



Ba Ria - Vung Tau Trawl Fisheries Environmental Rapid Assessment Report

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Purpose

This ERA is aimed to identify major gaps in environmental performance of trawl fisheries in Ba Ria - Vung Tau province (hereby called BRVT), mainly against the Marine Stewardship Council (MSC) standard, but with slight differences in approach and at an affordable budget for private sector (feed manufacturers and fishmeal producers of BRVT), as a start toward the sustainability of the trawl fishery. Based on results of this ERA, experts have given sound advice on how BRVT trawl fishery can move forward into a basic fishery improvement project.

Executive summary

In Principle 1, about Sustainable target fish stock, there are 4 indicators that are coloured yellow, 2 are coloured red and no green one, out of total 6 indicators. The root cause of all these gaps is that the methodology for multi-species stock assessment has not been developed yet.

In Principle 2, about Ecosystem impacts, *Primary species* indicators are excluded, the rest (12 performance indicators) are red or marked as data deficient or not be scored. The root cause of this entire failure is because foundation researches for fisheries in BRVT are not conducted yet. In addition, policies for protection of aquatic resources have been recently included in the Fisheries Law.

Principle 3, about Management, has only 2 indicators that are coloured yellow, the rest (5 indicators) are coloured green. This is because of all the efforts Vietnamese government has made to lift the EU yellow card about Illegal, Unreported and Unregulated Fishing (known as IUU fishing) since the end of 2017.

From the assessment results, it can be said that the information needed to enable assessment of the sustainability and impact of trawling in BRVT province on the environment is incomplete. High priorities for the next phase of FIP Vung Tau are identified, including the multi-species stock assessment methodology, the stock assessment for other species of trawl fisheries in BRVT, fishery related data collection frameworks, assessments of ETP species and Vulnerable Marine Ecosystems. Outcomes of such works need to be communicated and discussed with authorities at provincial level so that recommendations can be incorporated in the provincial fishery management plan.

This ERA was conducted by a team of assessors with different expertises from RESEARCH INSTITUTE OF MARINE FISHERIES (with experts in Marine Fisheries Resources and conducted many relevant researches for Ministry of Agriculture and Rural Development of Vietnam), NHA TRANG UNIVERSITY (a Fishery Management lecturer and also the key coordinator of Vietnam Tuna FIP by Tuna Association of Vietnam) and KIM DELTA T&C (with an expert in certification assessment reporting).



Abbreviations

MARD:	Ministry of Agriculture and Rural Development
DOF:	Directorate of Fisheries
DARD:	Department of Agriculture and Rural Development
RIMF:	Research Institute for Marine Fisheries
CPUE:	Catch Per Unit Effort
MSY:	Maximum Sustainable Yield
PI:	Performance Indicator
UoA:	Unit of Assessment
EEZ:	Exclusive Economic Zone
MPA:	Marine Protected Area
ETP:	Endangered, Threatened and Protected
IUU:	Illegal, Unreported and Unregulated
HS:	Harvest Strategy
MSC:	Marine Stewardship Council



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Methodology background

The Environmental Rapid Assessment methodology was co-developed by [Ocean Outcomes](#), [World Wildlife Fund US](#), and the [Sustainable Fisheries Partnership](#) and is based on their existing assessment tools and feedback from other non-profit groups. It is based on Marine Stewardship Council (MSC)'s performance indicators (PIs) and draws concepts/definitions from both the MSC and Monterey Bay Aquarium Seafood Watch (MBA SFW) standards, specifically the MSC Fisheries Standard Version 2.01 and the MBA SFW Standard for Fisheries Version 3.2. Although it relies heavily on concepts developed and tested by MSC and MBA SFW, this methodology does not replicate or replace either an MSC pre-assessment or a SFW assessment. This assessment is designed to present key information about the fishery and identify major deficiencies in ecological sustainability, for general scoping or to facilitate movement of a fishery into an improvement project.

To maintain consistency with MSC pre-assessment protocols and scoring ranges used on FisheryProgress.org, assessors assign a scoring range to each PI using a red-yellow-green traffic light system (Table 1). 'Default priority' refers to the general importance of addressing the identified deficiency; priority levels may be adjusted depending on the specific circumstances of the fishery under assessment.

Table 1. Environmental Rapid Assessment scoring ranges.

Score range	Default priority	General definition of management performance
<60	High	• Key aspects of management remain insufficient or ineffective, due to a lack of resources, will, and/or framework. • There is limited information on stock status, or available information suggests that stocks are overfished. • There is limited information on ecosystem impacts from the fishery, or available information suggests that fishing activity causes some significant impacts to the habitat and ecosystem. Relation to MSC assessment: this PI is likely to fail
60-79	Medium	• Some important management aspects may be lacking, but none are sufficient to prevent a passing rating by themselves. Monitoring and enforcement is in place and believed effective. • Information is available to estimate fishing mortality and effects on non-target and ETP species, and the fishery is unlikely to hinder ETP recovery. Habitat and ecosystem impacts are possible, though the fishery is unlikely to cause serious or irreversible harm. Relation to MSC assessment: a condition may be needed for this PI



≥80	Low	• Management measures in place are expected to be effective, and precaution is accounted for. • Stock-specific reference points are available and show that biomass is highly likely above a limit and is fluctuating around a target (normally MSY). Information is available to assess fishing mortality and impacts on non-target and ETP species. There is strong evidence that the fishery is not causing serious harm to habitats or ecosystems. Relation to MSC assessment: an unconditional pass for this PI appears likely
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Scoring summary

Table 2. Assessment summary

Principle	Component	PI #	Performance Indicator	Scoring category
1	Outcome	1.1.1	Stock status outcome	70
		1.1.2	Stock rebuilding outcome	65
	Management	1.2.1	Harvest Strategy	<60
		1.2.2	Harvest control rules	<60
		1.2.3	Information and monitoring	65
		1.2.4	Assessment of stock status	60
2	Primary species	2.1.1	Primary species outcome	80
		2.1.2	Primary species management	80
		2.1.3	Primary species information	80
	Secondary species	2.2.3	Secondary species information	< 60
		2.2.1	Secondary species outcome	< 60
		2.2.2	Secondary species management	< 60
	ETP species	2.3.3	ETP species information	< 60
		2.3.1	ETP species outcome	< 60
		2.3.2	ETP species management	< 60
	Habitats	2.4.3	Habitats information	< 60
		2.4.1	Habitats outcome	< 60
		2.4.2	Habitats management	< 60
	Ecosystem	2.5.3	Ecosystem information	< 60
		2.5.1	Ecosystem outcome	< 60
		2.5.2	Ecosystem management	< 60



3	Governance & policy	3.1.1	Legal and customary framework	85
		3.1.2	Consultation, roles and responsibilities	85
		3.1.3	Long term objectives	80
	Fishery specific management system	3.2.1	Fishery-specific objectives	70
		3.2.2	Decision-making processes	70
		3.2.3	Compliance and enforcement	80
		3.2.4	Management performance evaluation	80

Basic fishery information

Ba Ria-Vung Tau (BRVT) province is located in the Southeast (SE) region of Vietnam and includes an area of the mainland near Ho Chi Minh City but also the Con Dao islands some distance off Vietnam's southeastern coast. Fisheries in Vietnam in general and particularly in BRVT bears multi-species and multi-fishing gear characteristics. Official statistics indicated a total of 109,748 fishing vessels in Vietnam in 2017, of which BRVT province contributed 5.73% (6,284 fishing units) to the total number of fishing vessels in the country. Trawlers are dominant in BRVT comprising 27-30 % in total number of fishing units (1,576 – 1,925 fishing boats) with total catch estimated at 260-450 thousand tons per year in the period 2015-2019. Overfishing is a challenge not only in the SE region where BRVT trawl fisheries occur but also in the whole EEZ of Vietnam. Presently, the main faced issues in trawl fisheries in general are:

- Fisheries resources in the coastal water have been overfished
- Conflicts among and within fisheries significantly increased
- Big trawlers fishing in coastal and inshore waters and catching more juvenile fish
- No selectivity, trawl fisheries catch species, no by-catch
- Insufficient information on catch composition, species composition and size of species caught
- Poor complement of fisheries management measures, no harvest strategy, no harvest control rules.

The legal framework for fisheries management in Vietnam was the Law on Fisheries in 2003 (No.17/2003/QH11) and revised in 2017 (No.18/2017/QH14). A number of decrees and regulations were issued to implement the Law on Fisheries as Decree No. 26/2019/ND-CP dated March 08, 2019 on Guidelines for Implementation of the Law on Fisheries, Decree No. 42/2019/ND-CP dated May 16, 2019 on Penalties for Administrative violation against regulation on Fisheries, Circular 21/2018/TT-BNNPTN dated November 15 2018 on regulating the recording, submission of reports and logbooks of aquatic resources; publication of designated fishing ports confirming the origin of fisheries from exploitation; list of illegal fishing vessels; certification of raw materials, certification of



exploited aquatic resources issued by the Minister of Agriculture and Rural Development and Circular 19/2018/TT-BNNPTN dated November 15 2018 on guidelines for protection and development of aquatic resources.

The fisheries management in Vietnam is the responsibility of the Ministry of Agriculture and Rural Development (MARD). Under the MARD, the Directorate of Fisheries (DOF) is the central fisheries management organization (Declaration No. 27/2017/QĐ-TTg) and Research Institute for Marine Fisheries (RIMF) is a research institution established in 1961, responsible for fisheries research, fish stock assessment and marine fisheries protection and conservation (Decision No. 466/QĐ-BNN-TCCB) supporting the scientific information for fisheries management. Fisheries management structure in Vietnam is indicated in Figure 2 and RIMF structure is shown in Figure 3.

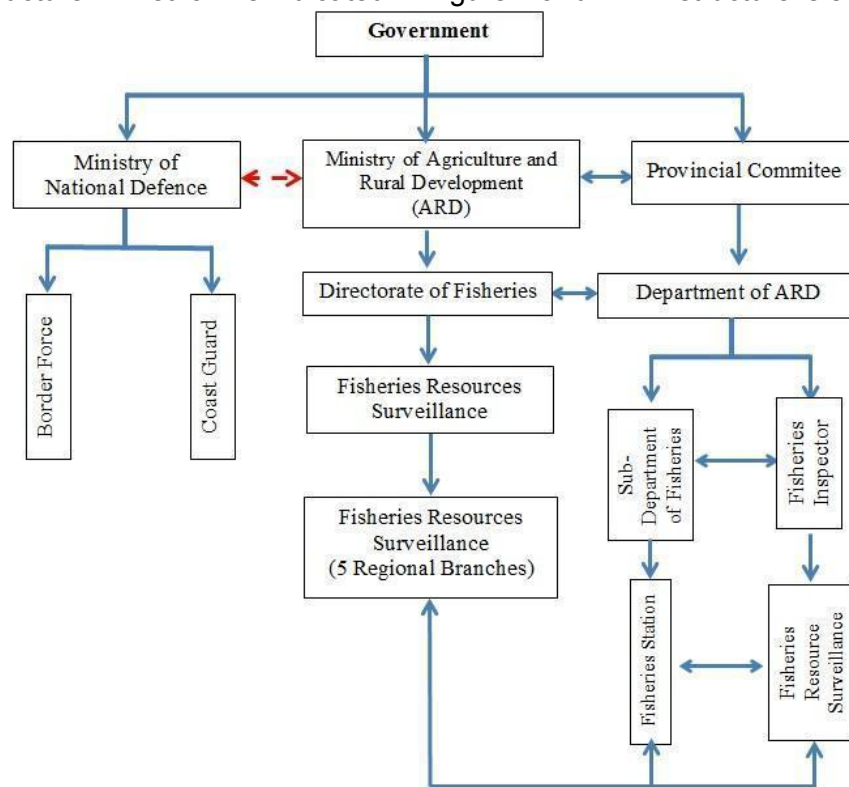


Figure 2. Fisheries management structure in Vietnam. The central boxes represent national government, and the boxes on the right represent the provincial government

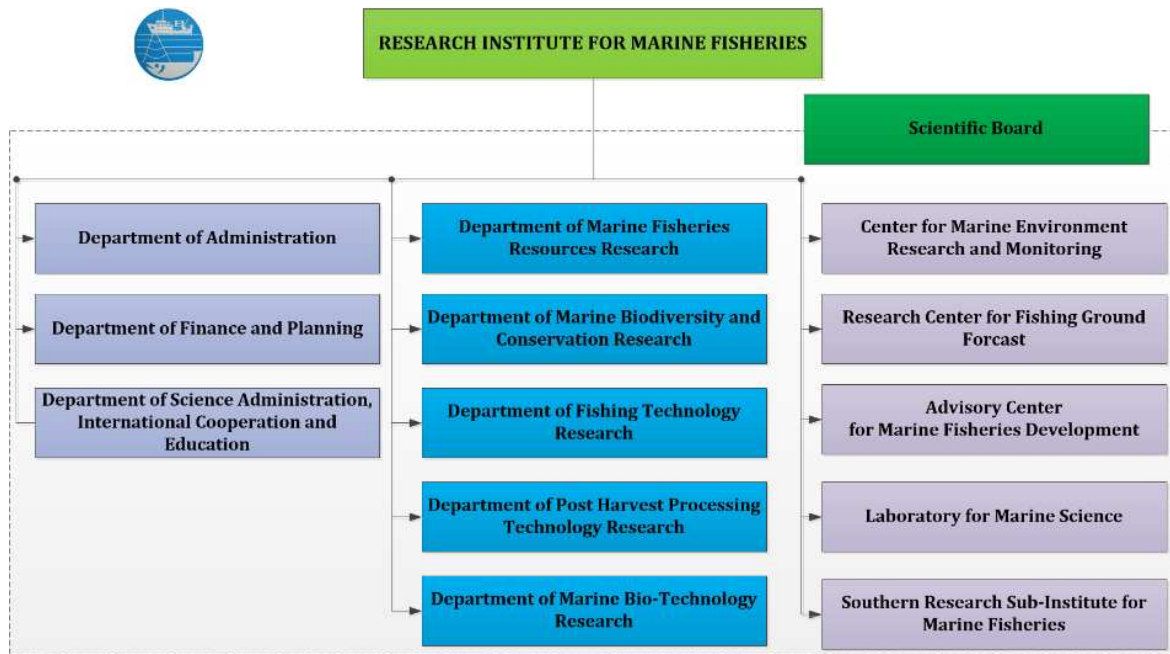


Figure 3. Structure of the Research Institute for Marine Fisheries (RIMF) defined in Decision No. 466/QĐ-BNN-TCCB. The Department of Marine Fisheries Resources Research under RIMF is responsible for Stock Assessment and Fisheries Evaluation

To minimise the impact of fishing activities on fisheries resources, habitat and ecosystem, Clause 1 Article 48 of the Law on Fisheries 2017 pointed out the “Zoning for fishing activities”. Decree 26/2019/ND-CP clarified that the Vietnam’s waters shall be divided into 3 fishing zones (Figure 2) as follows:

- 1) Coastal zone, which is delimited by the waterline along the coast and coastal route. Regarding an island, coast zone is the waters extending up to 06 nautical miles from the average line of tide in multiple years around the coast of the island;
- 2) Inshore zone, which is delimited by the coastal route and inshore route;
- 3) Offshore zone, which is delimited by the inshore route and outer boundary of the exclusive economic zone of Vietnam's waters.

The central government is responsible for fisheries management, fisheries resources survey and investigation in the whole EEZ of Vietnam whilst at the local level, the Provincial Department of Agriculture and Rural Development has been tasked with the fisheries management for the inshore and coastal zones.

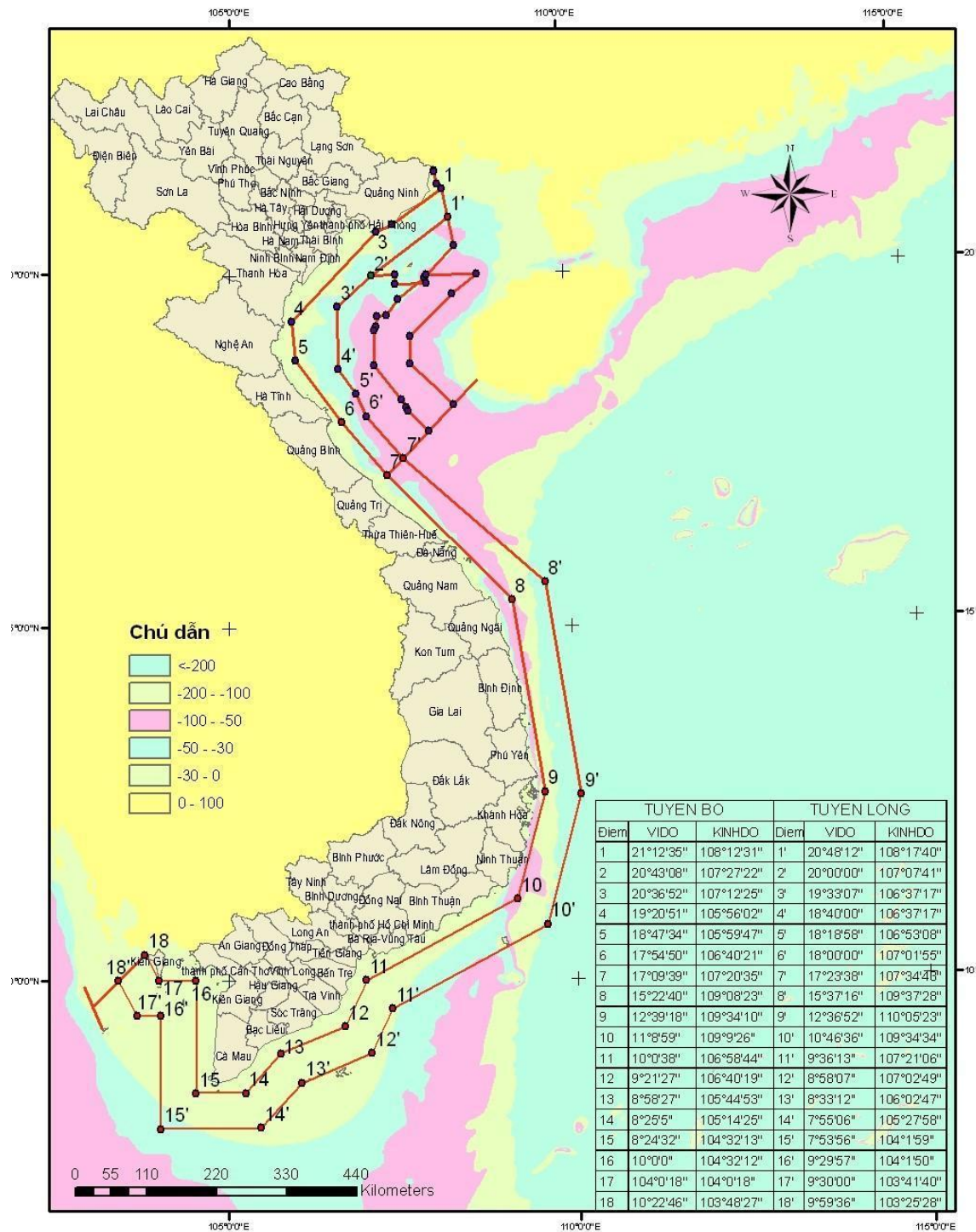


Figure 4. Zoning for fishing activities in Vietnam by Decree 26/2019/ND-CP



At national level, the fisheries management were advised to apply the adaptive fisheries management approach. The indicators of resources and ecosystem were used to estimate the trends of fisheries resources whilst the fleet indicators were used to evaluate the fisheries activities. Since 2000, the comprehensive independent fisheries surveys supporting fisheries management in Vietnam were carried out by RIMF covering the EEZ of Vietnam, with support from DANIDA for a period from 2000-2005. After a gap from 2006 to 2010, the surveys have been reconducted since 2011 by the Decision 47/2006/QĐ-TTg dated March 1st 2006 of Prime Minister on the approval of the Master Project on the basic survey and management of marine natural resources and environment toward 2010, vision 2020. The survey stations for the certain fisheries resources group are presented in Figure 1.

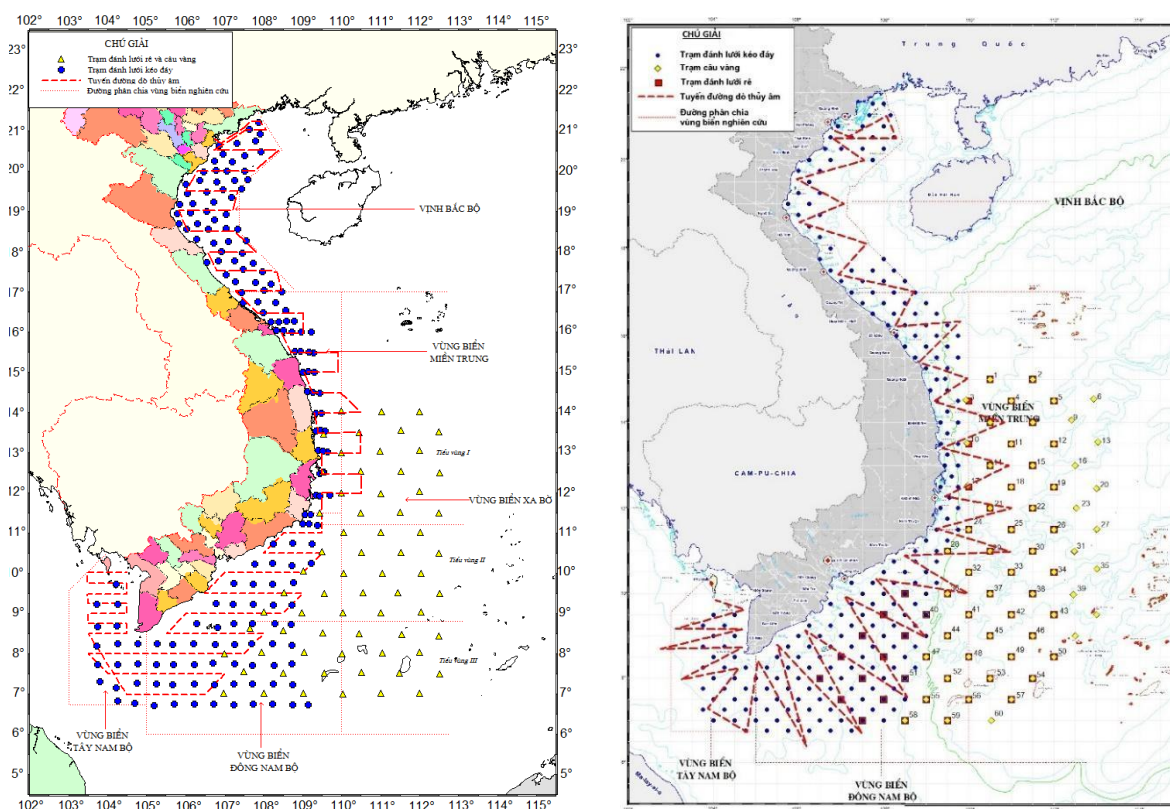


Figure 1. The maps show the fixed survey stations in the EEZ of Vietnam for the demersal fisheries resources (point), large pelagic fish resources (triangle and square dots) and the acoustics transect for small pelagic fish resources (dash line) in periods 2000-2005 (on the left) and 2011-2020 (on the right).

Biomass estimation from independent fisheries surveys indicated that the average biomass of fish and invertebrates in EZZ of Vietnam was 5.07 million tons for a period 2000-2005 (Dao et al., 2009) and 4.36 million tons during 2011-2015 (Nguyen & Vu, 2016) and 3.95 million tons for 2016-2020 period. In Southeast waters where the BRVT trawl occurs, the 5-year average biomass of fisheries resources was slightly fluctuated and estimated at 1.08 mil.tons for a period 2000-2005; 1.12 million tons for 2011-2015 period. However, the biomass of demersal fisheries resources decreased about 25,3%, from 304 thousand tons in the period 2000-2005 to 227 thousand tons in 2012-2015. The



quality of fisheries resources was changed with the increasing CPUE of the low-value species and decreasing economically important species.

Trawls are non-selective fishing gears and catching multi-species. In the Southeastern waters, the independent fisheries survey conducted by RIMF using the bottom trawl in August 2018 indicated 372 species belonging to 111 families whereas 21 species contributed from 1% to the total survey catch. The dominant species were Brushtooth lizardfish (14.6%), Blunt-nose lizardfish (5.3%) and Mitre squid (5.1%). Observed on boat fishing vessel of BRVT trawlers in 2015-2016 by RIMF identified 232 species in 70 families (Appendix 1), in which the dominant species of the otter trawl were Whiskered velvet (18.7%), Blunt-nose lizardfish (11.2%), Horn dragonet (7.1%); *Loligo* squids (6.5%); Brushtooth lizardfish (5.6%); Greater lizardfish (3.2%); Southern velvet shrimp (2.5%) and of the pair trawl were Bigeye scad (17.1%); Blunt-nose lizardfish (13.6%), Yellowtail scad (12.1%); Goldband fusilier (10.5%); Sulphur goatfish (9.1%); Moonfish (8.4%); and other goatfish (3.9%). The substantial differences between the two data sources are indicative of the challenges associated with characterizing the catch composition in the fishery, which not only changes based on season and location, but also from year to year and survey to survey. Additionally, even when sampled by experts many species can only be identified to genus or family level.

At-risk species identified in the BRVT trawl fishery based on observer data of RIMF in 2015-2016 include red stingray (*Dasyatis akajei*, categorised by the IUCN as Near Threatened); pale-edged stingray (*Dasyatis zugei*, Near Threatened); Malabar grouper (*Epinephelus malabaricus*, Near Threatened); sharpnose stingray (*Himantura gerrardi*, Vulnerable); and Spanish mackerel (*Scomberomorus commerson*, Near Threatened). Additionally, seahorse (*Hippocampus spp.*) and flathead lobster (*Thenus orientalis*) have been categorised as vulnerable by Vietnam's Announcement of the List of Species at Risk in Vietnam (Decision no. 82/2008/QĐ-BNN). Sea turtles and Dugong are ETP species that also reported their appearance in Con Dao Islands.

BRVT trawl activity occurs in the Southeast region (FAO fishing region 71), primarily around the Con Dao islands and further offshore. The trawl fisheries consist of the otter trawl and the pair trawl. The otter trawl targets on shrimp, fishing at night whilst the pair trawl targets on demersal resources such as fish and invertebrates, and trawling occurs both day and night.

According to official statistics, there were a total of 1,926 trawl boats in 2015 and decreased by 1,576 units in 2019 (Table 3, Table 4), comprising 30.60% and 27.03%, respectively, of the total fishing vessels in BRVT. Total annual landings estimated from logbook data conducted by Research Institute for Marine Fisheries (RIMF) and Directorate of Fisheries (DOF) was about 340 thousand tons in 2014-2015, dropped by 259 thousand tons in 2016-2017 and increased to 450 thousand tons in 2019-2020 (Table 5).

Table 3. Number of fishing vessels and trawl boats in BRVT

Indicator	Year	2015	2016	2017	2018	2019
Number of fishing vessels		6,294	6,291	6,284	5,905	5,831
Number of trawl boat		1,926	1,846	1,700	1,654	1,576



Percentage (%)	30.60	29.34	27.05	28.01	27.03
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Table 4. Fleet composition in number grouped by boat size in overall length

Fishing Fleet	Year	2015	2016	2017	2018	2019
<12m		23	23	23	23	25
12-15m		66	66	58	57	64
15-20m		947	912	856	839	785
>20m		890	845	763	735	702
Grand Total		1,926	1,846	1,700	1,654	1,576

Table 5. Total landing of BRVT trawl fisheries and others period 2014-2020 (The total catches is estimated for a period from July to June of the next year)

Fisheries	Year	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020
All Fisheries	tons	420,702	390,892	349,513	480,609	517,302	511,354
Trawl fisheries	tons	340,334	318,938	259,789	405,607	453,731	450,464
	percentage (%)	80.9	81.6	74.3	84.4	87.7	88.1
Others	tons	80,368	71,954	89,724	75,002	63,570	60,890
	percentage (%)	19.1	18.4	25.7	15.6	12.3	11.9



Unit of Assessment(s)

Table 2. Unit(s) of Assessment (UoA)

UoA 1	Description
Target species (common and scientific name)	Multispecies, demersal resources <i>Indicator species:</i> Greater lizardfish (<i>Saurida tumbil</i>), Blunt-nose lizardfish (<i>Trachinocephalus myops</i>), Sulphur goatfish (<i>Upeneus sulphureus</i>), Bigeye scad (<i>Selar crumenophthalmus</i>) and Yellowtail scad (<i>Atule mate</i>)
Stock	Demersal resources
Geographical area	Southeast Area of Vietnam (the coastal waters, inshore waters under administration of Ba Ria - Vung Tau province) and waters from the inshore route to the outer boundary (offshore) of Vietnam's exclusive economic zone (EEZ) FAO fishing region 71
Fishing method or gear type	Otter trawl, Pair trawl
Fishing fleet or group of vessels, or individuals fishing operators pursuing stock	All trawl fleets registered and licensed by People's Committee of Vung Tau Trawl fleets allowed to land at ports in Ba Ria - Vung Tau province



Principle 1: Sustainable target fish stock

Principle 1 considers the status of the target stock(s) and whether harvest is being conducted in a manner that does not lead to overfishing or depletion of the exploited populations.

For all performance indicators under each principle, fill in the scoring category (red, yellow, green, or n/a) and the rationale (justification for the scoring category that was assigned). An example has been provided under the Stock Status Outcome PI (1.1.1).

Stock status outcome (1.1.1)

Scoring category	70
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Rationale:

An adaptive fisheries management regime with the use of indicators has been applied in Vietnam since 2000. The bottom trawl survey with the swept-area method was used to estimate the standing biomass of the demersal fisheries resources in the Southeastern waters of Vietnam, where the BRVT trawl occurs. Time series of Catch per Unit Effort (CPUE, kg/h) from the surveys indicated that the trawlable resources had decreased and were quite stable since the survey in June 2005 (Figure 1). However, there are no target reference points for this fishery identified as supporting for management.

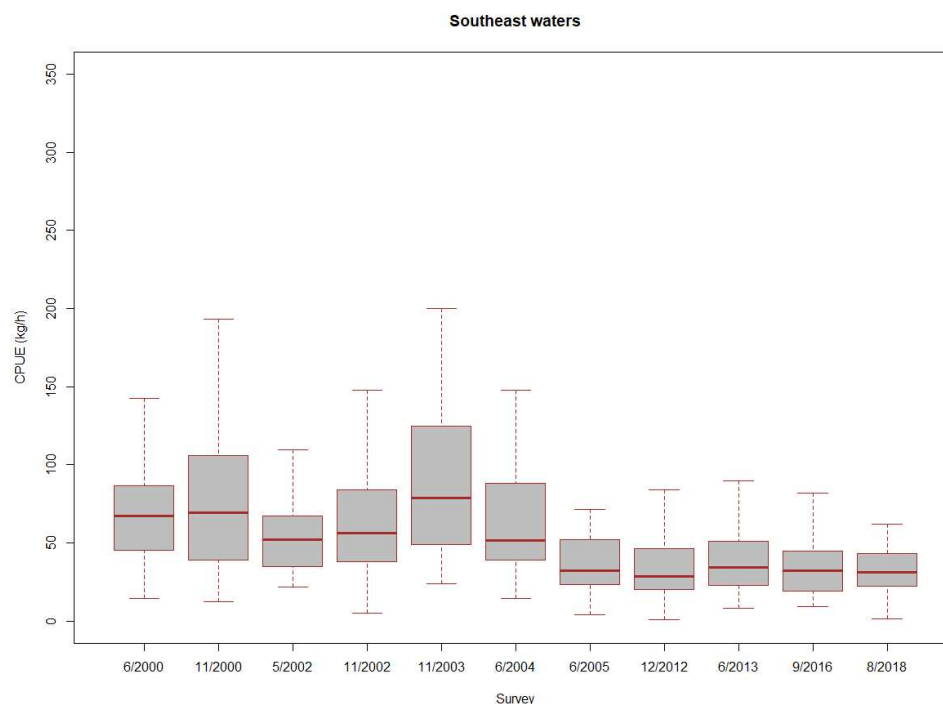


Figure 1. Catch per Unit Effort (CPUE, kg/h) of trawl survey in the Southeast waters of Vietnam.



According to recent stock assessment, the estimated standing stock biomass of the demersal fisheries resources was fluctuated and showed a decreasing trend, from 203 thousand tons in December 2012 to 274 thousand tons in June 2013 then dropped by 215 thousand tons in September 2016 and 191 thousand tons in August 2018 (Table 6). The target and limit referent points were not set, however, the fisheries are believed to be over exploited.

Table 6. Standing biomass (thousand tons) of demersal fisheries resources in the Southeast waters of Vietnam based on the trawl survey

Survey Depth Strata (m)	December 2012	June 2013	September 2016	August 2018
<20	16.640	45.235	15.891	22.288
20-30	26.140	24.739	29.262	21.091
30-50	49.818	74.678	61.726	61.772
50-100	60.230	63.733	72.277	60.345
100-200	50.474	66.101	36.451	25.696
Total	203.302	274.487	215.606	191.193

Stock rebuilding outcome (1.1.2)

Scoring category	65
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Rationale:

Management measures are in place (Circular 19/2018/TT-BNN with 32 seasonal closing regions along the coast of Vietnam, 8 sites in the Southeastern waters and the coastal zone of BRVT is restricted for fishing in a period from Nov. 1st – Nov. 30th annually), but it is not clear how effective closing the season and time restriction are.

There are no harvest strategies linked to Maximum Sustainable Yield (MSY). Therefore, there is a need to set targets and limit reference points against appropriate stock variables. Stock assessment needs to take place to establish a harvest control rule.

Problem concerns are the multi-species fisheries and a single species stock assessment model is not appropriate for the multi-species fisheries, therefore, indicator species need to be pointed out to take place an appropriate stock assessment and establishment of harvest strategies and harvest control rules for the fisheries.



Harvest strategy (1.2.1)

Scoring category	<60
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Rationale:

Standing biomass estimation of the demersal fisheries resources has taken place since 2000. Time series indicators such as CPUE, biomass, species composition, catch composition, length frequency and mean length of fish and invertebrates based on independent fisheries surveys are available, but the stock assessment has not been conducted yet. Presently, harvest strategy for the BRVT trawl fisheries has not been established therefore the target and limit reference points are not introduced.

Harvest control rules (1.2.2)

Scoring category	<60
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Rationale:

Although an adaptive fisheries management regime has been recommended to apply in Vietnam since 2000, however, the harvest strategy and harvest control rule link to fisheries management model are still not established yet.

Some studies on fisheries biology recommend the size restriction and ratio margin of undersize fish and invertebrates in landing, however, it is not put in any regulation and not applied in practice yet.

Information and monitoring (1.2.3)

Scoring category	65
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Rationale:

Report on CPUE, biomass, species composition and catch composition of the overall demersal fisheries resources or of the species level based on the trawl surveys has been available since 2000. It is noted that the CPUE has been quite stable recently. However, the quantity of the demersal fisheries resources is low with the economically important species being replaced by the low-value species.

CPUE of the BRVT trawl fisheries (otter trawl, pair trawl) from logbook are available from 2015, however, the data are not separated to species level.

Fishing effort is monitored by the number of trawl boats and number of active days at sea. However, the precision of this data is limited.

Additionally, since the EU gave a yellow card to the Capture Fisheries of Vietnam, the government has made big efforts to improve the management system. Many decrees and circulars have been issued to minimize IUU fishing and manage fishing activities as Decree No. 26/2019/ND-CP, Decree No. 42/2019/ND-CP, Circular 21/2018/TT-BNNPTNT. The fishing logbook is mandatory for fishing



vessels above 6m and fishing vessels from 15m have to equip a Vessel Monitoring System (VMS). In BRVT province, a total of 2,476 fishing vessels have been equipped VMS, of which, 271/277 (97.8%) vessels above 24m and 2,205/2,630 (83.8%) vessels 15-24m¹. However, the link of these regulations to the harvest control rule is not clearly seen.

Assessment of stock status (1.2.4)

Scoring category	60
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Rationale:

Based on the trawl surveys conducted by Research Institute for Marine Fisheries, the CPUE and biomass of demersal fisheries resources were stable recently, however, it has decreased about 25,3% when compared to the period 2000-2005. Fisheries data are available since 2015 however, the catch was not broken down to species level. Stock assessment was not fully conducted, just stopped at biomass estimation and fisheries description. Therefore, there is a need to introduce an appropriate stock assessment model to give advice for trawl fisheries management in BRVT.

This will require strengthening of data collection and analysis within BRVT Department of Agriculture and Rural Development (DARD), and or possibly with the processing sector improving data recording and analysis.

There is a peer review process on biomass estimation for the whole southeast region conducted by the Scientific Board of DOF however, at the provincial level, no peer review process. This may require a stronger custodial link with MARD to ensure that BRVT DARD is following sustainability principles.

¹ Information from Mr. Doan Van Phu at Division of Fisheries, Department of Agriculture and Rural Development of Ba Ria – Vung Tau



Principle 2: Ecosystem impacts

According to 'Methodology_Environmental Rapid Assessment v1.1 Nov 2020', primary species have management objectives (e.g. reference points) and stock status monitoring in place, whereas secondary species do not. Basic FIPs are likely to be in fisheries with less management capacity and data, so there may be no primary species. Hence all PIs applicable for primary species (PI 2.1.1 to PI 2.1.3) will be excluded in this Environment Rapid Assessment report. Instead, all non-ETP, Principle 2 species will be classified as 'other' species, and scores will be entered under the secondary species PIs (2.2.1, 2.2.2, 2.2.3) in FisheryProgress.org.

Based on the trawl survey data in 2018 and observed data onboard fishing vessels in 2015-2016 conducted by RIMF, 5 most dominant species were pointed out as 'other' species, given in the following table.

Other species classification table

Species common and scientific names	Approximate proportion of catch (%)	Classification
Bigeye scad - <i>Selar crumenophthalmus</i>	17.1	Main
Greater lizardfish - <i>Saurida tumbil</i>	13.8	Main
Blunt-nose lizardfish - <i>Trachinocephalus myops</i>	13.5	Main
Yellowtail scad - <i>Atule mate</i>	12.1	Main
Sulphur goatfish - <i>Upeneus sulphureus</i>	9.1	Main

The bottom trawl with "swept-area" method (Sparre and Venema, 1995) was used to estimate the biomass and abundance of demersal resources distributed near the seabed in Vietnam. The Southeastern region is a part of Vietnam EEZ. This region is flat and shallow, therefore, the trawlable catch is mixed with the small pelagic fish and the demersal fish as well as the crustacean and cephalopod (Vu et al., 2013). Thus, the bottom trawl survey becomes important since it provides either data for the demersal resources or pelagic fish.

Since 2000, the trawl surveys with systematic fixed sampling stations have been used to estimate the standing stock biomass. The biomass of the most dominant species based on survey in 2018 listed in Table 7 are:

- Bigeye scad: biomass was estimated at 302±125 tons and the long-term average biomass was 905±309 tons.
- Greater lizardfish: biomass was estimated at 1,601±696 tons and the long-term average biomass was 3,855±1,627 tons.
- Blunt-nose lizardfish: biomass was estimated at 9,352±1,782 tons and the long-term average biomass was 16,231±3,256 tons.



- Yellowtail scad: biomass was estimated at 2,757 tons and the long-term average biomass was 2,229 tons.
- Sulphur goatfish: average biomass for a period 2000-2018 was estimated at 2,229 tons and biomass in 2018 was 2,757 tons.

Trends of stock biomass of these species are shown in Figure 2.

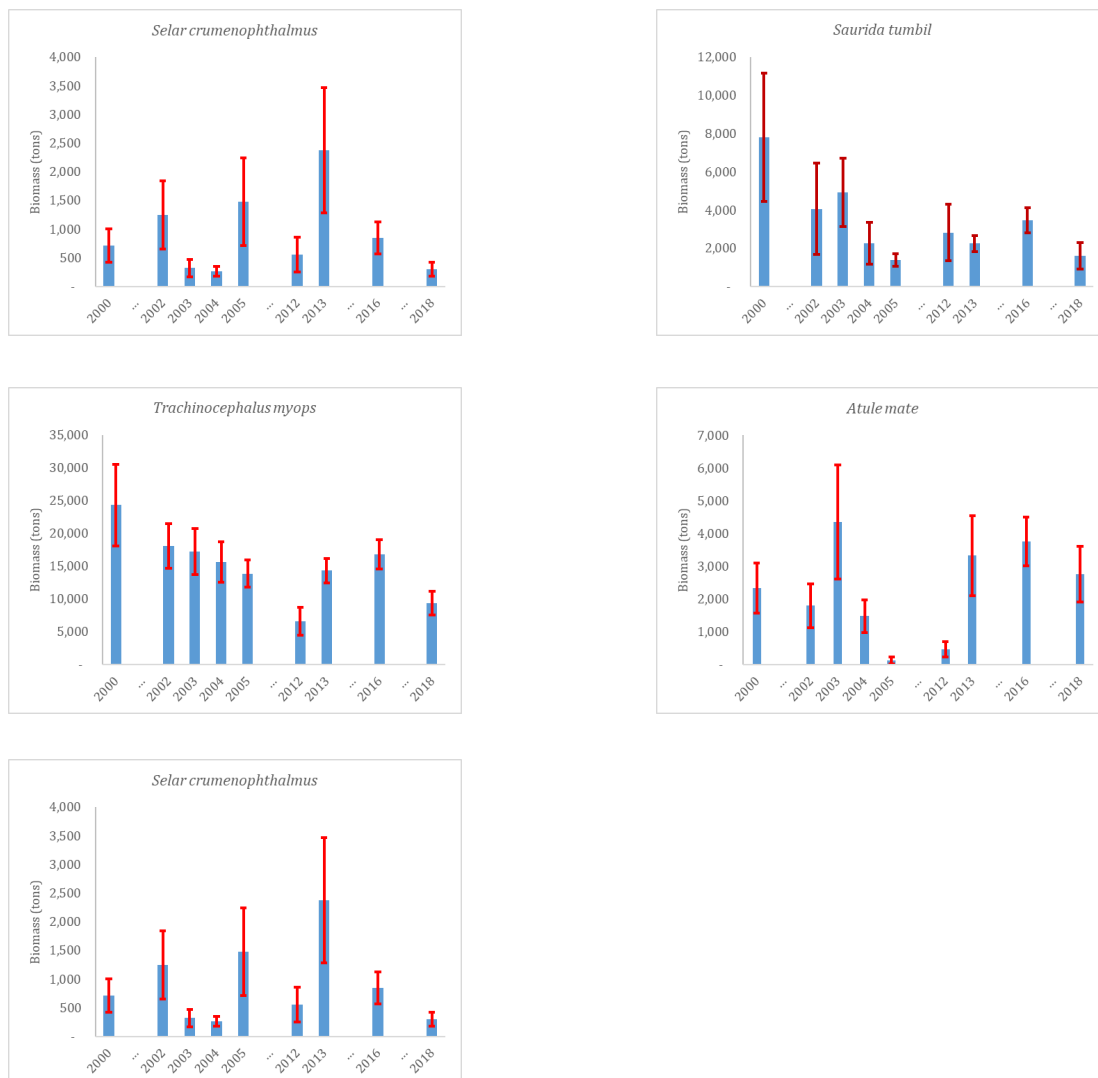


Figure 2. Trends of standing biomass of the five dominant species of the trawl fishery in the southeastern of Vietnam.

The above figure illustrates that the biomass of these species highly fluctuated over time and there were 4 species heavily exploited (biomass in 2018 lower than long-term average biomass). The stock status reference points are not available, neither strategies at the national or provincial level of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding. Qualitative information to conduct a PSA is not sufficient.



Secondary species information (PI 2.2.3)

Scoring category	< 60
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Rationale:

Some important indicators such as CPUE, biomass, species composition, catch composition are available, but not sufficient for conducting a PSA. Thus, setting up a fisheries data collection system for relevant species in BRVT should be considered one of high priorities for the FIP.

Secondary species outcome (PI 2.2.1)

Scoring category	< 60
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Rationale:

Although stock assessment has not been conducted, the trend of the biomass of the primary species is available since the trawl survey has been regularly conducted. Biomass estimation in 2018 indicated the stock of 4/5 species is below the long-term average biomass. This illustrates that the stocks are over exploited. Time series indicators are available since the bottom trawl survey has been conducted regularly. However, the CPUE and total landings from fisheries are not recorded.

Secondary species management (PI 2.2.2)

Scoring category	< 60
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Rationale:

There is no strategy to manage these species in trawl fisheries, not only in BRVT but also in Vietnam. In 2018, MARD issued the Circular 19/2018/TT-BNN with 32 seasonal closing regions along the coast of Vietnam, 8 sites in the Southeastern waters and the coastal zone of Ba Ria – Vung Tau is restricted for fishing in a period from Nov 1st – Nov. 30th annually. Mesh size restriction is also applied with the aim to enable the recovery of marine resources all over Vietnam.

The province shall establish provincial fisheries databases (as recommended in PI 2.2.3), then develop harvest control rules in the next phase of FIP.

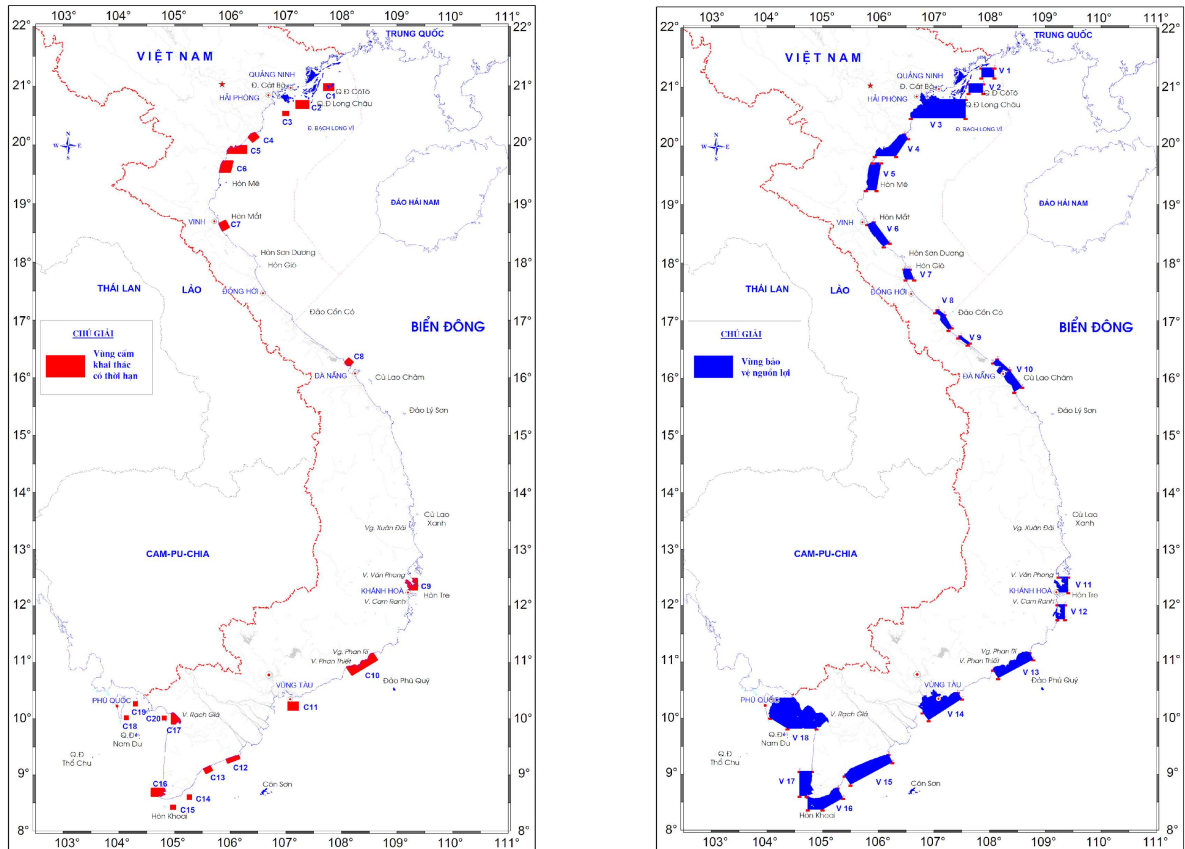


Figure 9. The seasonal restricted for fishing by Circular 19/2018/TT-BNN on the left and RIMF's proposal for the fisheries refugia along the coast of Vietnam

ETP species information (2.3.3)

Scoring category

< 60

Rationale:

Evidence from the observer onboard fishing vessel data in 2015-16 in the south-eastern waters of Vietnam, includes BRVT, conducted by RIMF indicated several Near Threatened and Vulnerable species occurring in the samples such as red stingray (*Dasyatis akajei*, categorised by the IUCN as Near Threatened); pale-edged stingray (*Dasyatis zugei*, Near Threatened); Malabar grouper (*Epinephelus malabaricus*, Near Threatened); sharpnose stingray (*Himantura gerrardi*, Vulnerable); and Spanish mackerel (*Scomberomorus commerson*, Near Threatened). Additionally, seahorse (*Hippocampus spp.*) and flathead lobster (*Thenus orientalis*) have been categorised as vulnerable by Vietnam's Announcement of the List of Species at Risk in Vietnam (Decision no. 82/2008/QĐ-BNN).



ETP species outcome (2.3.1)

Scoring category	< 60
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Rationale:

A comprehensive assessment of the impact of the UoA on ETP species is not yet carried out, hence limits of the population/stock of ETP species are not set. This should be considered as one of high priorities in the next phase of the FIP.

ETP species management (2.3.2)

Scoring category	< 60
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Rationale:

Appendix 2 of the Decree No. 26/2019/ND-CP dated March 08, 2019 on Guidelines for Implementation of the Law on Fisheries has pointed out a number of species as the List of Species at Risk in Vietnam (Updated the list of ETP species in 82/2008/QĐ-BNN). However, there are only action plans for the protection of the sea turtles that have been approved (Decision 811/QĐ-BNN-TCTS dated 14 March 2016). ETP species management plan shall be developed once the comprehensive assessment of the impact of the UoA on ETP species is carried out and limits of the population/stock of ETP species are set.

Habitats information (2.4.3)

Scoring category	< 60
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Rationale:

There are studies on sensitive habitats in Vietnam and particularly in the BRVT area conducted by the Research Institute for Marine Fisheries. Mostly focus on spawning and nursery grounds of fish and invertebrates. Marine Protected Areas are also priorities studied and the Con Dao MPA is designed to protect vulnerable species and coral reefs, and includes no take zones and ecological recovery zones.

Further study about the nature, distribution and vulnerability of the commonly encountered habitats in the UoA area at a level of detail relevant to the scale and intensity of the UoA shall be conducted.

Habitats outcome (2.4.1)

Scoring category	< 60
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Rationale:

The South-eastern waters where the traditional fishing ground of BRVT trawl fisheries are flat with a muddy and sandy bottom. The coral distributed in Con Dao islands and seagrass are in coastal



zones. There is no scientific research on habitat degradation due to trawling. Fishermen frequently return to the traditional grounds for fishing.

It is believed that the trawl activities have risks on habitats since the trawl net equipped with heavy chains in footrope swept on the seafloor. However, there is no scientific evidence to evaluate interaction.

Studies about Vulnerable Marine Ecosystems (VMEs) within the waters under the administrative management of BRVT province shall be carried out according to the GSA3.13.3.2 of MSC standard, v2.01. Any known impacts from ghost fishing, as related to at-sea garbage disposal and gear loss/retrieval should be covered by such studies.

Habitats management (2.4.2)

Scoring category	< 60
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Rationale:

Several attempts have been made, for example the circular 19/2018/TT-BNN dated November 15, 2018 stipulates that the trawl fisheries are not permitted to fish in the coastal and inshore zones, as efforts to minimize the impact of trawl fishing to the sensitive areas such as spawning and nursery grounds of fish and invertebrate; The creation of MPAs and Fisheries refugia also reflected that the potential habitat interactions are considered in the management decision-making process. However, there is a lack of information about Vulnerable Marine Ecosystems (VMEs) within the waters under the administrative management of BRVT and there is no convincing evidence to prove that a habitat management system exists. Studies to provide sufficient habitats and VMEs information shall be conducted in the next phase of FIP.

Ecosystem information (2.5.3)

Scoring category	< 60
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Rationale:

There is no information to identify the key ecosystem elements, hence main impacts of the UoA on these key ecosystem elements cannot be inferred.

Ecosystem outcome (2.5.1)

Scoring category	< 60
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Ecosystem management (2.5.2)

Scoring category	< 60
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Rationale:

There is no evidence of species-specific management measures in place.



Principle 3: Management

This principle is assessed by TRAN Van Hao, Lecturer / Researcher of the Fishery Management Department, under the Institute for Marine Science & Fishing Technology of Nha Trang University and NGUYEN Kim Thanh, expert of Kim Delta T&C.

Legal and/or customary framework (3.1.1)

Scoring category	85
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Rationale:

The foundational fisheries legislation of Vietnam is the Fisheries Law No.18/2017/QH14 which effected on January 1st, 2019. The Vietnam Fisheries Laws have 9 Chapters. Below are chapters relevant to fishery management:

- **Chapter 1** about General provisions stipulates Ownership of aquatic resources, Principles of fishery activities, The State's policies related to fishery activities, Prohibited actions in fishery activities, International cooperation in fishery activities, Fishery national database and Co-management in aquatic resource protection.
- **Chapter 2** about Protection and development of aquatic resources. This chapter defines provisions on The master plan for protecting and exploiting aquatic resources, Investigation into and assessment of aquatic resources and living environment of aquatic species, Aquatic resource protection, Recreation of aquatic resources and recovery of living environment of aquatic species, Marine Protected Areas (MPAs), Establishment of MPAs, Aquatic resource protected areas, Management of aquatic resources and aquatic ecosystem in reserve forests and protection forests, Management of aquatic resources in wetland reserves, Fund for protection and development of aquatic resources.
- **Chapter 4** about Commercial fishing covers articles about Management of fishing areas, Quota on issuance of marine fishing licenses, Commercial fishing licenses inside and outside Vietnam's maritime boundary, Rights and responsibilities organizations and individuals engaged in fishing activities inside and outside Vietnam's maritime boundary, Illegal commercial fishing.
- **Chapter 5** about Management of commercial fishing vessels, ships of fishery authorities and sheltering anchorages for commercial fishing vessels with one relevant article about commercial fishing vessels entering and leaving fishing ports.
- **Chapter 6** is all about Fisheries resources surveillance
- **Chapter 8** defines clauses related to State administration of fisheries.

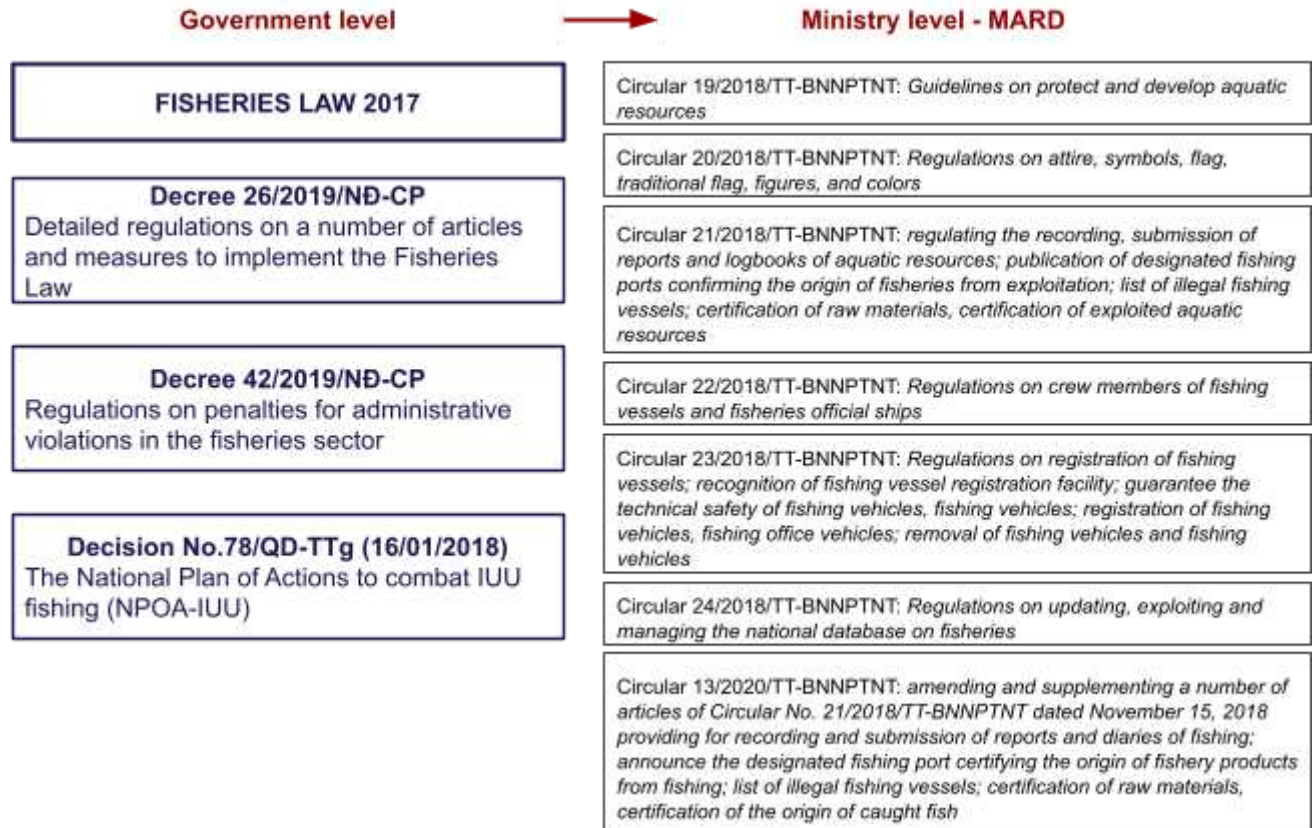
In order to support the implementation of the Fishery Laws, Vietnam Government has released two (02) Decrees about regulations on penalties for administrative violations on fishery sectors under Decree 42/2019/NĐ-CP and regulations on detailed articles and executed measures Fishery Laws under Decree 26/2019/NĐ-CP. To some extent it can be said that the Law on Fisheries 2017 and its guiding documents have a lot of responsive updates and improvements as a part of the process to



lift off the Yellow card issued by the European Commission for Vietnam's fisheries. A series of Circulars by MARD from the end of 2018 to 2020 for further guidance on the implementation of the Fisheries Law. Among these legislative documents are those dedicated to fisheries management, including:

- Circular 19/2018/TT-BNNPTNT: Guidelines on protect and develop aquatic resources;
- Circular 20/2018/TT-BNNPTNT: Regulations on attire, symbols, flag, traditional flag, figures, and colors;
- Circular 21/2018/TT-BNNPTNT: regulating the recording, submission of reports and logbooks of aquatic resources; publication of designated fishing ports confirming the origin of fisheries from exploitation; list of illegal fishing vessels; certification of raw materials, certification of exploited aquatic resources;
- Circular 22/2018/TT-BNNPTNT: Regulations on crew members of fishing vessels and fisheries official ships;
- Circular 23/2018/TT-BNNPTNT: Regulations on registration of fishing vessels; recognition of fishing vessel registration facility; guarantee the technical safety of fishing vehicles, fishing vehicles; registration of fishing vehicles, fishing office vehicles; removal of fishing vehicles and fishing vehicles;
- Circular 24/2018/TT-BNNPTNT: Regulations on updating, exploiting and managing the national database on fisheries;
- Circular 13/2020/TT-BNNPTNT: amending and supplementing a number of articles of Circular No. 21/2018/TT-BNNPTNT dated November 15, 2018 providing for recording and submission of reports and diaries of fishing; announce the designated fishing port certifying the origin of fishery products from fishing; list of illegal fishing vessels; certification of raw materials, certification of the origin of caught fish;

On the other hand, Decision No.78/QĐ-TTg about the National Plan of Actions to combat IUU fishing (NPOA-IUU) was released by the government on Jan 16, 2018, focusing on IUU combating tasks on short-term (within 2018), mid-term (2019 – 2020) and long-term (2021 – 2025) as a result of consultations and participations from related ministries and agencies.



Fishery management legal framework of Vietnam

In practice, marine capture fisheries management can be divided into two (02) issues: vessel management and fishing management.

- **Vessel management** covers all vessel related matters: registration, fishing license, vessel monitoring system, safety inspection and fishing logbook.
- **Fishing management** includes all management of fishing related activities: fishing areas, fishing quotas, operations and reporting at sea, catch verification, catch certification and export.

Legislation framework applied according to issues and its elements are visualised in the below diagram:



Fishing vessel management		Fishing management	
Registration	Circular 23/2018/TT-BNNPTNT	Fishing areas	Fisheries Law 2017, Article 49
License & Fishing quotas	Decree 26/2019/NĐ-CP Fisheries Law 2017, Article 48	Operations and reporting at sea	Circular 21/2018/TT-BNNPTNT
Safety inspection	Circular 23/2018/TT-BNNPTNT	Catch verification	Circular 21/2018/TT-BNNPTNT
VMS	Decree 42/2019/ND-CP	Catch certification	Circular 21/2018/TT-BNNPTNT
Logbooks	Circular 21/2018/TT-BNNPTNT	Export	Circular 48/2013/TT-BNNPTNT

Vessel management:

- Registration is applicable for all fishing vessels more than 6m length, under control of The Provincial Department of Fisheries (Sub-DFISH).
- License is applicable for all fishing vessels more than 6m length, under control of Sub-DFISH, data is uploaded to national fisheries databases, managed by VNFishbase.
- Safety inspection is applied for all new vessels after shipbuilding, carried out by Sub-DFISH.
- VMS: Vessel Monitoring System is mandatory for all offshore fishing vessels as prescribed by Vietnam Government on Decree 26/2019/ND-CP. The vessel with the maximum length of at least 15 meters is required by law to equippe with the VMS devices. Also by this Decree, offshore vessels are required to report their locations for every 2 hours by its long-latitude coordinate locations and keep connections with authorities 24/24 hours.
- Logbook recording is daily mandatory for all vessels 12m length & above which will be submitted to fishing port authorities for every fishing trip by using a regulated template in Appendix of Circular 21/2018/TT-BNNPTNT. For small-scale fishing vessels from 6m to 12m length, logbooks are also mandatory but will be submitted weekly.

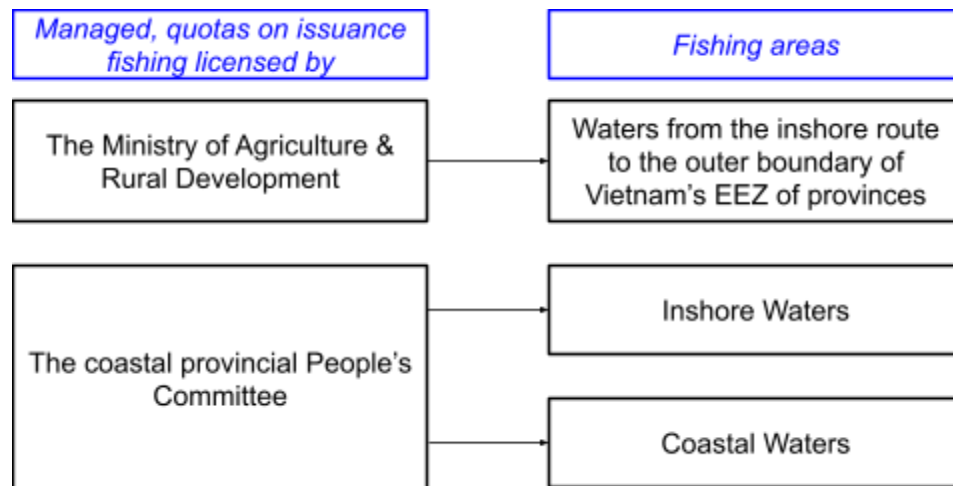
Fishing management:

- The Government prescribes **fishing areas** including the coastal waters, inshore waters and waters from the inshore route to the outer boundary (offshore) of Vietnam's exclusive economic zone (EEZ) and activities of commercial fishing vessels in the above mentioned



areas. MARD shall manage the commercial fishing in the waters from the inshore route to the outer boundary of Vietnam's exclusive economic zone. The People's Committee of each province manage the commercial fishing in coastal and inshore waters and domestic commercial fishing in the province.

- Bases for determining **quota** on issuance of marine fishing licenses are results of aquatic resources assessment; variable trend of aquatic resources; the maximum production of aquatic species allowed to be caught sustainably; structure of fishery vocations, aquatic species to be caught and fishing areas. MARD determines and assigns quotas on issuance of marine fishing licenses and production allowed to be caught of each species in the waters from the inshore route to the outer boundary of Vietnam's exclusive economic zone of provinces. The People's Committee of each province determines and assigns quotas on issuance of marine fishing licenses and the production allowed to be caught of each species in the coastal waters and inshore water under its management. The quota on issuance of marine fishing licenses shall be published and adjusted every 60 months. If there is any variation in aquatic resources, according to results of investigation into and assessment of aquatic resources in each subject, annual investigation into and assessment of commercial fisheries, MARD and People's Committees of provinces shall adjust the production allowed to be caught of each species. Vietnam is still on piloting for applied fisheries quotas management, and the pilot is only for tuna fisheries. Expansion for other fisheries will be applied in the future.



- Fishing operations & reporting at sea are mandatory for all fishing vessels with 12m length & above & submit fishing logbooks to fishing port authorities within 24h after landing completed (Clause 1, Article 4, Circular 21/2018/TT-BNNPTNT).
- Catch verifications are carried out at landing by port authorities. The catch is checked by weight and species to provide the "Landing Declaration" and issue the Statement of Catch if required.
- Catch Certifications will be issued (if required) by Sub-DFISH after checking and registration, licensing database and VMS system and confirming compliance.



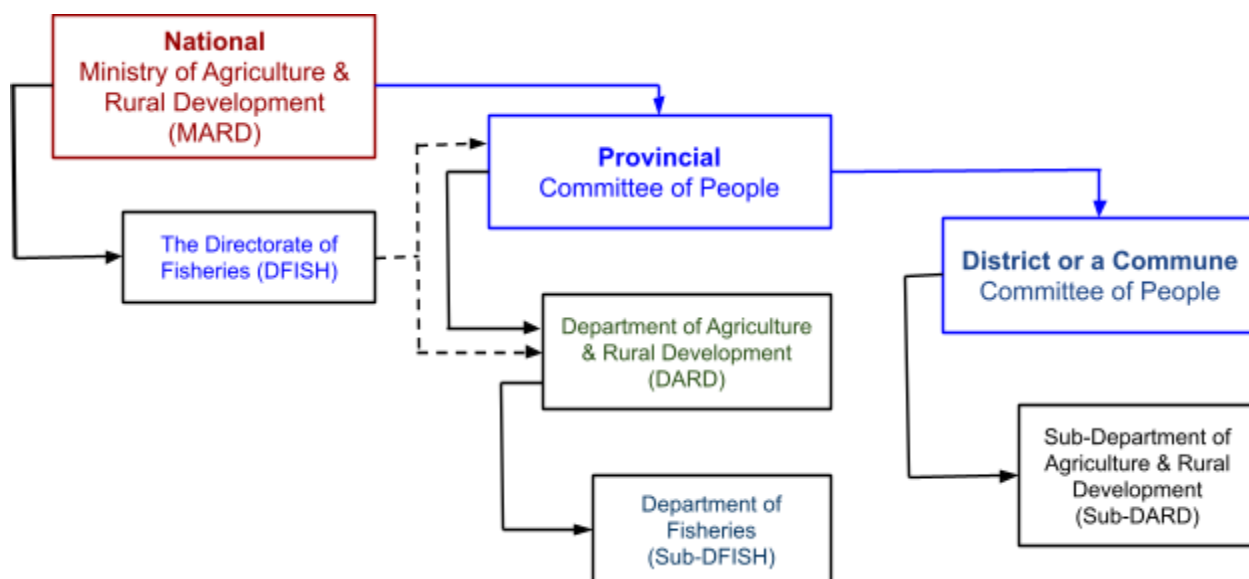
- Exportations for seafood products to international markets, applied for seafood processors & exporters. All original above documents need to be submitted to the National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD) to get the “Exportation Letter” before Custom Clearance procedure is taken place.

Consultation, roles, and responsibilities (3.1.2)

Scoring category	85
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Rationale:

A. STATE ADMINISTRATION OF FISHERIES



National level:

Article 101, Chapter 8 of the Fisheries Law 2017 defines ‘the Ministry of Agriculture and Rural Development (MARD) shall work as a contact point to assist the Government in the state administration’. According to this article, MARD is responsible for:

- a. State administration of fishery activities in the whole country; make and provide directions on implementing strategies, plans and schemes for fishery activities;
- b. Promulgate or request competent authorities to promulgate and implement policies, legislative documents, standards, technical regulations and economic and technical norms in fishery fields;
- c. Provide directions and instructions on and carry out environmental monitoring and warning, aquatic epidemic prevention and commercial fishing at sea; set up, manage and provide instructions on updating and accessing to the national fisheries database;



- d. *State administration of fisheries resources surveillance; provide consistent directions on fisheries resources surveillance;*
- e. *Organize the issuance, reissuance, extension and revocation of licenses and certificates in fishery activities under its management; authorize or assign the administration in accordance with regulations of law;*
- f. *Organize the investigation, scientific research and technological development, technology transfer; assess and analyze impacts of economic activities on fishery activities;*
- g. *Provide instructions on and carry out state inspections of fishing ports; provide professional training in managing fishing ports in accordance with regulations of law and announce the list of appointed fishing ports having sufficient systems for certifying origins of caught aquatic species;*
- h. *State administration applicable to marine protected areas and aquatic resources protected areas in the whole country;*
- i. *State administration and provide professional training in fisheries; organize and provide instructions on statistics, information, propagation and popularization of knowledge and legal education in fisheries;*
- k. *Specialized technical management in fishery activities;*
- l. *Manage, provide directions on, formulate plans for and organize inspection, handling of complaints and denunciation, taking actions against violations of law on fisheries within its power; work as a contact point to join international cooperation in fisheries;*
- m. *Take charge and cooperate with Ministries, ministerial agencies and People's Committees of provinces in developing software for managing the national fishery database;*

Provincial level:

According to Article 102, Chapter 8 of the Fisheries Law 2017, the People's Committee of provinces are responsible for:

- a. *Promulgate or request competent authorities to promulgate documents provide guidelines for implementation of law on fisheries;*
- b. *Provide directions on and organize management of fishery activities in the province; organize production and catching of aquatic species;*
- c. *Organize the propagation, popularization of and education about laws and knowledge related to fisheries; set up fishery database in the province and update the national fishery database;*
- d. *Organize the issuance, reissuance, extension and revocation of licenses and certificates in fishery activities under its management according to the assignment;*
- e. *Provide directions on, formulate plans for and organize inspection, handling of complaints and denunciation, taking actions against violations of law on fisheries within its power;*
- f. *Ensure allowances, funding and working conditions for the local fisheries resources surveillance force in accordance with regulations of law;*



- g. Organize the management of fishing ports; inspect, control and comply with regulations of law on catching and protecting aquatic resources, food safety, environmental safety and fire safety at fishing ports; collect, consolidate and report statistics of aquatic products passing commercial fishing vessels in accordance with regulations and law;*
- h. State administration applicable to marine protected areas and aquatic resources protected areas in the province.*

District and commune levels:

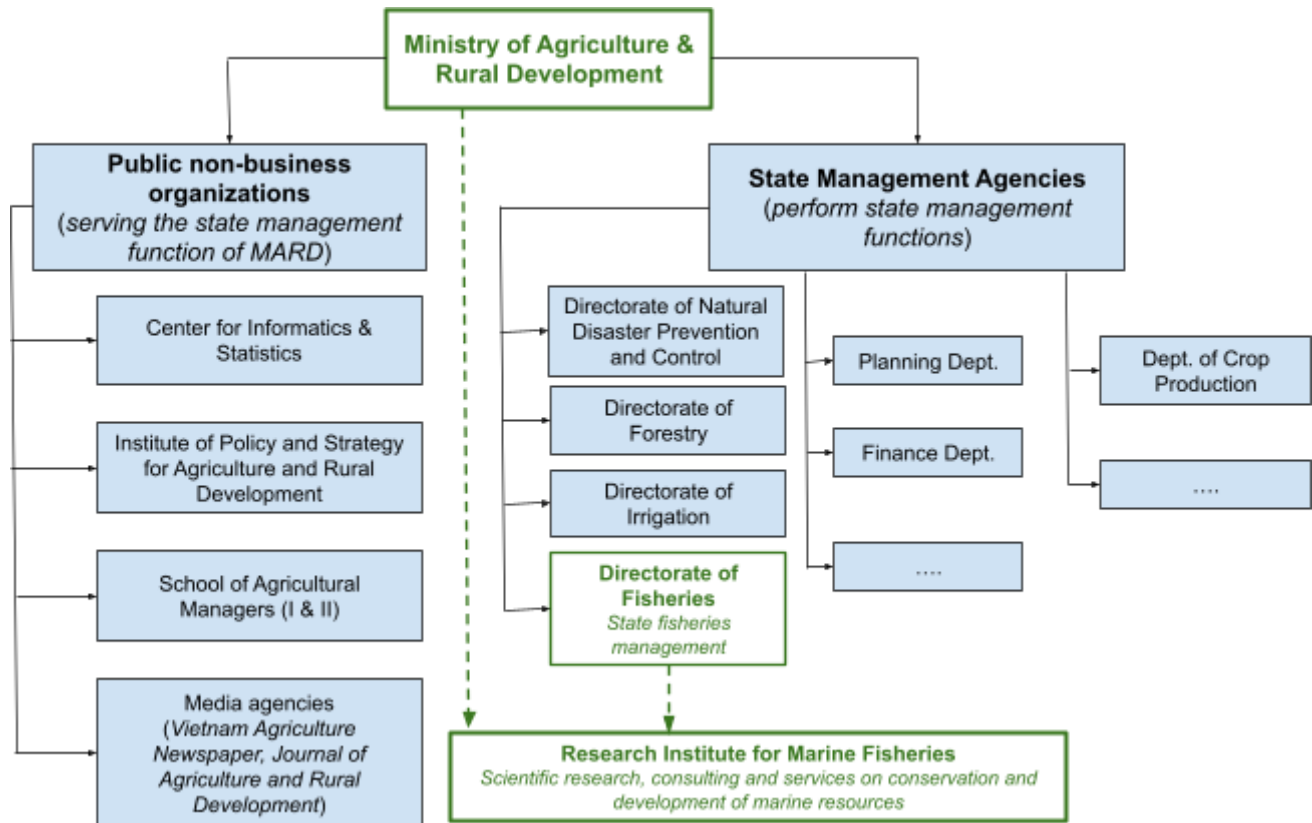
According to Article 102, Chapter 8 of the Fisheries Law 2017, People's committees of a district or a commune are more about implementation at district and lower levels. They are responsible for:

- a. Carry out activities and implement methods for managing fishery activities in the district or commune in accordance with regulations of law;*
- b. Carry out tasks of state administration of fisheries according to assignment or authorization by the supervisory People's Committee;*
- c. Propagandize, popularize and provide education about law on fisheries in the district or commune.*

B. FISHERIES MANAGEMENT SYSTEM

National level:

MARD: As defined in the Fisheries Law 2017, MARD is the key ministry for State administration of fisheries. Organisation structure of MARD is given in the following chart:



Sources: Decree 15/2017/ND-CP dated February 17, 2017

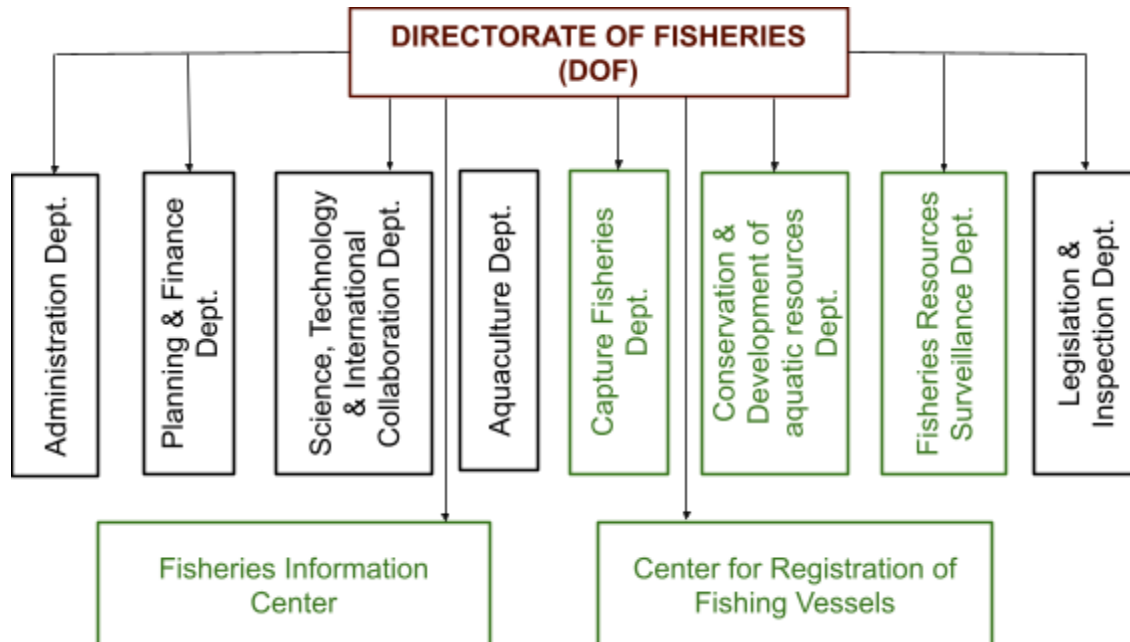
Directorate of Fisheries (DOF) is the MARD subordinate agency responsible for fisheries management as specified in *Decision 27/2017/QĐ-TTg on functions, tasks, powers and organizational structure of the Directorate of Fisheries under the Ministry of Agriculture and Rural Development*, issued by the Prime Minister. Within DOF, departments of Fisheries, Conservation & Development of aquatic resources, Fisheries Inspection, Fisheries Information Center and Center for Registration of Fishing Vessels directly participate in fisheries management activities.

- The Department of Capture Fisheries performs the function of state management in the field of fishing, fishing vessels and logistics service facilities.
- The Department of Conservation & Development of aquatic resources performs the function of state management of protection, conservation, regeneration and development of aquatic resources.
- The Department of Fisheries Resources Surveillance performs the task of patrolling, inspecting, controlling, investigating, detecting, preventing and handling violations of the law and specialized inspection of fisheries in the waters of Vietnam.
- The Fisheries Information Center is a public non-business unit with the function of managing and operating the fishing vessel monitoring system and the national database on fisheries;



information, statistics and application of information technology to serve the state management tasks of DOF and provide public services in accordance with the law.

- The Center for Registration of Fishing Vessels is a public non-business unit, having the function of carrying out the registration of fishing vessels to serve the state management tasks of DOF and provide public services in accordance with the law.



Research Institute for Marine Fisheries (RIMF): as defined by Decision No. 466/QĐ-BNN-TCCB of MARD, RIMF is a public scientific and technological non-business unit directly under the Ministry of Agriculture and Rural Development. Functions of RIMF related to marine fisheries are performing scientific research, consulting and services on conservation and development of marine resources. Responsibilities of RIMF are:

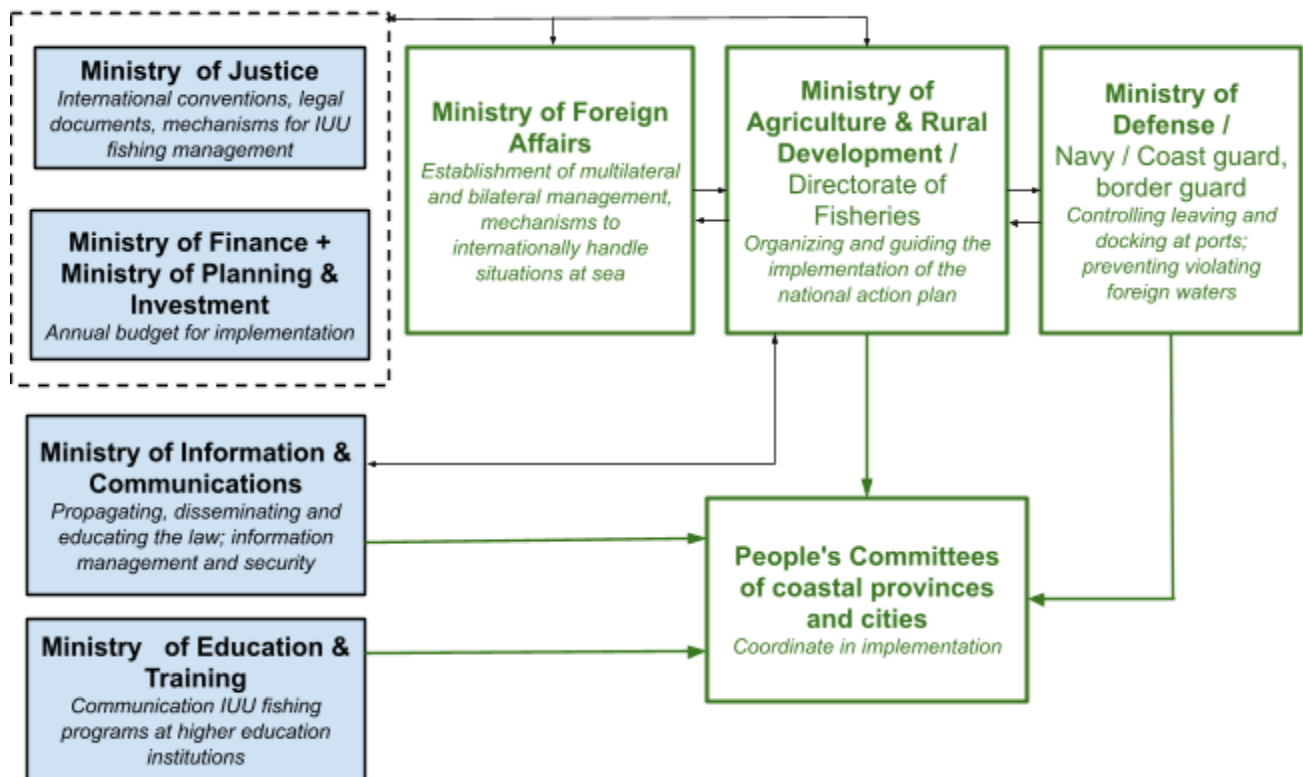
- Developing and submitting to the Ministry:
 - Strategies, planning, long-term, five-year, annual plans, programs and projects on exploitation, conservation and development of marine resources;
 - National standards, national technical regulations, technical guidance in the field of fishing; conservation and development of marine resources.
- Conduct basic research about:
 - Marine resources, the principles of changes in marine resources and fisheries biology for forecasting fishing ground and fisheries management;
 - The relationship between the environment, marine resources and marine fisheries; measures to restore, regenerate and develop marine resources;



- Socio-economic issues of fisheries; fisheries management model; model of organization of production and exploitation at sea; biodiversity and marine conservation.
- Investigate and evaluate the biomass stock and sustainable exploitation of marine resources; ecosystems as a scientific basis for the rational use of marine biological resources.

Fisheries management system

Regarding law enforcement issues, especially illegal, unreported and unregulated (IUU) fishing, the Prime Minister of Vietnam promulgated Decision 78/QĐ-TTg on January 16, 2018 about Approval of the national action plan to reduce and to end IUU fishing. According to the decision, MARD is responsible for the main coordination and collaborates with other ministries and their affiliates to execute the action plan. This action plan can be illustrated in the following diagram:



Tasks allocation was given in the Annex I of the Decision, summary as following:

- MARD is responsible for organizing and guiding the implementation of the plan; coordinating with concerned ministries, departments and provinces in monitoring, supervising and evaluating the results of the implementation of the Action Plan; and reporting to the Prime Minister.



- The Ministry of Defense is responsible for controlling fishing vessels leaving and docking at ports; preventing Vietnamese fishing vessels from violating foreign waters.
- The Ministry of Police is responsible for detecting, investigating and handling cases of organizations sending Vietnamese fishing vessels and fishermen abroad for illegal fishing.
- The Ministry of Foreign Affairs is responsible for supporting the establishment of multilateral and bilateral management mechanisms to handle incidents and situations at sea with international organizations and countries in the region.
- The Ministry of Information and Communications is responsible for propagating, disseminating and educating the law among the people about the provisions of law related to the issue of demarcation of the sea between Vietnam and neighboring countries, especially undefined sea areas and overlapping areas; information management, satellite data, radio frequency networks, satellites and information security.
- The Ministry of Justice is responsible for advising and proposing accession to international conventions on fisheries; development and appraisal of legal documents, mechanisms for IUU fishing management.
- The Ministry of Education and Training is responsible for implementing communication programs on preventing, reducing and eliminating IUU fishing at higher education institutions in coastal provinces and cities.
- The Ministry of Finance, the Ministry of Planning and Investment are responsible for balancing and arranging the annual budget for implementation.
- People's Committees of coastal provinces and cities shall coordinate in implementation.

Provincial level:

Implementation at provincial level is under the responsibility of the provincial Committee of People. The Committee of People of Ba Ria - Vung Tau province released Decision 1457/QĐ-UBND about guidelines for implementation of law on fisheries in BRVT (period 2019-2024). According to this decision, the fishery management system involved:

- Department of Agriculture & Rural Development and its affiliates - Department of Fisheries
- Vietnam Fisheries Surveillance, Squad 2
- Department of Internal Affairs
- Department of Foreign Affairs
- Department of Justice
- Department of Finance
- Naval Region 2 Command
- Coast Guard Region 3
- Provincial Border Guards
- Police
- BRVT Fishery Association



- Port authorities
- BRVT Radio & Television Station
- Organizations managing fishing ports in BRVT
- BRVT Newspaper

C. CONSULTATION

National level:

The system of legal documents of the State of Vietnam is defined in the Law on Promulgation of Legal Documents dated June 18, 2020 constitutes **Law documents** and **Sub-law documents**. Existing legal documents for the fisheries management system comprises one Law document (The Fisheries Law 2017) and several sub-law documents, including Decree of the Government; Decision of the Prime Minister, Circulars of Ministers and Heads of ministerial-level agencies and Legal documents of the People's Committee.

According to Law No 63/2020/QH14, promulgated on June 18, 2020 on '*Amendments and Supplements to some articles of the law issuing legal documents*', Clause 3, Article 6 stipulates that '*In the process of elaborating legal documents, agencies, organizations and National Assembly deputies shall preside over the drafting and relevant agencies and organizations are responsible for creating favorable conditions for agencies, organizations and individuals contribute opinions on the proposal to develop legal documents, draft legal documents, for the Vietnam Fatherland Front to conduct social criticism on draft legal documents; organize the collection of opinions of subjects directly affected by legal documents*'. Clause 4 of Article 6 also stipulates that '*Opinions on the proposal for formulation of legal documents, draft legal documents and social criticisms on draft legal documents shall be studied, explained and taken into consideration during the editing of the draft document*'.

Decree 34/2016/ND-CP dated May 14, 2016, Article 11 on the participation of organizations and individuals in the process of making a request for the formulation of a legal document stipulates that the requesting agency may mobilize the participation of research institutes, universities, associations, other related organizations, experts and scientists.

In addition, the Fisheries Law 2017, Article 103 defines that the Vietnamese Fatherland Front and its affiliated organizations, Socio-professional organizations and social organizations shall give opinions on promulgating regulations of law on fisheries.

Those regulations have been followed in the process of developing the Fisheries Law 2017 and related legal documents for implementation guidelines. Beside agencies and institutions under MARD, other stakeholders such as associations, private organisations have participated the process, among these can be mentioned following because of their significant influence on local communities and the industry:

- Centre for Marinelife Conservation and Community Development ([MCD](#)) is a leading Vietnamese NGO in the field of coastal and marine ecosystem conservation, striving for a



coastal zone of Vietnam with healthy ecosystems and a good quality of life for coastal communities, especially the most vulnerable.

- Vietnam Fisheries Association ([VINAFIS](#)) and its affiliates represent for the legitimate interests of members and fishermen; promote dialogue and bring the voice of fishermen to policy makers, contribute to the adjustment and development of policies for sustainable development of fisheries.
- Vietnam Association of Seafood Exporters & Producers ([VASEP](#)) coordinates and links enterprises' operations; improves value, quality and competitive capacity of Vietnamese seafood; enhances the source of raw material for seafood export; represents and protects legal interests of members.
- Vietnam Tuna Association ([VINATUNA](#)) coordinates & links for all stakeholders in its tuna supply chains from fishing, landing, purchasing, transporting, processing, trading & exporting tuna products

International level:

The Vietnamese government has made great efforts in removing the EU yellow card, in which cooperation with fisheries management organizations in the region is a top priority. The process of finalizing the Fisheries Law 2017 also consulted with the following organizations:

- International organisations that Vietnam is a member of can name Regional Fisheries Management Organizations (RFMOs), SouthEast Asia Fishery Development Center (SEAFDEC).
- Vietnam is cooperating with Western & Central Pacific Fishery Commission (WCPFC) under the Non-Member option.



Long term objectives (3.1.3)

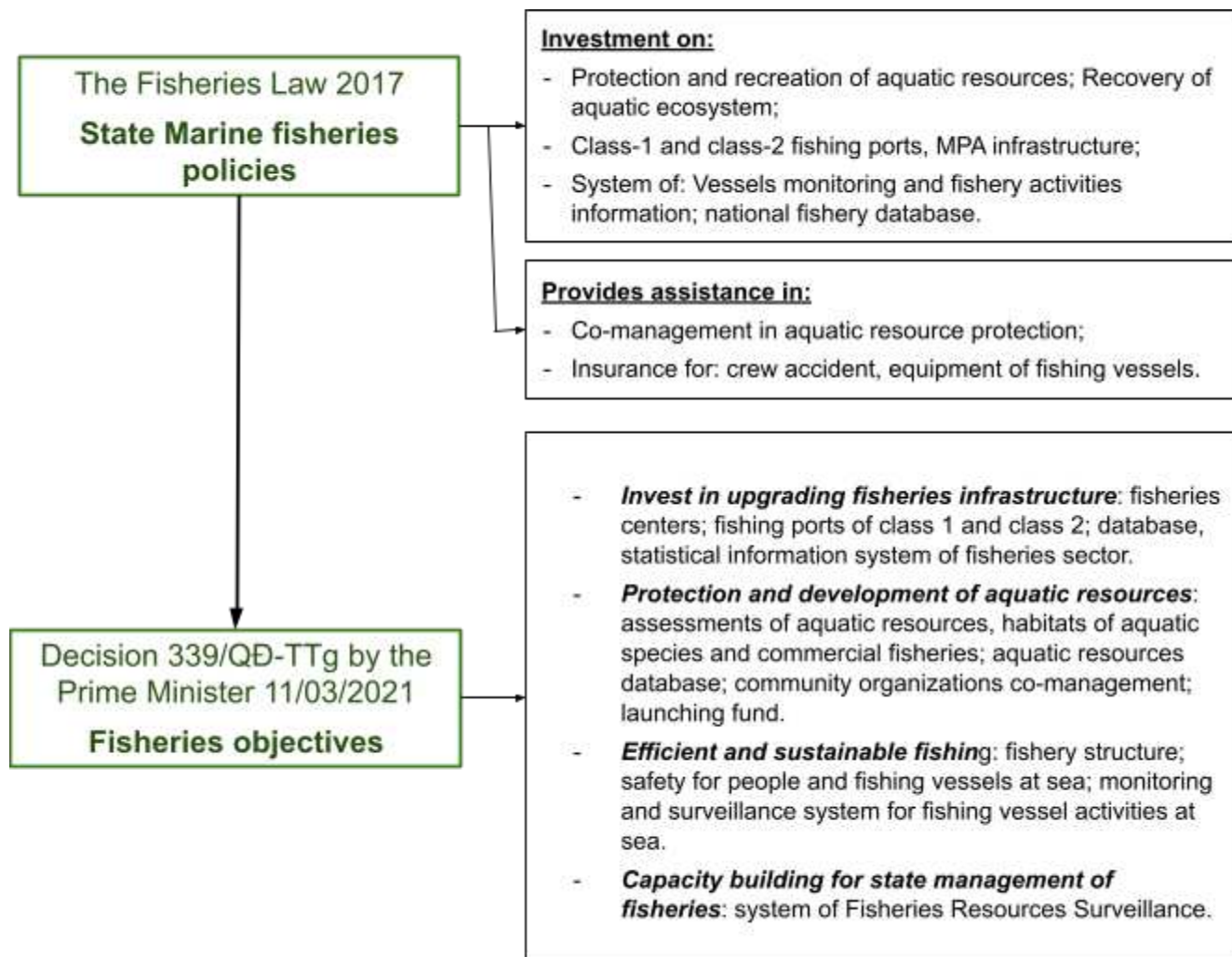
Scoring category

80

Rationale:

NATIONAL LEVEL

In a systematic way, objectives are often established based on set policies. For Vietnam, the latest Fisheries Law was released by the end of 2017 with clear statements of the government about State policies on marine fisheries. Related implementation guidelines had been issued since then until 2019. More than a year later, in March 2021, the Prime Minister approved the Vietnam Fisheries Development Strategy to 2030, visions up to 2045 (Decision No.339/QĐ-TTg). Long term objectives of fisheries are set, in which 04 out of 11 national programs are related to marine fisheries. Below is the diagram to visualise The Fisheries policies and the fisheries long term objectives.





The Fisheries Law 2017, Article 6 about *The State's policies related to fishery activities*, the government places the protection and restoration of marine resources and marine ecosystems on top, aspects of good fisheries management that are of interest to the government include building class-1 and class-2 fishing ports, sheltering anchorages, necessary infrastructure of MPAs, a system for monitoring and supervising activities of commercial fishing vessels at sea and a system of information and national database on fishery activities. The State's assistance will be provided for co-management in aquatic resource protection, establishing large fishery centers, insurances for crew accidents and for hull and equipment of commercial fishing vessels.

These policies have been concretized in objectives in the Vietnam Fisheries Development Strategy to 2030, visions up to 2045, under different national programs and projects, in which 4 of them related to marine fisheries sector, include:

1. Fishery infrastructure investment and upgradation project:

- There will be 5 big fisheries centers all over the country: in Hai Phong, Da Nang, Khanh Hoa, Ba Ria - Vung Tau and Kien Giang;
- Fishing ports of class 1 and class 2 will be upgraded to standard;
- Fishery databases and statistical systems will be set up.

2. National program for protection and development of aquatic resources:

- There will be assessments about the overall fisheries resources and habitats of aquatic species throughout the country every 5 years and assessments of the commercial fishing industry every year;
- Aquatic resource databases will be set up;
- The rights to manage, protect and exploit aquatic resources will be assigned to community organizations.
- Aquatic resource protection and development foundation will be initiated.

3. National program for effective and sustainable fishing development:

- Marine fishing activities will be re-structured in a way that fishing vessels (type and number) and trades are compatible with the stock of fishery resources and fishing grounds;
- Safety for people and fishing vessels at sea will be ensured;
- Monitoring and surveillance systems for marine fishing activities will be upgraded.

4. Project on improvement of fishery state management capacity:

- The system of fisheries surveillance organizations from the central to local levels will be improved in order to ensure consistency, efficiency and effectiveness.



PROVINCIAL LEVEL

The Committee of People of BR-VT issued the Decision 575/QĐ-UBND dated 10 March 2021 on Plan of Actions for Marine Economic Development Strategy to 2030 and visions 2045. In this document, long term objectives for the provincial fisheries were defined as following:

- a. **Control exploitation of marine resources within the resilience of marine ecosystems (to 2045):**
 - ***Shifting coastal fishing to inshore and offshore fishing (by 2030).*** This objective is based on the fact that fisheries resources in the coastal water have been overfished. In order to realise this, BRVT People's Committee has planned to restructure fisheries, with focus on high economic value seafood such as shrimp, squid, tuna, mackerel. Accordingly, by 2025, the number of fishing vessels in the province will be reduced to 5000 units, of which 2880 fishing vessels will operate offshore (as of 2020, the total number of registered fishing vessels in the province is 5809, of which 2902 are operating in offshore areas). The report 167/BC-CCTS dated December 10, 2020 by Sub-DOF of BRVT indicates that as of December 2020, the number of trawl fishing vessels operating in the province is 1538 units, down 61 units compared to December 2019 (1599 units). However, it is not clear how many trawl fishing vessels shall be reduced by 2025 and 2030. This issue will be reflected on the work plan for a more specific objective.
 - ***Having sufficient information about aquatic resources in coastal and inshore areas in the province.*** As defined by Article 45 of the Fisheries Law 2017, it is the responsibility of the provincial People's Committee for licensing quotas for fishing in coastal and inshore areas. Mr Tông Văn, the Director of Sub-DOF of BRVT informed that the sub-department has contracted RIMF for this the assessment of aquatic resources in coastal and inshore areas in BRVT.
- b. **Upgrading fishing ports and logistics.** This objective is based on the fact that there is not sufficient information on catch composition, species composition and size of species caught; control rooms at landing ports for vessel tracking (via vessels monitoring system) is needed for better landing control. Successful realization of this objective will contribute to the national goals regarding establishing fisheries activities information and national fisheries database.
- c. **Invest in completing the fishing vessel information system.** This objective is set as one of actions to end IUU fishing and to lift the Yellow card by the EU (in the short term).
- d. **Developing co-management models of coastal fisheries.** This is set to aim that responsibility for aquatic resources management can be shared between the government and user groups (fishermen) to address the existing growing problems of fisheries overexploitation.



Fishery-specific objectives (3.2.1)

Scoring category	70
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Rationale:

The Decision 575/QĐ-UBND dated 10 March 2021, by BRVT People's Committee on Plan of Actions for Marine Economic Development Strategy to 2030 and visions 2045 does not specifically indicate trawl fisheries, however, with the long term objective that the province will shift coastal fishing to inshore and offshore fishing by 2030, in which short term objective defines 'by 2025, the number of fishing vessels in the province will be reduced to 5000 units, of which 2880 fishing vessels will operate offshore (as of 2020, the total number of registered fishing vessels in the province is 5809, of which 2902 are operating in offshore areas)'. In this strategy, the People's Committee of BRVT also approves for what is called 'Project on job change / converting livelihood for coastal fishing vessels / fishermen.

On the other hand, the report 167/BC-CCTS dated December 10, 2020 by Sub-DOF of BRVT reported that as of December 2020, the number of trawl fishing vessels operating in the province is 1538 units, down 61 units compared to December 2019 (1599 units).

From the above facts, it can be assumed that BRVT is aiming to minimise coastal trawl fishing in upcoming years. This aligns with the provincial long term objectives that are described 3.1.3. However, specific management objectives for trawl fisheries in BRVT are not included yet in the provincial plan. More discussions shall take place with the Sub-DOF of BRVT for more detail about the concern.

Decision-making processes (3.2.2)

Scoring category	70
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Rationale:

As described in 3.1.1, the fisheries legal framework at provincial level is under responsibility of the provincial People's Committee, which is categorised as sub-law documents by the Law on Promulgation of Legal Documents (June 18, 2020). According to this Law, BRVT People's Committee shall preside over the drafting and create favorable conditions for agencies, organizations and individuals to contribute opinions on the proposal to develop legal documents, draft legal documents, for the Vietnam Fatherland Front to conduct social criticism on draft legal documents. BRVT People's Committee shall also organize the collection of opinions of subjects directly affected by legal documents. According to Decree 34/2016/ND-CP (May 14, 2016), BRVT People's Committee may mobilize the participation of research institutes, universities, associations, other related organizations, experts and scientists. Reports every 6 months and annually about performance of fisheries and management actions of the province (prepared by sub-DOF) are provided and normally available on request to stakeholders. The most important legal document of BRVT People's Committee regarding provincial responsible and sustainable fisheries management is the Decision 575/QĐ-UBND dated 10 March 2021, about Plan of



Actions for Marine Economic Development Strategy to 2030 and visions 2045. Main concerns that the plan aims to tackle are IUU fishing and overexploitation of marine resources.

Compliance and enforcement (3.2.3)

Scoring category	80
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Rationale:

A monitoring, control and surveillance (MCS) system has been implemented by Vung Tau DARD under Decree 26/2019/ND-CP and detailed by Plan No.21/KH-UBND date 20 Feb, 2020 of BRVT People's Committee on implement urgent tasks to adapt with "Yellow Card" situation which mostly focus & strengthen on MCS activities.

Based on Fisheries Laws 2017 and by-law documents, especially Decree No. 26/2019/ND-CP, all trawl fisheries activity at sea is monitored by the VMS system under Vung Tau fisheries management system. By December, 2020, in BRVT province, 97.8% of vessels above 24m and 83.8% of vessels 15-24m have been equipped with VMS (Vung Tau Sub-DFISH Report 2020).

Most trawl fleets in Vung Tau are over 12m length which fishing logbook is mandatory to record daily & submit to fishing port authorities within 24h after landings are completed (*Clause 1, Article 4, Circular 21/2018/TT-BNNPTNT*).

With availability of human and capacity resources so far, BRVT prioritises verification at fishing ports and landing sites. In 2020, the province BRVT organized 12 patrols and control at sea with 554 fishing vessels, detected 102 violating fishing vessels, issued a decision to sanction with a total amount of VND 3,709,200,000. in which there are 28 cases of illegal fishing (fishing without a license, fishing in the wrong area, not equipped with tracking devices, not recording, not submitting updates. sign for fishing according to regulations), 03 cases have been transferred to the Provincial People's Committee to issue a sanctioning decision with a total amount of 2,441,200,000 VND, 69 cases have been fined with the amount of 553,200,000 VND.

Number of fishing logbooks obtained from the beginning of 2021 to June 2021 is 2139 out of 3388 vessels, accounting for 63.13%, in which trawl fishing vessels is 598 out of 1476 vessels, accounting for 40.51%.



Monitoring and management performance evaluation (3.2.4)

Scoring category	80
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Rationale:

National level

Annually, MARD organizes meetings to review management tasks in the year and plan tasks for the following year. In this Meeting, DOF reports to MARD all aspects of fisheries management for a whole year-round in national wise scope.

Every six-month period, DOF also organizes North-East Monsoon & South West Monsoon fishing season meetings to review the status of national fisheries in the last fishing season and plan for the following fishing season.

At provincial level

Every six-month period, BRVT Sub-DOF organizes meetings to review the management performance for the first half of the fiscal year and make a plan of actions for the last half. On this meeting, BRVT Sub-DOF reviews all aspects of management mechanism such as management activities, administrations, capture fisheries management, marine resources protections, fishing vessels & fisheries service management, aquaculture management and other activities (Report No.90/BC-CCTS on Status of Vung Tau Fisheries management at first six-month of 2020 and action plans for last six-month year-end of 2020).

Similarly, BRVT Sub-DOF also has annual meetings to review monitoring and management results at the year-end for one-year management performance and plan for the next six-month period in the following year. Similar to the six-month Meeting, BRVT Sub-DOF also reviews all aspects of fisheries management in Vung Tau province (Report No.167/BC-CCTS on Status of Vung Tau Fisheries management in 2020 and action plans for 2021).



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4. [Vietnam Decree No. 42/2019/ND-CP](#)
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Appendices

Appendix 1. Catch composition of the trawl fisheries based on the observer on boat fishing vessels in 2015-16 by Research Institute for Marine Fisheries in Ba Ria Vung Tau province

Family/Species Name	Otter trawl				Pair trawl		
	6/2015	9/2015	10/2015	Average	5/2016	6/2016	Average
Alpheidae	0.01	0.02	0.05	0.03	0.00	0.00	0.00
<i>Alpheus sp.</i>	0.01	0.02	0.05	0.03	0.00	0.00	0.00
Ammodytidae	0.06	0.00	0.00	0.02	0.00	0.00	0.00
<i>Bleekeria mitsukurii</i>	0.06	0.00	0.00	0.02	0.00	0.00	0.00
Apistidae	0.00	0.00	0.13	0.05	0.00	0.00	0.00
<i>Apistus alatus</i>	0.00	0.00	0.13	0.05	0.00	0.00	0.00
Apogonidae	0.71	0.95	1.87	1.20	0.00	0.00	0.00
<i>Apogon ellioti</i>	0.06	0.17	0.46	0.24	0.00	0.00	0.00
<i>Apogon kiensis</i>	0.26	0.18	0.05	0.16	0.00	0.00	0.00
<i>Apogon lineatus</i>	0.14	0.19	1.22	0.53	0.00	0.00	0.00
<i>Apogon poecilopterus</i>	0.06	0.35	0.00	0.15	0.00	0.00	0.00
<i>Apogon quadrifasciatus</i>	0.01	0.00	0.01	0.01	0.00	0.00	0.00
<i>Apogon semilineatus</i>	0.00	0.00	0.06	0.02	0.00	0.00	0.00
<i>Apogon sp.</i>	0.18	0.04	0.00	0.07	0.00	0.00	0.00
<i>Apogon trimaculatus</i>	0.00	0.00	0.05	0.02	0.00	0.00	0.00
<i>Apogonichthys sp.</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
Ariommatidae	0.17	0.00	0.01	0.05	0.00	0.00	0.00
<i>Ariomma bondi</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Ariomma indica</i>	0.17	0.00	0.00	0.05	0.00	0.00	0.00
Blenniidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Xiphasia setifer</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bothidae	3.86	1.53	0.37	1.79	0.00	0.00	0.00



<i>Crossorhombus azureus</i>	0.00	0.49	0.00	0.18	0.00	0.00	0.00
<i>Crossorhombus sp.</i>	0.75	0.01	0.17	0.27	0.00	0.00	0.00
<i>Engyprosopon grandisquama</i>	0.67	0.48	0.13	0.41	0.00	0.00	0.00
<i>Engyprosopon sp.</i>	2.45	0.56	0.00	0.90	0.00	0.00	0.00
<i>Grammatobothus polyophthalmus</i>	0.00	0.00	0.08	0.03	0.00	0.00	0.00
Bregmacerotidae	0.00	0.08	0.01	0.04	0.00	0.00	0.00
<i>Bregmaceros japonicus</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Bregmaceros maclellandii</i>	0.00	0.08	0.00	0.03	0.00	0.00	0.00
Caesionidae	0.00	0.00	0.00	0.00	13.35	7.36	10.50
<i>Pterocaesio chrysozona</i>	0.00	0.00	0.00	0.00	13.35	7.36	10.50
Calappidae	0.48	0.88	0.00	0.46	0.00	0.00	0.00
<i>Calappa lophos</i>	0.48	0.88	0.00	0.46	0.00	0.00	0.00
Callionymidae	12.91	12.91	0.51	8.61	0.00	0.00	0.00
<i>Bathycallionymus kaianus</i>	0.17	0.00	0.00	0.05	0.00	0.00	0.00
<i>Bathycallionymus sp.</i>	0.00	0.12	0.00	0.04	0.00	0.00	0.00
<i>Callionymus japonicus</i>	0.55	3.20	0.00	1.34	0.00	0.00	0.00
<i>Callionymus richardsoni</i>	12.07	9.59	0.51	7.14	0.00	0.00	0.00
<i>Callionymus sp.</i>	0.12	0.00	0.00	0.03	0.00	0.00	0.00
Carangidae	0.18	0.68	0.15	0.35	38.18	19.93	29.49
<i>Atule mate</i>	0.07	0.27	0.00	0.12	15.83	7.96	12.08
<i>Carangoides malabaricus</i>	0.00	0.01	0.00	0.00	0.00	0.00	0.00
<i>Carangoides sp.</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Decapterus maruadsi</i>	0.00	0.11	0.02	0.05	0.00	0.00	0.00
<i>Megalaspis cordyla</i>	0.03	0.00	0.01	0.01	0.00	0.00	0.00
<i>Parastromateus niger</i>	0.04	0.14	0.00	0.06	0.09	0.00	0.05
<i>Scomberoides commersonianus</i>	0.00	0.00	0.00	0.00	0.13	0.00	0.07



<i>Selar crumenophthalmus</i>	0.04	0.16	0.00	0.07	22.13	11.55	17.09
<i>Selaroides leptolepis</i>	0.00	0.00	0.11	0.04	0.00	0.42	0.20
<i>Seriola sp.</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Seriolina nigrofasciata</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cepolidae	0.07	0.03	0.00	0.03	0.00	0.00	0.00
<i>Acanthocephala krusensternii</i>	0.07	0.03	0.00	0.03	0.00	0.00	0.00
Chirocentridae	0.03	0.04	0.00	0.02	0.00	0.00	0.00
<i>Chirocentrus dorab</i>	0.03	0.04	0.00	0.02	0.00	0.00	0.00
Congridae	2.92	1.54	0.01	1.40	0.00	0.00	0.00
<i>Ariosoma anago</i>	0.37	1.23	0.01	0.56	0.00	0.00	0.00
<i>Ariosoma sp.</i>	2.55	0.31	0.00	0.84	0.00	0.00	0.00
Cynoglossidae	3.06	3.22	0.83	2.35	0.00	0.00	0.00
<i>Cynoglossus arel</i>	0.01	0.32	0.10	0.16	0.00	0.00	0.00
<i>Cynoglossus bilineatus</i>	0.00	0.00	0.08	0.03	0.00	0.00	0.00
<i>Cynoglossus interruptus</i>	0.00	0.00	0.62	0.22	0.00	0.00	0.00
<i>Cynoglossus melampetalus</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
<i>Cynoglossus puncticeps</i>	1.03	1.85	0.00	0.98	0.00	0.00	0.00
<i>Cynoglossus robustus</i>	0.04	0.19	0.00	0.08	0.00	0.00	0.00
<i>Cynoglossus sp.</i>	1.98	0.85	0.00	0.88	0.00	0.00	0.00
Dasyatidae	0.73	0.24	0.13	0.34	0.00	0.00	0.00
<i>Dasyatis akajei</i>	0.58	0.03	0.00	0.18	0.00	0.00	0.00
<i>Dasyatis kuhlii</i>	0.00	0.01	0.04	0.02	0.00	0.00	0.00
<i>Dasyatis zugei</i>	0.06	0.13	0.09	0.10	0.00	0.00	0.00
<i>Himantura gerrardi</i>	0.06	0.07	0.00	0.04	0.00	0.00	0.00
<i>Himantura imbricata</i>	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Drepaneidae	0.01	0.01	0.00	0.01	0.00	0.00	0.00
<i>Drepane punctata</i>	0.01	0.01	0.00	0.01	0.00	0.00	0.00



Engraulidae	0.24	0.19	0.00	0.14	0.00	0.00	0.00
<i>Encrasicholina punctifer</i>	0.24	0.19	0.00	0.14	0.00	0.00	0.00
Fistulariidae	0.00	0.02	0.00	0.01	0.00	0.00	0.00
<i>Fistularia petimba</i>	0.00	0.02	0.00	0.01	0.00	0.00	0.00
Gerreidae	0.04	0.02	0.02	0.03	0.00	0.00	0.00
<i>Gerres erythrourus</i>	0.01	0.00	0.00	0.00	0.00	0.00	0.00
<i>Gerres filamentosus</i>	0.03	0.02	0.00	0.02	0.00	0.00	0.00
<i>Gerres sp.</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
Gobiidae	0.39	0.31	0.03	0.24	0.00	0.00	0.00
<i>Acentrogobius caninus</i>	0.00	0.04	0.00	0.02	0.00	0.00	0.00
<i>Cryptocentrus albidorsus</i>	0.08	0.00	0.00	0.02	0.00	0.00	0.00
<i>Cryptocentrus filifer</i>	0.10	0.09	0.00	0.06	0.00	0.00	0.00
<i>Cryptocentrus pavoninoides</i>	0.13	0.00	0.00	0.04	0.00	0.00	0.00
<i>Cryptocentrus russus</i>	0.00	0.08	0.00	0.03	0.00	0.00	0.00
<i>Cryptocentrus sp.</i>	0.05	0.09	0.01	0.05	0.00	0.00	0.00
<i>Gobiidae</i>	0.01	0.00	0.00	0.00	0.00	0.00	0.00
<i>Oxyurichthys sp.</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
<i>Valenciennesia wardii</i>	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Haemulidae	0.59	0.82	0.08	0.50	0.68	1.15	0.90
<i>Plectorhinchus pictus</i>	0.33	0.55	0.05	0.32	0.00	0.00	0.00
<i>Plectorhinchus sp.</i>	0.00	0.00	0.03	0.01	0.68	1.15	0.90
<i>Pomadasys maculatus</i>	0.25	0.27	0.00	0.17	0.00	0.00	0.00
Harpiesquillidae	0.12	0.27	0.00	0.14	0.00	0.00	0.00
<i>Harpiesquilla annandalei</i>	0.04	0.15	0.00	0.07	0.00	0.00	0.00
<i>Harpiesquilla sp.</i>	0.08	0.13	0.00	0.07	0.00	0.00	0.00
Labridae	0.02	0.01	0.00	0.01	0.00	0.00	0.00
<i>Xyrichtys dea</i>	0.01	0.01	0.00	0.01	0.00	0.00	0.00



<i>Xyrichtys evides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Xyrichtys sp.</i>	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Leiognathidae	0.71	1.88	0.18	0.96	0.00	0.00	0.00
<i>Gazza minuta</i>	0.00	0.02	0.00	0.01	0.00	0.00	0.00
<i>Leiognathus berbis</i>	0.00	0.02	0.01	0.01	0.00	0.00	0.00
<i>Leiognathus bindus</i>	0.00	0.19	0.00	0.07	0.00	0.00	0.00
<i>Leiognathus elongatus</i>	0.23	1.27	0.02	0.54	0.00	0.00	0.00
<i>Leiognathus leuciscus</i>	0.00	0.01	0.00	0.00	0.00	0.00	0.00
<i>Leiognathus lineolatus</i>	0.00	0.00	0.03	0.01	0.00	0.00	0.00
<i>Leiognathus parviceps</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
<i>Leiognathus sp</i>	0.31	0.01	0.00	0.09	0.00	0.00	0.00
<i>Leiognathus splendens</i>	0.07	0.31	0.00	0.13	0.00	0.00	0.00
<i>Leiognathus stercorarius</i>	0.03	0.02	0.10	0.05	0.00	0.00	0.00
<i>Secutor insidiator</i>	0.07	0.03	0.00	0.03	0.00	0.00	0.00
Loliginidae	10.52	10.32	0.47	6.96	0.00	0.00	0.00
<i>Loligo beka</i>	0.07	0.31	0.02	0.14	0.00	0.00	0.00
<i>Loligo chinensis</i>	3.19	2.52	0.38	1.97	0.00	0.00	0.00
<i>Loligo duvauceli</i>	0.28	0.60	0.01	0.31	0.00	0.00	0.00
<i>Loligo edulis</i>	0.07	0.00	0.00	0.02	0.00	0.00	0.00
<i>Loligo sp.</i>	6.91	6.90	0.05	4.52	0.00	0.00	0.00
<i>Sepioteuthis lessoniana</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lutjanidae	0.04	0.22	0.00	0.09	0.00	0.00	0.00
<i>Lutjanus malabaricus</i>	0.04	0.21	0.00	0.09	0.00	0.00	0.00
<i>Lutjanus sebae</i>	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Menidae	0.00	0.00	0.00	0.00	13.34	2.90	8.36
<i>Mene maculata</i>	0.00	0.00	0.00	0.00	13.34	2.90	8.36
Monacanthidae	0.50	0.27	0.06	0.26	1.60	0.00	0.84



<i>Aluterus monoceros</i>	0.00	0.00	0.00	0.00	1.60	0.00	0.84
<i>Paramonacanthus japonicus</i>	0.43	0.14	0.06	0.19	0.00	0.00	0.00
<i>Thamnaconus modestoides</i>	0.01	0.00	0.00	0.00	0.00	0.00	0.00
<i>Thamnaconus modestus</i>	0.06	0.13	0.00	0.06	0.00	0.00	0.00
Mullidae	0.08	0.29	0.20	0.20	6.85	19.78	13.01
<i>Upeneus japonicus</i>	0.04	0.17	0.14	0.12	0.00	0.00	0.00
<i>Upeneus moluccensis</i>	0.04	0.12	0.01	0.06	0.00	0.00	0.00
<i>Upeneus sp.</i>	0.00	0.00	0.00	0.00	1.30	6.71	3.87
<i>Upeneus sulphureus</i>	0.00	0.00	0.04	0.02	5.55	13.07	9.13
Muraenesocidae	0.44	0.20	0.49	0.37	0.00	0.00	0.00
<i>Muraenesox cinereus</i>	0.44	0.20	0.45	0.36	0.00	0.00	0.00
<i>Muraenesox sp.</i>	0.00	0.00	0.04	0.01	0.00	0.00	0.00
Muraenidae	0.23	0.39	0.01	0.22	0.00	0.00	0.00
<i>Gymnothorax fimbriatus</i>	0.20	0.24	0.00	0.14	0.00	0.00	0.00
<i>Gymnothorax neglectus</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Gymnothorax sp.</i>	0.04	0.16	0.00	0.07	0.00	0.00	0.00
Nemipteridae	2.43	2.24	0.14	1.57	1.17	0.59	0.90
<i>Nemipteridae</i>	0.00	0.00	0.00	0.00	0.05	0.00	0.03
<i>Nemipterus furcosus</i>	0.51	1.00	0.02	0.52	0.00	0.00	0.00
<i>Nemipterus hexodon</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Nemipterus japonicus</i>	0.00	0.13	0.01	0.05	0.00	0.00	0.00
<i>Nemipterus mesoprion</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Nemipterus nemurus</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
<i>Nemipterus peronii</i>	0.00	0.25	0.00	0.09	0.00	0.00	0.00
<i>Nemipterus sp.</i>	1.30	0.08	0.00	0.40	1.12	0.59	0.87
<i>Pentapodus setosus</i>	0.53	0.74	0.00	0.42	0.00	0.00	0.00
<i>Scolopsis affinis</i>	0.09	0.04	0.00	0.04	0.00	0.00	0.00



<i>Scolopsis taeniatus</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Scolopsis taeniopterus</i>	0.01	0.00	0.07	0.03	0.00	0.00	0.00
<i>Scolopsis vosmeri</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Octopodidae	2.00	1.83	0.32	1.36	0.00	0.00	0.00
<i>Octopus sp.</i>	2.00	1.83	0.32	1.36	0.00	0.00	0.00
Odontodactylidae	0.02	0.12	0.00	0.05	0.00	0.00	0.00
<i>Odontodactylus scyllarus</i>	0.02	0.12	0.00	0.05	0.00	0.00	0.00
Ophichthidae	0.12	0.19	0.09	0.14	0.00	0.00	0.00
<i>Ophichthus altipennis</i>	0.04	0.00	0.00	0.01	0.00	0.00	0.00
<i>Ophichthus sp.</i>	0.00	0.16	0.00	0.06	0.00	0.00	0.00
<i>Ophichthys sp.</i>	0.03	0.00	0.00	0.01	0.00	0.00	0.00
<i>Pisodonophis boro</i>	0.01	0.03	0.09	0.04	0.00	0.00	0.00
<i>Pisodonophis sp.</i>	0.05	0.00	0.00	0.01	0.00	0.00	0.00
Ophidiidae	0.00	0.00	0.02	0.01	0.00	0.00	0.00
<i>Sirembo imberbis</i>	0.00	0.00	0.02	0.01	0.00	0.00	0.00
Paralichthyidae	1.09	1.22	0.23	0.84	0.00	0.00	0.00
<i>Pseudorhombus duplciocellatus</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Pseudorhombus oligodon</i>	0.18	0.64	0.22	0.36	0.00	0.00	0.00
<i>Pseudorhombus sp.</i>	0.91	0.58	0.00	0.47	0.00	0.00	0.00
Pectinidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Amusium sp.</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Penaeidae	4.28	0.68	67.80	24.99	0.00	0.00	0.00
<i>Metapenaeopsis barbata</i>	2.02	0.43	51.79	18.70	0.00	0.00	0.00
<i>Metapenaeopsis lamelata</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Metapenaeopsis palmensis</i>	0.00	0.00	7.05	2.45	0.00	0.00	0.00
<i>Metapenaeopsis sp.</i>	0.29	0.00	1.80	0.70	0.00	0.00	0.00



<i>Metapenaeus affinis</i>	0.00	0.00	0.24	0.08	0.00	0.00	0.00
<i>Metapenaeus sp.</i>	0.05	0.00	0.41	0.16	0.00	0.00	0.00
<i>Parapenaeopsis barbata</i>	0.07	0.00	0.61	0.23	0.00	0.00	0.00
<i>Parapenaeopsis hardwickii</i>	0.00	0.00	0.05	0.02	0.00	0.00	0.00
<i>Parapenaeopsis hungerfordi</i>	0.56	0.00	0.02	0.17	0.00	0.00	0.00
<i>Parapenaeopsis sp.</i>	0.03	0.00	0.17	0.07	0.00	0.00	0.00
<i>Penaeus monodon</i>	0.01	0.00	0.00	0.00	0.00	0.00	0.00
<i>Trachypenaeus curvirostris</i>	1.04	0.25	3.11	1.47	0.00	0.00	0.00
<i>Trachypenaeus malaiana</i>	0.00	0.00	2.05	0.71	0.00	0.00	0.00
<i>Trachypenaeus sp.</i>	0.21	0.00	0.48	0.23	0.00	0.00	0.00
Pinguipedidae	1.10	2.85	1.66	1.94	0.00	0.00	0.00
<i>Parapercis ommatura</i>	1.10	2.80	1.66	1.92	0.00	0.00	0.00
<i>Parapercis sexfasciata</i>	0.00	0.05	0.00	0.02	0.00	0.00	0.00
Platycephalidae	0.29	0.32	0.44	0.35	0.00	0.00	0.00
<i>Cociella crocodila</i>	0.00	0.00	0.27	0.09	0.00	0.00	0.00
<i>Platycephalus indicus</i>	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<i>Rogadius asper</i>	0.17	0.32	0.17	0.22	0.00	0.00	0.00
<i>Rogadius sp.</i>	0.12	0.00	0.00	0.03	0.00	0.00	0.00
Plotosidae	1.78	1.16	0.05	0.95	0.09	0.00	0.05
<i>Plotosus limbatus</i>	0.00	0.00	0.00	0.00	0.09	0.00	0.05
<i>Plotosus lineatus</i>	1.78	1.16	0.05	0.95	0.00	0.00	0.00
Pomacentridae	0.12	0.17	0.04	0.11	0.00	0.00	0.00
<i>Abudefduf sparoides</i>	0.00	0.00	0.03	0.01	0.00	0.00	0.00
<i>Chromis notata</i>	0.12	0.17	0.01	0.10	0.00	0.00%	0.00%
Portunidae	18.14	18.71	1.88	12.71	0.00	0.00%	0.00%
<i>Charybdis feriatius</i>	0.23	0.23	0.01	0.15	0.00	0.00%	0.00%
<i>Charybdis natator</i>	0.42	0.72	0.02	0.39	0.00	0.00%	0.00%



<i>Charybdis sp.</i>	1.94	1.02	0.15	0.98	0.00	0.00%	0.00%
<i>Podophthalmus vigil</i>	0.00	0.02	0.00	0.01	0.00	0.00%	0.00%
<i>Portunidae</i>	0.02	0.00	1.29	0.45	0.00	0.00%	0.00%
<i>Portunus gracilimanus</i>	0.00	14.35	0.00	5.31	0.00	0.00%	0.00%
<i>Portunus pelagicus</i>	0.33	0.37	0.21	0.30	0.00	0.00%	0.00%
<i>Portunus sanguinolentus</i>	0.51	0.43	0.00	0.30	0.00	0.00%	0.00%
<i>Portunus sp.</i>	14.67	1.56	0.18	4.80	0.00	0.00%	0.00%
<i>Portunus tricuberculatus</i>	0.02	0.01	0.02	0.02	0.00	0.00%	0.00%
Priacanthidae	0.23	0.58	0.04	0.29	0.01	0.43%	0.21%
<i>Heteropriacanthus cruentatus</i>	0.05	0.07	0.00	0.04	0.00	0.00%	0.00%
<i>Priacanthus hamrur</i>	0.00	0.05	0.00	0.02	0.00	0.00%	0.00%
<i>Priacanthus macracanthus</i>	0.17	0.46	0.04	0.23	0.00	0.00%	0.00%
<i>Priacanthus sp.</i>	0.01	0.00	0.00	0.00	0.01	0.43%	0.21%
Rachycentridae	0.00	0.00	0.02	0.01	0.00	0.00%	0.00%
<i>Rachycentron canadum</i>	0.00	0.00	0.02	0.01	0.00	0.00%	0.00%
Samaridae	0.00	0.00	0.01	0.00	0.00	0.00%	0.00%
<i>Samaris cristatus</i>	0.00	0.00	0.01	0.00	0.00	0.00%	0.00%
Scaridae	0.00	0.00	0.00	0.00	0.12	0.00%	0.06%
<i>Scarus ghobban</i>	0.00	0.00	0.00	0.00	0.12	0.00%	0.06%
Sciaenidae	0.00	0.23	0.00	0.09	0.00	0.00%	0.00%
<i>Nibea soldado</i>	0.00	0.15	0.00	0.05	0.00	0.00%	0.00%
<i>Pennahia anea</i>	0.00	0.02	0.00	0.01	0.00	0.00%	0.00%
<i>Pennahia argentata</i>	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
<i>Pennahia pawak</i>	0.00	0.06	0.00	0.02	0.00	0.00%	0.00%
Scombridae	0.05	0.06	0.04	0.05	2.16	14.97%	8.27%
<i>Acanthocybium solandri</i>	0.00	0.00	0.01	0.00	0.00	0.00%	0.00%
<i>Rastrelliger kanagurta</i>	0.05	0.06	0.02	0.04	2.16	6.53%	4.24%



<i>Scomberomorus commerson</i>	0.00	0.00	0.00	0.00	0.00	8.44%	4.02%
Scyllaridae	0.00	0.00	0.01	0.00	0.00	0.00%	0.00%
<i>Thenus orientalis</i>	0.00	0.00	0.01	0.00	0.00	0.00%	0.00%
Sepiidae	2.66	1.99	0.16	1.54	0.00	0.00%	0.00%
<i>Sepia aculeata</i>	0.05	0.09	0.07	0.07	0.00	0.00%	0.00%
<i>Sepia esculenta</i>	0.70	0.71	0.07	0.49	0.00	0.00%	0.00%
<i>Sepia latimanus</i>	0.00	0.01	0.00	0.00	0.00	0.00%	0.00%
<i>Sepia sp.</i>	1.78	0.81	0.01	0.81	0.00	0.00%	0.00%
<i>Sepiella inermis</i>	0.12	0.37	0.00	0.17	0.00	0.00%	0.00%
Sepiolidae	0.02	0.01	0.15	0.06	0.00	0.00%	0.00%
<i>Euprymna morsei</i>	0.00	0.00	0.15	0.05	0.00	0.00%	0.00%
<i>Sepiola sp.</i>	0.01	0.00	0.00	0.00	0.00	0.00%	0.00%
Sepiolidae	0.01	0.01	0.00	0.01	0.00	0.00%	0.00%
Serranidae	0.05	0.28	0.00	0.12	0.00	0.00%	0.00%
<i>Epinephelus malabaricus</i>	0.00	0.01	0.00	0.00	0.00	0.00%	0.00%
<i>Epinephelus sexfasciatus</i>	0.05	0.27	0.00	0.12	0.00	0.00%	0.00%
Siganidae	0.92	1.66	0.00	0.87	0.00	0.00%	0.00%
<i>Siganus canaliculatus</i>	0.92	1.11	0.00	0.67	0.00	0.00%	0.00%
<i>Siganus sp.</i>	0.00	0.55	0.00	0.20	0.00	0.00%	0.00%
Sillaginidae	1.57	1.54	0.04	1.03	0.00	0.00%	0.00%
<i>Sillago robusta</i>	0.08	0.00	0.00	0.02	0.00	0.00%	0.00%
<i>Sillago sihama</i>	1.30	1.30	0.04	0.86	0.00	0.00%	0.00%
<i>Sillago sp.</i>	0.19	0.24	0.01	0.14	0.00	0.00%	0.00%
Soleidae	0.94	0.55	0.14	0.52	0.00	0.00%	0.00%
<i>Brachirus orientalis</i>	0.16	0.07	0.00	0.07	0.00	0.00%	0.00%
<i>Heteromycteris japonicus</i>	0.10	0.00	0.00	0.03	0.00	0.00%	0.00%
<i>Pardachirus pavoninus</i>	0.04	0.00	0.00	0.01	0.00	0.00%	0.00%



<i>Pseudaesopia japonica</i>	0.01	0.11	0.00	0.04	0.00	0.00%	0.00%
<i>Synaptura commersonnii</i>	0.15	0.10	0.00	0.08	0.00	0.00%	0.00%
<i>Zebrias zebra</i>	0.00	0.12	0.14	0.09	0.00	0.00%	0.00%
<i>Zebrias zebrinus</i>	0.48	0.15	0.00	0.19	0.00	0.00%	0.00%
Solenoceridae	0.00	0.00	0.15	0.05	0.00	0.00%	0.00%
<i>Solenocera crassicornis</i>	0.00	0.00	0.15	0.05	0.00	0.00%	0.00%
Sphyraenidae	0.02	0.04	0.00	0.02	0.00	0.00%	0.00%
<i>Sphyraena jello</i>	0.02	0.04	0.00	0.02	0.00	0.00%	0.00%
<i>Sphyraena obtusata</i>	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Squillidae	0.21	0.01	0.20	0.13	0.00	0.00%	0.00%
<i>Oratosquilla gravieri</i>	0.13	0.00	0.00	0.04	0.00	0.00%	0.00%
<i>Oratosquilla oratoria</i>	0.02	0.00	0.04	0.02	0.00	0.00%	0.00%
<i>Oratosquilla sp.</i>	0.00	0.00	0.16	0.05	0.00	0.00%	0.00%
<i>Squilla sp.</i>	0.03	0.01	0.00	0.01	0.00	0.00%	0.00%
<i>Squillidae</i>	0.03	0.00	0.00	0.01	0.00	0.00%	0.00%
Synanceiidae	0.00	0.00	0.02	0.01	0.00	0.00%	0.00%
<i>Minous monodactylus</i>	0.00	0.00	0.02	0.01	0.00	0.00%	0.00%
Syngnathidae	0.02	0.01	0.00	0.01	0.00	0.00%	0.00%
<i>Hippocampus sp.</i>	0.02	0.01	0.00	0.01	0.00	0.00%	0.00%
Synodontidae	21.83	25.20	20.51	22.62	22.44	32.89%	27.42%
<i>Saurida elongata</i>	1.46	1.54	0.45	1.14	0.00	0.00%	0.00%
<i>Saurida sp.</i>	2.23	2.28	0.02	1.48	0.00	0.00%	0.00%
<i>Saurida tumbil</i>	1.07	2.96	5.10	3.17	11.46	16.43%	13.83%
<i>Saurida undosquamis</i>	5.39	5.34	6.15	5.63	0.00	0.00%	0.00%
<i>Synodus variegatus</i>	0.00	0.10	0.00	0.04	0.00	0.00%	0.00%
<i>Trachinocephalus myops</i>	11.68	12.98	8.79	11.16	10.98	16.46%	13.59%
Terapontidae	0.00	0.33	0.01	0.13	0.00	0.00%	0.00%



<i>Terapon jarbua</i>	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
<i>Terapon theraps</i>	0.00	0.33	0.01	0.13	0.00	0.00%	0.00%
Tetraodontidae	0.92	0.60	0.08	0.51	0.00	0.00%	0.00%
<i>Lagocephalus gloveri</i>	0.03	0.00	0.00	0.01	0.00	0.00%	0.00%
<i>Lagocephalus spadiceus</i>	0.00	0.00	0.06	0.02	0.00	0.00%	0.00%
<i>Lagocephalus wheeleri</i>	0.89	0.60	0.02	0.48	0.00	0.00%	0.00%
Triakidae	0.00	0.00	0.03	0.01	0.00	0.00%	0.00%
<i>Mustelus sp.</i>	0.00	0.00	0.03	0.01	0.00	0.00%	0.00%
Trichiuridae	0.00	0.03	0.00	0.01	0.00	0.00%	0.00%
<i>Trichiurus lepturus</i>	0.00	0.03	0.00	0.01	0.00	0.00%	0.00%
Volutidae	0.00	0.00	0.10	0.04	0.00	0.00%	0.00%
<i>Melo melo</i>	0.00	0.00	0.10	0.04	0.00	0.00%	0.00%
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00



Appendix 2. List of species caught in BRVT trawl fisheries based observer data conducted by the Research Institute for Marine Fisheries in 2015-16, categorized as Least Concern (LC), Vulnerable (VU), Near Threatened (NT) by IUCN Red list, Decision No 82/2008/QĐ-BNN and Cites list

No	Species Name	Eng Name	VN Name	Cites	IUCN Red List	Decision 82/2008/QĐ-BNN
1	<i>Abudefduf sparoides</i>	False-eye sergeant			LC	
2	<i>Acanthocybium solandri</i>	Wahoo	Cá Thu ngành		LC	
3	<i>Acentrogobius caninus</i>	Tropical sand goby	Cá Bống tro		LC	
4	<i>Aluterus monoceros</i>	Unicorn leatherjacket	Cá Bò 1 gai		LC	
5	<i>Ariomma bondi</i>	Silver-rag driftfish			LC	
6	<i>Atule mate</i>	Yellowtail scad	Cá Tráo		LC	
7	<i>Carangoides malabaricus</i>	Malabar trevally	Cá Khế lưỡi đen		LC	
8	<i>Chirocentrus dorab</i>	Dorab wolf-herring	Cá Lanh		LC	
9	<i>Cociella crocodila</i>	Crocodile flathead	Cá Chai		LC	
10	<i>Dasyatis akajei</i>	Red stingray			NT	
11	<i>Dasyatis zugei</i>	Pale-edged stingray	Cá Đuối		NT	
12	<i>Encrasicholina punctifer</i>	Buccaneer anchovy			LC	
13	<i>Engyprosopon grandisquama</i>	Largescale flounder			LC	
14	<i>Epinephelus malabaricus</i>	Malabar grouper	Cá Mú điểm đại		NT	
15	<i>Fistularia petimba</i>	Red cornetfish	Cá Lao (mồm ống)		LC	
16	<i>Gazza minuta</i>	Toothpony	Cá Ngàng		LC	
17	<i>Gerres erythrouros</i>	Deep-bodied mojarra	Cá Móm mình ngắn		LC	
18	<i>Gerres filamentosus</i>	Whipfin silverbiddy	Cá Móm dài vây lưng		LC	



19	<i>Grammatobothus polyophthalmus</i>	Threespot flounder	Cá Bơn		LC	
20	<i>Heteropriacanthus cruentatus</i>	Glasseye			LC	
21	<i>Himantura gerrardi</i>	Sharpnose stingray			VU	
22	<i>Hippocampus sp.</i>	Seahorse	Cá Ngựa	X		VU
23	<i>Lagocephalus spadiceus</i>	Half-smooth golden pufferfish	Cá Nóc		LC	
24	<i>Leiognathus leuciscus</i>	Whipfin ponyfish			LC	
25	<i>Leiognathus splendens</i>	Splendid ponyfish	Cá Liệt		LC	
26	<i>Lutjanus sebae</i>	Emperor red snapper	Cá Hồng lang		LC	
27	<i>Megalaspis cordyla</i>	Torpedo scad	Cá Sòng gió		LC	
28	<i>Nemipterus furcosus</i>	Fork-tailed threadfin bream	Cá Lượng		LC	
29	<i>Nemipterus hexodon</i>	Ornate threadfin bream	Cá Lượng 6 răng		LC	
30	<i>Nemipterus nemurus</i>	Redspine threadfin bream	Cá Lượng vây đỏ		LC	
31	<i>Nemipterus peronii</i>	Notchedfin threadfin bream	Cá lượng tolu		LC	
32	<i>Ophichthus altipennis</i>	Highfin snake eel			LC	
33	<i>Paramonacanthus japonicus</i>	Hairfinned leatherjacket	Cá Bò giấy		LC	
34	<i>Pardachirus pavoninus</i>	Peacock sole	Cá Bơn hoa		LC	
35	<i>Pisodonophis boro</i>	Rice-paddy eel			LC	
36	<i>Platycephalus indicus</i>	Bartail flathead	Cá Chai ấn độ			
37	<i>Pomadasy maculatus</i>	Saddle grunt			LC	
38	<i>Priacanthus hamrur</i>	Moontail bullseye	Cá Trác		LC	
39	<i>Priacanthus macracanthus</i>	Red bigeye	Cá Trác đuôi ngắn		LC	
40	<i>Pseudaesopia japonica</i>	Wavyband sole			LC	



41	<i>Pterocaesio chrysozona</i>	Goldband fusilier	Cá Miền		LC	
42	<i>Rachycentron canadum</i>	Cobia	Cá Bớp		LC	
43	<i>Rogadius asper</i>	Olive-tailed flathead			LC	
44	<i>Saurida tumbil</i>	Greater lizardfish	Cá Mối thường		LC	
45	<i>Saurida undosquamis</i>	Brushtooth lizardfish	Cá Mối vạch		LC	
46	<i>Scarus ghobban</i>	Blue-barred parrotfish	Cá Mỏ vệt		LC	
47	<i>Scolopsis affinis</i>	Peters' monocle bream			LC	
48	<i>Scolopsis taeniopterus</i>	Lattice monocle bream	Cá Dơi sọc nâu (cá Bạch điều)		LC	
49	<i>Scomberoides commersonnianus</i>	Talang queenfish			LC	
50	<i>Scomberomorus commerson</i>	Narrow-barred Spanish mackerel	Cá Thu vạch		NT	
51	<i>Selar crumenophthalmus</i>	Bigeye scad	Cá Tráo mắt to		LC	
52	<i>Selaroides leptolepis</i>	Yellowstripe scad	Cá Chỉ vàng		LC	
53	<i>Seriolina nigrofasciata</i>	Blackbanded trevally	Cá Cu (cam)		LC	
54	<i>Siganus canaliculatus</i>	White-spotted spinefoot	Cá Dìa		LC	
55	<i>Sillago sihama</i>	Silver sillago	Cá Đục		LC	
56	<i>Synodus variegatus</i>	Variegated lizardfish	Cá Mối vện		LC	
57	<i>Terapon jarbua</i>	Jarbua terapon	Cá Căng		LC	
58	<i>Terapon theraps</i>	Largescaled terapon	Cá Căng		LC	
59	<i>Thamnaconus modestoides</i>	Modest filefish	Cá Bò		LC	
60	<i>Thenus orientalis</i>	Flathead lobster	Mũ ni (bề bề)		LC	VU
61	<i>Trachinocephalus myops</i>	Snakefish	Cá Mối hoa		LC	
62	<i>Trichiurus lepturus</i>	Largehead hairtail	Cá Hố		LC	



63	<i>Upeneus moluccensis</i>	Goldband goatfish	Cá phèn 1 sọc		LC	
64	<i>Upeneus sulphureus</i>	Sulphur goatfish	Cá phèn 2 sọc		LC	
65	<i>Valenciennea wardii</i>	Ward's sleeper			LC	
66	<i>Xiphasia setifer</i>	Hairtail blenny	Cá Đai		LC	
67	<i>Xyrichtys dea</i>		Cá Bàng chải		LC	
68	<i>Xyrichtys evides</i>		Cá Bàng chải		LC	