

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
RIMF and D-FISH

The Purse Seine Fisheries in Vietnam

The 4th Core Expert Meeting

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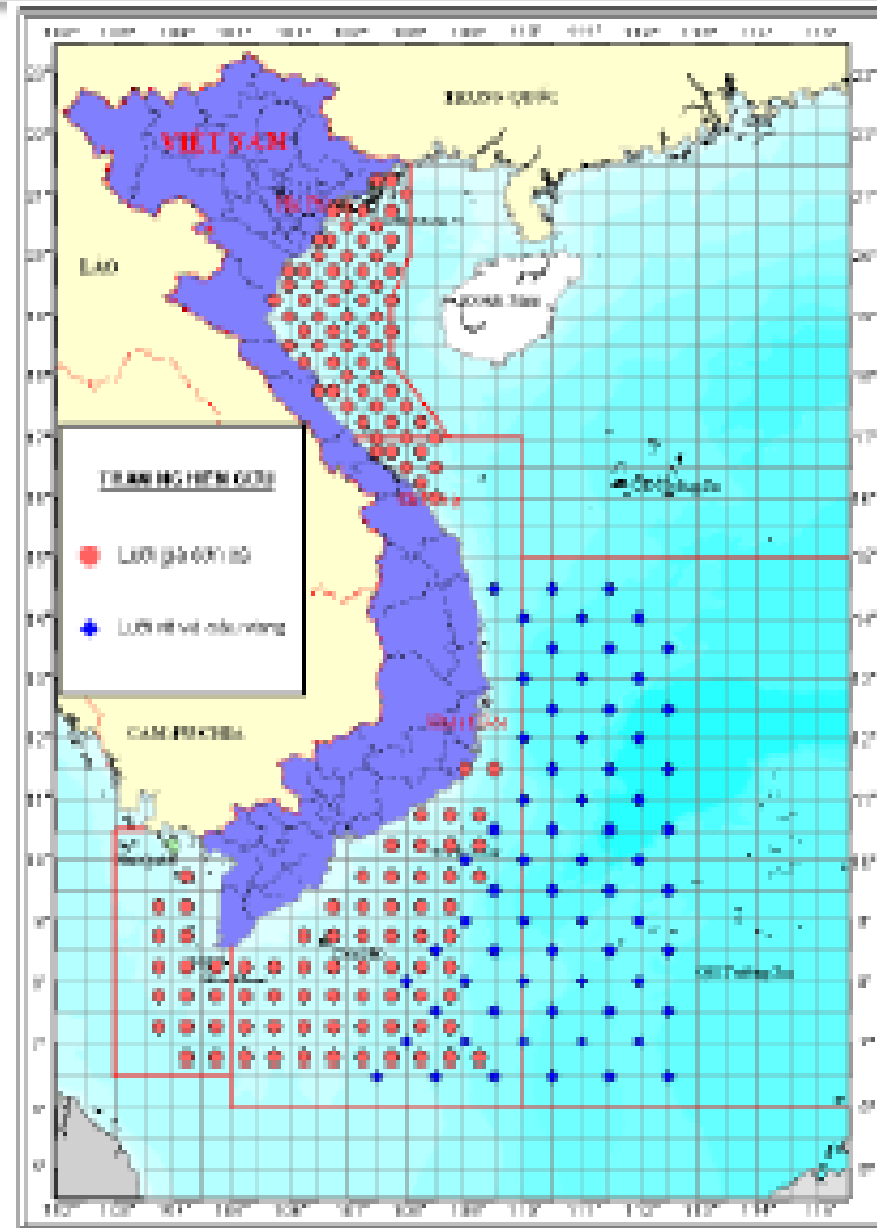
- 1) INTRODUCTION ON THE PURSE SEINE (PS)
- 2) CATCH AND EFFORT STATISTIC BY PS
- 3) BIOLOGICAL INFORMATION
- 4) STATUS OF PELAGIC FISH STOCK
- 5) EXISTING MANAGEMENT STRATEGIES FOR PS FISHERIES

1) INTRODUCTION

- Overview of Viet Nam fisheries
- Overview of purse seine

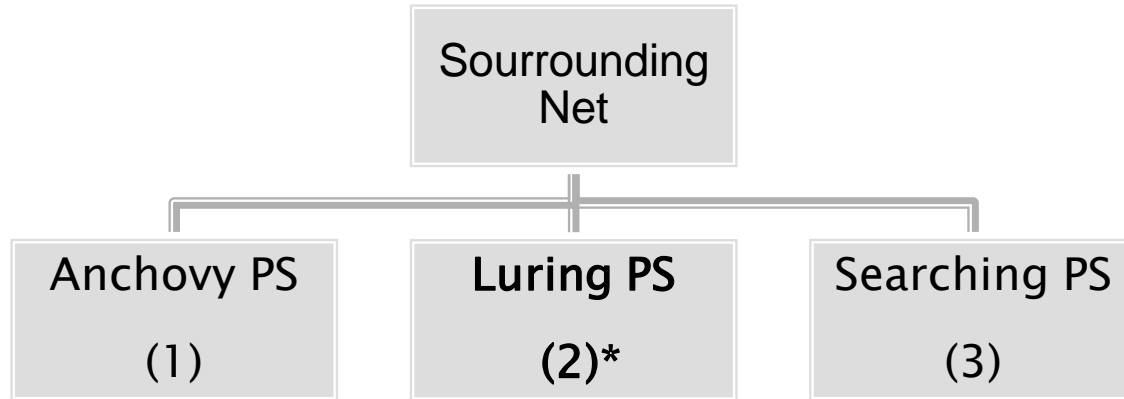
OVERVIEW

- ❖ Viet Nam has a long coastline of 3,260 km; and a large EEZ of more than 1 million km²;
- ❖ Marine Captured Fisheries play an important role in the social and economic development;
- ❖ The total number of fishing boats have increased rapidly from about 79,996 units (2007) up to 108,504 units (2017);
- ❖ The productions were increased, but CPUE decreased gradually;
- ❖ Vietnam fisheries are multi-species, multi-fishing gears and small scale. Thus difficulty for proper statistical data collection



- Purse seine is one of the most important type of fishing gear in the marine fishing sector of Viet Nam.
- Purse seine have potential to operate in offshore areas.
- The catch of purse seine accounts for 16-22% (~20.6%) of the total catch.
- The main species of the local and commercial types of surrounding net are small pelagic fish including: sardines, mackerels, round scads, neritic tunas, anchovies etc.

- ❖ Classification of fishing gears in Viet Nam: (Surrounding Net):



1) Anchovy purse seine: target on anchovy (popular in S.W)

2*) Luring purse seine: for small pelagic fishes (most popular)

3) Searching Purse Seine: not popular

- Small pelagic fish
- Tuna purse seine

2) CATCH AND EFFORT STATISTIC BY PURSE SEINE.

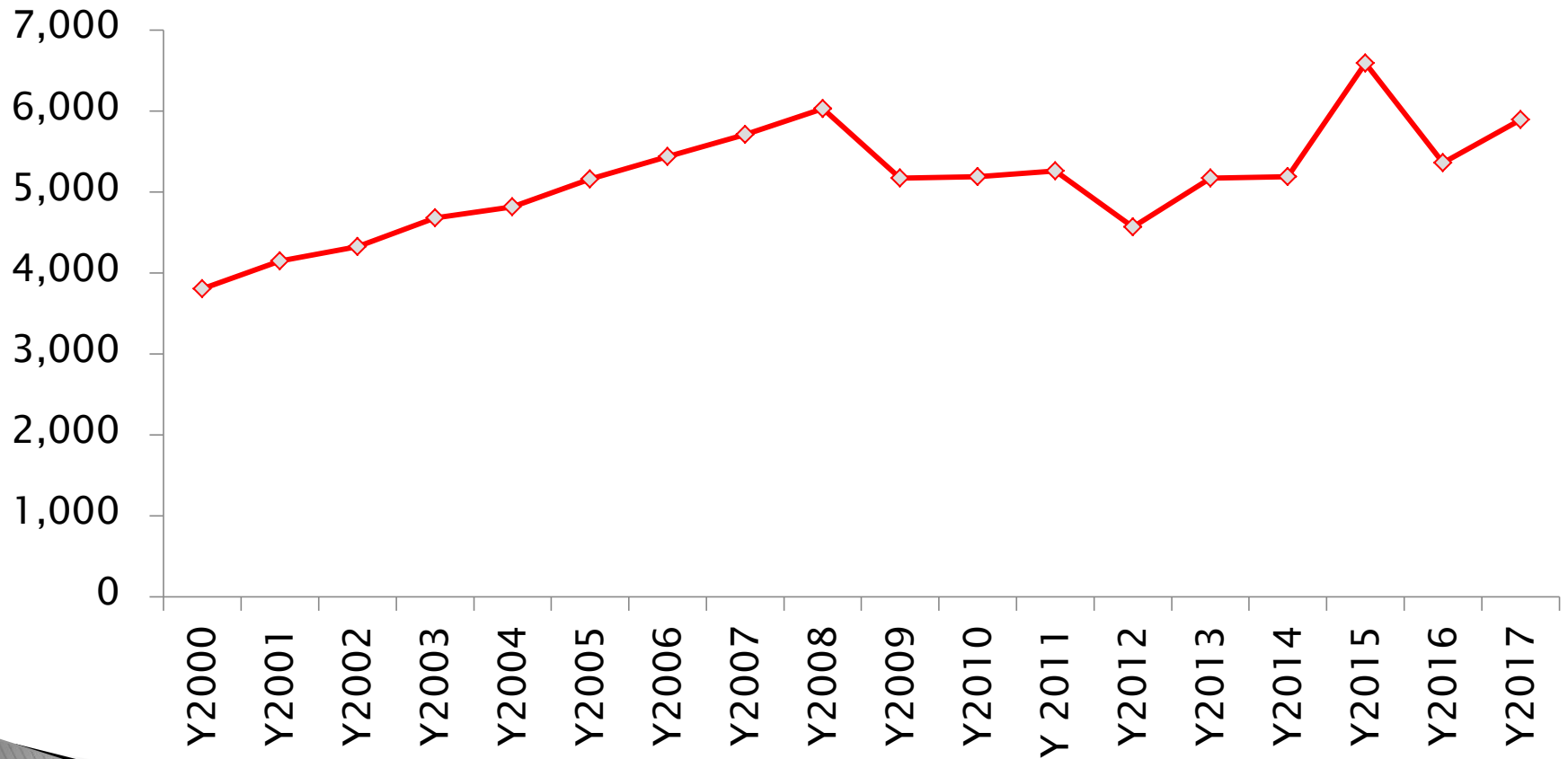
- Total no. of fishing vessels vs. Vessel of PS.
- Trend of Purse seiners
- Other fishing efforts (trips, days, hauls)
- CPUEs
- Total catch & PS catch

TOTAL NUMBER OF FISHING VESSEL vs. PS 8

Year	Total fishing vessel (units)	Purse Seiner (units)	Reference
Y2000	75,928	3.804	D-Fish, (2000-2017)
Y2001	78,978	4.148	
Y2002	81,800	4.327	
Y2003	83,122	4.684	
Y2004	85,430	4.818	
Y2005	90,880	5.163	
Y2006	93,651	5.438	
Y2007	95,609	5.712	
Y2008	102,231	6.033	
Y2009	120,326	5.171	
Y2010	128,021	5.191	
Y 2011	128,363	5.261	
Y2012	123,125	4.567	
Y2013	117,016	5.171	
Y2014	105,086	5.191	
Y2015	107,308	6.596	
Y2016	108,706	5.361	
Y2017	108,504	5.897	

Trend of purse seiners

Purse Seiner (units)



TOTAL NUMBER OF TRIPS, DAYS, HAULS

Year	Trips/year	Days/year	Hauls/day	Reference
Y2000	12	202	1-3	RIMF- Nguyen Van Khang et al., 2011
Y2001	12	200	1-3	
Y2002	12	202	1-3	
Y2003	13	203	1-3	
Y2004	12	202	1-3	
Y2005	11	180	1-3	
Y2006	11	174	1-3	
Y2007	10	168	1-3	
Y2008	11	185	1-3	
Y2009	12	202	1-3	
Y2010	11	179	1-2	RIMF- Nguyen Phi Toan et al., 2016
Y2011	11	177	1-2	
Y2012	11	174	1-2	
Y2013	10	172	1-2	
Y2014	10	170	1-2	
Y2015	10	167	1-2	

TREND OF CPUE

Year	CPUE tons/vessel/year	CPUE kg/day/vessel	CPUE tons/vessel/year (with hp>=90)	CPUE kg/day/vessel (with hp>=90)	Reference
Y2000	84	700			RIMF- Nguyen Van Khang et al., 2011
Y2001	79	663			
Y2002	51	425			
Y2003	59	487			
Y2004	51	420			
Y2005	47	182			
Y2006	61	453			
Y2007	72	716			
Y2008	91	781			
Y2009	133	734			
Y2010			78	751	RIMF- Nguyen Phi Toan et al., 2016
Y 2011			79	770	
Y2012			68	715	
Y2013			61	696	
Y2014			77	835	
Y2015			115	1,255	

TOTAL CATCHES vs. PS CATCHES

Year	Total catch (tons)	Reference	Year	Total catch/landings (tons) of PS		Reference
Y2000	1,280,591	MARD (2000-2017) Statistics	Y2000	320,636		RIMF- Nguyen Van Khang et al., 2011
Y2001	1,347,800		Y2001	328,562		
Y2002	1,434,800		Y2002	220,895		
Y2003	1,426,223		Y2003	276,813		
Y2004	1,724,200		Y2004	243,446		
Y2005	1,809,700		Y2005	245,074		
Y2006	1,823,700		Y2006	329,224		
Y2007	1,876,000		Y2007	413,374		
Y2008	1,937,000		Y2008	547,713		
Y2009	2,068,000		Y2009	688,133		
Y2010	2,240,000		Y2010	358,400	492,800	
Y2011	2,340,000		Y2011	374,400	514,800	
Y2012	2,434,000		Y2012	389,440	535,480	
Y2013	2,607,000		Y2013	417,120	573,540	
Y2014	2,722,000		Y2014	435,520	598,840	
Y2015	2,840,000		Y2015	454,400	624,800	
Y2016	3,035,900		Y2016	485,744	667,898	
Y2017	3,199,000		Y2017	511,840	703,780	

(* Blue Data): PS Catches = 16-22% * Total catches

3) BIOLOGICAL INFORMATION:

- Catch compositions
- Dominant species
- Lm50
- Spawning
- Growth and mortality parameters

SPECIES COMPOSITION OF PS FISHERIES

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1) Anchovy PS: target for anchovy

2) Luring PS:

Scientific Name	Nhóm thương phẩm	Rate (%)				Ref
		Tonkin Gulf	Central water	Southeast	Southwest	
<i>Decapterus spp</i>	Cá nục	57.4	40.0	48.9	8.3	Vũ Việt Hà, 2015
Scombridae	Cá ngừ	12.0	32.4	19.4	31.3	
<i>Rastrelliger Kanagurta</i>	Cá bạc má	7.4	1.2	8.9	5.9	
Engraulidae	Cá cơm	6.4	-	-	18.0	
<i>Priacanthus spp</i>	Cá trác	-	3.1	2.8	-	
<i>Sardinella spp</i>	Cá trích	4.9	-	1.7	1.2	
<i>Atule mate</i>	Cá ngân	3.3	2.8	3.8	3.4	
Other fish	Cá khác	8.6	6.3	5.4	9.8	
<i>Selaroides leptolepis</i>	Cá chỉ vàng	-	7.9	1.9	-	
<i>Megalaspis cordyla</i>	Cá sòng gió	-	6.3	-	-	
<i>Alepes spp</i>	Cá tráo	-	-	7.2	3.8	
<i>Rastrelliger brachysoma</i>	Cá ba thú	-	-	-	18.3	
	Total	100.0	100.0	100.0	100.0	

Notes: “-” less than 1% of total catch; “Other fish”: rest of fish species less than 1% of total catch

3) Searching PS: target for tuna (coastal and offshore tuna)

DOMINANT SPECIES – by Purse Seine

No	Common name (EN)	Scientific Name
1	Yellowtail scad	<i>Atule mate</i>
2	Wolf-herring	<i>Chirocentrus dorab</i>
3	Dolphin fish	<i>Coryphaena</i> spp.
4	Shortfin scad	<i>Decapterus macrosoma</i>
5	Japanese scad	<i>Decapterus maruadsi</i>
6	Torpedo scad	<i>Megalaspis cordyla</i>
7	Black pomfret	<i>Parastromateus niger</i>
8	Short mackerel	<i>Rastrelliger brachysoma</i>
9	Indian mackerel	<i>Rastrelliger kanagurta</i>
10	Herring	<i>Sardinella</i> spp.
11	Japanese mackerel	<i>Scomber</i> spp.
12	Scomberoides	<i>Scomberoides</i> spp.
13	Bigeye scad	<i>Selar</i> spp.
14	Yellowstripe scad	<i>Selaroides leptolepis</i>
15	Barracuda	<i>Sphyraena</i> spp.
16	Anchovy	<i>Stolephorus</i> spp.
17	Japanese horse mackerel	<i>Trachurus japonicus</i>
18	Hairtail	<i>Trichirus</i> spp.

Growth and mortality parameters (2011-2015)

Sites	species	Growth		Mortalities				Exploitation	Reference
		L _{oo}	K	Z	M	F	M/K	E=F/Z	
1. Tonkin Gulf	<i>Decapterus maruadsi</i>	27.8	0.97	3.95	1.76	2.19	1.81	0.55	RIMF, Nguyen Viet Nghia et al (2017)
	<i>Encrasicholina heteroloba</i>	10.5	1.5	6.22	3.07	3.15	2.05	0.51	
	<i>Rastrelliger kanagurta</i>	26.8	1.2	6.36	2.08	3.15	1.73	0.50	
2. Central water	<i>Auxis rochei</i>	32	0.68	3.19	1.36	1.83	2.00	0.57	
	<i>Decapterus maruadsi</i>	27.8	0.98	4.06	1.80	2.26	1.84	0.56	
	<i>Encrasicholina punctifer</i>	11	1.7	7.33	3.34	3.99	1.96	0.54	
	<i>Rastrelliger kanagurta</i>	27.8	1.1	4.33	1.94	2.39	1.76	0.55	
3. Southeast	<i>Auxis rochei</i>	32.3	0.68	6.22	1.36	4.86	2.00	0.78	
	<i>Auxis thazard</i>	45.7	0.62	2.31	1.16	1.15	1.87	0.50	
	<i>Decapterus maruadsi</i>	25.7	1.1	4.67	1.99	2.69	1.81	0.58	
	<i>Rastrelliger kanagurta</i>	26.8	1.2	6.39	2.08	4.31	1.73	0.67	
4. Southwest	<i>Atule mate</i>	27.8	0.97	3.56	1.79	1.77	1.85	0.50	
	<i>Encrasicholina heteroloba</i>	8.4	1.8	6.96	3.74	3.22	2.08	0.46	
	<i>Rastrelliger brachysoma</i>	22.6	1.8	7.75	2.84	4.91	1.58	0.63	
	<i>Rastrelliger kanagurta</i>	23.6	1.5	5.12	2.49	2.63	1.66	0.51	
	<i>Selaroides leptolepis</i>	16.3	1.2	4.24	2.39	1.85	1.99	0.44	

Spawning season (2011-2015)

Sites	Targeted species	Year	Viet Nam		
			Spawning season	Lm (cm)	Reference
1.Tonkin Gulf	<i>Decapterus maruadsi</i>	2014-2015	Feb - May and July-Aug	17.3	RIMF, Nguyen Viet Nghia et al (2017)
	<i>Encrasicholina heteroloba</i>	2014-2015	June-Aug and Oct -Nov	6.1	
	<i>Rastrelliger kanagurta</i>	2014-2015	Feb -May	18.3	
2.Central water	<i>Auxis rochei</i>	2014-2015	July - Aug and Apr-May	21.6	
	<i>Decapterus maruadsi</i>	2014-2015	Mar - May	19.8	
	<i>Encrasicholina punctifer</i>	2014-2015		5.3	
	<i>Rastrelliger kanagurta</i>	2014-2015	Mar - May and Sep - Oct	18.2	
3. Southeast	<i>Auxis rochei</i>	2014-2015	Feb - July	21.6	
	<i>Auxis thazard</i>	2014-2015	Feb - July	30.5	
	<i>Decapterus maruadsi</i>	2014-2015	Feb - July	16.4	
	<i>Rastrelliger kanagurta</i>	2014-2015	Feb - July	18.9	
4. Southwest	<i>Atule mate</i>	2014-2015	Apr - Aug	16.8	
	<i>Encrasicholina heteroloba</i>	2014-2015		4.9	
	<i>Rastrelliger brachysoma</i>	2014-2015	Fep - Apr and Aug - Oct	14.5	
	<i>Rastrelliger kanagurta</i>	2014-2015	June - Aug	16.4	
	<i>Selaroides leptolepis</i>	2014-2015	Jan - May	9.8	

4) STATUS OF PELGIC FISH STOCK

In general, the estimated standing biomass of the marine fisheries resources in Vietnam 2011-2015, at 4.36 million tons (ranging from 4.1 to 4.6 million tons) in which:

- Small pelagic fishes about 2,650 thousand tons; MSY about 1,580 thousand tons;
- Demersal fishes are 683 thousand tons;
- Oceanic pelagic fishes are 1,031 thousand tons.

Maximum Sustainable Yield, MYS (Small pelagic fish)

Area	2011-2015		Reference
	Biomass	MSY	
Gulf Tonkin	626	375.6	RIMF, Nguyen Viet Nghia et al. (2017)
Central water	616.4	369.9	
Southeast	891.5	534.9	
Southwest	510.5	306.3	
Total	2,644.40	1,586.70	

5) EXISTING MANAGEMENT STRATEGIES FOR PS FISHERIES.

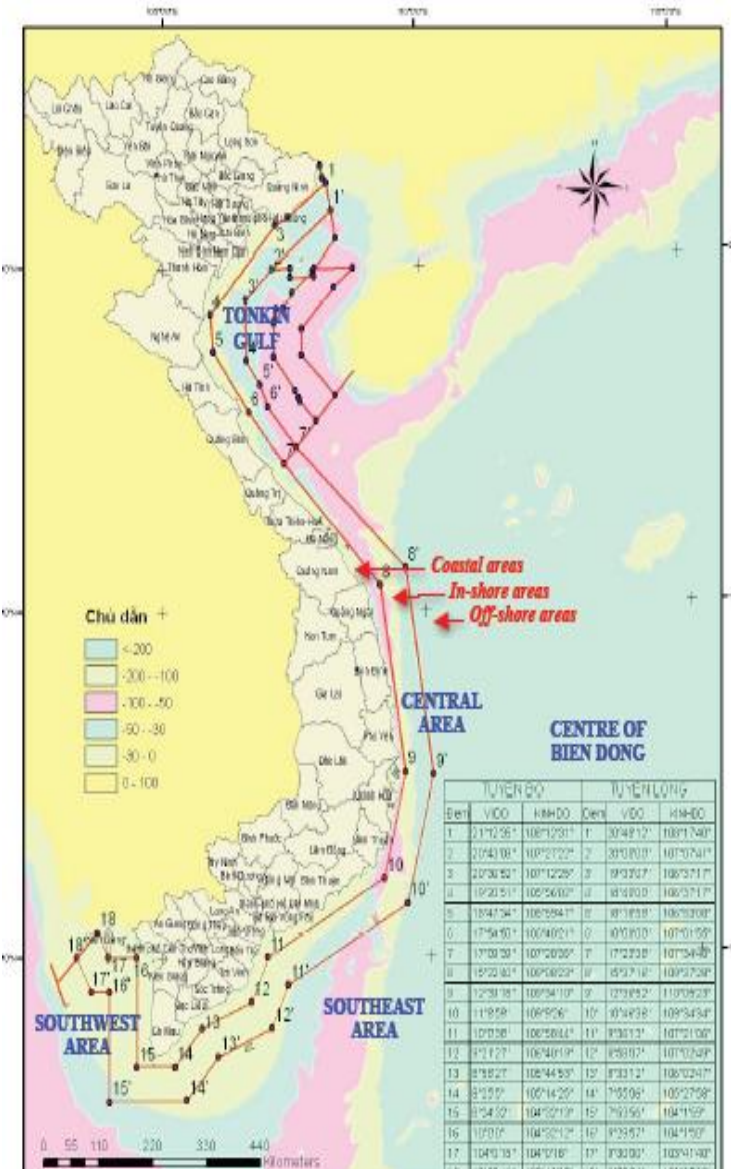
- Documents on management fisheries
- Regulation related to PS (input control).

FISHERIES MANAGERMENTS

- 1) Fisheries management, Viet Nm has issued legal documents such as Fisheries Law (2003) – in 2019 – Fisheries Law (2017) and Decrees (33), Circulars (02/2006, 62/2008)...etc.
- 2) Recently, Viet Nam Government has issued “Master plan on fisheries development of Viet Nam to 2020, vision to 2030”.

In which:

- + By 2020, to stabilize exploitation fisheries output of 2.4 million tones.
- + Total number of fishing boat in the whole VN: 110,000 units (2020), 95,000 units (2030). Offshore fishing boat remain about 30,000 units.
- + There are some research about season areas and fishing areas which are being studied.



REGULATIONS RELATED TO PS

1) Minimum mesh size at the bunt at Circulars 02/2006 of Ministry of Fisheries (old)

No	Vietnamese name	English name	Minimum mesh size at the bunt (mm)	Reference
1	Lưới vây cá cơm	Anchovy PS	10 mm	MOF, (2006) Circulars 02/2006
2	Lưới vây rút chì	Luring PS	18 mm	

2) Minimum length of some small pelagic at Circulars 62/2008 of Ministry of Agriculture

No	Vietnamese name	Scientific name	(cm)	Reference
1	Cá Trích xương	<i>Sardinella jussieu</i>	8	MARD, (2008) Circulars 62/2008
2	Cá Trích tròn	<i>Sardinella aurita</i>	10	
3	Cá Cơm	<i>Anchoviella</i> spp.	5	
4	Cá nục sồ	<i>Decapterus maruadsi</i>	12	
5	Cá Chỉ vàng	<i>Selaroides leptolepis</i>	9	
6	Cá Thu chấm	<i>Scomberomorus guttatus</i>	32	
7	Cá Thu nhật	<i>Scomber japonicus</i>	20	
8	Cá Ngừ chù	<i>Auxis thazard</i>	22	
9	Cá Ngừ chấm	<i>Euthynnus affinis</i>	36	
10	Cá Bạc má	<i>Rastrelliger kanagurta</i>	15	

3) Beside, regulations of fishing restrict area, time at Circulars 62/2008...

ISSUES

- ❑ Decrease of the marine fisheries resources in all waters of Viet Nam.
- ❑ Fishing techniques underdeveloped.
- ❑ Lack of funds for research of fish stocks, biological information for target species.
- ❑ The level of education of fishermen are low.
- ❑ The implementation of fisheries management regulations are limited at fishermen communities.
- ❑ Not yet effective fisheries management tools for purse seine fisheries.

FUTURE WORKS

- ❑ To raise knowledge, especially for coastal fishermen communities continuously.
- ❑ Strengthen capacity for various stakeholders (scientists, managers, policy makers, fishermen, etc.).
 - ❑ Collaborative and comprehensive study for managements.

1. Bộ Nông nghiệp và Phát triển Nông thôn, 2010. Nghị định 33/2010/NĐ-CP ngày 31/3/2010, Về quản lý hoạt động khai thác thủy sản của tổ chức, cá nhân Việt Nam trên các vùng biển
2. Bộ Thủy sản, 2006. Thông tư số 02/2006/TT ngày 20 tháng 3 năm 2006, Hướng dẫn thực hiện Nghị định của Chính phủ số 59/2005/NĐ-CP ngày 04 tháng 5 năm 2005 về điều kiện sản xuất, kinh doanh một số ngành nghề thủy sản.
3. Bộ Nông nghiệp và Phát triển Nông thôn, 2008. Thông tư số 62/2008/TT-BNN ngày 20/5/2008, Sửa đổi, bổ sung một số nội dung của Thông tư số 02/2006/TT-BTS ngày 20 tháng 3 năm 2006 của Bộ Thủy sản hướng dẫn thi hành Nghị định số 59/2005/NĐ - CP ngày 4 tháng 5 năm 2005 của Chính phủ về điều kiện sản xuất, kinh doanh một số ngành nghề thủy sản.
4. SEAFDEC, 2002. Catalogue of Fishing gears and methods in Vietnam, Vol. IV.
5. Bui Dinh Chung (2001). Marine fisheries resources – Basic for development of marine captured fisheries in Vietnam.
6. Vũ Việt Hà, Nguyễn Viết Nghĩa (2015). Đánh tổng thể hiện trạng và biến động nghề cá thương phẩm ở biển Việt Nam, Viện nghiên cứu hải sản.
7. Nguyen Van Khang (2011). Nghiên cứu cơ sở khoa học phục vụ cho việc điều chỉnh cơ cấu đội tàu và nghề nghiệp khai thác hải sản, Viện nghiên cứu hải sản.
8. Phan Dang Liem (2016). Prooceeding, Core 2^{sd}, The Purse Seine Fisheries in Vietnam.
9. Nguyen Viet Nghia, Pham Hung (2014). Prooceeding, Core 1st, Country report neritic tuna fisheries in Vietnam.
10. Nguyen Viet Nghia (2017). Báo cáo tổng kết dự án I.9, “*Đánh giá tổng thể hiện trạng và biến động nguồn lợi hải sản ở biển Việt Nam*”, Viện nghiên cứu hải sản-RIMF.
11. Nguyen Phi Toan (2016). Quy hoạch phát triển nghề khai thác hải sản xanh bờ toàn quốc đến năm 2020, định hướng đến năm 2030, Viện nghiên cứu hải sản- RIMF.
12. Phạm Văn Tuyen, Nguyen Dang Kien (2017). Prooceeding, Core 3rd, Purse seine fisheries in Vietnam.

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Thanks for your attention!
Trân trọng cảm ơn!

