample Size
Small-scale < 6 meter	<1	27.5	0.3%		
Small-scale 6-12 meter	49	449.0	17.1%	30	45
Trawler 6-12 meter	60	1,169.4	16.0%	35	55
Trawler 12-18 meter	37	8,725.9	42.4%	12	20
Trawler 18-24 meter	<1	3,533.3	2.2%	**25**	**40**
Other Middle-scale gears 12-18 meter	68	754.8	17.2%	70	160
Other Middle-scale gears 18-24 meter	7	2,299.0	1.8%	10	40
Large-scale gears >24 meter	<1	23,462.5	3.0%	**1**	**3**
Total sample	**224**			**183**	**363**

Since the goal for FCMAS is to enable more reliable monthly estimates, the survey cannot depend on random sampling as it has for 2021-2023, as this over-samples certain vessel-gear categories and under-samples others:

a. Stratified random sampling needs to be implemented based on the observed landing patterns and variation between vessel-gear categories, by assigning sampling targets for each agreed vessel-gear category for individual landing sites and redistributing the survey effort;
b. Adjust target sample size (number of landings), depending on observed variation and importance for fisheries; and,
c. Revise landing sites to be more representative.

[5] Currently all reports are prepared after the last month of data collection is concluded

The **minimum monthly sample size** included in Table 12, represents full stratified random sample across all target landing sites, while **optimal monthly sample size** would allow to have provincial level monthly estimates for the main indicators (catch, effort and CPUE).

5. Improve estimate for fishing effort (fishing days), by including additional questions for landings for multiple-day fishing trips:
    a. Number fishing days/trip (operational days) for current landing
    b. Normal duration of pause between trips (days)

6. Support updated 2024 fishing vessel census/survey for more accurate extrapolation of the total catch estimate;

7. Part of the catch is included in highly aggregated groups, like other fish, trash fish or other catch, this contributes 127,621 kg (18.9%) to the total reported catch, this combined with other highly aggregated species groups, e.g. shellfish nei, Octopus/squids nei and Tuna, other species groups contribute more than 31% of the total reported catch and this hampers more detailed analysis of the data to assess status and trends of the fisheries. Therefore, it is needed to improve species detail by
    a. Adding missing species to the current species list
    b. Link species and codes to international standard codes as used by FAO and SEAFDEC, using the FFI/MCC species lists as basis
    c. Standardise Khmer names entered in Kobo, to reduce spelling mistakes and improve linking with species and species groups
    d. Consider conducting sub-sampling for some of these highly aggregated groups, to be able to assess the typical (seasonal) species composition.

8. The quick analysis of the species composition of trawl fisheries, shows that this mainly targets low value species. Profit is likely derived from cephalopods, shrimps/prawns and occasional catch of high value fish species. A fishery mainly catching low value species may not be cost-effective nor economical sustainable and MaFReDI should investigate this in more detail, as a contribution to informing the sector about possible management interventions to increase value and profit to marine fisheries.

9. To improve comparing and reporting data on gear use (effort) and CPUE it is necessary to update and standardise the marine fishing gear list, also for use in the national statistical reports and in SMART, VMS, licensing, vessel census and other gear related applications across FiA:
    a. Expand gear types and codes following the Standard Statistical Classification of Fishing Gear (ISSCFG), as used by FAO
    b. Collect gear type for trawler sub-categories, e.g. pelagic, mid-water, otter board, pair- and beam-trawlers to better assess catch, target species, effort and CPUE:

    Pelagic trawlers, divided into:
        i. Mid-water/fly trawl (អួនហោះ), code TSP
        ii. Semi-pelagic trawl for fish (អួនអូសក្រឹ), code TM
        iii. Midwater otter trawls for squid (អួនអូសមឹក), code OTM

    Bottom trawlers, divided into:
        iv. Beam trawl (អួនអូសច្រឹនចូរ? or អួនឡែកឌិ), code TBB
        v. Bottom trawls for shrimp (អួនអូស/មងខារ), code TBS
    c. Review and align the Khmer and English classification and names for use in updating the drop-down list for selecting gear categories/names used in KoBo
    d. Fully remove occurrence of unidentified gears in data (representing 2.2% of the reported landed weight for 2023). Records without selecting a gear name need to be flagged during data collection/entry so a follow-up question can be asked (or the fisher can be contacted afterwards by phone) if no gear is recorded

10. The source of data (owner or trader records or recall/interview), was not recorded correctly, but the results indicate that only 5 landings (0.3%) were based on records by fisher, trader or owner. That means that almost all landings are based on recall. This is a large source of uncertainty about the landed species weight. Since almost all of the landed catch from marine fisheries is sold and owners, captains, fishers and traders are expected to keep records of transactions, the proportion of landings where the data is obtained from written records or sales slips can be much higher. With a few tweaks to the data collection approach for vessel-gear categories that are expected to have sales records, data collection could be improved and made more accurate. While more informal landings, mainly for small-scale operations may still need to be covered by a recall survey at the landing site, middle-scale fisheries may well be covered by interviewing key informants (fishers, captains and owners) at their home.

11. While the socio-economic data provides valuable insights into the profitability of the fisheries, , it is recommended to reduce the frequency of collecting the socio-economic indicators to a quarterly survey. Some additional changes may need to be considered based on a more in-depth analysis and review of the requirements under the MFMP;

12. A limited scope verification survey needs to be considered to determine both the species composition and species catch, using a sub-sample bought from the fisher or vessel owner for randomly selected vessel-gear landings;

13. The field-based validation rules included in KoBo for catch, effort and value need to be reviewed to ensure that typos and outliers are reduced to limit the effort for data cleaning.

14. Linkages to post-harvest (disposal), should be strengthened, both through adjustments to the current FCMAS and additional research, specifically for trash fish, other fish/catch nei and discards
    a. In the FCMAS, if trash fish or other fish/catch nei, is reported, the type and use should be indicated by specifying what it is used for: fish meal, feed for aquaculture (cage culture), human consumption (fresh or processed), feed for livestock, fertiliser, or other use;
    b. Data on species composition for ‘trash fish’ and species groups, especially other fish/catch nei, that contribute 13% of the total reported catch needs to be improved, through sub-sampling and analysis for selected landings as a research topic in collaboration with university and FiAC; and,
    c. Discards are poorly represented in the data (less than 0.07% of the total reported catch), and oftentimes only represent a small proportion of the actual discards, this should be investigated through research, using a voluntary logbook or anonymous reporting and/or through an observer programme.

15. The coverage of the Fishing Activity Survey needs to be expanded as recommended by FAO CAPFISH, covering a random sample of the main vessel-gear categories

Annex 1. Catch composition by species group for all landing, by weight and value.

Species group	Total weight (kg)	Total weight% (kg)
Fish	497,051.4	73.7%
Shellfish	60,499.7	9.0%
Cephalopods	59,518.3	8.8%
Shrimps	29,756.2	4.4%
Crabs	16,847.7	2.5%
Unspecified	10,596.6	1.6%
Rays	414.3	0.06%
Sharks	76.5	0.01%
Grand Total	**674,760.7**	

Species Group	Total value (1000 Riels)	Total value (%)
Fish	915,927	32.8%
Cephalopods	895,786	32.0%
Crabs	439,512	15.7%
Shrimps	399,109	14.3%
Shellfish	74,216	2.7%
Unspecified	67,570	2.4%
Rays	2,997	0.11%
Sharks	535	0.02%
Grand Total	**2,795,653**	
Average price	**4143**	

Annex 2. Catch contribution by gear type and province.

GearType	Koh Kong	Preah Sihanouk	Kampot	Kep	Grand Total
Trawl	31.6%	66.4%	1.3%	0.7%	529,988.4
Mackerel Gillnet	25.5%	49.5%	25.0%	-	52,255.0
Octopus trap longline	87.4%	3.0%	-	9.6%	20,530.0
Halfbeak gillnet	-	3.7%	96.3%	-	14,160.0
Fish gillnet	9.9%	-	86.7%	3.4%	9,267.2
Crab gillnet	38.8%	26.3%	-	34.9%	7,808.0
Fish trap	91.3%	8.7%	-	-	6,895.0
Crab trap	57.2%	-	26.6%	16.3%	5,875.2
Shrimp gillnet	52.2%	47.8%	-	-	4,853.1
Centipede trap	26.8%	-	0.7%	72.5%	1,792.8
Squid tow longline	94.0%	6.0%	-	-	1,160.0
Bottom longline for Squid	100.0%	-	-	-	1,080.0
Squid trap	100.0%	-	-	-	810.0
Encircling seine	100.0%	-	-	-	810.0
Push net	100.0%	-	-	-	300.5
Mullet gillnet	-	-	91.9%	8.1%	135.0
Dragged basket for blood cockle	100.0%	-	-	-	79.0
Fish hook	34.9%	-	-	65.1%	63.0
Trammel net for shrimp	-	-	100.0%	-	56.5
Fish bottom longline	33.3%	-	66.7%	-	30.0
Siganus (Fish) gillnet	-	-	100.0%	-	30.0
Spanish mackerel gillnet	-	-	-	100.0%	29.0
Ray bottom longline	-	-	-	100.0%	13.0
Hand push net	-	-	100.0%	-	9.5
Unspecified gears	11.7%	14.4%	73.5%	0.3%	14,897.5
Mixed gears	0.7%	-	98.9%	0.4%	1,833.0
Grand Total	**32.9%**	**57.4%**	**8.1%**	**1.7%**	**674,760.7**

Annex 3. Calculated CPUE by province

Province	VesselClass	GearType	Average CPUE	N	SD	ε%
Kampot	**Middle Scale**	Halfbeak gillnet	308.0	10	595.4	**61.1%**
		Mackerel Gillnet	193.4	10	287.0	**46.9%**
		Fish gillnet	62.1	19	31.1	11.5%
		Trawl	42.8	161	14.5	2.7%
		Crab trap	20.9	56	6.3	4.0%
	Small Scale	Fish gillnet	51.0	91	27.3	5.6%
		Mullet gillnet	41.3	3	6.0	8.4%
		Crab trap	15.8	22	5.1	6.9%
		Hand push net	4.8	2	1.1	15.8%
Kep	**Middle Scale**	Octopus trap longline	54.3	9	41.6	**25.5%**
		Crab trap	34.8	9	28.7	**27.5%**
		Trawl	30.4	129	4.4	1.3%
		Crab gillnet	19.8	113	9.0	4.3%
		Centipede trap	19.6	18	11.3	13.6%
		Fish gillnet	16.1	6	5.9	14.9%
	Small Scale	Fish hook	20.5	2	0.7	2.4%
		Fish gillnet	16.5	13	9.7	16.4%
		Centipede trap	14.3	54	7.4	7.1%
		Crab gillnet	12.7	28	5.1	7.5%
		Crab trap	8.2	6	3.5	17.7%
Koh Kong	**Middle Scale**	Trawl	221.5	109	427.9	18.5%
		Fish trap	166.2	6	213.7	**52.5%**
		Mackerel Gillnet	114.7	25	62.4	10.9%
		Octopus trap longline	57.5	54	38.3	9.1%
		Fish gillnet	41.6	2	44.7	**76.0%**
		Squid tow longline	32.2	3	11.1	19.9%
		Crab trap	30.5	9	20.3	22.2%
		Bottom longline for Squid	26.9	2	23.9	**62.8%**
		Centipede trap	23.0	9	12.8	18.6%
		Push net	20.9	4	3.8	9.0%
		Squid trap	14.8	5	1.7	5.2%
		Crab gillnet	12.9	40	17.7	21.7%
		Dragged basket for blood cockle	7.7	10	4.8	19.9%
	Small Scale	Octopus trap longline	84.4	6	105.8	**51.1%**
		Mackerel Gillnet	56.9	8	37.5	23.3%
		Push net	21.7	10	6.8	9.9%
		Centipede trap	21.3	12	8.6	11.7%
		Bottom longline for Squid	15.5	11	21.6	**42.1%**
		Shrimp gillnet	11.7	3	7.6	**37.8%**
		Fish hook	11.0	2	4.2	**27.3%**
		Squid trap	10.7	2	1.0	6.7%
		Fish gillnet	6.4	5	2.2	15.3%
		Crab gillnet	5.8	44	6.0	15.7%
		Crab trap	2.8	3	2.0	**41.2%**

Preah Sihanouk	**Middle Scale**	Trawl	371.4	292	351.0	5.5%
		Mackerel Gillnet	191.3	15	80.8	10.9%
		Octopus trap longline	46.4	4	8.8	9.5%
		Shrimp gillnet	43.7	53	11.2	3.5%
		Halfbeak gillnet	37.5	3	2.5	3.8%
		Crab gillnet	23.5	14	11.9	13.5%
	Small Scale	Crab gillnet	21.0	6	4.0	7.9%

Annex 4 Species catch by province

Scientific name	English Name	Khmer name	Koh Kong	Preah Sihanouk	Kampot	Kep	Catch (kg)	Catch (%)
Encrasicholina heteroloba	Shorthead anchovy	កាកឹម	5.8%	94.2%	0.0%	0.0%	286,375.0	42.4%
	Other fish nei	ប្រភេទត្រីចំរុះ	68.6%	28.4%	2.0%	1.0%	78,184.5	11.6%
	Shellfish nei	ងាវចំរុះ	100.0%	0.0%	0.0%	0.0%	58,131.0	8.6%
	trash fish	ត្រីជី	26.9%	70.5%	0.1%	2.5%	38,840.0	5.8%
	Octopus nei	មឹកពីងពាង	56.4%	30.8%	3.9%	8.9%	24,349.3	3.6%
Decapterus macrosoma	Shortfin scad	ត្រីកាម៉ុងឬត្រីប្លាធូ	0.0%	81.1%	18.9%	0.0%	22,740.5	3.4%
	Squids nei	មឹក	73.6%	25.6%	0.6%	0.3%	19,713.0	2.9%
Rastrelliger brachysoma	Short mackerel	ត្រីផ្ការធូ ឬត្រីកាម៉ុងខ្លួនខ្ចី	50.4%	33.0%	16.5%	0.1%	19,117.5	2.8%
Portunus pelagicus	Swimming crab	ក្តាមសេះ	32.0%	28.1%	14.1%	25.8%	13,970.6	2.1%
	Cephalopods (squids/cuttlefish)	ពពួកមឹកស្មុកនិងមឹកបំពង់	67.2%	32.3%	0.3%	0.3%	11,479.2	1.7%
	Needlefish nei	ត្រីផ្ទោង	0.0%	4.7%	94.3%	1.0%	11,203.0	1.7%
Penaeus sp.	Prawns nei	បង្គា	34.4%	51.2%	0.8%	13.6%	10,893.5	1.6%
	Other catch nei	ផ្សេងៗ	0.0%	0.0%	99.5%	0.5%	10,596.6	1.6%
	Shrimps (unsorted)	ពពួកបង្គាគ្រប់ប្រភេទទាំងអស់	48.0%	52.0%	0.0%	0.1%	6,959.0	1.0%
	Tuna	ត្រីឈាម	100.0%	0.0%	0.0%	0.0%	5,800.0	0.9%
Rastrelliger faughni	Island mackerel	ត្រីប៉ាឡាំង	0.8%	0.0%	99.2%	0.0%	5,775.0	0.9%
Anodontostoma chacunda	Chacunda gizzard shad	ត្រីកាម៉យ	0.0%	6.5%	93.2%	0.3%	5,612.0	0.8%
Metapenaeus spp.		បង្គាខ្ចិខាក់	22.8%	76.9%	0.3%	0.0%	5,457.2	0.8%
	Small mixed shrimp nei	គឺ	0.0%	100.0%	0.0%	0.0%	4,334.0	0.6%
Rastrelliger kanagurta	Indian mackerel	ត្រីកាម៉ុងខ្លួនដង	1.6%	0.0%	98.4%	0.0%	4,020.0	0.6%
Suborder Sepiina	Cuttlefish	មឹកស្មុក	36.0%	52.9%	5.3%	5.8%	3,606.8	0.5%
scomberoides tala	Barred queenfish	ត្រីកាឡាំង	44.4%	0.0%	55.6%	0.0%	2,700.0	0.4%
	Mollusks nei	សប្បុសត្វ ពពួកខ្យង គ្រំ ងាវ	76.5%	10.1%	0.0%	13.4%	2,280.7	0.3%
Lutjanus bohar	two-spot red snapper	ត្រីអាំងកើយអុចពីរ	99.6%	0.0%	0.4%	0.0%	2,256.0	0.3%
Siganus canaliculatus	Whitespotted Spinefoot	ត្រីកន្ធាំងក្រអូម	50.2%	0.0%	49.8%	0.0%	2,073.0	0.3%
Scomberoides commersonianus	Talang queenfish	ត្រីកាឡាំង	85.9%	0.0%	13.4%	0.6%	1,862.0	0.3%

Scientific name	English Name	Khmer name	Koh Kong	Preah Sihanouk	Kampot	Kep	Catch (kg)	Catch (%)
Hemiramphus far	Blackbarred halfbeak	ត្រីផ្ទោងផ្កា	0.0%	0.0%	99.9%	0.1%	1,501.0	0.2%
Portunus spp.	Swimming crabs	ក្តាមសេះ	97.2%	2.2%	0.2%	0.4%	1,440.0	0.2%
Penaeus merguiensis	Banana shrimp	បង្គាព៉ាន់	99.9%	0.0%	0.0%	0.1%	1,121.0	0.2%
Lutjanus argentimaculatus	Mangrove red snapper	ត្រីអាំងកីយក្រហម	100.0%	0.0%	0.0%	0.0%	1,015.0	0.2%
Tylosurus acus melanotus	Aguion needlefish	ត្រីផ្ទោងប្រ័ត្រ	0.0%	0.0%	99.9%	0.1%	1,000.7	0.15%
Epinephelus coioides	Orange-spotted grouper	ត្រីតុកម៉ែកកៅ	98.5%	1.5%	0.0%	0.0%	888.0	0.13%
	squirrelfish	ត្រីក្រហម	0.0%	0.0%	100.0%	0.0%	690.0	0.10%
	Parrot fish	ត្រីសេក	14.7%	35.2%	33.9%	16.3%	682.0	0.10%
	Mantis shrimp	បង្កងកណ្តូប	14.6%	4.8%	80.3%	0.3%	638.3	0.09%
	Crabs nei	ក្តាមផ្សេងៗ	22.1%	0.0%	0.0%	77.9%	632.5	0.09%
Sardinella gibbosa	goldstripe sardine	ត្រីគូទ	99.1%	0.0%	0.0%	0.9%	535.0	0.08%
	Swimming and mud crabs	ពពួកក្តាម (រួមទាំងក្តាមសេះ ក្តាមថ្ម ក្តាមដំរ ជាដើម)	74.9%	6.2%	0.0%	18.9%	530.0	0.08%
	Rabbitfish	ត្រីកន្តាំង	84.5%	1.7%	13.9%	0.0%	361.0	0.05%
Carangoides bajad	Orangespotted trevally	ត្រីរែកាម	100.0%	0.0%	0.0%	0.0%	360.0	0.05%
Nemipterus furcosus	Forktailed Threadfin Bream	ត្រីក្រហមស្រកាទន់	98.7%	0.0%	0.0%	1.3%	304.0	0.05%
Decapterus maruadsi	Round scad	ត្រីកូនគុំ	100.0%	0.0%	0.0%	0.0%	300.0	0.04%
	Rays nei	បបែល	0.0%	19.8%	80.2%	0.0%	299.8	0.04%
	Lizardfish	ត្រីកូឌិន	37.7%	6.8%	55.5%	0.0%	292.0	0.04%
	Barracuda	ត្រីរង្រៃ	100.0%	0.0%	0.0%	0.0%	290.0	0.04%
	Shrimps nei	បង្កងប៉ាក	27.5%	67.1%	0.0%	5.3%	261.7	0.04%
Rachycentron canadum	Cobia	ត្រីផ្តក់សមុទ្រ	98.8%	0.0%	0.0%	1.2%	253.0	0.04%
	Octopus	មឹកពីងពាង	100.0%	0.0%	0.0%	0.0%	250.0	0.04%
	Pony fishes	ត្រីកិ	0.0%	72.4%	23.3%	4.3%	232.0	0.03%
Episesarma versicolor	Violet vinegar crab	ក្តាមដំរ	90.5%	0.0%	0.0%	9.5%	188.5	0.03%
Crenimugil seheli	Bluespot mullet	ត្រីក្បុក	3.2%	0.0%	96.8%	0.0%	154.0	0.02%
Sillago sihama	Silver sillago	ត្រីព្រលួស	2.0%	0.0%	17.5%	80.5%	151.0	0.02%
Lutjanus gibbus	humpback red snapper	ត្រីឆ្នុងក្រហម	100.0%	0.0%	0.0%	0.0%	150.0	0.02%

Scientific name	English Name	Khmer name	Koh Kong	Preah Sihanouk	Kampot	Kep	Catch (kg)	Catch (%)
	Snappers, jobfishes	ត្រីអាំងកឹយ	100.0%	0.0%	0.0%	0.0%	150.0	0.02%
Sargocentron rubrum	Redcoat	ត្រីកាជី	100.0%	0.0%	0.0%	0.0%	120.0	0.02%
	Cephalopods (squids/cuttlefish)	មឹកហួយសាយ	100.0%	0.0%	0.0%	0.0%	120.0	0.02%
Pseudorhombus arsius	Largetooth flounder	ត្រីអណ្តាតង៉ុក	20.3%	68.9%	0.0%	10.8%	111.0	0.02%
Eleutheronema tetradactylum	Fourfinger threadfin	ត្រីកាវ៉ា	24.0%	0.0%	67.8%	8.2%	97.4	0.01%
Brevitrygon imbricata	Scaly whipray	បង់លមាន់	0.0%	0.5%	0.0%	99.5%	92.5	0.01%
Penaeus monodon	Giant tiger prawn	បង្គាខ្លឹង	0.0%	33.3%	0.0%	66.7%	91.5	0.01%
Anadara granosa	Blood cockle	ក្រែងឈាម	93.0%	0.0%	0.0%	7.0%	86.0	0.01%
Alepes vari	Herring scad	ត្រីកាហាវ	0.0%	0.0%	0.0%	100.0%	85.0	0.01%
Scylla serrata	Mud crab	ក្តាមថ្ម	52.4%	0.0%	0.0%	47.6%	84.1	0.01%
Nemipterus hexodon	Ornate treadfin bream	ត្រីអាងគីមលី	100.0%	0.0%	0.0%	0.0%	80.0	0.01%
	Congers nei	អន្ទង់សមុទ្រ	0.0%	0.0%	0.0%	100.0%	65.0	0.01%
Megalaspis cordyla	Torpedo scad	ត្រីកន្ទុយវែង	0.0%	0.0%	96.8%	3.2%	63.0	0.01%
Chiloscyllium griseum	Grey bambooshark	ឆ្លាមគឺង្គក់ឬឆ្លាមឆ្កួត	0.0%	0.0%	0.0%	100.0%	62.0	0.01%
Lutjanus malabaricus	Malabar blood snapper	ត្រីក្រហម	0.0%	0.0%	100.0%	0.0%	50.0	0.01%
Scomberomorus commerson	Narrowbarred Spanish mackerel	ត្រីបែកាខ្មៅ ឬត្រីបែកាឆ្នូត	78.3%	0.0%	21.7%	0.0%	46.0	0.01%
	Emperors, scavengers nei	ត្រីគ្រាប់ខ្នុរ	0.0%	0.0%	100.0%	0.0%	42.0	0.01%
Scomberomorus sp.	Spanish mackerel species nei	ត្រីបែកា	23.1%	41.0%	30.8%	5.1%	39.0	0.01%
Myrophis microchir	Ordinary Snake eel	អន្ទង់សមុទ្រ	0.0%	0.0%	0.0%	100.0%	37.0	0.01%
Arius maculatus	Spotted catfish	ត្រីក្អុក	94.4%	0.0%	5.6%	0.0%	36.0	0.01%
Leiognathus smithhursti	Smithhurst's ponyfish	ត្រីកិន្នូនខ្លី	0.0%	0.0%	0.0%	100.0%	30.0	0.004%
Pampus argenteus	Silver pomfret	ត្រីចាបស	0.0%	0.0%	0.0%	100.0%	29.0	0.004%
Sillago aeolus	Oriental sillago	ត្រីព្រលួសផ្កា	0.0%	0.0%	0.0%	100.0%	25.0	0.004%
Maculabatis gerrardi	Whitespottted whipray	បង់លអុជ	0.0%	0.0%	22.7%	77.3%	22.0	0.003%
Lactarius lactarius	False trevally	ត្រីស្លឹកខ្នុរ	0.0%	0.0%	100.0%	0.0%	20.0	0.003%
Gazza minuta	Toothpony	ត្រីសំបោរហៀរ "គ្មានអិល"	100.0%	0.0%	0.0%	0.0%	20.0	0.003%
Albula neoguinaica	Sharpjaw bonefish	ត្រីបែកា	0.0%	0.0%	100.0%	0.0%	20.0	0.003%

Scientific name	English Name	Khmer name	Koh Kong	Preah Sihanouk	Kampot	Kep	Catch (kg)	Catch (%)
	Flounders and soles nei	ត្រីអណ្តាតវង្កែ	16.2%	0.0%	83.8%	0.0%	18.5	0.003%
Diagramma pictum	Painted sweetlips	ត្រីកាជី	0.0%	0.0%	41.2%	58.8%	17.0	0.003%
	Pomfrets	ត្រីចាប	100.0%	0.0%	0.0%	0.0%	15.0	0.002%
	Mullets	ត្រីក្បែក	0.0%	0.0%	100.0%	0.0%	14.0	0.002%
	Sharks	ឆ្លាម	0.0%	100.0%	0.0%	0.0%	12.5	0.002%
Sillago ingenuua	Bay sillago	ត្រីព្រលួសធម្មតា	0.0%	0.0%	0.0%	100.0%	10.0	0.001%
Scarus ghobban	Blue-barred parrotfish	ត្រីសេកស្រការឡឿង	0.0%	0.0%	0.0%	100.0%	10.0	0.001%
Karalla daura	Goldstripe ponyfish	ត្រីសំបោរហៀរអរិល	100.0%	0.0%	0.0%	0.0%	10.0	0.001%
	Drums and croakers nei	ត្រីចង្កូមបី	0.0%	0.0%	100.0%	0.0%	10.0	0.001%
Cheilinus diagrammus	Cheeklinedmaori wrasse	ត្រីសេកថ្ពាល់ឆ្នូត	0.0%	0.0%	0.0%	100.0%	9.5	0.001%
Acanthurus sp.	Surgeonfish	ត្រីកាតាំង	37.5%	0.0%	62.5%	0.0%	8.0	0.001%
	Threadfins nei	ត្រីកាវ៉ែ	0.0%	0.0%	100.0%	0.0%	7.0	0.001%
Terapon jarbua	Jarbua terapon	ត្រីត្រសក់កន្ទុយដែក	0.0%	0.0%	50.0%	50.0%	6.0	0.001%
Epinephelus amblycephalus	Banded grouper	ត្រីតុកកែខ្លា	0.0%	0.0%	0.0%	100.0%	5.5	0.001%
Sphyraena obtusata	Obtuse barracuda	ត្រីអង្រែ	0.0%	0.0%	80.0%	20.0%	5.0	0.001%
Saurida undosquamis	Bushtooth lizarfish	ត្រីកូឥនអុជខ្មៅ	0.0%	100.0%	0.0%	0.0%	5.0	0.001%
Otolithes ruber	Tigertooth Croaker	ត្រីចង្កូមបី	0.0%	0.0%	100.0%	0.0%	4.0	0.001%
Anampses geographicus	Geographic wrasse	ត្រីកសេក	0.0%	0.0%	100.0%	0.0%	4.0	0.001%
Leiognathus leuciscus	Whipfin ponyfish	ត្រីកិ	0.0%	100.0%	0.0%	0.0%	3.0	0.0004%
Thryssa hamiltonii	Hamilton's thryssa	ត្រីស្លឹកឬស្សី	0.0%	100.0%	0.0%	0.0%	2.0	0.0003%
Thalamita crenata	Crenate swimming crab	ក្តាមថ្មខៀវ	0.0%	0.0%	0.0%	100.0%	2.0	0.0003%
Saurenchelys cancrivora	Slender Sorcerer	ត្រីខ្ជឹងសមុទ្រ	0.0%	0.0%	0.0%	100.0%	2.0	0.0003%
Chiloscyllium punctatum	Brownbanded bambooshark	ឆ្លាមឆ្នូត	0.0%	0.0%	100.0%	0.0%	2.0	0.0003%
	Bivalves nei	ឆ្លាម បំបែល	0.0%	0.0%	100.0%	0.0%	2.0	0.0003%
	Morray eels nei	អន្ទង់សមុទ្រ	0.0%	0.0%	0.0%	100.0%	2.0	0.0003%
	Terapons	ត្រីត្រសក់	0.0%	0.0%	100.0%	0.0%	1.0	0.0001%
Stolephorus indicus	Indian anchovy	ត្រីក្រចកក្របី	0.0%	100.0%	0.0%	0.0%	0.3	0.00004%

Scientific name	English Name	Khmer name	Koh Kong	Preah Sihanouk	Kampot	Kep	Catch (kg)	Catch (%)
Grand Total			**32.8%**	**57.2%**	**8.3%**	**1.7%**	**674,760.7**	

Annex 5. Reported monthly proportion to annual species catch for top 20 species

Scientific name	Khmer name	English name	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (kg)	Total (%)
Encrasicholina heteroloba	កាកឹម	Shorthead anchovy	25.9%	35.5%	7.7%	11.9%	12.4%	3.7%	2.9%	286,375.0	42.4%
	ប្រភេទត្រីចំរុះ	Other fish nei	6.3%	14.0%	12.8%	14.6%	21.8%	13.6%	16.9%	78,184.5	11.6%
	ខ្យង ម៉ឹក ក្តាមផ្សេងៗ	Shellfish nei	0.5%	23.1%	1.0%	0.0%	59.0%	1.4%	14.9%	57,328.0	8.5%
	ត្រីជី	Trash fish	6.1%	5.9%	9.7%	43.7%	9.1%	19.1%	6.3%	38,840.0	5.8%
	ម៉ឹកពងពាង	Octopus nei	11.6%	11.4%	11.4%	23.5%	11.9%	18.4%	12.0%	24,599.3	3.6%
Decapterus macrosoma	ត្រីកាម៉ុងឬត្រីឆ្ពាធូ	Shortfin scad	0.0%	4.4%	2.2%	20.9%	32.6%	30.8%	9.0%	22,740.5	3.4%
	ម៉ឹក	Squids nei	29.9%	12.2%	8.7%	12.0%	10.9%	10.2%	16.0%	19,713.0	2.9%
Rastrelliger brachysoma	ត្រីឆ្ពាធូ ឬត្រីកាម៉ុងខ្លួនខ្លី	Short mackerel	2.4%	0.0%	12.4%	43.1%	0.7%	22.1%	19.4%	19,117.5	2.8%
Portunus pelagicus	ក្តាមសេះ	Swimming crab	9.6%	11.1%	24.9%	9.0%	23.6%	10.8%	11.0%	13,970.6	2.1%
	ពពួកម៉ឹកស្មូកនិងម៉ឹកប៉ពង់	Squids & cuttlefish nei	9.6%	28.0%	3.6%	4.4%	25.2%	7.3%	21.8%	11,479.2	1.7%
	ត្រីឆ្ពាង	Needlefish nei	8.3%	18.0%	10.9%	14.9%	10.7%	13.1%	24.1%	11,203.0	1.7%
Penaeus sp.	បង្គា	Prawns nei	10.0%	3.6%	43.5%	18.2%	12.0%	8.0%	4.8%	10,893.5	1.6%
	ប្រភេទត្រីចំរុះ	Other fish nei	11.5%	8.4%	17.2%	15.6%	18.4%	17.7%	11.2%	10,596.6	1.6%
	ពពួកបង្គាគ្រប់ប្រភេទទាំងអស់	Shrimps nei	3.4%	36.6%	5.3%	11.6%	23.3%	11.8%	7.9%	6,959.0	1.0%
	ត្រីឈាម	Tuna	0.0%	0.0%	13.8%	0.0%	86.2%	0.0%	0.0%	5,800.0	0.9%
Rastrelliger faughni	ត្រីប៉ាឡាំង	Island mackerel	2.3%	0.0%	31.9%	0.0%	36.4%	29.4%	0.0%	5,775.0	0.9%
Metapenaeus spp.	បង្គាឱខាក់		9.8%	19.8%	17.5%	21.4%	7.0%	8.2%	16.4%	5,457.2	0.8%
Anodontostoma chacunda	ត្រីកាម៉ង់	Chacunda gizzard shad	20.7%	18.0%	16.3%	10.5%	20.0%	10.0%	4.5%	5,279.0	0.8%
	គី	Small mixed shrimp nei	7.2%	22.3%	18.1%	28.2%	10.4%	6.6%	7.2%	4,334.0	0.6%
Rastrelliger kanagurta	ត្រីកាម៉ុងខ្លួនម៉ង	Indian mackerel	14.9%	47.4%	8.7%	21.3%	7.5%	0.2%	0.0%	4,020.0	0.6%

Annex 6. Reported catch by main fishing area and province

Small-scale gears	Inshore	Offshore	Both	Total catch (kg)
Kampot	82.6%	17.4%	0.0%	6,891.8
Kep	100.0%	0.0%	0.0%	1,524.0
Koh Kong	36.8%	0.0%	63.2%	5,775.0
Preah Sihanouk	26.0%	28.7%	45.2%	1,044.5
Grand Total	**63.1%**	**9.8%**	**27.1%**	**15,235.3**
Trawlers	**Inshore**	**Offshore**	**Both**	**Total catch (kg)**
Kampot	99.1%	0.0%	0.9%	6,892.0
Kep	100.0%	0.0%	0.0%	3,938.0
Koh Kong	2.5%	57.8%	39.7%	167,268.7
Preah Sihanouk	35.5%	56.1%	8.4%	351,889.7
Grand Total	**26.4%**	**55.5%**	**18.1%**	**529,988.4**
Other Middle-scale gears	**Inshore**	**Offshore**	**Both**	**Total catch (kg)**
Kampot	11.8%	88.2%	0.0%	42,355.4
Kep	91.5%	8.5%	0.0%	5,888.9
Koh Kong	18.9%	6.0%	75.1%	48,069.5
Preah Sihanouk	21.6%	51.5%	26.9%	33,151.2
Grand Total	**20.6%**	**44.7%**	**34.8%**	**129,465.0**

Annex 7. Species catch composition for trawl fishing, contributing at least 70% of reported catch

Scientific Name	Khmer name	English name	Total	Trawl%
Encrasicholina heteroloba	កាកឹម	Shorthead anchovy	286,375.0	100.0%
	ប្រភេទត្រីចំរុះ	Other fish nei	78,182.5	91.6%
	ខ្យង ម៉ឹក ក្តាមផ្សេងៗ	Shellfish nei	57,328.0	99.9%
	ត្រីជី	trash fish	38,840.0	97.8%
	ពពួកមឹកស្ងួកនិងមឹកបំពង់	Cephalopods (squids/cuttlefish)	11,479.2	91.2%
Penaeus sp.	បង្គា	Prawns nei	10,893.5	72.7%
	ពពួកបង្គាគ្រប់ប្រភេទទាំងអស់	Shrimps (all kinds of shrimps)	6,959.0	99.7%
	ត្រីឈាម	Tuna	5,800.0	100.0%
Metapenaeus spp.	បង្គាខ្ចៅក់		5,457.2	77.8%
	គី	Small mixed shrimp nei	4,334.0	100.0%
Suborder Sepiina	មឹកស្ងួក	Cuttlefish	3,606.8	76.8%
Penaeus merguiensis	បង្គាប៉ាំ៉ា	Banana shrimp	1,121.0	99.9%
	ងាវចំរុះ	Shellfish nei	803.0	100.0%
	ត្រីសេក	Parrot fish	682.0	90.9%
	ក្តាមផ្សេងៗ	Crabs nei	632.5	75.3%
Sardinella gibbosa	ត្រីគូទ	goldstripe sardine	535.0	99.1%
Carangoides bajad	ត្រីឆៃកាម	Orangespotted trevally	360.0	83.3%
Decapterus maruadsi	ត្រីកូនគុំ	Round scad	300.0	100.0%
	ត្រីអរង្រែ	Barracuda	290.0	100.0%
	ត្រីកិ	Pony fishes	232.0	73.3%
Sargocentron rubrum	ត្រីកាជី	Redcoat	120.0	100.0%
Penaeus monodon	បង្គាខ្លឹង	Giant tiger prawn	91.5	86.9%
	អន្ទង់សមុទ្រ	Congers nei	65.0	81.5%
Chiloscyllium griseum	ឆ្លាមគឺង្កក់ឬឆ្លាមឆ្កូត	Grey bambooshark	62.0	87.1%
Pampus argenteus	ត្រីចាបស	Silver pomfret	29.0	75.9%
Episesarma sp.	ក្តាមដំរ	Vinegar crab	22.0	72.7%
	ត្រីចាប	Pomfrets	15.0	100.0%
Karalla daura	ត្រីសំបោរហៀរអំរិល	Goldstripe ponyfish	10.0	100.0%
Sphyraena obtusata	ត្រីអរង្រែ	Obtuse barracuda	5.0	100.0%
Saurida undosquamis	ត្រីក្តិចអុជខ្មៅ	Bushtooth lizarfish	5.0	100.0%
Anampses geographicus	ត្រីកសេក	Geographic wrasse	4.0	100.0%
Saurenchelys cancrivora	ត្រីខ្លិងសមុទ្រ	Slender Sorcerer	2.0	100.0%
	ឆ្លាម បំប៉ែល	Shellfish (bivalves nei)	2.0	100.0%
	ត្រីត្រសក់	Terapons	1.0	100.0%