

Optimizing Economic Returns for the Tuna Fishery Sector within a Sustainable Fisheries Environment in Papua New Guinea

**APEC 2015 Expert Consultation on Assessment Methodology of Fishery and Livestock Losses
Taipei, Chinese Taipei 16th – 17th July, 2015**

Presented by:



**The National Fisheries Authority
PO Box 2016, Port Moresby, National Capital District**



Outline

1. **INTRODUCTION**
1. **BACKGROUND AND RATIONALE**
1. **STOCK STATUS AND MANAGEMENT CONSIDERATIONS**
1. **ASSESSMENT OF PNG ACCESS ARRANGEMENTS**
1. **THE ECONOMICS OF THE FISHERY SECTOR**
1. **PROVINCIAL DEVELOPMENT OPPORTUNITIES AND CONSTRAINTS**
1. **POLICY OPTIONS, REVENUE SCENARIOS AND DISTRIBUTION**
1. **WAYFORWARD FOR APEC**

Introduction

This presentation includes outcomes of the Assessment of the Investments in PNG's Tuna Industry, which also includes an assessment of the harvest strategies and management tools currently used in PNG, including fleet capacity, fishing effort and catch limit issues in Archipelagic Waters (AW) and the PNG Exclusive Economic Zone (EEZ) respectively and management of Fish Aggregation Devices (FADs) and sharks.

The purpose of this presentation is to present to members of the APEC OFWG/PPFS in this consultation on effective strategies to maximize economic rents, as well as other benefits, most specifically relating to job creation and value added, without leading to overfishing from the experience of PNG.

Methodology

The assessment included an extensive consultation process, interviewing over 100 stakeholders including NFA staff, provincial officers, and industry representatives, as well as WCPFC, FFA and SPC.

- defining the main opportunities and constraints to investment, with the view to assessing potential locations in coastal provinces for viable processing plants as well as other non-processing options;
- defining the prospective fees, charges and rents for domestic, locally-based foreign and distant waters vessels in PNG waters and formalizing the links to onshore processing;
- assessing the costs and benefits of the PNA VDS, FSMA and USMLT to PNG; and
- assessing a range of discounts that take account of the value added generated under a number of dependency scenarios.

Background & Rationale

NFA's strategic goals that are directly applicable to tuna (aligned to the PNG MTDP 2010-2015):

- ◆ A commitment to ensuring sustainable resources are harvested at Maximum Sustainable Yield (MSY) levels
- ◆ Increasing downstream processing of tuna and creating employment and export driven economic growth;
- ◆ Increasing revenues from distant water fishing vessel access;
- ◆ Review licence conditions including costs recovery;
- ◆ Supporting rural development and poverty reduction, including through good governance and the promotion of fisheries on a sustainable basis, and building strategic alliances for improved implementation;
- ◆ Having in place the institutional framework (management and monitoring, control and surveillance) to support the achievement of these goals.

PNG Tuna Fishery

Table 1: Domestic, locally based and FSMA purse seine vessels licensed to fish in Papua New Guinea waters by operational group, 2008-2012

Table 2: Foreign purse seine vessels licensed to fish in Papua New Guinea waters by operational group, 2008-2012

Table 1: PNG Flagged

Group	Category	length (m)	2008	2009	2010	2011	2012
Domestically based							
Frabelle (PNG) Ltd	DOM	<50	1	1	1	1	1
Dologen Ltd	DOM	<50	0	1	1	1	1
Frabelle (PNG) Ltd	LBF	<50	1	1	1	1	1
RD Fishing PNG Ltd	LBF	<50	4	5	5	5	8
Sub total		<50	6	8	8	8	6
Frabelle (PNG) Ltd	DOM	50-80	6	6	6	10	10
Pacific Blue Sea Fishing Limited	DOM	50-80	1	1	1	1	1
Reil & Renn Fishing (PNG) Ltd	DOM	50-80	0	0	0	0	1
Dologen	LBF	50-80	0	0	0	1	1
Frabelle (PNG) Ltd	LBF	50-80	1	2	2	2	2
RD Fishing PNG Ltd	LBF	50-80	9	9	12	12	12
Fair Well Fishery (PNG) Ltd	LBF	50-80	5	5	5	5	5
South Seas Tuna Corporation Limited	LBF	50-80	10	8	12	12	12
Majestic Seafoods Corporation	LBF	50-80					1
Sub total		50-80	32	31	38	43	45
South Seas Tuna Corporation Limited	LBF	80>	3	2	2	2	2
Sub total		80>	3	2	2	2	2
Total PNG based			41	43	48	53	53
FSMA							
Federated States of Micronesia	FSMA	<50	2	1	2	2	1
Federated States of Micronesia	FSMA	50-80	0	1	1	11	2
Marshall Is	FSMA	50-80	5	1	7	1	7
Kiribati	FSMA	80>	0	0	2	1	1
Total FSMA			7	3	12	15	11

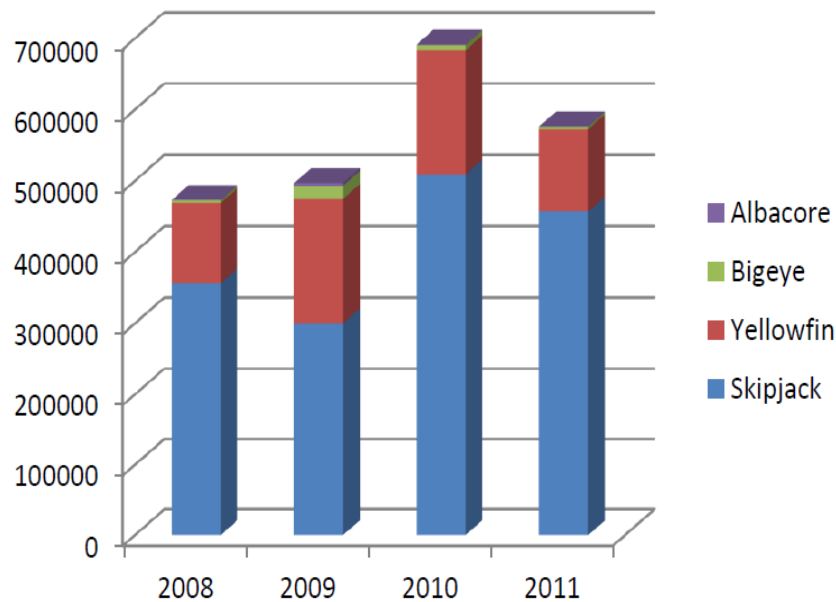
Table 2: Foreign Flagged

	Category	length (m)	2008	2009	2010	2011	2012
Foreign vessels							
Frabelle Fishing Corporation	Foreign	50-80	10	10	10	10	10
Luminar Fishing Corporation	Foreign	50-80	0	4	4	4	4
RBL Fishing Corporation	Foreign	50-80	0	2	2	3	3
Trans-Pacific Journey Fishing Corporation	Foreign	50-80	3	3	4	7	7
Kasar Fishing Corporation	Foreign	50-80	0	0	1	0	0
China Fisheries Association	Foreign	50-80	11	11	11	11	11
Fong Seong Fishery Group	Foreign	50-80	0	0	1	1	1
Fong Seong Fishery Group	Foreign	80>	5	3	3	3	3
Fu Fa Fishery Co., Ltd	Foreign	50-80	1	0	0	0	0
Japan Far Seas Purse Seine Fishing Association	Foreign	50-80	35	37	34	35	36
Korean Deep Sea Fisheries Association	Foreign	50-80	27	25	26	26	25
Korean Deep Sea Fisheries Association	Foreign	80>	1	2	2	2	2
Taiwan Deep Sea Tuna Boat Owners and Exporters Assn.	Foreign	50-80	33	33	32	29	29
Taiwan Deep Sea Tuna Boat Owners and Exporters Assn.	Foreign	80>	1	1	1	1	1
US Treaty Multilateral Agreement	Foreign	50-80	14	18	18	15	16
US Treaty Multilateral Agreement	Foreign	80>	2	3	3	3	3
Total foreign			143	152	152	150	151

- Besides, PNG has an established onshore processing industry with 4 companies operational & 2 yet to establish in three locations. These plants collectively employ more than 8,000 workers, as well as generating further upstream and downstream benefits.
- PNG also hosts a longline fleet which is set up to operate as a group of domestic companies, with a small seasonal fishery for albacore tuna, whilst Coco Enterprises target shark species. All current operations are based in Port Moresby.

Stock Status and Management Consideration

Fig. 1. Tuna catch in the PNG EEZ (Metric tonnes)



- The total annual catches of tuna and tuna like species in PNG waters have averaged around 635,000 mt per year between 2008 and 2011. These in-zone catches (EEZ and AW) represent around 23% of the WCPO tuna catch. Most of the PNG catch (98%) is attributed to the purse seine fishery.
- Catches (**Figure 1**) from 2008 to 2011, show an upward trend, with 2010 being the year of highest ever catches to around 700,000 mt. (2015 catches are projected at 630,000 mt).
- The highest ever estimated catches for skipjack may have been up to 509,000 mt (SPC), and the highest for yellowfin was in the same year (2010), at 198,000 mt, for bigeye at 18,000 mt in 2011 and albacore, 2000 mt, in 2007(NFA Annual Report Part 1, 2012).

Summary of Stock Status

Western and Central Pacific Ocean including PNG

Table 3: Stock Assessments and Catch Trends for the main tuna species of the WCPO

Species	2011 catch (mt)	Catch trend	Overfishing occurring ? ²	Overfished state?	Comment
Skipjack	1,540,189 (lowest since 2007 but likely high in 2012)	Decrease in recent few years, after rapid expansion during 2000s	No ($F_{curr}/F_{MSY} = 0.37$)	No ($SB_{curr}/SB_{MSY} = 2.94$)	Stock robust but impacts increasing and greatest in western equatorial areas
Yellowfin	430,506 (lowest since 1996)	Decreasing	No ($F_{curr}/F_{MSY} = 0.77$)	No ($SB_{curr}/SB_{MSY} = 1.47$)	Approaching MSY levels; impact greatest in western equatorial areas; future CMM projections favourable under most scenarios if further effort reductions are prevented
Bigeye	151,533 (higher than 2010, purse seine catch high)	Staying high with some fluctuation	Yes ($F_{curr}/F_{MSY} = 1.46$)	No ($SB_{curr}/SB_{MSY} = 1.19$)	Continuing overfishing; almost heavily overfished (biomass close to MSY levels); Impacts greatest in equatorial areas; further WCPFC management restrictions likely 2014-2017
Albacore (southern)	75,258 (3 rd highest on record)	High since 2009	No ($F_{curr}/F_{MSY} = 0.21$)	No ($SB_{curr}/SB_{MSY} = 2.6$)	Stock robust but fishing conditions subject to localised overfishing and CPUEs vary by year,

Implications for management of the PNG tuna fishery

- Skipjack:** Stock currently healthy but close to MSY levels, and no significant increase in catch should be expected. Total catch (regional) has been declining in recent years despite record levels of effort as a result of continuing fleet expansion. The 2012 catch looks likely to approach record levels at probable record levels of effort. The most recent CMM (2012-01) includes skipjack for the first time and restricts effort of PNA parties in their EEZ to 2010 levels under the VDS.
- Yellowfin:** Stock overall not subject to overfishing nor overfished, but with high levels of exploitation in the western part of the region and probably subject to overfishing in the PNG/Indonesia area; catches have been declining in recent years and this looks to continue in 2012; CMM 2012-01 recommends taking measures not to increase catch; declining purse seine catch rates in PNG archipelagic waters (AW) have been reported (SPC data); it would be prudent to reduce catch and effort on yellowfin in AW and not increase catch in EEZ waters.
- Bigeye:** Stock subject to overfishing for > 10 years; management measures have not been effective, with associated purse seine catch of juveniles and longline catch of adults both contributing to the overfishing; the stock is not quite overfished but if recruitment returns to earlier lower levels, the risk will be considerably increased; CMM 2012-01 proposes a continuation of the reduction in fishing effort on bigeye, and as interim measures, an increase in the FAD closure period and monthly catch reporting for longline fisheries taking > 2,000t pa (but not applicable to PNG) whilst enhanced measures for 2014-2017 are developed and adopted. PNG as a major FAD user will be required to comply with the longer FAD closures in EEZ waters and apply its (anchored) FAD Management Plan, compatible with WCPFC measures, to AW, preferably revised and modified to be compatible.
- Albacore (South Pacific):** Stock in good shape but intermittently there are fishery/economic issues with localized low abundance/availability driven by oceanic processes; currently efforts to develop a PNA longline VDS which will impact the PNG longline fishery.

National, Sub-regional and Regional Management Measures

Regional Management Measures

- ◆ WCPFC Conservation and Management Measures (CMMS) are binding on all WCPFC members, cooperating non-members and participating territories;
- ◆ All CMMs post-date the PNG National Tuna Management Plan, which has been revised to incorporate them where appropriate;
- ◆ A new WCPFC CMM (2012-01), including skipjack for the first time, was introduced with interim measures for 2013
- ◆ This establishes an effort limit for skipjack, urges CCMs maintain effort on yellowfin at current levels or lower, and may develop additional measures for bigeye
- ◆ FAD closures will increase to four months or equivalent, with limits on FAD sets in some cases
- ◆ WCPFC management measures will also be under review in the period 2014-2017 and may include additional management measures for purse seine and longline fisheries to reduce F of bigeye

Sub-regional Purse Seine Management

- ◆ The PSVDS remains the main management tool for the PNA purse seine fishery and needs to be observed;
- ◆ Compatible PSVDS measures are to be established for AW
- ◆ RPs and HRCRs are yet to be developed but are required as part of the MSC certification for the PNA free school skipjack tuna fishery. PNA will subsequently advance these through to WCPFC
- ◆ Sub-regional purse seine management

Sub-regional Longline Management

- ◆ PNA Longline Vessel Days Scheme

National level Management Measures

- ◆ National Tuna Management Plan (revised NTMP, 2014), and the first such plan adopted within the PNA membership.
- ◆ The Plan is established under the Fisheries Management Act (1998) and is to be read in association with the Fisheries Management Regulation (2000).

PNG Access Arrangements

Economic Links and Transshipments

- ◆ The essence of the discounting on access fees, as well as the value of the State agreements are being flouted by most companies;
- ◆ There is almost no cost recovery (observer fees and training levy) from locally based (and domestic) vessels;
- ◆ Despite the understanding that locally based (and domestic vessels) will land product for processing within PNG, substantial proportions of the total catch are going unprocessed, either exported as whole frozen, transshipped and landed outside PNG into other ports;
- ◆ The weaknesses is that the licences, when issued, do not explicitly specify the link to landing into PNG plants, and the State Agreements do not explicitly state that all product caught by locally based vessel be landed;
- ◆ The State Agreements serve a limited purpose and can in many ways are superseded by policies already in place through IPA and IRC, and other rules can be implemented through the licence MTCs;
- ◆ The appropriate mechanisms to record this data (Export data, CDS and transshipments) all show weaknesses and should be strengthened as a priority;
- ◆ None of the Vanuatu registered vessels are eligible to supply the EU market, do not unload for processing, and therefore provide limited benefit to PNG's processors,

Economics of Tuna Fishery Sector

Economic Performance of Vessels operating in PNG waters

- Purse seine tuna prices have increased by >100% in the period 2010 to 2012, with corresponding operating costs by less than 10%, allowing for a considerable increase in access fees;
- An analysis of the economic rents in the DWFV purse seine fishery suggests that the current rents could be US\$ 8,800 / PSVD (50-80m vessel), and US\$ 17,400/ PSVD (>80m);
- The realizable economic rents for locally-based foreign vessels are around 33% below those of the DWFN counterparts, achieving US\$ 3,980/PSVDS day (US\$ < 50 m), and US\$ 5,900/PSVD (50-80m);
- Longline tuna prices also show continuing upward trends but major cost efficiencies have developed with the transition to lower cost ULT vessels (with a range in price from US\$ 2,300/mt to US\$ 14,000/mt), with associated increases in economic rents;
- The economic rent for the locally based foreign longline sector is US\$ 153 LL LLVD.

Main Economic Yield

Table 4: Effort made by foreign vessels in PNG EEZ and AW waters (average 2010-2011)

Company	Total days in PNG waters	AW (days)	EEZ (Days)	% days in EEZ	% days in AW	Average catch/day in AW	Average catch/day (mt) in EEZ	Overall average catch/day (mt)
FFC	2436	1902	533	22%	78%	11	12	14
LFC	1171	522	649	55%	45%	13	21	18
RBL	631	80	551	87%	13%	5	16	15
TPJ	1305	636	670	51%	49%	19	17	18
KFC	80	-	80	100%	0%	-	23	23
CHINA	1602	5	1597	100%	0%	1	23	23
TAIWAN (FSFG)	423	3	421	99%	1%	0	18	18
JAPAN	5614	16	5598	100%	0%	21	21	21
KOREAN	4428	17	4412	100%	0%	17	24	24
TAIWAN	4310	12	4298	100%	0%	6	19	19
USA	2600	7	2594	100%	0%	0	18	18
TOTAL	24,598	3197	21401	87%	13%	13	21	20

Maximum Economic Yield

- For the EEZ, a 60% decline from the 2010 effort (to 8,133 days) would be expected to maximize the resource rent, increasing it to 500% from US\$ 61 million to US\$ 362 million.
- This level would be expected to produce US\$ 56,000 worth of rent per day fished (currently at US\$ 9,400 per day). For PNG as a whole, a 50% decline in effort from 2010 levels was estimated to maximize resource rent (~ 13,342 days), increasing it by 100% from US\$ 200 to US\$ 405 million.
- This equates to US\$ 30,380 worth of rent per day fished (currently at US\$ 7,485 per day). Assuming a catch rate of 25 mt/day (**Table 19**), this would result in an equivalent catch of 333,350 mt.

Key Industry Constrains

Province	Score	Main Constrains
Morobe	38	Wharfage & associated public utilities
Madang	34	Possible labour issues, few support services
East Sepik	30	Wharfage, shipping, water, few support services
Manus	24	Minimal infrastructure, shipping, utilities and support services
New Ireland	28	Water, wharfage, labour, shipping, few support services
East New Britian	30	Water, shipping, volcanic threat
AR Bougainvlle	21	Land, water, power, wharfage, shipping, security
Milne Bay	29	Water, few support services
Provinces not visited-ranking less certain		
Northern (Oro)	24	Wharfage, shipping, few support services, security
West New Britain	30	Few support services, utilities not known
Sandaun	24	Shipping, utilities, few support services

Policy Options, Revenue Scenarios and Distribution

- ◆ Under MSY situation, higher rents, could increase the fee base to around US\$ 133 million, or more, but requires an increase in DWFV fees to at least US\$ 7,500, and also charging locally based industry an access fee;
- ◆ Under MEY, reducing the days to increase vessel profitability and CPUE, Government incomes could more than double, but this would mean a capping of the current PNG processing investment strategy;
- ◆ After NFA's cost recovery (US\$ 62 million), this would provide either US\$ 70 million (MSY) or US\$ 167 million (MEY) to Government consolidated revenue. This could contribute to provincial government grants as a viable alternative to equity in largely revenue neutral processing ventures;
- ◆ This is without prejudice for a requirement for a review of NFA's costs, especially in MCS, against the background of the recommendations for implementing the revised strategy.

Conclusion

Optimizing Economic Returns for the Tuna Fishery Sector within a Sustainable Fisheries Environment;

- ◆ Promoting Sustainable Management of Fisheries under National jurisdictions
- ◆ While generating income from access fees and from onshore investment;
- ◆ Creating employment in the fish processing sector, and allied industries;
- ◆ Investing in infrastructure in the central hubs;
- ◆ Support for provincial coastal and inland fishery development;
- ◆ Providing adequate human and capital resources to ensure that the required management; and
- ◆ Development actions are effectively implemented.

Way forward for APEC

APEC TO ACCELERATE ECONOMIES OF SCALE THAT PROMOTE TRADE OPTIMISATION AND ECONOMIC RETURNS IN THE FISHERY SECTOR

- APEC Economies to participate in promotion of sustainable fisheries
- Good regulatory framework (fulfilling obligations under UNSCR 1540) and business friendly implementation of policies that create sustainable investment environment
- Establish good regional cooperation and networks to exchange trade-related information particularly to promoting economies of scale.
- List of non-binding best practices that are most facilitative, least restrictive and most effective in ensuring a safe trade environment for APEC economies to emulate.