(15 June 2012)

Strengthening Opportunities and Linkages for Fishery Downstream, Value Added Processing and Trade within and Between MSG Members

Prepared by:

Professor Biman Prasad

Dr Anand Chand

Dr Vina Ram-Bidesi

Ms Suwastika Naidu

ABBREVIATIONS

ADB:	Asian Development Bank
ADB:	Asian Development Bank
BOP:	Balance of Payment
CNFC:	China National Fisheries Commission
CROP:	Council for Regional Organisations of the Pacific
DWFN:	Distant Water Fishing Vessels
EEZ:	Economic Exclusive Zone
EPA:	Economic Partnership Agreement
EU-ACP:	European Union-African Caribbean Pacific
FAD:	Fish Aggregating Devices
FAO:	Food and Agriculture Organisation
FCF:	Fong Cherng Fishery Company
FCMA:	Fish, Crustaceans, Molluscs and Aquatic Invertebrates
FDI:	Foreign Direct Investment
FDI:	Foreign Direct Investment
FFA:	Forum Fisheries Agency
FIC:	Forum Island Countries
FIRCA:	Fiji Islands Revenue and Customs Authority
FSM:	Federated States of Micronesia
FTA:	Free Trade Agreement
FTAC:	Fisheries Technical Advisory Committee
GDP:	Gross Domestic Product
GG:	Gutting and Gilling
GSP:	Generalised System of Preference
HACCP:	Hazard analysis and critical control points
IATTC:	Inter-American Tropical Tuna Commission
ICCAT:	International Commission for the Conservation of Atlantic Tunas
IFC:	International Food Corporation

IFP:	Integrated Framework Programme
IOTC:	Indian Ocean Tuna Commission
LDC:	Least Developed Countries
MFN:	Most Favoured Nation
MSG:	Melanesian Spearhead Group
mt:	Metric Tonnes
NFA:	National Fisheries Authority
NFD:	National Fisheries Development (Solomon Islands)
PACER:	Pacific Agreement on Closer Economic Relations
PAFCO:	Pacific Fishing Company Ltd
PIC:	Pacific Island Countries
PICTA:	Pacific Island Countries Trade Agreement
PIF:	Pacific Island Countries
PIF:	Pacific Islands Forum
PIFS:	Pacific Islands Forum Secretariat
PNA:	Parties to the Nauru Agreement
PNGK:	Papua New Guinea Kina
PP:	Pacific Plan
RFMO:	Regional Fisheries Management Organisations
RIFP:	Regional Trade Facilitation Programme
RoO:	Rules of Origin
SFPL:	Soltai Fishing and Processing Ltd
SIG:	Solomon Islands Government
SIS:	Small Island States
SPARTECA:	South Pacific Regional Trade and Economic Cooperation Agreement
SPC:	South Pacific Commission
SPC:	South Pacific Commission
SPOCC:	South Pacific Organisations Coordinating Committee
SPS:	Sanitary and Phytosanitary Measures
STL:	Solomon Taiyo Limited
TBT:	Technical Barriers to Trade

UN:	United Nations
VFIL:	Vanuatu Fishing Investment Ltd
WCPFC:	Western and Central Pacific Fisheries Commission
WTO:	World Trade Organisation
WTO:	World Trade Organisation
WW2:	World War 2
WWF:	World Wildlife Fund

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

I. Contribution of the Fisheries Sector to the economy of MSG Countries

The MSG countries governments have regarded fisheries resources as an important source of livelihood and income. The focus on commercial fisheries development seriously began following independence and the extension of 200 nautical mile maritime jurisdiction under the Law of the Sea Convention. There are several studies that have documented and provide reviews of developments in the fisheries sector. The Fisheries sector in broadly divided into two categories: coastal and offshore, although in the case of Papua New Guinea, there is also a distinct inland fishery. Coastal fisheries have been targeted as a priority with regards to its contribution to local nutrition, food security and income generation while the primary focus of offshore fishery and processing has been to generate foreign exchange, contribute to GDP and employment. Reviews of coastal fisheries have also been through improvements in rural development projects initiated by the respective governments and donor agencies such as rural development under EDF, JICA and OFCF and other poverty alleviation projects. Focus on coastal fisheries has been twofold: firstly identifying the potential for commercial development as well as addressing over-exploitation, resource depletion and sustainability concerns with regards to biodiversity conservation and secondly maintaining food security.

The status of commercial fisheries in MSG countries indicates that MSG countries have rich fisheries and tuna resources in its EEZ. Out of the four MSG countries, PNG contributes around 37%, Fiji contributes 5%, and Solomon Islands contribute 3% and Vanuatu around 1 % to the total commercial fisheries production for the PICs (Gillett, 2010).

The MSG countries are licensing the foreign tuna fishing vessels to fish in their EEZ in return for the small amount of revenue (license fees, employment, etc.). For example, on average, the fees from the foreign fishing vessels contribute to 0.03% of MSG government revenue (FAO, 2009). This return in relatively lower as compared to the thousands of dollars of tuna that is caught in the EEZ of PNG, Solomon Islands, Fiji and Vanuatu by the DWFNs.

II. Summary of Main Points of Each Chapter (TOR)

Chapter 1 (TOR 1): Literature Review of the Status of Commercial Fisheries in Each MSG Countries

Chapter 1 provides a summary of literature on the status of commercial fisheries in MSG countries. Firstly, the literature shows the importance of fisheries and tuna resource for MSG countries. The literature shows that the PICs has rich fisheries and tuna resource in its EEZ and MSG countries are licensing the foreign tuna fishing vessels to fish in its EEZ in return for the small amount of revenue (license fees, employment, etc.). For instance, the fees from the foreign fishing vessels contribute to 0.03% of government revenue (FAO, 2009). This return in relatively lower as compared to the thousands of dollars of tuna that is caught in the EEZ of PNG, Solomon Islands, Fiji and Vanuatu by the DWFNs.

Secondly, the literature has emphasised the contribution of fisheries industry to the national economies of the MSG countries. Some of these contributions include earning foreign exchange (GDP), employment, government revenue, economic development and spin of activities. For PNG, the FFA (2011) highlighted that in 2009 the tuna industry contributed US$116.4 million dollars to the GDP. For Solomon Islands, in 2009 the tuna industry contributed $29.6 million dollars to the GDP. For Fiji, the tuna industry contributed to US$ 5.0 million dollars to the GDP.

Thirdly, with regards to employment, in PNG, around 10,000 persons are engaged in the fish processing activities in PNG. In Solomon Islands, Soltai (STL) provides employment for 1,500 Solomon Islanders and National Fisheries Development (NFD) provides employment to 500 Solomon Islanders. In Fiji, the tuna industry provides employment to 180 Fijians in the domestic pole/line vessels, PAFCO provides jobs for 700 Fijians, domestic long-line vessels provides employment to 180 Fijians, sashimi handling and processing provides jobs for 100 Fijians and artisanal fishing vessels provides employment for 50 people. In Vanuatu, the tuna industry provides employment to about 100 ni-Vanuatu.

Chapter 2 (TOR 2): Review of Country level studies on Commercial Fishery Development with Emphasis on Downstream Processing

Chapter 2 provides a review of MSG country level studies on commercial fishery development with emphasis on downstream processing. Since the late 1970s, Solomon Islands and Fiji have developed a vertically integrated tuna industry to optimize benefits from their tuna resources. Both countries developed joint ventures with foreign companies for canning tuna and a fishing fleet to supply the cannery. Since the mid-1990s, PNG has actively pursued both fishing and processing and created the 'Pacific hub' for tuna industry development. PNG has taken a regional leadership role in fisheries management through its membership within the PNA group being instrumental in the establishment of the Vessel Day Scheme (VDS) for the management of the purse seine fishery. PNG has also secured access to the EU market for its tuna under the IEPA and has successfully negotiated for derogation under the rules of origin for global sourcing of tuna. Vanuatu, on the other hand relies on access agreements and by re- flagging of vessels that fish either in Vanuatu waters or within the WCPFC area or other RMFO regions. The scope for domestic industry development is expressed through the deployment of FADs for small scale tuna fishery development by Ni-Vanuatu fishers rather than through the creation of its own industrial fleet. In the case of Fiji, the fresh chilled tuna industry through longline operations is well developed. Foreign longline vessels also operate as domestic based foreign vessels that supply the local processing plants. However, the fishing zone of Fiji is only marginally productive and so tuna as raw material has to be sourced from elsewhere including the neighbouring zones and international waters.

Policies on downstream processing, value adding and exports are similar for Fiji, PNG and the Solomon Islands where they aim to create employment for locals and generate foreign exchange through exports of fresh/chilled tuna, canned tuna and tuna loins. However, there are various degrees of implementation of investment policies and incentive schemes which are influenced by other political, social and economic factors within the respective countries. The target markets for these countries on the whole are similar and they face similar fisheries management rules, although Fiji's main focus is the sashimi market while PNG and Solomon Islands main product is canned and loin tuna. However, Fiji also has the capability to can tuna but its cannery

operations have not been viable. It is therefore apparent that scope for intra-regional trade amongst these MSG countries could be explored by considering their comparative and competitive advantages from the point of view of increasing efficiency and economies of scale.

Chapter 3 (TOR 3): Comparative and Competitive Advantages of Each MSG Member in Terms of Fishery Investment, Business Opportunities and Exports

Given the background of the tuna industry in the MSG countries, what is the scope of improving trade between the members? How can MSG countries strengthen trade amongst themselves in relation to tuna resources? What are their relative strengths and business opportunities in order to achieve their common objectives on utilization of tuna resources? These questions have been explored by looking at the comparative and competitive advantages in relation to the fishery investments, business opportunities and exports.

Not only the relative size of the EEZ is the largest for Papua New Guinea followed by the Solomon Islands but they are also within the Western Pacific equatorial zone where tuna is available throughout the year and seen as relatively more productive fishing grounds. Papua New Guinea and the Solomon Islands have surplus tuna in their zones to allow foreign vessels to harvest under access arrangements while Fiji vessels fish outside of Fiji waters to supplement its processing plants. In the case of Vanuatu, foreign fishing vessels flagged to Vanuatu fish predominantly outside of Vanuatu within the WCPO as well as in other RMFOs. A large majority of Vanuatu vessels are foreign vessels that are re-flagged to Vanuatu.

In relative terms, infrastructure is fairly well developed in Fiji, although cost of electricity remains high. Domestic transportation and air links to Europe, USA and Asia is comparatively reliable while infrastructure remains a problem in the Solomon Islands and Vanuatu. The MSG countries also have the competitive advantage of not only being close to the raw material supply but also they have preferential access to the EU market. Fiji has also developed a good reputation for its sashimi market in Japan.

In terms of wage rates, Fiji and Vanuatu have a relatively higher labour cost amongst the MSG members while Solomon Islands have the lowest labour cost. In comparison to minimum wages of Asian countries, Indonesia has a lower rate compared to Thailand and Philippines whose minimum wages are at a similar level to that of Fiji but lower than PNG and Vanuatu. Minimum wages while legislated may not necessarily be enforced and monitored. However, strategically if PNG and Solomon Islands as members of the PNA wish to participate in the PNA initiative on marketing of its certified tuna under the "Pacifical" logo, then the issue of enforcing minimum wage guidelines may be necessary to fulfil the sustainability and social equity criteria. Labour costs are an important component of tuna processing industries and a number the canneries have closed largely because of high labour costs. In light of this, to remain competitive with a higher labour cost, it is important that labour productivity will need to improve in the processing operations in the MSG countries.

Given the wider mandate of revised MSG Agreement that includes trade in services and with the benefit of being compliant with PICTA provisions and in light of other regional agreements, and the realization of the need for greater co-operation in the fisheries sector, there is much scope to explore the various possibilities and options for economies of scale from the shared resources to achieve greater efficiency to increase economic gains.

In addition to having regulations that promote and support business operations through incentives and tax schemes, it is also the role of the governments to ensure that fisheries management systems are in place and reflect the international and regional obligations and have provision and resources for their implementation and enforcement. This is an essential step towards establishing and securing sustainable trade.

Chapter 4 (TOR 4): Review Market Access Opportunities and Identification of Potential Value Added Fishery Products Where MSG Can Benefit From Inter-Fishery Product Trade

This chapter examines provides a review of international and regional trade agreements which provide MSG countries preferential market access (duty free and quota free) for fish and fish

products export to overseas markets. The rules and regulations for exporting to overseas countries are also highlighted. Currently, MSG countries are exporting fish and fish products to Japan, EU, USA, Japan, Asia, Australia, New Zealand and Pacific Island countries.

The main international and regional trade agreements which provide MSG countries the preferential market access for fish export to overseas markets are: Cotonou Agreement (2000-2020), Economic Partnership Agreements (EPA, 2007+), Generalised System of Preferences (GSP), South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA-1981), Pacific Island Countries Trade Agreement (PICTA-2001+), the Pacific Agreement on Closer Economic Relations (PACER-2002+), Melanesian Spearhead Group Trade Agreement (MSG-1993+) and various Bilateral Trade Agreements. Other arrangements such as Aid for Trade, Pacific Plan (PP-2005) and Council of Regional Organisations of the Pacific (CROP) are briefly examined to highlight their roles and functions in supporting fisheries issues. For each trade agreement, the opportunity for preferential market access, tariff rates, trade barriers, threats and challenges are examined and some recommendations provided.

Furthermore, the chapter discusses the overseas consumer trends and types of fish products that are currently exported to overseas markets and identifies new potential value added products which MSG countries can produce and market overseas. The benefits MSG countries can derive from inter-fishery trade is also examined.

Chapter 5 (TOR 5): Opportunities for MSG to Consolidate and Integration of Efforts in Relation to Fishery Downstream Processing and Trade Options

This chapter examines the opportunities for MSG countries to consolidate and integrate efforts in relation to fishery downstream processing and trade options**.** The MSG countries are licensing the foreign tuna fishing vessels to fish in its EEZ in return for the small amount of revenue (license fees, employment etc.). If fish currently caught by the foreign fishing vessels are caught by the MSG countries themselves and value added, then the government revenue from the fisheries industry would increase tremendously.

MSG countries canneries are competing with overseas countries such as Thailand, Philippines, Indonesia, China, Mauritius, Seychelles, Ghana, Ecuador, Costa Rica, Madagascar, Maldives, and Senegal in the production of fish, tuna and tuna related products. The cost of production of canning fish and tuna in these countries is significantly lower as compared to the MSG countries.

Chapter 6 (TOR 6): Recommendations

This report makes the following recommendations/ suggestions which MSG countries policy makers may like to consider.

1. **Erosion of preferential tariffs under existing trade agreements: the major threat.**

   So far, the international trade agreements have given MSG countries 'competitive advantage' over low cost producer countries such as Thailand, Philippines, Indonesia, China, Mauritius, Seychelles, Ghana, Ecuador, Costa Rica, Madagascar, Maldives, and Senegal. The cost of processing of tuna and tuna products in these countries is significantly lower as compared to the MSG countries. Since, Thailand and Philippines are the world's two largest producers of canned tuna they are the main threats in future once there further erosion of preferential tariffs (duty and quota free) as required by WTO. International trade agreements such as EPAs, GSP, SPARTECA has given preferential access of MSG countries tuna and tuna products to EU, USA, Japan, Australia and New Zealand markets. MSG together with PICs should lobby in international trade agreement meeting to ensure sure there is no further erosion of preferential tariffs under existing trade agreements.

2. **Search for New Markets**

   Whilst MSG countries are taking advantage of duty free access and preferences that are currently available, they should be more proactive and start robustly to search new markets. The erosion of duty free access and preferences are already taking place and there is no room for complacency.

   I. Greater penetration in EU Market

Data shows that Spain, Italy, France, and Portugal are the largest importers of fresh and frozen tuna and hence these markets should be targeted within the EU market. In 2009, Spain for example imported 170, 000 tonnes of fresh and frozen tuna, France 25, 000 tonnes, Italy 20,000 tonnes and Portugal imported 15,000 tonnes. Currently, these EU countries canneries are getting tuna supplies from their EEZ and from their former colonies and territories, but in future it is predicted that these countries fishing fleets are likely to decline in the coming future because of reduction of supply their fishing areas. Hence this presents an opportunity for MSG countries to supply frozen fish and loins to these countries in the future.

II. Greater penetration in Japan, USA and China markets

Outside the EU, MSG countries should also target Japan and USA markets for export of more fresh fish, frozen fish, loins, canned tuna and other tuna product lines. In the case of Japan, the data shows that the two largest suppliers of fresh and frozen fish are South Korea and Taiwan and MSG countries should aggressively target these two markets. Since MSG countries do not have any trade agreements with Japan and USA, it is an opportune time for MSG countries to collectively negotiate trade agreements with Japan and USA as a reciprocal exchange for the political support MSG countries give to Japan and USA in international organisations, etc.

III. Targeting Niche Markets in the Oceania Region and International Region (Australia, NZ, USA, Canada and EU countries)

Although Australia and NZ are exporting fish and fish products to overseas countries, MSG countries have an opportunity to target Pacific diaspora communities. Since there are thousands of Pacific Islanders living in NZ, Australia, MSG countries should focus on exporting more fresh fish and fish products to these countries. The Pacific diaspora is a good niche market and further development in this sector is needed. For example, the Pacific islanders prefer salt water fish rather than freshwater fish. In addition to targeting Pacific

diaspora communities in Australia and NZ, MSG countries should also target Pacific diaspora in USA, Canada and EU countries.

IV. Solidarity for MSG countries to cooperate and jointly access the overseas markets.

Rather than competing with each other in the international market, there is urgency for solidarity in the MSG countries to cooperate and jointly access the overseas markets. Solidarity, collaboration and cooperation amongst the MSG countries will generate economies of scale, synergies and complementarities and these will enable the MSG countries to gain sustainable competitive advantage in the international market.

3. Increase onshore downstream processing and value adding

MSG countries, particularly PNG, Fiji and Solomon Islands who already have canneries should further enhance their down streaming processing and value adding activities if they want to take full advantage of their fisheries resources. If more value adding takes place onshore in MSG countries, then MSG countries revenue from the tuna industry would increase significantly. Lessons can be learnt from the PNG success of attracting foreign companies to be engaged in tuna canning.

- **Frozen fish: More scope for value adding**

Since labour cost is high in developed countries (EU, USA, Japan) it is suggested that more semi-processed (cleaned) product should be exported rather than just exporting whole un-cleaned frozen fish. Semi-processed (cleaned) frozen fish markets in Japan and USA fetch good price approximately (USD$5-8 per kilo) and hence more value adding should be done in MSG countries before fresh fish is exported. For example, instead of just freeing the whole fish, additional processes such as 'gutting' & 'gilling' (GG), 'gutting' & 'cutting head' (GCH) and skinning (GHS) would add more value to the frozen tuna. Similarly for loin exports, 'skinned and cooked' loins as done in PACFO in Fiji and PNG would be preferable than 'uncooked loins' which are currently sent by private sector fishing companies in Fiji.

- **Canned fish: More scope for value adding**

There are many opportunities for MSG countries to consolidate and integrate efforts in downstream processing and trade options. Some of these ways are:

- PNG, Fiji and Solomon Islands should capitalize on the production of canned fish (including tuna) whilst Vanuatu should capitalize more on exporting fresh, loins and frozen tuna. In future, Vanuatu may also be involved in small scale tuna processing.
- PNG, Fiji and Solomon Islands should continue to provide preferential licences to vessels that are based locally to supply their canneries. They should also invite foreign company investors interested in downstream processing and tuna canning plants.
- More preference should be given to the MSG countries vessels willing to catch fish in each other's EEZ as compared to the DWFN tuna fishing vessels.
- The MSG countries should share their knowledge, key competencies, research and development information with each other to foster the integration of efforts for fishery downstream processing.

- **Processing of other fish Products**

MSG countries should further develop processing of other fish products such as mackerel, sardine, fish meal, sea cucumber, tilapia and seaweeds. For example, there is high demand for processed Tilapia products in the USA market and high demand for dried sea cucumber and seaweed in the Asian markets particularly China.

- **Diversify fish product lines**

Furthermore, MSG countries should diversify their fish product lines and be involved in more value adding activities. New tuna products should be embarked upon. For example, in canned tuna, another line item could be 'tuna in pouch', 'tuna salad', 'tuna paste', tuna fish balls', 'fish cake', etc

- **Factors to be considered for downstream processing**

Factors that need to be considered for enhancing downstream processing: availability and supply of raw materials at the lowest cost; level of investment (semi-processing, canneries, vessels, gear and equipment); infrastructure (wharves, transportation, airfreight facilities, electricity, water, telecommunication); availability and supply of skilled productive labour; and the capacity to handle the volume of production. For example, as of 2010, PNG has the largest capacity of around 650 mt per day, Fiji with 200 mt per day, Solomon Islands with 80 mt per day and Vanuatu with 20 mt per day. Furthermore, to guarantee a constant supply of fish to the canneries, MGS governments should regulate that more percentage of fish caught by foreign fishing vessels in MSG EEZ to be offloaded in MSG countries.

4. **Consolidate and Integrate Efforts in Relation to Fishery Downstream Processing**

Rather than developing their own individual downstream processing plants, it would be wise for MSG countries to consolidate and integrate their efforts in relation to fishery downstream processing.

5. **Public-Private Partnership to increase onshore downstream processing**

Lessons can be learnt from the past mistakes in each country which shows that government owned and operated canneries are not successful. Therefore, public-private partnership is the way to go forward and in case MSG countries want to be involved in more value adding. The existing canneries in PNG, Solomon Islands and Fiji can be further expanded with new ventures to be allowed in the country via public-private partnerships. A good example is the signing of a recent (2011) new investment project in PNG - a joint venture between Thai Union, Century Canning and Frabelle. Another example is the joint venture partnership between PAFCO and Bumble Bee of USA. It is wise for both the government sector and private sector to be involved in solving the problems and obstacles for canned fisheries industries in MSG countries. In addition, the problem of the lack of raw material (can tins, oils, etc) could be reduced with government and private sector partnership to improve the efficiency of the tuna industry.

6. **Upgrade of factories**

Since MSG countries do not have comparative advantage from low labour cost *vis-à-vis* Asian countries, it is wise for the MSG countries canned tuna producers to upgrade their factories and production procedure to reduce their labour cost. Again this can be done via public-private partnerships.

7. **Health Standards and Certification**

Canneries can be made more hygiene for compliance for food safety/ quality and to align with HACCP rules to EU, USA and Japanese markets. Certification is also crucial factor for exporting. There are ever more intense non-tariff barriers (eg HACCP, certification) in today's international trade and thus the MSG countries canned tuna exporters and/or producers should adjust their plants, their products and their production procedures to meet the importing countries' standards and import regulations.

8. **Sharing Information amongst MSG countries**

Although some information is shared between government departments within a country and between MSG countries, there is need for greater degree of co-ordination and sharing of information. There should be better information sharing between relevant government ministries and MSG countries on issues such as export rules, markets, competitors, and the new production technology, etc. In addition, the government should be the representative of the MSG countries for fish exporters and negotiate preferential agreements with the importing countries in order to provide the MSG countries exporters to compete globally.

9. **Joint Co-ordination in Monitoring, Control and Surveillance**

MSG countries should be involved jointly in Monitoring, Control and Surveillance of fishing vessels in its EEZ. One of the major problems faced by the government of the MSG countries is the inability to monitor and control the fish that is caught in its EEZ. The tuna stocks in the MSG countries are rapidly declining and some species of tuna are overexploited such as Bigeye. This indicates the urgency for the governments of the MSG countries to monitor and control the population of tuna that is present in its EEZ.

The following strategies need to be implemented to strengthen the monitoring, control and surveillance:

- Maintaining proper data collection systems, e.g. stringent monitoring at the ports, seasides and docks.
- Investment in helicopter for quick search of large areas.
- Joint patrolling of fishing vessels

In addition to using the FFA's Vessel Monitoring System (VMS), MSG countries should also jointly conduct monitoring and surveillance of its EEZ.

10. Marketing: Aligning with larger global fish/tuna traders/marketers.

MSG countries should be create economies of scale and increases the chances of aligning with larger global tuna traders and international brand names and marketers. For marketing purposes, selling of tuna products should be done in partnership with the major global marketers of tuna, for example Bumble Bee, Thai Union, Frabelle, Star Kist, South Seas, etc. Without such partnership it would be difficult to market and sell Pacific Island tuna.

It would be wise for the MSG countries canned tuna producers/exporters to have their own web site to advertise and provide consumer information. The current advancement of Internet and E-Commerce technologies can help them achieve a wider sales distribution channel and can access to untapped markets easier and quicker. This is a great opportunity for them to sell more via Internet. Additionally, the government should provide support to the exporters regarding training or even giving services, such as Web Development, and E-Commerce service.

11. Brand Name: Align with Global Brand Name, Packaging and Health Information.

Instead of creating their own brands, it will be wiser for MSG countries to align with existing global marketers of tuna, for example Bumble Bee, Thai Union, Frabelle, Star Kist, South Seas, John West, etc, so that MGS tuna be certified and sold overseas. Furthermore, by certifying and promoting ‘green’ and ‘carbon free’ canned tuna from

Pacific canneries can add more value to the product as well as increase the potentiality in competing with existing brand names. Currently, the packaging of most of the MSG canned tuna does not look appealing and without any 'health benefit' information (eg omega-3) which will tempt consumers to buy MSG country tuna. For example, Australian 'John West' brand uses the 'health benefit' information to appeal to consumers. Better packaging and 'health benefit' information will enhance marketing flair Pacific tuna to attract more consumers.

12. More trade among the MSG members

There is a need for more trade among the MSG members with regards to tuna products. While there is some trade among the MSG members with regards to tuna resources but this trade remains minimal. Much could be achieved under the revised MSG Agreement which has extended the scope of trade and other closer co-operative relations amongst the MSG members given that these members represent the larger island group of the Pacific region, in terms of land area, fishing zones, people and capacity. This is particularly relevant for MSG countries fisheries sector where tuna stocks as natural resources are a shared commodity.

MSG Trade Agreement provides the platform where the members can engage in trade as well as fisheries management related activities as they are becoming intrinsically linked. Economies of scale can be only be realised within this framework which explores the possibilities of joint arrangements with public goods such as sharing of skills and in conservation, management and development aspects.

There is scope for intra-regional trade in areas such as seaweeds, pearls, aquarium products and some small volumes of high values fisheries resources. The study team feels more in-depth study is needed.

13. Co-ordination and Cooperation amongst MSG countries

MSG countries would be better served if they enhanced their cooperation and coordination. For example, firstly, joint scheme for exports to EU utilizing the rules of

derogation of (global sourcing) for multiple reasons – improving the economic returns as well as improving the standards of practice and creating harmonization amongst wider Pacific or the main players. Secondly, the possibility of joint monitoring, control and surveillance tasks between MSG members such as sharing of resources like observers, surveillance officers, patrols and fisheries data. Individually, it is difficult to perform this MCS functions. Thirdly, co-ordination and cooperation amongst the MSG countries in terms of sharing of technical and skilled labour amongst the processing plants in the MSG countries will foster greater economic integration. For example, PNG can temporarily recruit experienced PAFCO women to work in PNG canneries on contract given the expansion plans that is envisaged in PNG. Fourthly, securing competitive access agreements between Fiji and Vanuatu and Fiji and Solomon or securing supplies. Fifthly, the MSG countries can also cooperate by extending benefits of PNA initiatives to wider non PNA members (Fiji and Vanuatu) and by using the strategic role of PNG and the Solomon Islands as members of both MSG and PNA. This will ensure more benefits to Fiji and Vanuatu. Sixthly, develop better strategies to access international markets. This could ensure economies of scale, synergies and complementarities which could enable the MSG countries to gain sustainable competitive advantage in the international market.

Hence, MGS countries should have more solidarity and need to cooperate to further enhance on-shore processing development of tuna within MSG members.

14. Strategy for sustainable use of fish resources

There should be a long-term strategy for sustainable use of fish resources for MSG countries. Increasingly on the global front, there are calls for improving fisheries management to achieve sustainable outcomes that also can support sustainable trade. NGOs such as Green peace and Oxfam are pushing for resource management and sustainable trade. Furthermore, MSG countries should adhere to WCPF Commissions fish management measures and they could take the lead role to emphasise its importance.

15. Further Research

Since this research was limited to desktop research and with time constraints, it is suggested that a series of more detailed in-depth research in specific areas should be conducted. Suggested areas are:

- A comparison of cost structure of canneries/loin plants in MSG countries.
- Further explore trade options in identified coastal fisheries commodities in MSG countries.
- Further investigate options for strengthening monitoring and surveillance in MSG countries.
- A more comprehensive assessment of trade related issues in each of the MSG countries.

INTRODUCTION

This brief introductory section examines the scope of study, methodology, and the supply and demand of fisheries products in the MSG countries.

Study Scope

While the study focuses on fisheries of MSG countries, given the time limitation, this study only looked at the industrial fisheries sector by concentrating on tuna fisheries issues. This is because the coastal fisheries are of extreme importance to each MSG member country for food and nutritional security. There is however, some scope for intra-regional trade in areas such as seaweeds, pearls, aquarium products and some small volumes of high values fisheries resources. The study team felt that this should be a subject of a separate study because policies and issues of the two major sub-sectors are different.

Methodology

This research was primarily a desk study through review of reports and literature. Secondary data was compiled from government reports, South Pacific Commission (SPC) digital library, United Nations (UN) commodity trade database, Food and Agriculture Organisation (FAO) Aquaculture and Fisheries database, World Trade Organisation (WTO) database, GlobeFish database, Asian Development Bank (ADB) reports, Pacific Islands Forum Fisheries Agency (FFA) database, Western and Central Pacific Fisheries Commission (WCPFC) reports and National Fisheries Authority Reports (NFA). In addition, primary data was collected through interviews and focus group meetings. Interviews were conducted with the owners and employees of different processing firms in Fiji. To gain further knowledge, Fiji Islands Revenue and Customs Authority (FIRCA) and Fisheries Department officials were interviewed to find out the quarantine, trade and fisheries management issues in relation to tuna. Country visits were logistically not possible given the time limitation.

Supply and Demand of fisheries Products in the MSG Countries

Fish is the mainstay of food security for Pacific Island Countries (Bell, et al, 2009). Recent surveys demonstrate that subsistence fishery still provides the great majority of dietary animal protein in the region. Most Pacific Island Countries exceed by a large margin – the world

average per capita fishery product consumption rate of 16.5 kg (Gillett, 2009). Based on the predicted age structure of the population in the Pacific until 2030 and age and weight relationships, an annual per capita fish consumption of 34-37 kg is estimated to produce about 50% of the recommended protein intake for people in the South Pacific Islands (Gillett, 2009). Fish supply in a country can be estimated by domestic production as well as imports of fisheries products. In the Pacific Islands, imports of fish and fishery products generally consist of processed and preserved fish including canned fish. Table 1shows the forecast of fish and fishery products required to meet per capita consumption for good nutrition in MSG countries by Bell, et al (2009).

Table 1: Forecast of fish required in to meet per capita consumption of fish for good nutrition (Tonnes)

	2010	**2020**	**2030**
Fiji	**30,000**	**33,200**	**37,500**
urban	16,000	19,500	24,200
rural	14,000	13,700	13,300
Papua New Guinea	**111,400**	**142,800**	**182,300**
urban	31,500	46,500	73,400
Coastal/riverine	59,900	72,600	83,300
inland	20,000	23,700	26,500
Solomon Islands	**18,000**	**25,000**	**29,900**
urban	3,400	5,400	8,700
rural	14,600	18,100	21,200
Vanuatu	**8,200**	**10,700**	**13,600**
urban	2,100	3,300	5,200
rural	6,100	7,400	8,400

Source: Bell, et al (2009).

While table 1.1 can be implied as the projected demand for nutritional security, the apparent supply of fish and fishery products can be estimated by considering the national fish production data. Table 2 provides the fisheries production details of MSG countries for 2007.

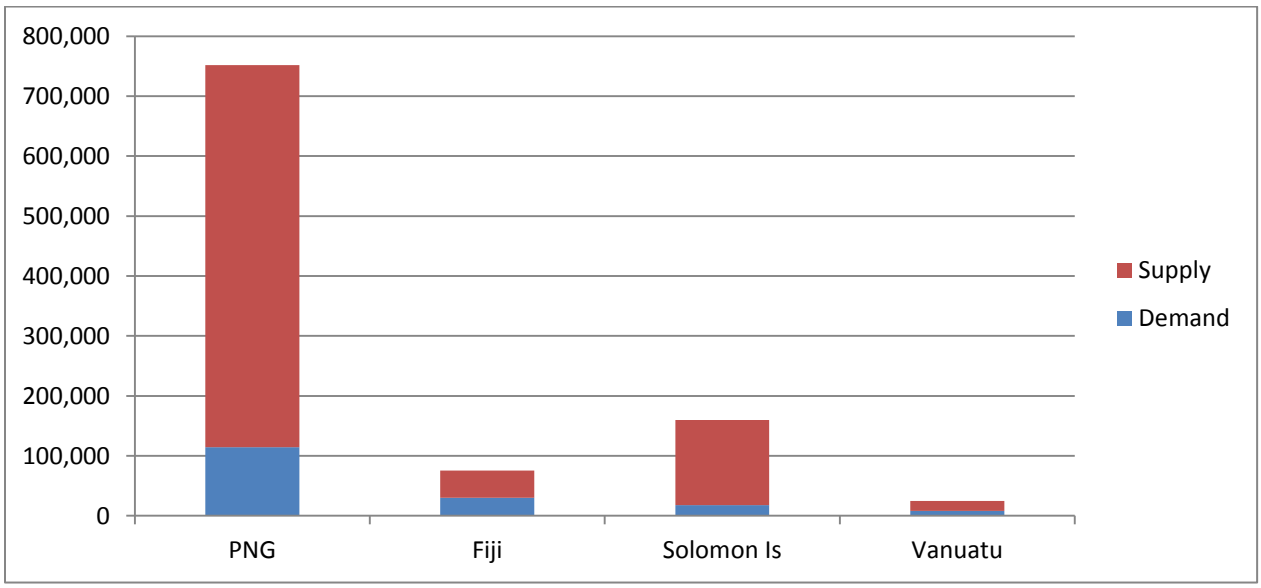
Table 2: Fisheries production in MSG countries in 2007 (tonnes)

	Coastal commercial	Coastal subsistence	Offshore locally based	Offshore foreign-based	Freshwater	Total
Papua New Guinea	5,700	30,000	256,397	327,471	17,500	637,068
Fiji	9,500	17,400	13,744	492	4,146	45,282
Solomon Islands	3,250	15,000	23,619	98,023	2,000	141,892
Vanuatu	538	2,830	0	12,858	80	16,306

Source: Gillett (2009).

Fish production in 2007 when compared with the estimated demand for 2010 in figure 1 shows that the supply of fish is higher in the MSG countries than the apparent demand. Thus, using such analysis, one can argue that in principle, there is surplus fish in all MSG countries which provides the basis for engaging in trade. In practical terms however, the coastal fisheries remain the main target for domestic consumption given the proximity of the fishing grounds to meet household subsistence needs while tunas are primarily targeted at the export markets. However, in localized areas where access to coastal fisheries is not easy, pelagic fish such as tunas provide the substitute.

Figure 1: Comparative analysis of supply and demand for fish in MSG Countries



Source: Created by Authors. (2012).

The study acknowledges the membership of Front de Liberation National de Kanak Socialist (FLNKS) membership to the MSG. However, for the purpose of this study, fisheries of New Caledonia has not been included because the implications of New Caledonia as a French Territory with interest in tuna fisheries are not clear and the industry dynamic cannot be predicted at this stage in relation to MSG countries. The scope for trade and co-operation however, cannot be discounted.

Members of the study team:

*Professor Biman Prasad – Project Leader and Executive Editor

**Dr Anand Chand – Executive Summary, Chapters 4, 6

**Ms Suwastika Naidu – Chapters 1, 5

***Dr Vina Ram-Bidesi – Chapter 2, 3

*Professor of Economics and Chair of Oceania Development Network, School of Economics, USP

**Senior Lecturer, School of Management and Public Administration, USP

** Teaching Assistant, School of Management and Public Administration, USP

*** Senior Lecturer, School of Marine Studies, USP

Chapter 1 (TOR 1)

Literature Review of the Status of Commercial Fisheries in Each MSG Countries

1.0 Introduction

The primary aim of this chapter is to discuss and analyse the existing literature on the commercial fisheries in the MSG countries (PNG, Solomon Islands, Vanuatu and Fiji). This chapter is divided into nine sections. The first section discusses the contribution of the tuna industry to the national economies of the MSG countries. Second section highlights the history of development of the commercial fisheries in the MSG countries. Third section focuses on the history of commercial fisheries development particularly the tuna fisheries in the MSG countries. Fourth section emphasises on the trade of commercial fisheries in the MSG countries. Fifth section underlines the stock status of the commercial fisheries (tuna fisheries) in the MSG countries. Sixth section outlines the fleets fishing for tuna in the MSG countries EEZ. Seventh section analyses the trade agreements and legislations affecting the commercial fisheries (tuna industry) in the MSG countries. The eighth section emphasises on the sustainability of commercial fisheries in the MSG countries. Ninth section examines the recent developments and future prospects of the tuna industry in the MSG countries. Tenth section underlines the strengths, weaknesses, opportunities and threats of the tuna industry of the MSG countries. The eleventh section discusses the investments in the commercial fisheries particularly in the tuna industry of the MSG countries. The final section identifies the gaps in the existing literature and how this study will contribute towards filling these gaps.

1.1 Contribution of the Tuna Industry to the MSG Countries

The tuna industry makes numerous contributions to the national economies of the MSG countries and these contributions have been well emphasised and discussed in the existing literature (see for example, FFA, 2011). Some of these contributions include earning foreign exchange, employment, generating revenue and production of tuna for local consumption and sports tourism (Diake, 2006; Honiwala, 2011). This section will discuss the studies that have examined the contributions of the tuna industry to the national economies of the MSG countries.

Barclays and Yoshikazu (2000) emphasised that the figures of June 1999 shows that STL had a total of 2,400 permanent employees and 700 temporary employees. The Government of Vanuatu and EU (2002) emphasised that Vanuatu is located at the centre of the vast fisheries resources, especially tuna; however, it is surprising that the exploitation of the tuna resources is very minimal in this island. The tuna industry also contributes very little to the overall economy of Vanuatu. Offshore fishing is largely licensed to the foreign fishing vessels (see section 1.5).

Barclays (2005) study titled '*Tuna Dreams Revisited: Economic Contributions to a Tuna Enterprise in the Solomon Islands*' highlighted that Solomon Taiyo's largest contribution to the Solomon Islands economy over the years have been via providing employment, tax revenues, easing the countries balance of payments (BOP) issues, and contribution to the royalties of the reef owning communities for bait fishing. Kumuru and Koren (2006) underlined that the tuna industry is the largest in PNG and there is a good balance between the domestic industry and foreign Distant Water Fishing Nations (DWFN) access arrangements. The FFA (2006) conducted a study on the gender issues in the PICs and highlighted that tuna industry of Vanuatu provided direct employment opportunities for the ni-Vanuatu and contributes to the government earnings (port fees).

Diake (2006) indicated that the Solomon Islands tuna resource is an essential source of foreign exchange earnings, financial fringe benefits and employment to the Solomon Islanders (on vessels and locally based tuna processing facilities). The Department of Fisheries Solomon Islands (2007; 2008) highlighted that the SIG is focusing on local participation in the tuna industry and have imported pump boats in order to support the domestication of the fishing industry. Sullivan and Ram-Bidesi (2008) conducted a study titled '*Gender Issues in Tuna Fisheries: Case Studies in Fiji, PNG and Kiribati*' and emphasised that 7,000 women are employed in the PNG tuna industry. According to the Department of Fisheries Solomon Islands (2007; 2009), artisanal fleet, domestic industrial fleet and the distant water industrial fleet have equally contributed to the national food security, employment and foreign exchange. The FFA (2010) stated that on average nearly 10,000 persons are engaged in the fish processing activities in PNG.

Building onto these studies, Honiwala (2011) discussed that the tuna industry in the Solomon Islands is a very important industry and contributed significantly towards the wellbeing of the people. The FFA (2011) highlighted that the tuna industry contributed to $2.0 million dollars to the GDP of Fiji in 1997 and this value increased to US$ 5.0 million in 2009. The FFA (2011) underlined that the tuna industry has also contributed to employment in the vessels and on shore processing facilities in the MSG countries (see table A2 & A3 and figure A2 & A3). Bell et al. (2011) stated that surface fishery (including tuna) in PNG contributed on average 1.5% to the GDP from 1999–2008.

Table 1.1: Summary of Studies on the Contribution of Tuna Industry to the MSG Countries

No	Study	Description
1	Grynberg et al. (1995)	• Solomon Taiyo Limited (STL) provided employment for 1,500 Solomon Islanders and National Fisheries Development (NFD) provided employment to 500 Solomon Islanders in 1995.
2	Hughes and Thaanum (1995)	• In 1995, STL provided 9% of all formal jobs in the Solomon Islands.
3	Pollard (1995)	• Fiji's major private fishing company has provided employment to 15 people in 1988 and this increased to 640 in 1994.
4	Gillett (1997)	• In the mid-1990s, the tuna industry provided employment to 180 Fijians in the domestic pole/line vessels, PAFCO provided jobs for 700 Fijians, domestic longline vessels provided employment to 180 Fijians, sashimi handling and processing provided jobs for 100 Fijians and artisanal fishing vessels provided employment for 50 people.
5	Barclays and Yoshikazu (2000)	• Figures of June 1999 show that STL had a total of 2,400 permanent employees and 700 temporary employees.
6	Government of Vanuatu and EU (2002)	• Exploitation of the tuna resources is very minimal in Vanuatu
7	Barclays (2005)	• Solomon Taiyo's largest contribution to the Solomon Islands economy over the years have been via providing employment, tax revenues, easing the countries balance of payments (BOP) issues and contributing to the royalties of the reef owning communities for bait fishing.
8	Kumuru and Koren (2006)	• Tuna industry is the largest in PNG and there is a good balance between the domestic industry and foreign Distant Water Fishing

		Nations (DWFN) access arrangements.
9	FFA (2006)	• Tuna industry of Vanuatu provided direct employment opportunities for the ni-Vanuatu and contributes to the government earnings (port fees).
10	Diake (2006)	• Solomon Islands tuna resource is an essential source of foreign exchange earnings, financial fringe benefits and employment to the Solomon Islanders
11	Department of Fisheries Solomon Islands (2007; 2008)	• SIG is focusing on local participation in the tuna industry and have imported pump boats in order to support the domestication of the fishing industry.
12	Sullivan and Ram-Bidesi (2008)	• Approximately 7,000 women are employed in the PNG tuna industry
13	Department of Fisheries Solomon Islands (2007; 2009)	• Artisanal fleet, domestic industrial fleet and the distant water industrial fleet have equally contributed to the national food security, employment and foreign exchange.
14	FFA (2010)	• On average, nearly 10,000 persons are engaged in the fish processing activities in PNG.
15	Honiwala (2011)	• Tuna industry in the Solomon Islands is a very important industry and contributed significantly towards the wellbeing of the people.
16	FFA (2011)	• Tuna industry contributed to us $2.0 million dollars to the GDP of Fiji in 1997 and this value increased to US$ 5.0 million in 2009.
17	Bell et al. (2011)	• Surface fishery (including tuna) in PNG contributed 1.5% to the Gross Domestic Product (GDP) from 1999–2008.

Source: Created by Authors (2012)

1.2 History Development of Commercial Fisheries in MSG Countries

The history of commercial fisheries, particularly the tuna industry can be traced back to Japans economic development in the Pacific Island Countries (PICs) Economic Exclusive Zone (EEZ). Gillett (2007) stressed that a major development in the tuna industry occurred in the 1970s when the government owned tuna cannery was established in Fiji known as the Ika Corporation. Drawing on from the study of Campling et al. (2007), Gillett further highlighted that the establishment of canneries in Fiji, PNG and Solomon Islands was another important development in the fishing industry as the PICs starting venturing into value adding of the high

export value tuna commodity. According to Campling and his colleagues there are five major players in the tuna industry of Fiji, PNG and Solomon Islands. These players are as follows:

1. Pacific Fishing Company Ltd (PAFCO) established in early 1970s in Fiji
2. RD Tuna Canners was established in 1996 in Madang, PNG.
3. South Seas Tuna Corporation was established in 2004 in Wewak PNG.
4. Frabelle (PNG) Pty Ltd was established in 2006 in Lae, PNG.
5. Sanko Bussan was established in 1999 at Port Moresby PNG.

Table 1.2: Summary of the Studies on the History of Tuna Industry in the MSG Countries

No	Study	Year of Event	Event
1	Alexandra (1902)	1899	• USA fish vessel, *Albatross* departed San Francisco on an 18 months fishery voyage to investigate fisheries in the PICs.
2	Skipjack Programme (1984); Peatie (1988)	Mid 1920s	• Real development of the tuna industry the Fiji, PNG, Vanuatu, Solomon Islands, Cook Islands, Tonga, Tuvalu, Kiribati, Marshall Islands, French Polynesia, Federated States of Micronesia and Guam was started by the Japanese.
3	Smith (1947); Rothschild and Uchida (1968); Wilson (1971); Ikebe and Matsumoto (1937)	Mid 1930s	• Japanese tuna industry was well developed by the mid-1930s with 45 pole and line vessels fishing in Palau's EEZ, followed by 52 pole and line fishing vessels in FSM and 19 pole and line fishing vessels in the Northern Marianas.
4	Peatie (1988); Matsuda (1987); Felando (1987)	After 1945	• USA gained control over the Japanese tuna fishing areas in the PICs EEZ
5	Habib (1984); Doulman (1987); Rothschild and Uchida (1968); Matsuda (1987); Amos (2007)	1950s to 1960s	• Tuna longline base was established in Santo Island (Vanuatu) and Levuka (Fiji). • Japanese fishing vessels again started fishing in the EEZ of Palau, FSM and Northern Marianas islands. • Establishment of South Pacific Fishing Company. • Japanese long liners were replaced by Koreans from fishing in Vanuatu's EEZ.

6	Doulman (1987); Gillett (2007); Campling (2007)	1970	• Japanese companies strongly established pole and line tuna fishing in PNG. • Ika Corporation established in Fiji. • Pacific Fishing Company Ltd (PAFCO) established in Fiji
7	Doulman (1987)	1971	• Japanese companies strongly established pole and line tuna fishing in Solomon Islands.
	Habib (1984)	1975	• Korean long liners were replaced by Taiwanese from fishing in Vanuatu's EEZ.
8	Doulman (1987)	1976	• Japanese companies strongly established pole and line tuna fishing in Fiji.
	Habib (1984)	1986	• South Pacific Fishing Company Limited was relocated to Samoa.
9	Campling (2007); Habib (1984)	1990s	• Latitude 8 Limited was established in Port Moresby, PNG. • Neptune Fishery Company was established in Lae and Rabaul in PNG. • Three fishing enterprises were established in Vanuatu-International Tuna Services Ltd, Vanuatu Fishing Investments Limited (VFIL) and TOHO Vanuatu Ltd.
10	Campling (2007)	1996	• RD Fishing Ltd was established in PNG • RD Tuna Canners was established in Madang, PNG
11	Campling (2007)	1999	• Sanko Bussan was established at Port Moresby PNG.
12	Campling (2007)		• Fair Well Fishery Ltd established in PNG.
13	Campling (2007)	2004	• South Seas Tuna Corporation was established in Wewak PNG.
14	Campling (2007)	2006	• Frabelle (PNG) Pty Ltd was established in Lae PNG.

Source: Created by Authors (2012)

1.3 Trade of Commercial Fisheries in the MSG Countries

The tuna in the PICs has cultural, recreational and economic value. Many studies have analysed the importance of the tuna commodity to the PICs (see Gillett, 2001). The amount of tuna caught in the PICs EEZ is ten times higher than the accumulative catch of all other types of fishes. As far as the value of tuna is concerned, the tuna catch is worth ten times higher than accumulative value of all other fishes combined (Gillett, 2004). The following sections will review the literature on the trade status of commercial fisheries, particularly the tuna industry in the MSG countries.

Gillett (2001) stressed that the tuna industry in PNG made many contributions to the economy of PNG and these include export earnings, access fees earnings, tuna vessel fines, direct employment, indirect and spinoff employment, other employment considerations, expenditures of locally based vessels, government revenue from direct taxation, small scale fishing, nutritional value, cultural and recreational value. According to Tamate (2002) the major exporters of sashimi/chilled tuna are PNG, Fiji and Solomon Islands together with Samoa Tonga, FSM and Palau. The author also highlighted that two major target markets for the sashimi/chilled tuna are US fresh tuna market and Japanese sashimi tuna market

Hand *et al.* (2005) accentuated that 60% of PAFCO's revenue in 2004 was from loining, 38% from canning and 2% was from the sale of fish in the domestic market. Diake (2005) stated that the total volume of tuna and tuna products exported from Solomon Islands in 2004 amounted to 27,496 mts. Naviti (2005) underscored that it is assumed that the final destination for the fish caught by Vanuatu licensed foreign fishing vessels are transhipped to distant markets from Pacific Island Ports or to Pacific island canneries.

Amoe (2005; 2006) highlighted that in 2005, Fiji exported 66% of the sashimi grade tuna to Japan and America. The remaining 34% was exported to China and other countries. Kumoru and Koren (2006) stressed that the majority of the fresh chilled tuna caught (Yellowfin and Bigeye) in PNG is exported by airfreight to Japanese and the Australian markets.

According to Diake (2006), the tuna caught by the domestic fleets in Solomon Islands are processed locally into canned tuna, smoked tuna, tuna loins and fishmeal for the export market. Kumoru and Koren (2007) accentuated that total value of tuna fishery related exports has increased from 2002-2006 and peaked at US$66 million in 2005.

Amos (2007) underlined that the commercially viable species of tuna present in the Vanuatu's EEZ include skipjack (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), mackerel tuna (*Euthynnusaffinis*), dog-tooth tuna (*Gymnosarda unicolor*), and albacore (*Thunnus alulunga*), bigeye (*T. obesus*) and frigate tuna (*Auxis thazard*) have also been recorded. The Fiji Islands Trade and Investment Bureau (2009) showed that Fiji imported FJ$68.3 million of fish (tuna and snapper) and exported FJ$81.4 million of tuna and snapper in 2004. Furthermore, FAO (2009) conducted a research on the national fisheries sector of the Fiji islands. This study indicated that the fisheries contribution to the total export increased from 7.1% in 2004 to 12.2% in 2007. Out of the total fisheries export in the mid-2000s, 60% was tuna, 18% was aquarium items, 10% beach-de-mer and 2% was trochus.

Table 1.3: Export of Tuna and Tuna Commodities from PNG

	Chilled Tuna		**Frozen Tuna**		**Canned Tuna**		**Tuna Loins**		**Fish Meal**	
Year	**MT**	**Value**	**MT**	**Value**	**MT**	**Value**	**MT**	**Value**	**MT**	**Value**
2000	1,196	5.1	33,004	13.5	10,298	18.1	-	-	1,690	0.4
2001	1857	8.2	35106	22.4	9,858	17.6	-	-	1,438	0.5
2002	2106	8.4	33960	19.5	12214	23.4	-	-	1670	0.6
2003	2092	9.3	31294	16.5	13753	28	-	-	1791	0.7
2004	2320	10.4	26720	17.9	16,746	38.9	1, 749	1	3,174	1.5
2005	989	4.0	38282	32.9	15,511	41.0	14,675	8.3	3,944	1.5
2006	1667	7.5	33159	33.1	16.380	42.3	11,896	10.3	6,142	3.0
2007	1395	6.1	40364	54.8	14,654	40.9	11,525	12.4	5,484	2.8

2008	1302	6.2	47444	78.5	12,545	50.0	10,031	10.3	4,752	2.6
2009	0.6	2.7	138223	49.1	15,742	49.8	11,249	13.6	5,552	3.1
2010	280	1.39	24820	33.13	13660	41.7	-	-	-	-

Source: Kumoru and Koren (2006; 2007), Kumoru (2005; 2010), Usu (2011)

Another important study on the tuna industry in the PICs was conducted by Gillett (2009). The author concluded that for Fiji, the contribution of the total fisheries export (mainly tuna) to the accumulative value of total exports increased from 6.1% in 1999 to 12.2% in 2007. Drawing on from the study conducted by Kumoru (2008), Gillett (2009) concluded that the exports of tuna and tuna related products from PNG increased from US$54.5 million in 2003 to US$86.7 million in 2007. Gillett (2009) highlighted that the tuna catch is very low in Vanuatu. It was 6,424 tonnes in 2003 and increased to 9,891 tonnes in 2007. Kumoru (2009) indicated that the total value of tuna related commodities from PNG have increased over the last five years from 2004-2008.

Amoe (2009) stressed that Fiji's export of sashimi grade tuna to the Japanese and the American markets totalled 51% in 2008. Kumoru (2010) highlighted that the export of chilled tuna from the PNG to the international markets declined from US$10.4 million in 2004 to US$ 2.7 million in 2009 and the export of frozen tuna increased from US$17.9 million in 2004 to US$ 49.1 million in 2009. Drawing onto the data collected by Kumoru (2010), Usu (2011) highlighted that the value and the quantity of the exports of tuna from PNG has increased in the last six years. The highest export of tuna was in 2008. According to Amoe (2010; 2011), the export of tuna from Fiji to the Japanese and the American markets was 87%.

Hamilton et al. (2011) highlighted that the three big tuna traders- Fong Cherng Fishery Company Ltd (FCF), Trimarine and Itochu have gained a dominant position in the tuna industry of the PICs hence their position is unlikely to be challenged in the long run. According to Miyake et al. (2010) two types of firms coexist in the Pacific Island tuna canning industry. First is the processing firm that is vertically integrated and second is the processing firms which only focus on processing such as PAFCO (Fiji), Soltai (Solomon Islands) and South Seas Tuna Corporation (Papua New Guinea).

Table 1.4: Summary of Studies on the Trade of Tuna from the MSG Countries

No	Study	Description
1	Wright (1982)	• The marine produce valued at PGK 30-40 million was exported from PNG.
2	Ministry of Fisheries (1998)	• In Fiji, the export of canned tuna increased from $FJ 25.80 million in 1996 to $FJ 31.60 million in 1997.
3	Gillett (2001)	• Tuna industry exports amounted to $39.5million in 1998 and $29.3 million in 1999.
4	Tamate (2002)	• Major exporters of sashimi/chilled tuna are PNG, Fiji and Solomon Islands together with Samoa Tonga, FSM and Palau.
5	Pacific Islands Forum Secretariat (2004)	• Fiji's export of fresh and canned tuna was $FJ90 million in 2003.
6	Hand *et al*. (2005)	• 60% of PAFCOs revenue in 2004 was from loining, 38% from canning and 2% was from the sale of fish in the domestic market.
7	Diake (2005)	• Total volume of tuna and tuna products exported from Solomon Islands in 2004 amounted to 27,496 mts.
8	Naviti (2005)	• Final destination for the fish caught by Vanuatu licensed foreign fishing vessels are transhipped to distant markets from Pacific Island Ports or to pacific island canneries.
9	Amoe (2005; 2006)	• In 2005, Fiji exported 66% of the sashimi grade tuna to Japan and America.
10	Kumoru and Koren (2006)	• Accentuated that total value of tuna fishery related exports has increased from 2002-2006 and peaked at US$66 million in 2005.
11	Diake (2006)	• Tuna caught by the domestic fleets in Solomon Islands are processed locally into canned tuna, smoked tuna, tuna loins and fishmeal for the export market.
12	Kumoru and Koren (2007)	• Total value of tuna fishery related exports has increased from 2002-2006 and peaked at US$66 million in 2005
13	Amos (2007)	• Commercially viable species of tuna present in the Vanuatu's EEZ include skipjack (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), mackerel tuna (*Euthynnusaffinis*), dog-tooth tuna (*Gymnosarda unicolor*), and albacore (*Thunnus alulunga*), bigeye (*T. obesus*) and frigate tuna (*Auxis thazard*) have also been recorded
14	Fiji Islands Trade and	• Fiji imported FJ$68.3 million of fish (tuna and snapper) and

	Investment Bureau (2009)	exported FJ$81.4 million of tuna and snapper in 2004.
15	FAO (2009)	• Fisheries contribution to the total export increased from 7.1% in 2004 to 12.2% in 2007.
16	Gillett (2009)	• The data for Fiji shows that the contribution of the total fisheries export (mainly tuna) to the accumulative value of total exports increased from 6.1% in 1999 to 12.2% in 2007.
17	Kumoru (2009)	• Total value of tuna related commodities have increased over the last five years from 2004-2008.
18	Amoe (2009)	• Fiji's export of sashimi grade tuna to the Japanese and the American markets totalled 51% in 2008.
19	Kumoru (2010)	• The export of chilled tuna from PNG to the international markets declined from US$10.4 million in 2004 to US$ 2.7 million in 2009 and the export of frozen tuna increased from US$17.9 million in 2004 to US$ 49.1 million in 2009.
20	Usu (2011)	• The data for PNG shows that the value and the quantity of the exports of tuna have increased in the last six years.
21	Amoe (2010; 2011)	• Export of tuna from Fiji to the Japanese and the American markets totalled 87%.
22	Hamilton et al. (2011)	• The three big tuna traders- Fong Cherng Fishery Company Ltd (FCF), Trimarine and Itochu have gained a dominant position in the tuna industry of the PICs hence their position is unlikely to be challenged in the long run.
23	Miyake et al. (2010)	• Two types of firms coexist in the Pacific Island tuna canning industry. First is the processing firm that is vertically integrated and second is the processing firm which only focuses on processing such as PAFCO (Fiji), Soltai (Solomon Islands) and South Seas Tuna Corporation (Papua New Guinea).

Source: Created by Authors (2012).

1.4 Stock Status of Commercial Fisheries in Fiji, PNG, Vanuatu and Solomon Islands

Kumuru and Koren (2006) highlighted that PNG'S EEZ is one of the largest and most productive tuna grounds in the Western and Central Pacific Ocean. Diake (2006) accentuated that Solomon Islands annual estimated total tuna catch during the 2005 licensing period by both the domestic and the foreign fleet was 94,924.3 mts.

Amos (2007) highlighted that tuna in Vanuatu's EEZ generally migrate to other regions throughout the year. According to Amoe (2008), the domestic longline fleet of the Fiji islands caught 12,314 mt of tuna in 2003, 22,287 mt in 2004, 15495 mt in 2005, 20,707 mt in 2006 and 12,417 mt in 2007. Kumoru (2008) emphasised that the catch of tuna by the PNG associated vessels in 2008 was 223,279 mt of which 3,225mt was longline catch and 220,054 mt was purse-seine. The Department of Fisheries Solomon Islands (2009) stated that foreign fleet recorded about 87,434 mts of tuna out of which 79,312 mt was Skipjack and 16,288 mt was Yellowfin and 1,298 mt was bigeye.

According to Kumoru (2009), the catch of tuna from PNG by longline dropped from 2,858 mt in 2007 to 1,209 mt in 2008. The Department of Fisheries Solomon Islands (2009) underscored that the tuna catch by the purse-seiners and pole-n-line domestic industrial fleet was 20,075 tonnes in 2007. According to Gillett (2010), Fiji contributes 5% and PNG contributes 37% to the total commercial fisheries production for the PICs. Amoe (2010; 2011) highlighted that during the early 1990s, the level of tuna fishing activity was low in the Fijis EEZ. The Department of Fisheries Solomon Islands (2010) stated that the accumulative value of the catch of the tuna in the Solomon Islands increased from 96,108 mt in 2008 to 105,186 mt in 2009.

According to Honiwala (2011), the total annual catch estimates of tuna from the EEZ of Solomon Islands is approximately 128,842 mt out of which Skipjack dominated the catch by 95,229 mt followed by Yellowfin tuna with 23,136mt, Albacore was 6,357mt and Bigeye was 2,140 mt. Taleo and Joy (2011) indicated that the annual total catch of tuna from all the fleets undertaking fishing in Vanuatu's EEZ declined from 7863.952 mt to 3997.783 mt.

Table 1.5: Summary of Studies on the Status of Commercial Fisheries in Fiji, PNG, Vanuatu and Solomon islands

No	Study	Description
1	Tuna and Billfish Assessment Programme (1992)	• Tuna is PNG's largest resource with the 1993 catch estimated at 300,000 mt per year.
2	Hampton (1993)	• Stressed that for the year 1981, the SPC fisheries database recorded 1,478 mt of tuna catch, in 1984 and in 1985 it recorded 2,219 mt of catch.
3	Kailola (1994)	• Noted that there is large variation in the data provided by the different agencies on the stock status of tuna.
4	Oceanic Fisheries Programme (1994)	• Since the year 198, the total tuna caught in the SPC statistical area (including PNG) has exceeded one million mt.
5	Gillett (2004)	• The catch of skipjack tuna was the highest from 1972 to 2002 followed by Yellowfin, Bigeye and Albacore. • The catch of tuna using the purseine gear was recorded highest for the period from 1983 to 2002 followed by pole and line, longline and others.
6	Kumuru and Koren (2006)	• The PNG'S EEZ is one of the largest and most productive tuna grounds in the Western and Central Pacific Ocean.
7	Diake (2006)	• Solomon Islands annual estimated total tuna catch during the 2005 licensing period by both the domestic and the foreign fleet was 94,924.3 mts.
8	Amos (2007)	• Tuna in Vanuatu's EEZ generally migrate to other regions throughout the year.
9	Amoe (2008)	• Domestic longline fleet of the Fiji islands caught 12,314 mt of tuna in 2003, 22,287 mt in 2004, 15,495 mt in 2005, 20,707 mt in 2006 and 12,417 mt in 2007.
10	Kumoru (2008)	• The catch of tuna by the PNG associated vessels in 2008 was 223,279 mt of which 3,225mt was longline catch and 220,054 mt was purse-seine.
11	Department of Fisheries Solomon Islands (2009)	• The foreign fleet recorded about 87,434 mts of tuna out of which 79,312 mt was Skipjack and 16,288 mt was Yellowfin and 1,298 mt was Bigeye.
12	Kumoru (2009)	• The catch of tuna by the longline dropped from 2,858 mt in 2007 to 1,209 in 2008.
13	Department of Fisheries	• The tuna catch by the purse-seiners and pole-n-line by the

	Solomon Islands (2009)	domestic industrial fleet was 20,075 tonnes in 2007.
14	Gillett (2010)	• Fiji contributes 5% and PNG contributes 37% to the total commercial fisheries production for the PICs.
15	Amoe (2010; 2011)	• During the early 1990s, Albacore accounted for about 50% of the total tuna caught in Fiji's EEZ; however, this increased to around 70%-80% from 1995 onwards. • As far as the Yellowfin tuna is concerned, the catch is usually around 15-25% of the total tuna caught in the regions with the highest value recorded in 2004.
16	The Department of Fisheries Solomon Islands (2010)	• Accumulative value of the catch of tuna in the Solomon Islands increased from 96,108 mt in 2008 to 105,186 mt in 2009. • Out of the total tuna caught in 2009, 79312 mt was Skipjack tuna followed by 24,383 mt was Yellowfin tuna and 1,490 mt was Bigeye tuna.
17	Honiwala (2011)	• The total annual catch estimates of tuna from the EEZ of Solomon Islands is approximately 128,842 mt out of which Skipjack dominated the catch by 95,229 mt followed by Yellowfin tuna with 23,136 mt, Albacore was 6,357 mt and Bigeye was 2,140 mt.
18	Taleo and Joy (2011)	• Annual total catch of tuna from all the fleets undertaking fishing in Vanuatu's EEZ declined from 7863.952 mt to 3997.783 mt.

Source: Created by Authors (2012).

1.5 Fleets Fishing in the MSG Countries EEZ

According to Taleo and Joy (2006; 2008; 2010), Vanuatu is a member of the Regional Fisheries Management Organisations (RFMOs) such as IATTC, ICCAT, IOTC and the WCPFC. Vanuatu has largely gained from being the member of the RMFOs because being a member allows Vanuatu's fleet to fish in the RFMO waters for tuna and highly migratory species. Komoru and Koren (2007) stressed that a total of 186 purse-seine vessels fished in PNG waters under the bilateral and multi-lateral access arrangements with US and FSM arrangements. Amoe (2008) stated that the tuna fishing industry of Fiji has attracted foreign fishing activity since the early 1950s and achieved local participation in the tuna industry starting from the mid-1970s (focusing mainly on the pole and lining). Kumoru (2008) highlighted that the number of fishing vessels fishing in the PNG waters were 222.

Taleo (2008; 2009) highlighted that Fiji's fleet has a high catch with good effort data coverage. Amoe (2009) underlined that the catch of tuna from the Fiji's domestic fleet was 21,793 mt in 2004 and this value increased to 14,328 mt in 2008. According to Kumoru (2009), the PNG tuna fishing industry is comprised of purse-seine and the longline sectors. The Department of Fisheries Solomon Islands (2009) stated that the industrial fleet consists of vessels owned by the locally owned companies such as Soltai and National Fisheries Development (NFD) Ltd.

Amoe (2010) emphasised that Fiji's local longline fleet consists of licensed longline vessels and other unlicensed Fiji-flagged vessels operating outside Fiji's EEZ. According to the Department of Fisheries Solomon Islands (2010), the foreign fleet licensed to fish in the Solomon Islands waters increased as compared to the local fleet.

Taleo and Joy (2010; 2011) stated that on average Vanuatu's fleet comprised of 19 purse seiners and 65 long liners fishing vessels (see table 1.6). Table 1.7 shows the number of foreign fishing vessels licensed to operate in Solomon Islands EEZ.

Table 1.6: Number of Foreign Fishing Vessels Licensed to Operate in Solomon Islands EEZ

No	Country	2004	2005	2006	2007	2008	2009
1	Belize				5	3	5
2	China	18	20	30	47	73	71
3	Fiji	3	3	18	12	1	16
4	Japan	41	62	81	75	71	68
5	Korea	44	47	65	75	68	38
6	New Zealand	4	4	4	4	4	3
7	Taiwan	48	61	66	69	71	82
8	Vanuatu	16	14	17	18	7	8
9	FSM Arrangements	-	-	24	26	27	30

10	US Treaty	19	11	13	12	-	39
11	Spain	-	-	-	-	5	4
12	Cook Islands	-	-	-	-	1	1
13	Kiribati	-	-	-	-	1	2
14	Tuvalu	-	-	-	-	1	-

Source: Department of Fisheries Solomon Islands (2009).

Table 1.7 shows the number of foreign fishing vessels licensed to operate in Vanuatu's EEZ.

Table 1.7: Number of Foreign Fishing Vessels Licensed to Operate in Vanuatu's EEZ

No	**Country**	**2004**	**2005**	**2006**	**2007**	**2008**
1	Belize	3	3	0	0	-
2	Cambodia	0	0	0	0	-
3	China	57	57	51	61	9
4	Equatorial Guinea	0	0		0	-
5	Fiji	17	28	19	17	17
6	Korea	10	11	1	0	-
7	Cook Islands	-		1	2	2
8	Senegal	-		2	0	-
9	New Zealand	0	0	0	0	-
10	Penama	0	0		0	-
11	Taiwan	23	16	33	24	24
12	US	0	0		0	-
13	Vanuatu	8	11	14	15	15
14	**Total**	**188**	**127**	**122**	**119**	

Source: Taleo (2009) and Naviti and Taleo (2007)

Table 1.8: Summary of Studies on the Trade of Tuna from the MSG Countries

No	Study	Description
1	Gillett and Lightfoot (2002)	• Figures for late 1999 shows that the Solomon Islands domestic tuna fleet consisted of 20 long liners, 30 pole-n-line vessels and 5 purse seiners.
2	Taleo and Joy (2006; 2008; 2010)	• Vanuatu is a member of the Regional Fisheries Management Organisations (RFMOs) such as IATTC, ICCAT, IOTC and the WCPFC
3	Komoru and Koren (2007)	• A total of 186 purse-seine vessels fished in PNG waters under the bilateral and multi-lateral access arrangements with US and FSM arrangements.
4	Amoe (2008)	• The tuna fishing industry of Fiji has attracted foreign fishing activity since the early 1950s and achieved local participation in the mid-1970s.
5	Kumoru (2008)	• The number of fishing vessels fishing in the PNG waters was 222. Out of this 200 were purse-seiners and 22 were longliners.
6	Taleo (2008; 2009)	• Fiji's fleet has a high catch with good effort data coverage whilst fishing in Vanuatu's EEZ.
7	Amoe (2009)	• The catch of tuna from the Fiji's domestic fleet was 21,793 mt in 2004 and this value increased to 14,328 mt in 2008.
8	Kumoru (2009)	• PNG tuna fishing industry is comprised of purse-seine and the longline sectors. • The longline vessels are domestic fishing vessels and the purse-seine is a mix of both the domestic and the foreign access vessels.
9	Department of Fisheries Solomon Islands (2009)	• In total, fleets from 12 foreign countries usually fish in the Solomon Islands waters.
10	Amoe (2010)	• Fiji's local longline fleet consists of licensed longline vessels and other unlicensed Fiji-flagged vessels operating outside Fiji's EEZ.
11	Department of Fisheries Solomon Islands (2010)	• The foreign fleet licensed to fish in the Solomon Islands waters increased as compared to the local fleet. In year 2009, the number of registered foreign vessels to fish in the Solomon Islands EEZ was 367 vessels (182 purse seine, 175 long line and 10 pole-n-line vessels).
12	Taleo and Joy (2010; 2011)	• On average Vanuatu's fleet comprised of 19 purse seiners and 65 long liners fishing vessels.

		• The only foreign fleet that has the highest number of catch is the Fiji fleet fishing in Vanuatu's EEZ. • Fishing fleets from Fiji and Taiwan fishing in Vanuatu's EEZ has increased from 2009 to 2012; however, the number of the Chinese fleet decreased from 71 vessels in 2009 to 65 vessels in 2010. • The Cook Islands have two vessels fishing in the Vanuatu's waters.

Source: Created by Authors (2012).

1.6 Environmental Agreements Affecting the Commercial Fisheries in the MSG Countries

According to Diake (2006), the current bilateral fisheries access agreements of Solomon Islands are with Japan, Korea, New Zealand and Taiwan whilst the bilateral fisheries access agreement have been endorsed for the formal signing and is expected to come into force in the late 2006. Amoe (2008) stated that the fisheries department continues to execute and implement control of the offshore fishing operations as mandated under the Fisheries Act of Fiji and the National Fisheries Management Plan. Komuru (2009) indicated that the PNG's local vessels are fishing in both the PNG waters and other waters outside PNG (licensed under the FSM arrangements).

According to the Department of Fisheries Solomon Islands (2010), the foreign fleets fishing in Solomon Islands EEZ are under the joint venture/development agreements, bilateral and multilateral arrangements.

1.6.1 Parties to the Nauru Agreement (PNA)

Dunn et al. (2005) underlined that the Nauru agreement is a sub-regional agreement that is concerned with the management fisheries of common interest. The PNA include countries (such as Federated States of Micronesia (FSM), Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu) whose EEZ account for the bulk of the tuna caught in the region. Dunn and his colleagues further emphasised that PNA have harmonized the terms of access for distant water fishing vessels, granted preferential access to the partners of the PNA and has provided a provisional limit of 164 DWFN purse seine vessels that could be licensed to fish in the PNA EEZ. Armram and Deiye (2008) highlighted that PNA are considering the

solutions for the overfishing and depletion of the stock of the Bigeye and Yellowfin tuna. Some of these solutions include banning the utilisation of the Fish Aggregating Devices (FAD).

1.6.2 FSM Arrangement

FFA (2008) emphasised that the FSM arrangement was established in 1995 and deals with purse seine fishery. This arrangement tries to promote greater participation by nationals and the development of the national fisheries. The FSM arrangement further established a licensing regime that gives preferential access to the fishing vessels that provides genuine and quantifiable economic benefits to the parties of the FSM arrangement. Thoulag (2010) highlighted that the FSM arrangement is an agreement between the states of the PNA regarding access to fishing resources by other parties. The signatories to the FSM arrangement are FMS, Marshall Islands, Kiribati, Nauru, Palau, PNG and Solomon Islands. This arrangement ensures that the access of domestic vessels on terms is not less favourable than those granted to the DWFN.

1.6.3 Palau Agreement

Lodge (1998) highlighted that the Palau Arrangement is a unique agreement because it provided the mechanism via the group of fisheries dependent states can sustainably manage highly migratory fish stocks. These member countries are Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, and Papua New Guinea. Reid et al. (2003) emphasised that Palau Agreement that came into force in November, 1995 seeks to conserve the tuna species in of the PICs through access fees and local development of the fisheries sector. According to Oxfam (2006), the Palau arrangement sets limits on the accumulative purse seine fishing efforts in the members of the Palau arrangement EEZ.

1.6.4 US Treaty

Dieye (2007) highlighted that the US Treaty revenue is fixed at US $21 million. Havice and Reed (2012) stated that US Treaty is an agreement between 16 PICs (Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu) and it enables the US purse seine vessels to fish in the EEZ of the sixteen PICs who are party to the agreement.

1.6.5 Melanesian Spearhead Group (MSG)

Jayaraman (2004) highlighted that there is joint effort by the Melanesian countries in bringing an end to the countries inter-island and ethnic rivalries. The Pacific Institute of Public Policy (2008) underlined that MSG is the strongest sub-regional political organisation. It constitutes of Fiji, Vanuatu, Solomon Islands and PNG. The author also emphasised that the MSG Free Trade Agreement (FTA) was signed in 1993.

Table 1.9: Summary of Studies on the Trade Agreements and Legislations Affecting the Tuna Industry in the MSG Countries

No	Study	Description
1	Arnason and Bjorndal (1991)	The US Treaty provides an access fee that is shared by the PICs and this arrangement is conducted sub-regional. Under the US Treaty the US vessels have the right to fish in the PICs EEZ.
2	FFA (1992)	The Palau Arrangement was developed by a sub-regional group of FFA members for the sustainable use of the tuna resource.
3	Aqorau and Bergin (1997)	Under the Palau arrangement, the PICs have developed different legal and political structures to sustainably manage the tuna resource.
4	Lodge (1998)	The Palau Arrangement is a unique agreement because it provided that mechanism through which the group of fisheries dependent states can sustainably manage highly migratory fish stocks.
5	Government of Vanuatu and EU (2002)	Vanuatu is in advanced stage of negotiating the membership of the WTO. At the regional level, Vanuatu together with the other members of the Pacific Islands Forum (PIF) is committed to fostering a free trade area that will start in 2002.
6	Reid et al. (2003)	The Palau Agreement that came into force in November, 1995 seeks to conserve the tuna species of the PICs through access fees and local development of the fisheries sector.
7	Jayaraman (2004)	There is joint effort by the Melanesian countries in bringing an end to the countries inter-island and ethnic rivalries.
8	Dunn et al. (2005)	The Nauru agreement is a sub-regional agreement that is concerned with the management of fisheries of common interest. The PNA include countries (such as Federated States of Micronesia (FSM), Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu) whose EEZ account for

		the significant bulk of the tuna caught in the region.
9	Prasad (2005)	Fiji has comparative advantage in the production of commodities like fish. There are a number of issues that Fiji faces in the development of the fisheries sector and these include lack of investment, increasing cost components and political instability. At present, the Fiji islands are in the phase of developing its own national environmental policy and are not able to analyse the requirements under the international agreements of Technical Barriers to Trade (TBT) and the agreement on the Sanitary and Phytosanitary Measures (SPS).
10	Oxfam (2006)	The Palau arrangement sets limits on the accumulative purse seine fishing efforts in the members of the Palau arrangement EEZ.
11	Diake (2006)	The current bilateral fisheries access agreements of Solomon Islands are with Japan, Korea, New Zealand and Taiwan whilst the bilateral fisheries access agreement have been endorsed for the formal signing and is expected to come into force in the late 2006.
12	Dieye (2007)	The US Treaty revenue is fixed at US $21 million.
13	Amos (2007)	In 2000 the Department of Fisheries developed the National Tuna Management Plan. This plan underlined special procedures for sustainably developing the tuna industry. The tuna management plan was based on the following objectives: 1. The tuna fishing industry should ensure that the catch of tuna is compatible with the stock of tuna that is available in the Vanuatu's EEZ. 2. The tuna industry should contribute to the food security of the ni-Vanuatu. 3. The tuna industry should meet the international requirements for sustainable tuna management
14	Pacific Institute of Public Policy (2008)	The MSG is the strongest sub-regional political organisation. It constitutes of Fiji, Vanuatu, Solomon Islands and PNG.
15	Amoe (2008)	The fisheries department continues to execute and implement control of the offshore fishing operations as mandated under the Fisheries Act of Fiji and the National Fisheries Management Plan.
16	FFA (2008)	The FSM arrangement was established in 1995 and deals with purse seine fishery.
17	Armram and Deiye (2008)	The PNA are considering the solutions for the overfishing and depletion of the stock of the Bigeye and Yellowfin tuna. Some of these solutions include banning the utilisation of the Fish Aggregating Devices (FAD).
18	Komuru (2009)	PNG's local vessels are fishing in both the PNG waters and other waters outside PNG (licensed under the FSM arrangements). The tuna fishing industry in PNG represents both the domestic industry and the foreign water fishing nations. In

		the domestic tuna fishing, the fishing license is granted based on the condition that the vessels will catch tuna for processing by the local facilities.
19	Thoulag (2010)	The FSM arrangement is an agreement between the states of the PNA regarding the access to fishing resources by other parties.
20	Department of Fisheries (2010)	The foreign fleets fishing in Solomon Islands EEZ are under the joint venture/development agreements, bilateral and multilateral arrangements. The bilateral arrangements are with Distant Waters Fishing Nations (DWFN) such as Japan, Korea, Taiwan and Spain and other arrangements include the US Treaty and the FSM arrangements. The foreign fishing vessels under each of these arrangements are directly administered by the Forum Fisheries Agency to fish in Solomon Islands EEZ. The following sub sections will provide an analysis of the existing studies on the Parties to the Nauru Agreement (PNA, FSM Arrangement, Palau Agreement, US Treaty and Melanesian Spearhead Group)
21	Havice and Reed (2012)	The US Treaty is an agreement between 16 PICs (Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu) and US to enable the US purse seine vessels to fish in the EEZ of the sixteen PICs who are party to the agreement.

Source: Created by Authors (2012).

1.7 Sustainability in Commercial Fisheries in the MSG Countries

Paris and Grafton (2006) examined the importance of the tuna industry to the PICs and whether the contemporary institutional mechanisms are sufficient to promote the sustainable development of the tuna industry. Lack (2007) highlighted that Bigeye is overfished (including, Fiji, PNG, Solomon Islands and Vanuatu) and the sustainable management of the Bigeye tuna stock has failed because of the following factors:

1. Insufficient data on the stocks of Bigeye.
2. Poor quality of scientific advise
3. High level of complexity in managing different species of tuna and fish.

According to Amos (2007), the management of tuna in Vanuatu's EEZ requires a regional approach. Barclays and Ian (2007) and Commonwealth of Australia (2007) stated there is a high potential for the Skipjack and Albacore tuna to expand in the PICs; however, sustainable

measures need to be undertaken in managing the stock of the Bigeye and Yellowfin tuna. Barclays (2010) underlined that industrial fishing of tuna has not harmed the population of the Skipjack and Albacore tuna; however, the population of the Yellowfin and the Bigeye has been deleterious.

Table 1.10: Summary of Studies on the Sustainability of Commercial Fisheries in the MSG Countries

No	Study	Description
1	Kuk (1991)	Some of the sustainable tuna management policies that the government of PNG needs to consider are as follows: 1. The government needs to reconsider the non-discriminatory licensing policy for the foreign vessels. 2. Tax incentives should be provided for stakeholders who are committed to developing a sustainable, competitive and integrated tuna industry. 3. The PNG government should take up shares in the domestic tuna industry. 4. Surveillance and regulations protecting the domestic tuna industry should be strictly enforced.
2	Tuna and Billfish Programme (1992)	Skipjack and Yellowfin tuna are widely overfished and exploited in the PICs.
3	South Pacific Commission (1993)	The harvest ratio for the Skipjack in PNG fishing zone is about 9-13% whilst for the Yellowfin tuna it is about 17-20%.
4	Paris and Grafton (2006)	There is potential of the tuna industry in the PICs to gain sustainability if there is cooperation amongst the countries on tuna management.
5	Lack (2007)	Bigeye is overfished (Fiji, PNG, Solomon Islands and Vanuatu) and the sustainable management of the Bigeye tuna stock has failed because of the following factors: 1. Insufficient data on the stocks of Bigeye. 2. Poor quality of scientific advice. 3. High level of complexity in managing different species of tuna and fish.
6	Amos (2007)	The management of tuna in Vanuatu's EEZ requires a regional approach. The regional approach includes the prohibition of certain techniques such as drift gillnetting will ensure the sustainable use of the tuna resources.
7	Barclays and Ian	There is a high potential for the Skipjack and Albacore tuna to expand in the PICs; however,

	(2007) ; Commonwealth of Australia (2007)	sustainable measures need to be undertaken in managing the stock of the Bigeye and Yellowfin tuna.
8	Barclays (2010)	Industrial fishing of tuna has not harmed the population of the Skipjack and Albacore tuna; however, the population of the Yellowfin and the Bigeye has been deleterious.

Source: Created by Authors (2012).

1.8 Recent Developments and Future Prospects in the Tuna Industry of the MSG Countries

Amoe (2006) stated that onshore development include the setup of the new fish processing factory bringing the total number of fish processing factories in Suva to five. Amos (2007) specified that the recent development in the tuna industry of Vanuatu include providing license to the locally based foreign fishing vessels and foreign fishing vessels to fish in the Vanuatu's EEZ. Amoe (2007) highlighted that the Fiji government in collaboration with the fishing industry is looking for avenues to strengthening the industry in terms of increasing the processing and value adding.

According to Kumoru and Koren (2007), under the ADB fisheries development project, two wharves to support the longline fishing development were built in Kavieng and Lombrum (Manus) in PNG. According to the Department of Fisheries Solomon Islands (2008), Soltai Fishing and Processing Limited (SFPL) will increase its production after the new cold storage and new power supply is installed. Kumoru (2008) highlighted that under the government's contemporary export driven economic growth strategy, onshore investment in tuna processing for export is largely encouraged.

According to a study conducted by the ADB (2009), two tuna semi-processing plants are under development in Vanuatu (Port Vila Bay and Mele Bay). Kumoru (2010) stated that three tuna processing plants are currently in progress in PNG. Table 1.11 shows details of the recent developments in the tuna industry in PNG as postulated in the study carried out by Kumoru (2010).

Table 1.11: Onshore Fisheries Development in PNG

Name	Facility Type	Capacity/input(mt/day)	Status	Date of Start Operation
SSTC	Tuna Loins	100	Operating	2004
RD	Tuna Canning	150	Operating	1997
Frabelle	Canning/loins	100	Operating	2006
IFC	Canning/loins	100	Under Progress	-
Thai Union/Century Canning/Frabelle	Canning/loins	350	Under Progress	-
RD Fairwell	Canning/loins	200	Under Progress	-
Chinese Investment	Loins	200	Under Progress	-

Source: Kumoru (2010)

Drawing onto the study conducted by Kumoru (2010), Usu (2011) underlined that there are two major canning facilities in Madang (RD Tuna Canner) and Lae (Frabelle PNG Ltd) and there is another loining plant in Wewak (South Sea Tuna Corporation).

According to a recent study by Taleo and Joy (2011), the newly build processing plant in the Port Vila Harbour is exporting fresh Sashimi tuna to Taiwan and New Zealand. Taleo and Joy (2011) highlighted that despite Vanuatu's 668,000 sq km of EEZ, Vanuatu's fisheries resources in the past has been largely unexploited.

Table 1.12: Summary of Studies on Recent Developments and Future Prospects of the Tuna Industry in the MSG Countries

No	Study	Description

1	Amoe (2006)	Onshore development includes the setup of the new fish processing factory bringing the total number of fish processing factories in Suva to five.
2	Amos (2007)	The recent development in the tuna industry of Vanuatu includes providing license to the locally based foreign fishing vessels.
3	Amoe (2007)	Fiji government in collaboration with the fishing industry is looking for avenues to strengthening the industry in terms of increasing the processing and value adding. Plans are underway to build a new multipurpose fisheries port in Suva Bay.
4	Kumoru and Koren (2007)	Under the ADB fisheries development project, two wharves to support the longline fishing development were built in Kavieng and Lombrum (Manus).
5	Department of Fisheries Solomon Islands (2008)	The Soltai Fishing and Processing Limited (SFPL) will increase its production after the new cold storage and new power supply is installed.
6	Kumoru (2008)	Under the government's contemporary export driven economic growth strategy, onshore investment in tuna processing for export is largely encouraged. Foreign and domestic access by purse seine vessels is increasingly linked to commitment in onshore investments especially in the form of tuna processing.
7	ADB (2009)	Two tuna semi-processing plants are under development in Vanuatu (Port Vila Bay and Mele Bay). The Mele Bay plant is to be operated by the China National Fisheries Corporation.
8	Kumoru (2010)	Three tuna processing plants are currently in progress in PNG.
9	Usu (2011)	There are two major canning facilities in Madang (RD Tuna Canner) and Lae (Frabelle PNG Ltd) and there is another loining plant in Wewak (South Sea Tuna Corporation).
10	Taleo and Joy (2011)	The newly build processing plant in the Port Vila Harbour is exporting fresh Sashimi tuna to Taiwan and New Zealand.
11	Taleo and Joy (2011)	Despite Vanuatu's 668,000 sq km of EEZ, Vanuatu's fisheries resources in the past have been largely unexploited. This study also stressed that the locally owned tuna fishing company made its first export of two tonnes of filleted tuna to Japan. The Chinese backed tuna canning factory is being constructed in Mele near Port Vila and this company will export tuna to the international markets.

Source: Created by Authors (2012).

1.9 Strengths, Weaknesses, Opportunities and Threats of the Tuna Industry of the MSG Countries

Gillett (2003) highlighted that there is lack of dialogue between the different stakeholders of the tuna industry. Some of the weaknesses and threats of the tuna industry in the PICs include instability of policies affecting the tuna industry development, high fuel costs, lack of credit availability, lack of air freight availability, fisheries taxation difficulties, high government administrative charges, administrative blockages, lack of entrepreneurial ability, lack of training and development of the fisheries staff, there is lack of government/industry dialogue, inefficient labour management, and lack of preparation of HACCP requirements.

Table 1.13: Summary of Studies on the Strengths, Weaknesses, Opportunities and Threats of the Tuna Industry

No	Study	Description
1	Grynberg et al. (1995b)	Poor law and order situation in the tuna industry of PNG creates uncertainty for investors
2	Polacheck and Cusack (1995)	The longline catch rate of tuna is very high in PNG.
3	Grynberg et al. (1995a)	The operators in the longline industry of Fiji indicated that there needs to be development in the infrastructure that needs to be supported by the government and the donor agencies.
4	ADB (1997)	Vanuatu is the high cost producer of tuna and tuna commodities. Wages rates in Vanuatu are very high and internal transportation and energy costs are highest amongst all the MSG countries.
5	Chapman (1998)	Some of the opportunities for the tuna industry of the Solomon Islands include encouraging foreign investment in value adding and processing and fostering the expansion of the fresh sashimi export.
6	Chapman (2000)	Some of the major weaknesses and threats of the tuna industry of Vanuatu include poor financing, licensing policy and high costs of electricity.
7	Gillett (2003)	There is lack of dialogue between the different stakeholders of the tuna industry.

Source: Created by Authors (2012).

1.10 Investment in the Tuna Industry of the MSG Countries

FAO (2009) stressed that Fiji receives a lot of technical assistance for the fisheries sector development from the bilateral aid donors such as Japan, Australia, New Zealand the United Kingdom, and the European Union. Similarly, FAO (2009) also highlighted that PNG receives aid from the Asian Development Bank, European Union, Australia, Japanese International Corporation Agency, German Technical Assistance, and Chinese Government. The Fiji Foreign Investment Advisory Service (2009) stated that the main attraction for the foreign firms to enter the tuna industry is that there is a highly economically viable tuna resource present in the Fiji Islands.

Table 1.14: Summary of Studies on the Investment in the Tuna Industry of the MSG Countries

No	Study	Description
1	Doulman (1986)	Many investment opportunities in the PICs (including PNG, Solomon Islands, Fiji and Vanuatu) exist; namely, fishing, transhipment and processing.
2	Grynberg et al. (1995a)	The government of the Solomon Islands should focus on implementation of measures for foreign investors, encouraging the local participation in the tuna industry and enhancing the gains from the inward foreign investment in the tuna industry.
3	Pollard (1995)	If Solomon Islands, PNG, Fiji and Vanuatu want to establish an economically viable tuna industry then the joint venture should be led primarily by the private sectors.
4	Phillipson (1998)	If the governments of the Solomon Islands, PNG, Fiji and Vanuatu want to enhance the investment in the tuna industry than the governments should focus on reviewing existing policies, eliminating impediments and adopting new policies.
5	Preston (1996)	Investment in the infrastructure of PNG that is related to the handling, packing and export of high quality fresh fish will create opportunities for the small scale fishermen to produce high quality of products.
6	Gillett (2003)	There is a lot of interest in attracting foreign direct investment (FDI) in the tuna industry of the Solomon Islands, Fiji, PNG and Vanuatu.

7	FAO (2009)	Fiji receives a lot of technical assistance for the fisheries sector development from the bilateral aid donors such as Japan, Australia, New Zealand, the United Kingdom, and the European Union.
8	FAO (2009)	PNG receives aid from the Asian Development Bank, European Union, Australia, Japanese International Corporation Agency, German Technical Assistance, and Chinese Government.
9	Philipson (2008)	Success of the tuna fisheries enterprises are directly linked to the input quality (corporate governance) and management.
10	Foreign Investment Advisory Service (2009)	The main attraction for the foreign firms to enter the tuna industry is that there is a high economically viable tuna resource present in the Fiji Islands.

Source: Created by Authors (2012).

1.11 Conclusion & Gaps in the Existing Literature

Numerous studies have been conducted on the MSG countries concerning the value adding, processing and trade of tuna and tuna related commodities from the PICs. There are only few studies that have analysed the opportunities and linkages for fishery downstream, value added processing, trade within and between MSG countries. This study contributes to the existing literature in the following ways:

First, this study identifies the comparative and competitive advantages of the tuna industry in the MSG countries. Very few studies have analysed the comparative and competitive advantages of the tuna industry in the MSG countries.

Second, this study further identifies the opportunities for MSG countries to consolidate and create opportunities for integration in relation to fishery downstream processing and trade options. Very few studies have analysed this in light of the MSG countries.

CHAPTER 2

Commercial Fisheries Development and Downstream Processing

2.0 Introduction

Given the geography of the MSG countries as high islands surrounded by extensive reef and lagoon areas and extended fishing zones, the respective governments saw fisheries resources as an important source of livelihood, income, food security and a means of earning foreign exchange. The focus on development of commercial fisheries seriously began following independence and with the extension of 200 nautical mile maritime jurisdiction under the Law of the Sea Convention. There are several studies that have documented and provide reviews of developments in the fisheries sector (ADB, 1997; Barclay & Cartwright, 2005; Gillett, 2003). The Fisheries sector in broadly divided into two categories: coastal and offshore, although in the case of Papua New Guinea, there is also a distinct inland freshwater fishery. Coastal fisheries have been targeted as a priority with regards to their contribution to local nutrition, food security and income generation while the primary focus of offshore fishery has been to generate foreign exchange. Reviews on coastal fisheries have been as part of assessments on rural development by the respective governments and donor agencies like EDF, JICA and OFCF. Focus on coastal fisheries has been twofold – identifying the potential for commercial development as well as addressing over-exploitation and resource depletion concerns with regards to biodiversity conservation and maintaining food security.

This section reviews the fisheries development policies and outlines the current status of the industries in each of the MSG member countries with respect to downstream processing. Developments in the offshore sector with respect to tuna fisheries (as the most dominant species) are discussed. Given that policies for coastal fisheries and offshore fisheries so far have been considered separately by the respective governments of MSG countries, it is only wise to look at issues of the two sectors separately in order to adequately address the concerns of both. The importance of coastal fisheries is increasing realised through the interdependence between coastal and offshore fisheries under the ecosystem based management that is being promoted by the international organizations like the FAO and regional agencies such as FFA, SPC and SPREP.

2.1 Coastal Fisheries

Coastal fisheries in MSG countries contribute significantly to local economies, particularly subsistence and commercial fishing carried out in lagoon, reef, deep-slope or shallow sea areas, with a growing contribution being made by mariculture in inshore waters. The importance of coastal fisheries for local livelihood and for providing a means of nutritional security is highlighted. A number of studies already indicate concerns about the declining status of several important coastal fisheries resources while the scope for expansion of production is promising in the area of aquaculture production. Some of the concerns or resources status and the scope for trade within MSG countries are discussed in the next section.

Importance of Coastal Fisheries

The value of regional commercial fisheries was estimated to be $165.7 million in 2007 across the Pacific, while the value of aquaculture was estimated to be $146.9 million (Gillett, 2009). For example, in Fiji, artisanal catch, consisting of 5,994 tonnes of reef fish (67%) and invertebrate (33 %) were recorded in 2005, with an estimated value of FJ$27 million (Fiji Fisheries Division, 2007), while in 2007, the coastal commercial catch of 9,500 tonnes was estimated at FJ$54 million. Recent estimates of coastal fisheries production in Papua New Guinea are not available but the coastal commercial catch in the mid-2002 was 5,700 tonnes worth 80 million PNG kina to the producer (Gillett 2009). The total subsistence catch was estimated to be 47,500 tonnes. In Vanuatu, the total commercial fisheries of 538 tonnes plus 152,000 pieces of coral were worth 226.4 million Vatus while the subsistence fishery was estimated to be 2,830 tonnes and valued at 597 million Vatus (Gillett, 2009). A wide range of estimates exist for coastal fisheries in the Solomon Islands. Information on three main components of coastal fisheries indicates the flowing in the case of the Solomon Islands: domestic consumption has been estimated to be around 1,500 tonnes with a value of SI$12 million; baitfish catches were estimated to be around 800 tonnes valued at SI$0.8 million and exports from coastal areas of 950 tonne were valued at SI$12.5 million (Gillett, 2009). Often the contribution of coastal fisheries to GDP and the value of coastal exports are under-estimated due to inadequate recording of data.

The aquarium trade has also been significant for a number of countries such as the Solomon Islands and Fiji. The aquarium trade in the Solomon Islands for example, accounts for 4% of the

international coral trade (Lal & Kinch, 2005). Almost 70 species of live corals are regularly exported from the Solomon Islands together with 19 species of dead coral. Aquaculture is dominated by pearl production in Fiji. The trend that is currently seen in all MSG countries in terms of trade is expansion in aquaculture and aquarium fishery while traditional fisheries such as beche-de-mer and trochus from the capture fishery are either on the decline due to over-exploitation or suffer from wide fluctuations in catch rates.

Status of Coastal Fisheries Resources

A typical small scale commercial reef fishery in the reef and lagoon areas could harvest between 200-300 species, although it is likely that only a few species will dominate the harvests. It appears that many reef species have low natural mortality rates and therefore may be vulnerable to over-exploitation (William et al, 1995). The low mortality rates imply that only a small amount of the biomass can be harvested annually to achieve sustainable harvests. Furthermore, several important species such as emperors, soldier fish and groupers reach maturity late (Dalzell & Schug, 2002). In addition, the typical multi-species coral reef fisheries (effort is generalized and all species are concurrently taken), the large, most vulnerable species face rapid local reductions in biomass and number of mature individuals. A review by (Newton, et al 2007) indicates that about 55% of all Pacific Island countries have overexploited their coral reef fisheries, although this statistics in uncertain due to limited data (Kinch, et al 2010). Several recent surveys in Melanesia have shown that sea cucumber stocks are widely overfished (Papua New Guinea NFA 2007, cited in Hamilton & Lokani 2011). Another more recent study by Ram-Bidesi et al (2011) highlights the problem of overfishing in the coastal areas and outlines some of the reasons that contribute to the problem. The study also points out that degradation of the coastal habitats are contributes to the decline in coastal productivity and hence the supply of fisheries resources.

Strengthening linkages to support trade and development in coastal fisheries commodities

The importance of coastal fisheries for self-sufficiency and food security for MSG countries and indeed for other Pacific Island Countries must be underscored. Thus where there are surpluses generated, expansion of niche markets could then be pursued. Therefore, while all MSG countries have extensive reef and lagoon areas, the potential expansion of trade is limited from

the capture fisheries as indicated by review of the coastal fisheries, although beche de mer, trochus, snapper and grouper fishery (finfish) continue to operate on a 'boom and bust cycle fashion. The scope for expansion of coral and aquarium fishery remains but require a careful management regime and standard of practice before any expansion in trade is undertaken. Aquaculture provides an important area for strengthening opportunities and linkage within MSG. Given the advances in science and technology and development in aquaculture and in light of the successful breeding and cultivation programmes in the region, the scope for expansion of coastal commercial fisheries lies in mariculture of commodities such as seaweeds, pearls, trochus, sea cucumbers and planting coral. A recent study commission by SPC (Hamberg Consulting, 2011) on mariculture highlights a number of issues associated with each of these commodities that MSG countries will need to consider if an expansion of industry and trade is to occur. The report states that given the experience of mariculture in the Pacific Islands, that it is worth noting that "the market should be regarded as the first and most fundamental opportunity or constraint,"(Hamberg Consulting, 2011:ix).

Kappaphycus seaweed (trade name: *euchema cottonii*) produces carrageenan that is used primarily in the food industry. Although easy to farm and requiring little capital input, the main drawback has been distance to markets and limited transport links which causes high freight costs. Both in the Solomon Islands and in Fiji, with declining beche de mer fishery, seaweeds provide an alternative income source. These can be grown in isolated locations, have short growth cycles, low investment, low production risks and low perishability. An important factor in seaweed production is the reduction is transport costs which could be possible if there are sufficient quantities of seaweeds that could be produced regionally and semi-processed. Therefore, MSG countries could consider the possibility of strengthening intra-regional trade through establishing a processing plant where the regional countries could benefit from a regional market in seaweeds.

Given that the regional trade in beche de mer fishery remains high when considered as a commodity by volume and value of trade and the scope of expansion through mariculture and re-stocking of reef areas. Areas where the MSG countries could collaborate are as follows; the sharing of resources such as skilled personnel for brood stock development and hatchery seed

production. Other areas where collaboration would be needed would be harmonization of policy on science and management of the fishery such as addressing bio-security issues, species to be cultivated and in accessing markets and maintaining levels of production that will not only be biologically sustainable but also maintain profitability.

Pearl farming can generate high export earning but oversupply and increasing competition from fresh water pearl means that market prices have declined recently. Therefore, while pearls provide an important alternative, a careful assessment of the market and a regional strategy would be useful to protect the interest of the industry and investments. MSG countries could provide a coordinated approach to addressing the development and management aspects of the pearl fishery. Commercial possibilities of other commodities such as sponge farming and marine shrimp could also be explored within the MSG members. It is therefore important that before considering of expanding trade within the region and outside of the region, there is an urgent need to ensure that the institutional governance issues are taken into consideration through a regional strategy. This could be explored in terms of harmonization of regulations and practices, access to markets and maintaining production standards.

2.2 Tuna Fisheries Development

The extended maritime jurisdiction, close proximity to productive tuna fishing grounds and preferential access to the export markets heightened the aspirations of many PICs to develop domestic industries to optimize the benefits from tuna resources within their EEZ. These are clearly stated in their National Economic Development Plans since the mid-1970s (Ram-Bidesi, 2003). Depending on the level of the resource base, economic status and available infrastructure, countries adopted either production based and /or access based strategies for domestic development. Larger island countries with established infrastructure mostly adopted production and processing while smaller island countries sought to derive benefits from access fees, and having requirements for use of local shore-based facilities, in-port transhipment, and use of local crew on vessels (Ram-Bidesi, 2003). In addition to having national policies on tuna, PICs also forged greater regional co-operation through the establishment of the Forum Fisheries Agency (FFA) in 1977 to provide policy advice on management of resources, industry development and

marketing. The FFA is the primary organization dealing with the region's tuna fisheries issues and has spearheaded several key efforts to promote domestic development of the tuna industry, both through the FFA itself, and through its sub-regional organization (Campling, Havice & Ram-Bidesi, 2007), the Parties to the Nauru Agreement (PNA). The regional policy framework under the FFA and its initiatives that support and influence national policies on tuna are not directly discussed in this report since there are several studies that elaborate on the latter aspects of regional cooperation (Sutherland & Tsamenyi, 1992; Herr, 1990; Aqorau, 1998). All MSG countries are members of the FFA and therefore have an obligation to take advice and implement any applicable regional agreement or resolution such as the development of national tuna management plans.

A brief review of tuna industry development in each of MSG country is provided which clearly indicate that countries continue to aspire to strengthen their domestic industries so as to increase benefits from tuna in the local economies. Except for Vanuatu, all other three members have cannery operations.

2.1.1 Papua New Guinea

The general objectives of all fisheries management in PNG are specified in the Fisheries Management Act 1998. These include:

- Optimum utilization and long term sustainable development to achieve economic growth, human resources development and employment creation and ecological balance
- Conserve resources for present and future generations
- Management measure to be based on best scientific evidence available
- Apply precautionary approach
- Protect ecosystem as a whole
- Preserve biodiversity
- Minimize pollution
- Implement PNG's obligations on international law and agreements

As stipulated in the Fisheries Management Act (1998), important commercial fisheries are managed through formal Management Plans. About 10 Fisheries Management Plans have been

formulated by the National Fisheries Authority. These include plans for Tuna, Bêche-de-mer, lobster, Gulf of Papua prawn, sharks, aquaculture, longline fishery, Fish Aggregation Devices, Barramundi, Torres Strait lobster (Gillett, 2011).

The National Fisheries Authority (NFA) through its governing council the National Fisheries Board is the main institution involved in the oversight on fisheries management. The Fisheries Industry Association also has influence on management and industry-related issues as they are represented in the National Fisheries Board. The NFA's management authority is conditioned to some extent by the *Organic Law* which has devolved many powers including fisheries to the provincial and local government (Gillett, 2011).

2.1.1.1 Development of the Tuna Processing Industry in PNG

In the early 1970s four foreign companies formed joint venture agreements with the Papua New Guinea government, then under Australian control, to operate a pole and line fishery.[1] The Papua New Guinea government agreed to facilitate land, access to PNG waters and exclusive access to bait. When Papua New Guinea became self-governing in 1972, it announced an eight-point plan that outlined the socio-economic development goals of Papua New Guinea that placed emphasis on equality, self-reliance and rural development.

Two companies established shore-based facilities, the New Britain Fishing Industry (a subsidiary of Gollin Kyokuyo), which operated a *katsubushi* plant, and Star-Kist (PNG) which had a cold storage facility in Rabaul. Both companies ceased their operations by 1982 because pole and line fishery was becoming more expensive compared to purse seine caught tuna. With depressed

[1] These were Australian, Japanese and US based companies, Gollin Kyokuyo (Niugini) Pty Ltd, Carpenter Kaigai (PNG) Pty Ltd, New Guinea Marine Products Pty Ltd and Star-kist (PNG) Pty Ltd.

world prices for skipjack tuna, the government focused attention on deriving revenue from access agreements.

By the early 1990s, the Papua New Guinea economy was depressed and began a structural adjustment programme upon advice from the World Bank and the International Monetary Fund. National policies were designed to rationalise and down size the public sector to encourage economic growth. Under the Fisheries Act (1994), the National Fisheries Authority was formed to promote economic growth through increased private sector involvement. The main focus for growth shifted to offshore tuna fisheries through promoting direct domestic investments and by encouraging existing foreign operators to move their operations ashore (FFA, 1995).

In 1995, the government banned the issue of distant water fishing licences to longline vessels (Habib, 1997). It was envisaged that this policy would allow the use of the Papua New Guinea flag by foreign longliners and/or establish relationships with offshore investors or vessel owners and Papua New Guinea interests to invest in Papua New Guinea through joint ventures or charters.

In 1995 the government licensed two large distant water purse seiners to fish in Papua New Guinea under its flag. A Filipino purse seine venture also began operations with medium sized vessels under access agreement and began to base its services in domestic ports (McCoy, 1998). In 1996, a number of taxes and tariffs such as import and export tax, and fuel tax were removed or reduced to provide incentives for foreign and domestic vessels.

A review of the policy to ban the issue of licences to foreign longline operators revealed that the domestication objective was not achieved because of low investment capital, lack of infrastructure and marketing linkages, and limited skilled labour (Habib, 1998). Other problems related to a lack of co-ordination between Provincial fisheries' departments and the National Fisheries Authority. Following the review, the government changed its policy from banning longline operations to a sliding scale licensing system based on time period and cost structure (Government of Papua New Guinea, 1998). This allowed greater flexibility to foreign operations to identify local investment opportunities and for locals to get to better know their foreign partners.

As part of the domestication strategy, onshore processing of catch is being encouraged through the tuna management plan. The PNG Tuna Management Plan specifically identifies domestication as a means of tuna industry development. Section 15.2 states: "notwithstanding the overall objective of the *National Tuna Fishery Management Plan*, which is aimed at sustainable exploitation of the tuna resource, the principal objective of this policy is to promote an increased rate of participation by Papua New Guineans in the tuna industry" (Government of Papua New Guinea, 1998). The guidelines and conditions that support this policy are given in part three (operational framework) of the Management Plan.

As a result, with a large EEZ and being centrally located in the rich tuna zone, PNG has become a tuna producer of global significance. The total annual catches in PNG waters have averaged around 475,000 mt per year between 2007 and 2009. This represents about 19% of the WCPO catch and about 11% of the global catch (Usu, 2011). Table 2.1 presents catch within PNG's waters (archipelagic and EEZ) from 2006 -2010 which shows a steady increase.

Table 2.1: Catch in PNG Waters by Vessel Access Category (mt), 2006 - 2010

Catch by Location	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2006-2010**
PNG flag vessels (domestic)	18,659	20,826	31,106	34,688	27,972	26,650
Locally-based foreign (chartered)	126,495	124,572	112,286	95,310	114,468	114,626
Foreign access vessels	273,926	317,839	329,160	262,450	560,530	348,781
Total EEZ catch	419,080	463,237	472,552	392,448	702,970	490,057

Source: Hamilton, Lewis, Campling (2011).

Under the present Government's export-driven economic growth strategy, onshore investment in tuna processing for export is actively encouraged. Foreign and domestic access by purse seine vessels is increasingly linked to commitment for onshore investment, especially in the form of tuna processing. Downstream processing of locally harvested tuna by RD Tuna Canners operation in Madang provides an example of growth through a steady increase in quantity and value of exports from frozen fish to production and export of canned fish. The SSTC specializes in cooked loin production on a contractual basis and so far focussed mostly on the US market but plans to increase exports to the EU as well (Hamilton, Lewis, Campling, 2011). It has provided new employment opportunities and spin-off activities for the people of Wewak (Usu, 2011). The third canning operation is by Frabelle PNG limited while the International Food Corporation is canning mackerel. Currently the processing plants have a maximum processing capacity of 520 mt/day of tuna, that is, 130,000 mt annual raw material throughout) (Hamilton, Lewis, Campling, 2011). The plants however have been operating at around half of their processing capacity due to higher cost of business resulting from high operating cost (Hamilton, Lewis, Campling, 2011).

Table 2.2 Existing Facilities for Tuna and Mackerel Processing

Investors	**Product Type**	**Production Capacity (mt/day)**	**Employment (estimated)**	
			Direct	Indirect
RD Canners	Canned tuna	200	3500	500
Frabelle (PNG)	Canned tuna	140	1000	500
Frabelle Frescomer	Raw tuna	40	200	100
Southseas Tuna Corporation	Cooked loins, canned tuna	100	1,000	200

International Food Corporation	Canned mackerel	100	1000	200
		580	6700	1800

Source: Usu (2011).

There are currently 5 new planned tuna processing investments at different stages of development. Four are at the Malahang Industrial Estate, Lae and one at the Pacific Marine Industrial Zone (PMIZ) at Vidar, Madang. The duty free market access to the EU under the IEPA, as well as global sourcing Rules of Origin (RoO) makes onshore investments more attractive. This is seen as an avenue towards supplying canned tuna and cooked loins to the EU market. Under the vessel licensing policy, each plant can secure 10 fishing license once the plant is 75% complete. Given the VDS quota limitation, NFA also intends to reduce the number of licenses issued under the bilateral foreign access with no onshore investment in PNG in favour of those licensed in association with new onshore developments.

1. **Majestic Seafoods Limited** is a joint venture partnership between Thai Union (Thailand, Century Canning (Philippines) and Frabelle (Philippines, PNG). Development is planned in two stages. It is planned that Majestic will process 100% canned tuna of which 80-90% will be exported to the EU (Germany, Italy, UK), with 10-20% to other markets including the US, Japan and others. The plant is due to begin operations by mid-2012.

   There is also a mackerel canning facility (International Food Corporation) that was established in 1997 at Malahang, Lae which is now venturing into tuna canning, an investment valued around USD 10 million which is capable of producing at 150 mt per day capacity and provide employment opportunities for around 1000 nationals Usu,2011). Production is anticipated to be 70% canned tuna and 30% cooked loins; 95% of which is planned to be exported to the EU market (canned tuna to Germany, loins to Spain).

2. **International Food Corporation (IFC)** in Malahang, Lae which was established in 1997 for mackerel processing is expanding operations into canned tuna and cooked loins.

Production is anticipated to be 70% canned tuna and 30% cooked loins; of which 95% will be exported to the EU market.

3. **Nambawan Seafoods** in Malahang, Lae is a proposed joint venture between 2 Philippines fishing companies – TransPacific Journey Fishing Corporation (TJP) and TSP Marine Industries to establish a 150 mt/day plant to process canned tuna and cooked loins. TSP and TPJ have been fishing in PNG under bilateral access agreements for some time. In light of securing access, they intend to establish shore based processing of canned tuna and cooked loins, primarily destined for the EU as well as for markets in China and the Middle East.

4. **Halisheng Corporation i**n Malahang, Lae is a Chinese company with diversified interests in industries such as tuna processing, pharmaceuticals and real estate. The company intends to process canned tuna and loins for export to the EU, China and the US. The Company is currently trying to secure partnership with purse seine vessels for supply of raw materials.

5. **Niugini Tuna Limited** at the PMIZ in Madang is a joint venture between RD Tuna Canners (Philippines), Fairwell Fishing (Taiwan) and Trimarine. The plant intends to process cooked tuna loins mostly for the Italian market. Table 2.3 provides the projected investments in tuna processing in PNG. These investments are in line with the country's development aspirations and aiming at processing all catches in PNG waters back on PNG shores. With a cumulative estimated investment value of USD 192.5 million, and once completed, these facilities would be producing at a capacity of 1,115 mt per day and providing more than 16,000 employment opportunities for nationals (Usu, 2011).

Table 2.3 Planned Future Facilities for Tuna Processing

Investors	**Product Type**	**Production capacity (mt/day)**	**Est. Investment value US $m**	**Local Employment (estimated)**	
				Direct	Indirect
Thai Union/Century Canning and	canned tuna	350	80	4500	1500

Frabelle					
RD/ Fairwell	canned tuna	200	27.5	2000	500
Chinese Investments	Canned tuna/ cooked loins	600	85	6500	1500
International Food Corporation	Canned tuna	150	10	1000	500
		1300	203	14000	4000

Source: Usu (2011).

2.1.1.2 Current Status of the PMIZ

The concept of Marine Industrial Zone was established in the late 1990s to increase onshore processing activity in a central location closer to the fishing grounds and as a result to gain greater economies of scale by clustering so as to reduce cost of operations. PNG government acquired 215 ha of land for the creation of this industrial hub. The approval for this initiative was granted in 2005, with the offer of a concessional soft loan from the China Exim Bank to underwrite the development (Hamilton, Lewis, Campling, 2011). A national management committee has been set up which intends to establish the PMIZ as a special economic zone. An EIA was carried out in early 2010. While approval was granted in principle in 2011 by the government, with the change of government a review of the plan was requested. Local community groups have expressed environmental and social concerns with a court injunction in place. Media reports indicate that there has been insufficient consultation with communities around and those affected. Of the 10 sites available for development of processing facilities, only one has been taken up by the Niugini Tuna Limited. While there has been some progress and investors are showing interest to invest, the construction of major infrastructure and firm proposal for investments have not materialized at the pace anticipated. Delays in realize of funds, pending legal action against NFA and Department of Commerce and industries, it can be deduced that PMIZ concept may be stalled.

Malahang Industrial Estate on the other hand has the support of the Morobe Provincial Government and landowners. This is closer to the Lae urban centre where the basic infrastructure and utilities are already available. DongWon of Korea has shown interest in establishing a

processing facility at this site but no further information is available. The Company has also shown interest to establish a facility in the Solomon Islands.

PNG's policy on domestic development of tuna fisheries through downstream processing and exports is obvious through the several measures taken by the PNG government and NFA. To facilitate this process, PNG has been the first country to forge the interim Economic Partnership Agreement (IEPA) with the EU in order to gain preferential access to the EU, the largest tuna market. PNG therefore has taken steps necessary to meet the EU food safety standards for exports such as EU- SPS compliance including setting up a competent authority. In addition, PNG has also taking steps in increase this compliance with their vessels and further more to meet the EU Regulation (EC regulation No. 1005/2008) on having an enforcement and monitoring system that prevents IUU fishing.

PNG has also played a key role within the Parties to the Nauru Agreement (PNA) group to consolidate support for strengthening the fisheries management measures, particularly the purse seine fishery through the VDS within the sub-group. PNG has also been an active member of the WCPFC and has been vocal in putting pressure on members for the implementation of the WCPFC resolutions on management measures.

2.1.2 Solomon Islands

Fisheries in the Solomon Islands are also broadly divided into two categories: the offshore tuna fisheries and inshore coastal fisheries. Provincial governments are empowered to make decisions with regards to fisheries in the territorial waters of the provinces. Similar to the other MSG countries, coastal fisheries plays a vital role in the Solomon Island economy, particularly in the rural areas. Some commodities have been exported such as beche-de-mer, trochus, seaweeds, and aquarium products with boom and bust cycles but the scope for expansion and trade lies in developments in area of mariculture. However, more research and assessment is needed to determine this scope and viability. The processing industry is dominated by the operations of the tuna cannery at Noro and the operations of the National Fisheries Development Corporation.

2.1.2.1 Processing Industry Development in the Solomon Islands

Production-based strategies through the establishment of joint venture with a foreign company, and development of a national fishing corporation were established in the Solomon Islands. The broad policy aim of the Solomon Islands government had been to attract foreign capital, increase expertise and progressively localise employment, increase foreign exchange and decentralise development (Ministry of Finance and Economic Planning, 1992).

Solomon Taiyo Limited (STL) was established in 1973 as a joint venture between the Solomon Islands government and Taiyo Gyogyo Kabuki Kaisha of Japan which exported canned tuna, frozen tuna and small amounts of *arabushi* (smoked dried tuna). The Company also operated a fleet of pole and line vessels and later included a group of purse seiners in its fleet. In 1982, a second agreement was forged for another 10 years with an agreement to nationalize and construct a cannery at Noro in the Western Province (Asian Development Bank, 1998).

Maruha Corporation of Japan took over the Taiyo Company in 1994 but the cannery was closed down in 2000 following the political tension in the Solomon Islands. Despite the various economic and social benefits to the Solomon Islands' economy, the joint venture operation never reached its full potential (Asian Development Bank, 1998). The investment left the government exposed to huge debt. When the Maruha Corporation withdrew its operations, and the Solomon Islands government and the Western Province took over the operations under the name of Soltai. Operations were initially to cater for the domestic and regional markets with attempts to revive trade to UK under the ACP-EU Preferential Agreement.

A State fishing corporation, National Fisheries Development (NFD), was established in 1977 by the Solomon Islands government to accelerate the nationalisation of the tuna industry (Hughes, 1998). NFD was seen as a potential vehicle for developing local fleet capacity, providing training, and in assisting to speed up development of national management capability in the tuna industry. NFD is based in Tulagi where it has collection and transhipment facilities, cold storage, and a repair and maintenance facility. In the initial years of its operation, most of the catch of NFD went to the STL cannery which had 25% shareholding in NFD. Since the start of the operations, NFD has faced financial problems. In 1990, the NFD was sold to BC Packers of Canada and in 1998 Tri Marine International took over the operations as a locally-based foreign company (Asian Development Bank, 1998).

One of the key policies for the Solomon Islands government has been the decentralisation of development through the provincial governments. For the exploitation of tuna resources a national quota was determined and allocated to STL and the provincial governments. The provincial governments established a number of purse seine joint venture operations with foreign companies. For example, in 1992, Russfil Marine Inc., a Manila-based company, formed a joint venture with Malaita Province called the Malaita-Russfil. The joint venture was to engage in tuna fishing in the Solomon Islands EEZ; to purchase other marine products for export; and to establish a shore-based facility in Auki with a refrigerated warehouse and an office (FFA, 1995).

Several weaknesses were identified in the joint venture agreement, ranging from the legality of the arrangement to the inadequacy of project appraisal. In 1990, a joint venture between Makira Province and the Frabelle Fishing Company of Manila was formed. The project involved a three-phase development: purchase of two purse seine vessels, establishment of a fresh water farm, and a cannery. In 1994, the Minister of Fisheries terminated the agreement because the company was making losses and had no investments in the Solomon Islands. The venture was seen merely as a foreign partner seeking access. A number of other similar joint ventures were established at the Provincial level, most of which failed to deliver the benefits expected, and many of which ceased operations after one or two years (Asian development Bank, 1998).

During the 1990s, the success in downstream processing through State joint ventures was minimal because of lack of effective joint venture agreements to derive any direct or spin-off benefits. None of the joint ventures with Provincial governments made any permanent shore-based investments. Moreover, by 1997, the Solomon Islands fishery resources were under threat as a result of unsustainable harvesting and lack of management (Aqorau, 2001). A National Tuna Management Plan was developed in 1999. Under the Plan's goal of increased domestic participation, the government aimed to expand the domestic industry with a long-term view of using local resources and reducing reliance on foreign access. With limited skilled labour, the government intends to encourage more direct participation of Solomon Islanders in diverse sectors of the industry, to promote higher level positions for Solomon Islanders in all sectors, and to facilitate growth of domestic industry through private sector development. A revision of the national tuna management plan is underway.

To overcome the constraints to development, the government embarked on development of incentives for the fisheries sector and also to invest in targeted education and training programmes (Government of Solomon Islands, 1999). The Management Plan therefore addresses present barriers to development efforts and introduces new management obligations and strategies to ensure greater local involvement.

In 2003, a strategic partnership was established between Tri-Marine (an Italian/Taiwanese owned tuna trading company) under which Soltai processes frozen loins under contract to the Bolton group (Italy). Currently the Soltai cannery is operated as a joint venture between Tri-marine, Solomon Islands National Provident Fund and the Western Province. Tri-marine also owns vessels that supply tuna to the cannery but much of tuna caught from the Solomon Islands is destined for canneries in Thailand.

According to media reports, the government has been trying to attract more foreign investment to be based within the Solomon Islands to increase downstream processing. Incentives and other measures to attract foreign investment has been development but its timely implementation remains a hurdle.

2.1.3 Vanuatu

Like the other, MSG countries, Vanuatu also has distinct coastal and offshore fisheries. Currently a fresh chilled tuna handling facility exists in Port Vila and a freezing storage facility on Santo Island. Vanuatu operates an open registry of fishing vessels where it authorizes foreign vessels to fish not only in Vanuatu waters but also in other zones, RMFOs and international waters.

2.1.3.1 Historical development of the Offshore Fishery in Vanuatu

The Vanuatu government initially had similar high aspirations to develop the domestic tuna industry. The *First National Development Plan* (1981-1986) identified the need for the development of a locally-based industrial-scale fishery to exploit the tuna resources within its EEZ, and to develop a domestic tuna processing facility (National Planning Office, 1982). While feasibility studies and operational trials were carried out, no domestic processing of tuna took place. During the second plan period (1987-1991), the objective was to begin the

development of a small locally-based tuna fishery and to revive the operations of the South Pacific Fishing Company based at Palekula on Espirito Santo.[2]

With low catch rates of tuna in its fishing zone and limited domestic capital, Vanuatu began to rely on licensing of foreign vessels by operating an open vessel registry. Since 1999, the development of the tuna fishery has been guided by a National Tuna Fishery Management Plan which establishes an overall management structure, and an application framework for the tuna fisheries, including license limits and total allowable catches (TACs). The Plan was revised in 2009. With regards to developing a local tuna industry, the focus has been largely on development of a small-scale tuna fishery around FADs. Other opportunities stated in the plan include crewing opportunities for Ni-Vanuatu fishers on foreign vessels.

2.1.4 Fiji

In the case of Fiji, from the outset starting with the *National Development Plan Seven* (1976-1980), the objective of the tuna fisheries sector was to maximize the benefit from tuna through the creation of a vertically integrated industry to capture the maximum benefits from the tuna resources in the EEZ. This was done by establishing a State-owned national fishing corporation (IKA Corporation Ltd) and Pacific Fishing Company Ltd (PAFCO) a government joint venture with a Japanese company to develop and operate a cannery. The PAFCO cannery began operations in the mid-1970s that capitalized on duty free access to the European market under the ACP- Lomé Convention. At the end of the 10 year period of the joint venture in 1986, the foreign company pulled out of the agreement and the Fiji government nationalized the operations. The export revenue fluctuated during the period up to 2000. One of the key problems faced by PAFCO was the inconsistent supply of "originating tuna" to fulfil market obligations under the ACP-Lomé Convention to qualify for preferential access. PAFCO's problems were compounded by acquisition of IKA Corporation, high transport and operating cost that required continual support from the government to keep the factory operational. In 1997 PAFCO closed operations a number of times.

[2] A Japanese Company Mitsui established the South Pacific Fishing Company (SPFC) base in 1957 where the government was a minor shareholder. In 1987 Mitsui transferred its interest to the Vanuatu Government in consideration for terminating the joint-venture and writing off accumulated losses. See details in: Asian Development Bank, *Vanuatu Economic Performance and Policy Reform Issues*, Pacific Studies Series, Asian Development Bank, Manila, 1997.

In August 1997, Fiji Government signed a MOU with the FCF Company of Taiwan and Bumble Bee Seafood's of the United States and PAFCO was re-opened to process loins for Bumble Bee. As part of the agreement, PAFCO upgraded its operations to meet the US sanitary and hygiene requirements. PAFCO's operations therefore continued up until late 2010 when operations were again closed down and marketing to the US of loins suspended amidst concerns over quality standards under the US FDA, lack of regular raw material supply, and high operating costs. Operation at PAFCO has been scaled down with minimal processing for the domestic market while discussion with Bumble Bee and Australian interests on possible processing of tuna in pouches is continuing (Per. Comm. Senior Fisheries Officer, February, 2012). PAFCO has been seen as the lifeline for the people of Levuka and the neighbouring islands. Government thus far has seen the continuation of PAFCO as a social responsibility.

In the mid-1990s exports of fresh/ chilled tuna began with the establishment of the longline industry for sashimi tuna. The government had also begun its economic reform around the same time and therefore the motivation was high for private sector participation through a package of incentives and duty exemptions (Ram-Bidesi, 2003). Limits on airfreight space, price and catch fluctuations led to the industry to stabilize by the late 1990s. In 2001, there were 19 companies registered as fresh tuna exporters and there were five major companies processing and packing, four of which had its own fleet. As local operators were faced with high operational costs, there was an increase in vessels from Taiwan and China that based their operations under joint-venture arrangements. This further created competition for air cargo space and port congestion as the number of licenses issued increased.

In parallel to developments at the regional level, the government established a National Tuna Management Plan in 2002. A TAC was determined and a cap was placed on the number of licensed vessels and license fee increased from $200 to $26,000 for vessels greater than 20 meters (Government of Fiji, 2002). To maximize benefits from the tuna resources, the Tuna Management Plan set a licensing criteria where allocation was based on nationality, history of fishing activities and investment levels with local individuals or companies who were already in the industry and indigenous Fijians given preference. The Tuna Management Plan was revised in 2005 but many of the objectives from the first plan remain. A TAC of 15,000 mt of tuna and cap

on vessel numbers are the main management measures besides strengthening of monitoring and enforcement measures.

In May 2008, a directive came into effect that banned the export of fishery products from Fiji to the European Union because of the procedures in place for food safety and sanitary requirements were not met by Fiji due to lack of oversight by a competent authority. Fiji now has set up a competent authority and EU inspectors have approved at least 4 processing establishments to be compliant and can export fish to Europe (per. comm. Senior Fisheries Officer, Fisheries Department, 28 February 2012).

2.1.4.1 Current status of Fish Processing in Fiji

The current longline industry consists of 70 licensed vessels to fish in Fiji's EEZ. These vessels consist of locally owned, domestic based contracted foreign and chartered foreign and foreign flagged vessels. Fiji also provides authorization permits for its flagged vessels to fish in the high seas and other PICs zones such as Vanuatu. Table 2.4 gives a summary of investors, their product type, production capacity and major markets.

Table 2.4: Current Tuna Processing Establishments in Fiji

Investors	Product Type	Production Capacity (mt/day)	Employment (estimated)	Export markets
PAFCO: Fiji Government/ /local private owners	Canned tuna (local market) Cooked loins???	80 mt/day	650 (temporary closure of operations)	USA, Canada
Viti Foods	Canned tuna (skipper)	10 mt/day	120	Domestic, regional???
Golden Ocean	Loins, frozen tuna, fresh/chilled	15 mt/day	200	USA, Japan, China, Australia, New Zealand, Russia
Tosa Bussan	Skinless loins, tataki and frozen tuna	15 mt/day	70	Japan
Fiji Fish Marketing Limited	Pre-package sashimi, loins, fresh/chilled tuna, frozen tuna			Japan, USA, Hong Kong
Tripacific Marine	Frozen loins,	50 mt/day	100	Japan, USA and

Limited	frozen whole, cooked tuna in pouches			Europe – main markets. Exports also to Vietnam, Korea, Taiwan, Sri Lanka Pouches to NZ and Australia
Hangton Pacific	Frozen, fresh/chilled	20 mt/day	170	Japan, PAFCO (Fiji), A. Samoa, Thailand, USA, Vietnam
Celtrock Holdings Limited* (processing and packing facility)	Frozen, fresh/chilled	30 mt/day	120	Japan, Australia, New Zealand, China

Source: Industry interviews

The suspension of operations at PAFCO also means that the continuation of FCF company which has been supplying majority of the raw materials (tuna) in Fiji at this stage is unclear (per. comm. Senior Fisheries Officer, Levuka, February 2012), although FCF contracted vessels are already fishing in the Solomon Islands and PNG. However, Gilontas Ocean Panama (a business venture registered in Panama, South America) has been given approval to operate and process tuna for export. The company plans to set up a processing plant in Lautoka to locally process tuna loin for export to the EU. According to the interviews with senior fisheries officials, countries like South Africa and Russia have shown interest to base their vessel operations in Fiji. Details on the nature of their operations whether it is just transhipment or unloading for further processing is still unclear. However, it is understood that the Fiji government has now levied a transhipment fee of $350 per trip for transhipment of consignments of tuna that is not offloaded for further processing in Fiji. This is a strategy seen by the government to encourage domestic development through on-shore development.

As tuna caught within Fiji's EEZ has been fluctuating and on the decline, a number of fishing vessels (Fiji Flagged) which are either locally owned, chartered or locally based foreign vessels also seek authorization permits to fish in the high seas or in zones of other Pacific Islands such as Vanuatu, Solomon Islands, Kiribati and Tuvalu. In case of fishing in the EEZs of other countries, a license needs to be obtained from the respective countries. There are currently no bilateral access agreements between the respective governments.

Processing or handling of fresh/ chilled tunas sashimi exports from Fiji is highly dependent on airline routes to major market destinations such as the US, Japan, and Europe which in turn is highly dependent on the movement of passengers or tourists and the type of aircraft and availability and reliability of cargo space.

2.2 Downstream Processing in the MSG Countries

Since the late 1970s, Solomon Islands and Fiji have developed a vertically integrated tuna industry to optimize benefits from their tuna resources. Both countries developed joint ventures with foreign companies for canning tuna and a fishing fleet to supply the cannery. Since the mid-1990s, PNG has actively pursued both fishing and processing and created the 'Pacific hub' for tuna industry development. PNG has taken a regional leadership role in fisheries management through its membership within the PNA group such as the establishment of the VDS. It has also secured access to the EU market for its tuna under the IEPA and has successfully negotiated for derogation under the rules of origin for global sourcing of tuna. Vanuatu, on the other hand relies on access agreements and by re- flagging of vessels that fish either in Vanuatu waters or within the WCPFC area or other RMFO regions. The scope for domestic industry development is expressed through the deployment of FAD for small scale tuna fishery development by Ni-Vanuatu fishers rather than through the creation of its own industrial fleet. In the case of Fiji, the fresh chilled tuna industry through longline operations has been well developed. Foreign longline vessels also operate as domestic based foreign vessels that supply the local processing plants. However, the fishing zone of Fiji is only marginally productive and so tuna as raw materials also have to be sourced from elsewhere including the neighbouring zones and international waters. Policies on downstream processing, value adding and exports are similar for Fiji, PNG and Solomon Islands where they aspire to create employment for locals and generate foreign exchange through exports of either fresh/chilled tuna, canned tuna and tuna loins. The target markets for these countries on the whole are similar and they face similar fisheries management rules. It is therefore apparent that scope for intra-regional trade amongst these MSG countries could be explored by considering their comparative and competitive advantages.

Chapter 3

Comparative and Competitive Advantages of MSG Countries

3.0 Introduction

Assessing the comparative advantage of the MSG countries with respect to fisheries investments, business opportunities and exports would ideally mean identifying each of the members relative opportunity costs associated with these factors to see where costs are lower a basis for encouraging trade. Competitive advantage on the other hand compares variables which support the development, maintenance and consolidation of the fisheries industry. This section therefore aims to provide an evaluation of the comparative and competitive analysis of the MSG countries to identify their strengths and constraints with regards to downstream processing and trade in fisheries commodities, specifically focusing tuna. However, the importance of coastal fisheries and the growth in aquaculture and Mari culture within the MSG countries must also be underscored in terms of the enormous possibilities they provide for forging new and renewed trade relations. This will warrant a study on its own within the context of broader cooperation between the MSG countries particularly in light of the unique coastal biodiversity of the Coral Triangle countries of which the MSG members are an integral part.

3.1 Identifying Comparative Advantages

Given the background of the tuna industry in the MSG countries, what is the scope of improving trade between the members? How can MSG countries strengthen trade amongst themselves in relation to tuna resources? What are their relative strengths and business opportunities in order to achieve their common objectives on tuna? In this section, these questions are explored by looking at the comparative and competitive advantages in relation to their fishery investments, business opportunities and exports.

3.1.1 Raw Material Supply

The most critical factor in any natural resource based industry is to consider resource base or availability of raw materials and securing a reliable supply of raw materials at the lowest cost. In this regard, the size of the EEZ and the national annual TAC provides an apparent measure of the resource base.

Table 3.1: Estimated National TAC and size of EEZ of MSG Countries

Country	Size of EEZ (km^2)	Est. Total Allowable Annual Catch	Limits of effort
Fiji	1,290,000	15,000 mt	90 longline vessels
Papua New Guinea	3,120,000 (of which) 640,000 km^2 Archipelagic Waters	10,000 mt – longline 338,000 mt - purse seine 20,000 mt – pole & line	Purse seine days set by PNA
Solomon Islands	1,340,000	120,000 mt	Purse seine days set by PNA
Vanuatu	680,000	Albacore – 10,000 mt Yellowfin – 3,000 mt Bigeye – 1,000 mt Skipjack – 3,000 mt Billfish – 1,000 mt	Longline 100 Purse seine 10 Pole & line 10 Other 100

Source: National Tuna Management Plans; ADB 2010 (Solomon Islands Economic Report 2010); Amos, 2007.

Not only the relative size of the EEZ is the largest for Papua New Guinea followed by the Solomon Islands but they are also within the Western Pacific equatorial zone where tuna is available throughout the year and seen as relatively more productive fishing grounds.

3.1.2 Level of Investments

Investments in tuna industry can be determined by considering investments in the processing and harvesting sectors and in infrastructure that supports the two sub-sectors. Table 3.2 provides a summary of major direct investments in the Tuna processing in PNG while table 3.3 shows the investment in the Solomon Islands, table 3.4 presents information on Fiji and table 3.5 on the current status of processing in Vanuatu.

Table 3.2: Major investments in the processing sector in Papua New Guinea

		Ownership	Maximum production capacity (mt/day)	Location	Future Plans
Papua New Guinea	RD Tuna Canners	RD Group of Companies (Philippines)	200 mt/day	Siar, Madang – cannery Vidar, Madang – private wharf, cold storage, value added processing	Increase frozen loin processing capacity Increasing canning for local market Expand markets
	Frabelle (PNG) Ltd	Frabelle Fishing Corporation (Philippines)	100 -120 mt/day	Lae City, Morobe	Build new 120 m wharf (PNG K $20 million) – for use by Frabelle and other Lae-based processors Increase share of local market Move can-making, fish meal, label-making to Malahang; add 2 extra lines and fish oil plant
	South Seas Tuna Corporation Ltd.	FCF (Taiwan) (95.5%); Bank of South Pacific (PNG) (3%); East Sepik Provincial Govt. (1.5%)	200 mt/day	Wewak, East Sepik	Aiming for 50% production to EU and 50% for US from 2011 Need to resolve infrastructure issues – wharf, power and water
	International Food Corporation	FIMA – Malaysian company	120 mt/day		Proposed tuna canning with 150mt per day capacity.

Source: Hamilton, Campling & Lewis (2011).

In PNG, there are plans for five new tuna processing investments at different stages of development; four at Malahang Industrial Estate, Lae and one at the Pacific Marine Industrial Zone at Vidar, Madang as discussed in section II. With a cumulative estimated investment value of USD 192.5 million, and once completed, these facilities are projected to produce at a capacity of 1,115 mt per day and provide more than 16,000 employment opportunities for nationals (Usu, 2011; Hamilton, Lewis, Campling, 2011). These investments are in line with the country's development aspirations aimed at processing all catches in PNG waters back on PNG shores (Usu, 2011).

Table 3.3: Major Investments in Tuna Processing in Solomon Islands

		Ownership	Maximum production capacity (mt/day)	Location	Future Plans
Solomon Islands	Soltai	Tri-Marine (51%); Solomon Islands National Provident Fund (29%); Solomon Islands Govt (10%); and Western Province (10%)	80 mt/day	Noro, Western Province	Currently 11% of the total Solomon Island catch is landed locally and 89% outside of Solomon Is. Aim is to increase share of local processing.

Source: ADB (2010).

There are two sites identified for fish loining factories: Suava Harbour in the Malaita Province and Tenaru Shoreline in the Guadacanal Province (Solomon Star, 28 August 2008). Government has also indicated plans to reduce bilateral fisheries access agreements in the near future. The Minster for Fisheries and Marine Resources Development states that 6 international companies want to establish onshore operations in the Solomon Islands but progress has been delayed because of land related issues (Solomon Star 24 June 2009).

Table 3.4: Major Investments in Tuna Processing in Fiji

		Ownership	Maximum production capacity (mt/day)	Location	Future Plans
Fiji					
	PAFCO: Fiji Government/ /local private owners	Majority Fiji Govt./ Minority local private owners	80 mt/day	Levuka, Ovalau	Suspension of operations; ongoing discussion with Bumble Bee Company(US) and FCF (Taiwan) and Australia
	Viti Foods	Fijian	10mt/day	Laucala Beach Estate, Suva	
	Golden Ocean	Fijian	15 mt/day	Walu Bay, Suva	Expand operations in Kiribati
	Tosa Bussan	Japanese/Fijian Joint venture	15 mt/day	Rokobili, Suva	Export to EU
	Fiji Fish Marketing Limited	Fijian			Export to EU, continue with traditional markets – Japan, USA, Hong Kong
	Tripacific Marine Limited	Fijian	50 mt/day	Wailada Industrial, Lami	Increase processing with improved supply

	Hangton Pacific	Fijian/Chinese Joint venture			Secure supplies and expand product types to EU, China
	Celtrock Holdings Limited	Fijian	30 mt/day	Walu Bay, Suva	Increase processing with increased supply

Table 3.5: Major Investments in Tuna Processing in Vanuatu

		Ownership	**Maximum production capacity (mt/day)**	**Location**	**Future Plans**
Vanuatu	South Pacific Fishing Company	Vanuatu Govt.	Storage/ freezers	Palekula, Espiritu Santo Island	Ceased operations
	The Tuna Fishing Company	?		Port Vila	

In the harvesting sector, vessels, gear and equipment as well as on-shore infrastructure for offloading and storage are the major components of investments. Table 3.6 provides a summary of the domestic fleet and catch levels of the MSG members.

Table 3.6: Number of Vessels in national fleet, catch levels of national fleet and catch in national waters

	No of active vessels fishing	**Catch of national fleet (mt)**	**Catch in national waters (mt)**	**Notes**
Fiji				Some Fiji –flagged vessels also fish in Vanuatu, PNG and international waters
2007	110 longline	10,040	5,730	
2008	96 longline	11,656	8,536	
2009	117 longline	10,524	326	
Papua New Guinea				
2007	21 longline 47 purse seine	230,015	486,757	PNG vessels also fish in other PNA zones and foreign vessels also fish in PNG EEZ
2008	17 longline 49 purse seine	205,624	495,952	
2009	29 longline 41 purse seine	212,906	438,730	
Solomon Islands				
2007	5 purse seine	21,240	114,309	Foreign vessels also fish in Solomon Islands EEZ. In 2010, there were more than 400 vessels.
2008	4 purse seine	16,182	120,586	
2009	7 purse seine	17,883	97,969	

				Longline fishing resumed in 2010 after a break for several years with the collapse of Solgreen
Vanuatu				
2007	64 Longline 10 purse seine	79,784	6,263	Vanuatu flagged foreign vessels fish in other zones and some Fiji vessels fish in Vanuatu
2008	61 longline 5 purse seine	47,234	6,021	
2009	59 longline 7 purse seine	47,663	3,679	

Source: FFA, 2012 (2010_08_024_WCPFC_CA_tuna_catch); SPC 2011.

Domestic vessels are those owned and or operated by locals in partnership with foreign investors. A number of domestic vessels are also foreign vessels that are either chartered by domestic operators or are in joint- venture operations with foreign companies and classified as "domestic based foreign vessels. The above table shows that Papua New Guinea and the Solomon Islands have surplus tuna in their zones to allow foreign vessels to harvest under access arrangements while Fiji vessels also fish outside of Fiji waters to supplement its processing plants. In the case of Vanuatu, foreign fishing vessels flagged to Vanuatu fish predominantly outside of Vanuatu within the WCPO as well as in other RMFOs. A large majority of Vanuatu vessels are foreign vessels that are re-flagged to Vanuatu.

While all members aspire to increase benefits from tuna, in the case of Fiji, the scope for securing supplies from Solomon Islands remains a strong possibility since only a small proportion of the Solomon Islands catch is processed locally. However, a competitive price by Fiji may be necessary as an incentive for the Solomon Islands to re-direct some of its harvested tuna to Fiji.

3.1.3 Infrastructure & Transportation

In the Solomon Islands, infrastructure for supply of basic services needs to be upgraded not only for private sector development but also for the general public. Electricity, water, transport and telecommunication services are not available to a large majority of the people (Asian Development Bank, 2010). Telecommunication services are expensive as this is only provided by Telekom which has a monopoly. Electricity costs are also seen as high because of high cost of

energy and power blackouts are not uncommon. There are three international airlines operating – Air Pacific, Air Niugini and Pacific Blue but domestic air flights are intermittent and unreliable. While the Solomon Islands government wishes to decentralize economic activities including fisheries development projects in provincial areas, it would be important for government to provide the necessary infrastructure to support private sector development for this. There are three ports that handle tuna fish –Noro, Tulagi and Honiara but much of the transhipment takes place at sea by vessels that are fishing under access agreements.

In the case of Papua New Guinea, the quality of key infrastructure is also considered as poor, particularly wharves and roads. Wharf-related issues are one of the most serious disadvantages for Wewak and Lae-based processing facilities, (Hamilton, Lewis, Campling, 2011). Water and electricity have high cost and supply is unreliable. Processing plants are forced to install back-up generators and fuel costs are high due to monopolistic supply arrangement between Inter-Oil and the PNG Government. In Wewak, unreliable power and water supplies are the biggest constraints to production (Hamilton, Lewis, Campling, 2011). One of the key reasons for the establishment of the Papua New Guinea Marine Industrial Zone (PMIZ) has been to overcome this problem by centralizing activities in one place so as to achieve economies of scale and to reduce transportation cost.

In Vanuatu, cost is also high for basic utilities and rural infrastructure is also inadequate. There is limited room to expand port facilities in Port Vila where occasional transhipment takes place. This is also partly due to the need to protect the environmental quality in relation to nearby hotels and to protect the tourism sector interests.

In relative terms, infrastructure is fairly well developed in Fiji, although cost of electricity remains high. Domestic transportation and air links to Europe, USA and Asia is comparatively reliable, although inter-island costs are considered to be high cost. For example, the cost of transporting raw materials and supplies from Suva to Levuka is seen as high in the production and processing of tuna loins at PAFCO. The international air links are largely reliant on the tourism industry. This in turn is dependent on the political stability of the country. For example, during the coups in Fiji, often there are travel advisories by major markets which then disrupted regular flights. This has led to changes in routes such as in the case of flights to Japan were later changed to Hong Kong. Table 3.7 presents the relative costs of a unit of electricity in US$ while

Table 3.9 gives the diesel fuel cost per litre. These tables indicate that cost of electricity and diesel fuel is cheaper in Fiji compared to other MSG members. Table 3.8 indicates the cost of airfreight services from the MSG countries. This shows that air freight costs from the Solomon Islands is much higher than other MSG countries. In relative cost terms, Fiji has the least cost for air freighting to US and Japan.

Table 3.7: Cost of 1 kw/hr of electricity (industrial use) in MSG countries (2008-2010) (US$)

	2008	**2009**	**2010**
Fiji	0.11	0.12	0.16
Papua New Guinea	0.17	0.30	0.30
Solomon Islands	0.51	0.62	0.59
Vanuatu	0.40	0.41	0.45

Source: FFA (2011)

Table 3.8: Air freight costs (US$/kg) for fish to selected destination

	2008			**2009**			**2010**		
	US(LA)	Japan	AUST-Sydney	US (LA)	Japan	AUST-Sydney	US (LA)	Japan	AUST-Sydney
Fiji	1.63	2.10	1.40	1.64	2.12	1.42	1.64	2.12	1.42
PNG	4.78	2.79	1.20	n/a	2.75	n/a	n/a	2.75	n/a
Solomon Is	5.60	5.50	2.60	6.40	6.40	2.20	19.16	10.59	3.50
Vanuatu	3.84	4.49	1.02	3.84	6.06	1.08	5.34	7.03	1.10

Source: FFA (2011).

Table 3.9: Diesel fuel costs (US$ per litre) in MSG Countries (2008-2010)

	2008	2009	2010
Fiji	0.37	0.39	0.40
Papua New Guinea	0.97	0.90	0.90
Solomon Islands	0.96	1.07	1.20
Vanuatu	1.41	2.04	1.45

Source: FFA (2011)

3.1.4 Labour Supply

Unemployment rates are high in all MSG countries and so there is adequate availability of surplus unskilled labour. The average unskilled hourly labour rate in the MSG countries during 2008 and 2010 is given in Table 3.10.

Table 3.10: Unskilled Labour Costs in MSG Countries in US$ (2008 – 2010)

	2008	2009	2010
Fiji	1.12	1.14	1.20
Papua New Guinea	0.60	0.89	0.89
Solomon Islands	0.55	0.55	0.55
Vanuatu	1.00	1.00	1.00

Source: FFA (2011): Economic Indicators Update

On the other hand, a survey of minimum wages rates in each of the countries was obtained. Table 3.11 briefly shows the rate for each MSG country as well as those of Thailand, Philippines and Indonesia in international currency. International currency is a measure of currency based on the value of US dollar in 2009 (http://www.minimum-wage.org/international (accessed 10 March 2012).

Table 3.11: A comparison of current minimum wage rates in MSG and selected Asian countries in International Currency

MSG Countries	($)/hr	Notes
Fiji	$2.00	
Papua New Guinea	$3.00	minimum mandated wage is $2.29 PNG kina/ hr for adult workers in the private sector
Solomon Islands	$1.00	minimum wage is $1.50 per hour for all workers except in fishing and agriculture which is SI$1.25 per hr
Vanuatu	$5.00	minimum wage rate is 26,000 Vanuatu vatus per month for all workers
Asian Countries		
Philippines	$2.00	178 Peso a day for agricultural workers in the MIMAROPA region to Peso 404 a day in the capital

Thailand	$2.00	Minimum wage ranges from 148 Thai baht to 203 baht per day depending on cost of living in various provinces. Provincial wages are set by provincial tripartite wage committees that also includes employer reps.
Indonesia	$1.00	Minimum wages established by provincial and district authorities which varies.1, 100,000 rupiah per month in Papua to as low as 500,000 rupiah per month in East Java.

Source: http:www.minimum_wage.org/international, 2012.

In terms of wage rates, Fiji and Vanuatu have a relatively higher labour cost amongst the MSG members while Solomon Islands have the lowest labour cost. In comparison to minimum wages, Indonesia has a lower rate compared to Thailand and Philippines whose minimum wages are at a similar level to that of Fiji but lower than PNG and Vanuatu.

Minimum wages while legislated may not necessarily be enforced and monitored. However, strategically if PNG and Solomon Islands as members of the PNA wish to participate in the PNA initiative on marketing of its tuna under the "Pacifical" logo, then the issue of enforcing minimum wage guidelines may be necessary to fulfil the sustainability and social equity criteria.[3] Labour costs are an important component of tuna processing industries and a number the canneries have closed largely because of high labour costs such as the Chicken of the Sea in American Samoa and those in the US and Japan. In order to remain competitive with a higher labour cost, it is important that labour productivity will need to improve in the processing operations in the MSG countries. A major problem often cited by operators in the Pacific Islands is that labour productivity is low and absenteeism is high. A recent study in PNG states: labour costs are exacerbated by low efficiency levels (2-3 times less efficient than Thai, Filipino and Ecuadorian labour), high absenteeism (20-30%) and high labour turnover (50-60%) (Hamilton, Lewis, Campling, 2011). Likewise, it was also noted that PAFCO management also faced similar problems (Sullivan & Ram-Bidesi, 2008).

In most shore-based processing plants, women often dominate the production lines while on it is the young men on board the fishing vessels who face similar problems. There are a number of

[3] Pacifical tuna – the brand signifies that it meets the environmental and social criteria.

underlying reasons for such attitudes and behaviour which are often social and cultural related. Besides training on better time management, work ethics, commitment, and rewards system, often cross-cutting issues such as gender relations, household division of labour and access to reliable medical facilities, transportation and day care centres could provide some avenues to how these could be addressed for women in the region. Problems for crew on board are diverse and range from poor working conditions on board, language barrier, lack of communication and long periods of absence from home. Improvements in vessel conditions could be facilitated through imposing standards as criteria for licensing as among the strategies to overcome some of such problems.

3.1.5 Exports and Market Accessibility

Tuna market in general has expanded and become more complex and globalised: tuna commodities are traded throughout the world, the distribution system is very complicated, and consumers' preferences are both diverse and changing over time (Miyake, Guillotreau, Chin-Hwa, 2010). All MSG members with the exception of Vanuatu have established tuna industries that are export-oriented and rely on overseas markets. Therefore, even before considering market accessibility within MSG members, exporting opportunities and accessibility into the international market is essential. The key question for MSG trade would be identify the possibilities and options for achieving economies of scale and building strategic alliances with processors, traders and suppliers to link operations where possible so as to have better access to the global markets. MSG countries should therefore consult and cooperate to ensure that partnerships are forged with reliable and reputable trading firms and importing agents that are not competing against each other but who can offer support and market opportunities.

The three major export market destinations are the EU, the US and Japan. The US has been the major export destination in the last decade accounting for more than 40% of exports value and increasing to 51% in 2008 and 2009 (FFA, 2010). This has been mostly tuna loins traditionally from Fiji but more recently increasingly from PNG and to a lesser extent from the Marshall Islands. Other product forms include canned and pouched products in brine or oil. EU is the second most important market primarily for canned tuna product under duty free access from PNG and the Solomon Islands. Frozen tuna and loins are exported from Fiji. Japan remains the major market for sashimi tuna.

For detailed coverage on the requirements for food safety and quality standards in these three markets, see discussions in Campling, Havice Ram-Bidesi. (2007). Up until the end of the twentieth century, the tuna fishing industry was singly focused on how to increase efficiencies in fishing, processing and trading in order to increase profit. Under current circumstances, consideration of ecosystems and the sustainability of target and non-target species, as well as many other socio-economic factors (such as rising costs of fuel and labour and strict regulations on industrial waste discharges and emissions) are necessary (Miyake, Guillotreau, Chin-Hwa, 2010). Therefore, other new measures required either as voluntary code of practice such as eco-labels for certifying use of resource sustainability criteria in harvesting or mandatory requirements such as the certifying the implementation of resource management measures such as vessel registration and effective MCS to ensure that fishing is legitimate and not IUU. Table 3.12 compares the market accessibility of the MSG members in terms of being compliant with the SPS requirements such as HACCP and resource sustainability.

Table 3.12: Accessibility to major export markets

	EU	USA	Japan
Fiji	IEPA • Competent Authority established. • 3 processing plants – EU compliant • Fishing vessels are under review while a few have satisfied the IUU criteria. • PAFCO – had upgraded to meet EU standards but will require new up-grade to meet new requirements. • Derogation allowed - Global sourcing of tuna has made rules of origin flexible, so this opportunity could be explored since Fiji had faced major drawback previously with RoO.	• Exports of cooked tuna loins from PAFCO suspended because of SPS concerns under the US FDA requirements. • PAFCO needs to up-grade facilities to meet new US food safety requirements	• Exports of fresh/ chilled and frozen tuna, vacuum packed and frozen loins are exported. Remain lucrative market for Fiji although prices fluctuate
Papua New Guinea	IEPA • PNG exports to EU has been increasing rapidly as most plants and a number of vessels are SPS compliant and Competent Authority is • established • Major export market for PNG canned tuna • PNG is likely to be more attractive because of its close proximity to resources and derogation of RoO allowed under IEPA for global sourcing of tuna • Some rapid alerts have been issued to PNG, therefore PNG has to	• Primary market for cooked loins (37% in 2010) • Canned tuna exports to US has declined in the last few years	• Remains as an alternative market for frozen, fresh and chilled tuna

	implement and monitor the SPS requirements effectively to avoid de-listing		
Solomon Islands	EU – GSP (EBA) EU- HACCP compliant but no competent Authority established yet	[mostly exporting cooked loins and frozen loins]	Frozen fish
Vanuatu	No exports to EU Competent Authority need to be set up and legislation revised	None	Small quantity of fresh/ chilled tuna

From Table 3.12, it is clear that opportunities exist for MSG countries to export to major tuna markets provided they remain competitive and full-fill the respective standards for import criteria in each of the major markets.

Much has been said about the Pacific Islands as lacking economies of scale and having higher labour and operating costs. Table 3.13 provides a comparison of costs between Asia (a cannery in the Philippines) and FFA member country cannery.

Table 3.13: Comparative costs of cannery operation between Asian and FFA member country

	Asian Member	**FFA Member**	**Difference**
Productivity (kg/man hr)	9.98	5.48	(4.52)
Labour rate/ fortnight (US $)	71.72	88.78	(17.06)
Labour cost (US $ per case)	1.03	2.53	(1.50)
Yield from fish or recovery	40% - 42%	38% -40%	(-2%)
Fish cost per case at $1,600/ton of tuna (US $ per case)	22.48	21.92	(0.56)
Utilities (US $ per case)	0.539	0.800	(0.26)
Finished product freight (US $ per FCL)	1,200	2,745	(1545)
Freight cost per case			-0.13
Lower freight cost for fish delivery			1.1
Penalty in producing in a FFA member (US $			(3.00)

per case)			

Source: FFA (2011): Economic Update

From the above table, the differences in costs indicate the challenge faced by Pacific Islands because of lower productivity and higher freight costs (FFA, 2011).

3.1.6 Intra-regional trade

In terms of trade between MSG countries, there is no specific pattern as identified in Campling et al. (2007) except for trade between Vanuatu and PNG. Trade between Fiji and Solomon Islands have been on an intermittent basis for imports of frozen fish and small amounts of canned fish. Trade between Fiji and Vanuatu has been largely in the form of access to Vanuatu waters by Fiji flagged vessels. Table 3.14 shows trade in canned tuna between PNG and MSG partners. Trade has only been consistent with Vanuatu where there are no canneries.

Table 3.14: PNG Exports of canned tuna (mt) to MSG member countries, 2000-2010

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Vanuatu	99	66	16	16	132	129	69	131	180
Fiji	0	98	0	16	79	32	0	0	0
Solomon Is	82	0	0	0	0	17	40	0	0

Source: extracted from Hamilton, Lewis & Campling (2011).

From the above table and other earlier trade study by Campling, et.al (2007), it is evident that trade between and among the MSG remains negligible because MSG members are producing similar commodities. Some trade between these countries has been on coastal products and canned mackerel. With the revised MSG Agreement, the potential to expand trade could be improved through proactive trade promotion. An obvious example is the imports of prawns and barramudi from PNG to cater for the tourism market instead of importing from outside the region. Fiji could also secure supplies of raw materials through better terms of access from its MSG neighbours, namely, Vanuatu and the Solomon Islands and possibly from PNG as well if cost permits.

Given the history of experiences between MSG members where they have occasionally resorted to protectionist measures as [such as kava, biscuit and beef disputes between Fiji, PNG and Vanuatu] to defend domestic industry when faced with competition, members have to be

cautious and mindful that these experiences are not repeated. Given the wider mandate of revised MSG Agreement that includes trade in services and with the benefit of being compliant with PICTA provisions and in light of other regional agreements such as the Pacific Plan, and the realization of the need for greater co-operation in the fisheries sector, there is much scope to explore the various possibilities and options to realize economies of scale from the shared resources to achieve greater efficiency to realize increased economic gains.

3.1.7 Industrial dispute

Several reports have already pointed that cost of labour in processing plants in the Pacific Islands are higher than that of operations in Southeast Asia which has cheaper labour and economies of scale in production. In addition, labour unions have been seen with negativism while operators have complained about low productivity and absenteeism. Social assessment reports have also pointed that working conditions have been unfair and workers have been exposed to health and safety risks. The experience in Fiji, given the long history of PAFCO operations; and in more recent case of PNG where conditions have been relatively better as least for health and safety standards because of the need to be HACCP compliant, all provide an area of diverse issues that requires a more thorough and detailed research and assessment to analyse the several underpinning problems related to Pacific Island labour. Often there is a lack of proper consultation and information is not shared in a transparent manner where different parties and factions begin to mistrust each other and undermine the business operations.

However, there are several labour related emerging social issues that look at questions of equity and fairness and focus on creating labour standards that are mutually beneficial to the workers and the operators. Given the nature of the Pacific Islands and the importance of their fisheries resources, and in light the global trends in fair trade practices, social responsibility and on the other hand, the need to secure reliable supply of skilled workers and improved productivity, it may be opportune time for MSG members to re-look at the model emulated by PNA on labelling and branding. What are the costs and benefits of MSG or even PICs to move in this direction, given the size of tuna resources within the WCPFC area and within their zones? These issues must be seen within the backdrop of the global trends where canneries in the US have closed because of this. However, this trend is also being experienced by Thailand and Philippines as

earlier seen with wage rates. What are the possibilities of the major tuna markets to support and demand fair trade practices that are not exploitive of either the workers or the resources? This subject requires further research on the scope of application of such principles of responsible fisheries.

3.1.8 Government Regulations

Government regulations give rise to incentives or disincentives for investment. Incentives may include fiscal benefits such as tax credits and exemptions, financial benefits such as grants and subsidized loans whereas disincentive include a number of impediments, from slow processing of the required authorization to outright prohibition or restrictions on investment. Political instability and political risk is also another major disincentive, particularly in the context of MSG countries where changes in governments have been frequent together with sudden changes in policies. Lack of political stability discourages inflows. Political risk arises because unexpected modifications of the legal and fiscal frameworks that can change the outcome of a given investment drastically in the host country such as those experienced by PAFCO and the Solomon Taiyo joint ventures during coups and civil unrest.

Fiji and PNG have very pro-active investment schemes that are widely promoted and readily accessible through their investment promotion agencies. These include tax-free zones, tax holidays, duty concessions and tax exemptions. The Ministry of Fisheries and Forests in Fiji has prepared a Fisheries Business Guide as a way of informing investors on the rules and procedures for setting up and operating a fishing business. The process of registering and the requirements for foreign investment are clearly stated whereas the specific government regulations and investment information in the Solomon Islands are not as readily available and require up-date in order to create a favourable environment to attract investment.

In addition to having regulations that promote and support business operations, it is also the role of the governments to ensure that fisheries management systems are in place and reflect the international and regional obligations and have provision and resources for its implementation and enforcement.

3.1.9 Business and Investment Opportunities in MSG

While there is some trade among the MSG members with regards to tuna resources but this remains minimal. Much could be achieved under the revised MSG Agreement which has extended the scope for trade and other closer co-operative relations amongst the MSG members because fisheries trade otherwise cannot be pursued without paying attention to its management regime as discussed in the earlier part of the report.

The scope for trade is also heightened by the fact that these members represent the larger island grouping of the Pacific region, in terms of land area, fishing zones, people and capacity. The MSG countries therefore are strategically placed to influence global and regional decisions in the interest of the Pacific region and the wider global community as stewards of a large area of Western and Central Pacific Ocean under their national jurisdiction. The MSG window allows for greater co-operation amongst the Pacific Island Countries that extends beyond the PNA. Thus this can be seen as a positive step towards co-operation between PNA and non-PNA states where they share a common good and culture. This is particularly relevant for MSG countries fisheries sector where tuna stocks are shared within an overlapping eco-region with majority being members of the coral triangle. By identifying the strengths and constraints of each member, the complementarities amongst these countries can be identified to boost economic growth and strengthen trade.

Increasingly on the global front, there are calls to improve fisheries management to achieve sustainable outcomes that can then support sustainable trade. Economies of scale can only be realized within this framework which explores the possibilities of joint arrangements with public goods such as sharing of skills and scarce resources. Therefore, MSG Trade Agreement provides the platform where the members can engage in trade as well as implement their fisheries management measures since these are intrinsically linked to trade. For example, the sharing of resources for MCS and its enforcement tasks, movement of goods through their ports through harmonization of trade rules and environmental and social standards including customs and quarantine regulations.

The current trends with business as usual approach points to the fact the MSG members may be competing against each other and allowing investors to exploit this situation by "shopping around". This leaves not only the investors at risk but also discourages innovation and long term stability in investments. This ultimately leaves large groups of local workers vulnerable and unemployed which further creates social unrest.

3.2 Recommendations for consideration

Some of the specific opportunities for possible consideration are stated as follows:

- Joint monitoring, control and surveillance (MCS) tasks between MSG members such as sharing of resources like observers, surveillance officers and patrols and fisheries data
- Forging preferential access agreements between the MSG members on terms compatible with other fishing nations. This can allow securing of competitive access agreements between Fiji and Vanuatu and Fiji and Solomon Islands so that there is a steady supply of raw materials to their processing plants while also providing crewing and training opportunities for locals.
- Sharing of skilled labour between processing plants. For example, PNG can temporarily recruit experienced PAFCO women to work in PNG canneries on contract given the expansion plans that is envisaged in PNG
- Joint scheme for exports to EU utilizing the derogation on the rules of origin for global sourcing. This in turn can improve the economic returns as well as the standards of practice and create harmonization amongst the members. In turn, this can limit other players from under-cutting individual countries.
- Extending benefits of PNA initiatives to wider non PNA members such as Fiji and Vanuatu , while providing a framework for strengthening longline fisheries management
- Creating hub of activities can allow realizing economies of scale, increases the chances of aligning with larger global tuna traders and international brand names and markets. This can not only provide the necessary support during the initial years but also strengthen longer term trading relations since larger companies have added corporate social responsibility. MSG countries should therefore consult and cooperate to ensure that partnerships are forged with reliable and reputable trading firms and importing agents

that are not competing against each other but who can offer support and market opportunities.

CHAPTER 4

REVIEW MARKET ACCESS OPPORTUNITIES AND POTENTIAL VALUE ADDED FISHERY PRODUCTS

4.0 Introduction

MSG countries are fortunate enough to have preferential market access for fish (tuna) export to overseas and regional markets and this is facilitated by various international and regional trade agreements. Currently, MSG countries are exporting fish and fish products to Japan, EU, USA, Asia, Australia, New Zealand and Pacific Island countries. This chapter is divided in three sections. Section one, provides a review of international and regional trade agreements which provide MSG countries preferential market access (duty free and quota free) for fish and fish products export to overseas markets. Within this section, the threats, challenges and opportunities are identified. It also examines the various rules for the major importing countries (Japan, EU and USA). Section two discusses the types of fish and fish products that are exported to overseas markets and identifies new potential value added fishery products which MSG countries can be involved in and sell to overseas markets. Section three, briefly examines the benefit MSG countries can from inter-fishery product trade.

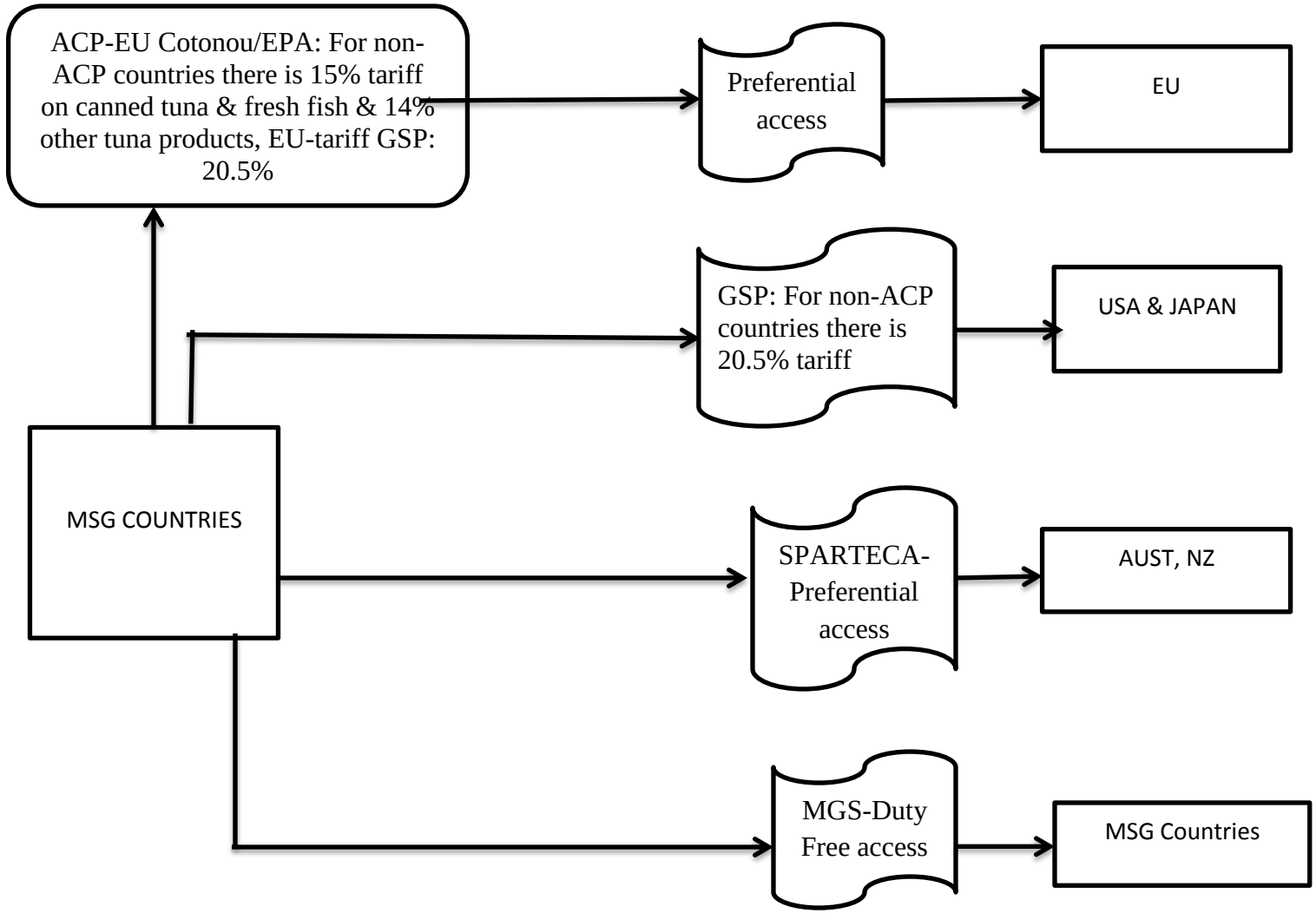
Section 1:

4.1 Market Access Opportunities for MGS Fisheries: Trade Agreements, Barriers of Trade & How to Remove the Barriers

The main international and regional trade agreements which provide MSG countries the preferential market access for fish export to overseas markets are: Cotonou Agreement (2000-2020), Economic Partnership Agreements (EPA, 2007+), Generalised System of Preferences (GSP), South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA-1981), Pacific Island Countries Trade Agreement (PICTA-2001+), the Pacific Agreement on Closer Economic Relations (PACER-2002+), Melanesian Spearhead Group Trade Agreement (MSG-1993+) and various Bilateral Trade Agreements, US treaty, FSM Arrangement, PNA Agreement and Parties to Nauru Agreement. Other agreements such as Aid for Trade, Pacific

Plan (PP-2005) and Council of Regional Organisations of the Pacific (CROP) are briefly examined. For each trade agreement, the opportunity for preferential market access, tariff rates, trade barriers, threats and challenges are examined and some recommendations provided.

Figure 4.1: Summary of Trade Agreements, Markets and Tariff rates



Source: Figure designed by authors (2012)

4.1.1 Access for Pacific Tuna Products under Cotonou Agreement (2000-2023)

MSG countries have targeted EU market for export of frozen fish, cooked loins and canned tuna. In 2000, the Lomé Conventions were replaced with the Cotonou Agreement in order to comply with the trade laws of the World Trade Organisation (WTO). The rationale behind the EU-ACP trade agreement was that it will allow ACP products to enter EU market against lower cost competition in the world economy (especially goods coming out of South East Asia and that it would enhance ACP economies. The development of large-scale industrial processing of tuna in MSG countries was due to the duty-free and quota-free access to EU markets under the Cotonou Agreement. This trade agreement has been the major enabling factor in the development of tuna semi-processing plants and canneries in MSG countries with government-private partnership with foreign companies. For example, the three main tuna canneries in MSG countries are RD Tuna Canners in PNG, PAFCO in Fiji, Soltai in the Solomon Islands. The end result of the Lomé/Cotonou Agreements was attraction of foreign direct investment, employment creation and general spread effect to each country's economy (Campling et al; 2007).

On the whole, the Lomé Conventions and Cotonou Agreement has offered a real competitive advantage *vis-à-vis* Southeast Asian competition (especially against Thailand and Philippines) which have to pay a 24% tariff on their canned tuna exports to the EU. MSG countries need to maintain this competitive advantage in the years to come if MGS countries want to seriously develop its fisheries industry.

4.1.1.1 Threat and challenges

Policy makers should be aware that the major threat is that in future as per WTO negotiations, trade agreements will become less favourable for MSG countries to export fish products to EU. The erosion of preferential access has already started, for example, the Cotonou Agreement states that, after 2007, ACP-EU trade preferences should gradually become reciprocal (i.e. both-way) in the framework of a set of Economic Partnership Agreements (EPAs). Also noteworthy is that Cotonou Agreement will end in 2020 and things will change with new WTO negotiations. The implication of Cotonou for MSG countries is that if MSG countries want to have preferential

access into EU market then extension of the Cotonou preference is necessary in the new proposed Pacific EPAs.

4.1.2 Access for Pacific Tuna Products under ACP-EU Economic Partnership Agreements (EPAs) and EU Market

Since 2007 few PICs have started negotiations for Economic Partnership Agreements (EPAs) with EU. In order for ACP-EU preferential market access to be compatible with the rules of the WTO, a reform of the old relationship between the ACP and the EU was initiated in 2007 so that trade could be fairer. As part of the legal text of the Cotonou Agreement, the ACP and the EU have agreed to negotiate a series of Economic Partnership Agreements (EPAs) and basically, EPAs establish a framework of rules and procedures to govern trade relationships between the EU and ACP countries. One requirement is that, rather than being one-way non-reciprocal relationship the WTO states that trade outside of the framework of the Generalised System of Preferences (GSP) must be reciprocal (i.e. ACP states must offer reduced tariffs to EU goods), otherwise it is considered by WTO rules to be 'discriminatory' against those developing countries that are not part of the ACP group. Six sub-regions of the ACP are currently negotiating separate EPAs.

One advantage of EPA, is that the strict 'Rules of Origin' (RoO) on fish exports has been relaxed. Under the Lomé/Cotonou Agreements the RoO, the export opportunities for PICs had been severely restricted. Under the EPA rules of origin, as long as fish that are processed on-shore in the Pacific Islands countries, the nationality of the ownership of the vessel and crew will no longer be relevant as is required under Lomé/Cotonou Agreements (Dearden, 2007). Other benefits of the interim EPA include improved sectoral rules of origin, especially for fishery products (canned fish), agro-processing and textiles.

Currently, a few Pacific ACP states and the European Commission are negotiating interim EPAs, which are expected to be finalised in the near future (WTO, 2010). It is likely that not all PICs have to sign the EPA Agreement on Goods (i.e. on reciprocal tariff reductions), and it is likely that only a handful of PICs will actually do so (Campling et al, 2007). Fiji and PNG are the only Pacific ACP States (PACPS) that started the Interim EPA in 2007 and since then Fiji has signed

the EPA with EU (Interview with Mr Ali- Fiji's Representative to EPA meeting Nadi: February 2012). Fiji agreed to liberalise just over 84% of its imports from the EU over a period ending in 2023. Solomon Islands have been participating in the negotiation of an EPA with the European Commission since 2002, but unfortunately, no agreement could be reached and negotiation of a comprehensive EPA is ongoing (WTO, 2010).

All MSG countries (particularly PNG, Fiji and Solomon Islands) are dependent upon maintaining market access to the EU for their exports of tuna and thus negotiation of EPA is imperative. For PNG tuna exports are worth €40m per annum and PNG requires continued duty-free access to the EU to maintain its competitive advantage over Thailand and the Philippines. It is suggested that MGS countries should sign the EPA Agreement on Goods in order to benefit from duty-free market access for tuna products under the EPA. Those PICs that did not sign will have to utilise the EU-GSP agreement which provide the same preferences, but with slightly stricter Rules of Origin for fish and fish products.

4.1.2.1 Threat and challenges

Policy makers should be aware of two challenges. First, sanitary standards for EU market are strict and MGS countries need to be vigilant about this. Lessons can be learnt from the Fiji case. In 2008, Fiji was de-listed and its eligibility to export any fishery-related products was stopped until the Competent Authority complied with the EC's stringent sanitary and phytosanitary regulations. These strict rules had hindered Fiji from fully utilising this market access for few months. Second, in future, the commencement of EPA negotiations and the initialling of the Interim EPA may require Fiji to commence formal consultations with Australia and New Zealand. Informal 'PACER-Plus' consultations have already started with Australia and New Zealand (WTO, 2010). Under the 'PACER-Plus' rules, PICs negotiating the goods agreement for example with the EU might be required negotiate an offer of the same treatment to Australia and New Zealand. Article 6 (3.a) of PACER states that " if PICs sign a trade agreement with another developed country (i.e. the EU) then they shall offer to undertake consultations as soon as practicable with Australia and New Zealand, whether individually or jointly, with a view to the commencement of negotiation of free trade arrangements". While the wording of this text does not commit the PICs to sign an EPA-equivalent with Australia and New Zealand, there will be significant diplomatic pressure to do so (Campling et al; 2007). In addition, there is little

effective/real preferential market access available for PIC tuna products under PACER because in Australia and New Zealand import tariffs for tuna and tuna products is already very low and PIC are already finding it hard to export tuna products to Australia and New Zealand because of competition from low cost producers such as Thailand and Philippines.

4.1.3 Access for Pacific Tuna Products under EU's Generalised System of Preferences (GSP)

In addition to Cotonou and EPA, there exists other forms of preferential market access into EU, USA and Japanese markets and this is under the EU's Generalised System of Preferences (GSP). The GSP is an arrangement that formally allows developed countries to offer non-reciprocal preferential access to their markets for goods from qualifying developing countries. Until 2006, this offered no tariff preference on tuna, but from January 2006 it provided a 3.5% reduction on the Most-Favoured Nation (MFN) tariff (e.g. from 24% to 20.5% for canned tuna). The new 'GSP Plus' (or GSP+) is available to countries categorised by the EU whose 'economies are poorly diversified, and therefore dependent and vulnerable', and those that have also ratified and implemented up to 27 international conventions on good governance, human rights and the environment. The trade preference also offers duty free market access for all tuna products, subject to rules of origin. For example, Solomon Islands, as a least developed country, benefits from tariff preferences under many developed countries' Generalised System of Preferences schemes, including the European Union, Australia and New Zealand.

4.1.3.1 Threat and challenges

MSG countries should not reply too much on this agreement because there is no long-term guarantee that the preferential market access will be available all the time. EU has put a tariff of 24% for non-developing countries exporting canned tuna and tuna loins to EU. The main reason being is that over the last few years there has been a concerted effort by East Asian countries (especially by Thailand and Philippines) to reduce EU 20.5% tariffs in WTO meetings. Thailand and Philippines (non-developing countries) have strongly lobbied at WTO meetings to reduce the margin of preference on canned tuna and tuna loins (Campling et al; 2007). Despite the difficulty in completing the Doha Development Round negotiations, global liberalisation of tariffs and the

following preference erosion will continue to be a problem for MSG. While MSG should take advantage of preferences that are currently available, they should remain aware of the global negotiations on tariff liberalisation, and plan responses accordingly.

Thus, it is important for PICs (including MSG) to lobby to block the reduction of the margin of preference on canned tuna and tuna loins to any more than the current 24% offered to all other developing countries under the GSP. MSG should not undertake this lobbying effort alone but in partnership with the following five tuna stakeholders:

(i) Other ACP countries;

(ii) EU tuna industry lobby groups such as EUROTHON;

(iii) Tuna producing countries benefiting from the GSP+ (i.e. mainly in Latin America, but also Maldives and Sri Lanka);

(iv) Small Island Developing Sates (SIDS) and/ or Small and Vulnerable Economies (SVE) groupings. For example, Solomon Islands, though the Pacific Islands Forum Secretariat (PIFS) Geneva office, has been actively involved in the work programme on SVEs, alongside 21 other countries mostly from the Pacific, Caribbean and Central America.

(v) Influential NGOs (Green Peace, WWF, and Oxfam) who are engaged in defending developing country concerns in the international trade arena (Campling, et al, 2007).

Given the fact that global liberalisation of tariffs and preference erosion will continue to be a problem for MSG, a 'best case scenario' for MSG countries should treat EU tuna tariffs as a 'sensitive' product and to create a 'carve-out clause' at the WTO that recognises their importance to socio-economic development in the ACP. This effort complements the resolution of the ACP-EU Joint Parliamentary Assembly on fisheries and their social and environmental aspects in developing countries in June 2006 (Campling et al; 2007).

4.1.4 Aid for Trade

MSG countries have welcomed the WTO initiative on Aid for Trade and would like the WTO to coordinate with all the members and other donor agencies to ensure that the Aid for Trade initiative is fully implemented to enable MSG countries to address its adjustment problems, supply side constraints, and develop export competitiveness to be able to utilise market access opportunities offered by trade liberalisation. MSG countries overseas trade and foreign missions will work with donor countries and agencies to ensure that Aid for Trade is provided to enable MSG countries to build its trade capacity and infrastructure (Campling et al; 2007).

For example, Solomon Islands, as a least developed country member, is already benefiting from generously improved market access into many developed and developing economies as a result of the Doha Development Round (Campling et al; 2007). As a result, the conclusion of Doha is likely to impact Solomon Islands negatively by eliminating or greatly reducing significant tariff preferences (WTO, 2010). Of particular concern to the national economy will be the loss of a valuable fisheries preference into the EU market. Whilst Solomon Islands believes that in the long-term benefits of progressive mutual tariff reduction, it recognises that the costs of adjustment will be significant, and of particular concern in the context of small, vulnerable, least developed economies with very limited flexibility to support and facilitate significant shifts in employment. In this context, the aid for trade already received both through the 'Integrated Framework Programme' (IFP) and from bilateral donors is welcomed, but Solomon Islands recognises that it has a long way to go before it is able to offer its private sector the internationally competitive infrastructure, services and transport links it needs to survive without historical tariff preferences (WTO, 2010). The Integrated Framework (IF), and especially the programme of capacity expansion supported by the enhanced IF budget, has already substantially increased the country's capacity to absorb and effectively use aid for trade investments (WTO, 2010).

4.1.5 Japan and USA Markets- No Trade Agreements

Apart from GSP, there is no preferential market access available for PICs tuna products to Japan and USA, even though they are major markets for fresh and frozen fish. It is suggested that more bi-lateral trade agreements should be developed with these two large markets for tuna products from MSG countries.

4.1.6 China Markets- No Trade Agreements

MSG countries should consider negotiating preferential trade agreement with China. Currently MGs fish products to China face high tariff. It is suggested that bi-lateral trade agreements be developed with these large market for fisheries products from MSG countries.

4.1.7 Market Access to Australia and New Zealand: South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA)

Since 1981, under the SPARTECA trade agreement, MSG countries are exporting fish and fish products duty-free and quota-free to Australia and New Zealand market. The main objective of SPARTECA is to provide 14 Forum Island Countries (FICs) duty-free and unrestricted access to the markets of Australia and New Zealand over a wide a range of products and to promote and facilitate economic co-operation, including commercial, industrial, agricultural and technical co-operation (Forum Secretariat, 1981).

However, surprisingly the export of fish and fisheries products to Australia and New Zealand has been relatively small and the supply has not been consistent. There are two reasons for this: Firstly, MGS countries have focused on exporting fish and fish products to larger markets such as Japan, USA and EU. Secondly, Australia and NZ are fairly self-sufficient in fish products and they are also major exporters to overseas markets. Having said this MGS countries should in a coordinated effort target more to the Australian and NZ markets.

4.1.7.1 Challenges and barriers to trade

There are two major reasons for the failure of SPARTECA to act as a catalyst for improved MSG market access to Australia and New Zealand. First, the RoO under SPARTECA are very complex and very strict especially to New Zealand. It is suggested that PICs should push for these rules to be revised in order to improve market access for fish to Australia and New Zealand. Secondly, even if these RoO requirements were met, the import tariffs for fish in Australia and New Zealand are already low, thus competitive exporters from Southeast Asia (Thailand and Philippines) are out-competing MSG firms (Campling, et al, 2007). It is suggested that PICs should lobby with Australia and New Zealand not to reduce the import tariff for fish any further.

4.1.7 Pacific Island Countries Trade Agreement (PICTA): 2001

In August 2001, PICTA was signed with the objective of establishing a free trade area among the 14 Forum Island Countries (FICs[4]). It entered into force in 2003, but three MSG members (Fiji, Solomon Islands and Vanuatu- not PNG) have passed the necessary legislation to commence trading under PICTA.[5] Only Fiji had commenced trading under PICTA by early 2007 and Solomon Islands began trading in late 2007. In addition, PNG, the Solomon Islands and Vanuatu committed themselves to move towards trade liberalisation over an eight year period from 2005. PICTA requires developing FICs to reduce ad valorem tariffs to zero by 2015 and Least Developed Countries (LDCs) and Small Island States (SIS) by 2017. Since Solomon Islands and Vanuatu are classified as LDCs, they have time till 2017. For those products that qualify for the negative list exemption, tariffs will be reduced to zero by 2020 for developing FICs and 2021 for LDCs and SIS.[6] Hence, MSG countries are required to reduce its maximum ad-varolem tariffs on PICTA originating goods to 15% in 2009, 10% by 2011, 5% by 2013 and zero by 2015. Maximum specific duties on PICTA originating goods are to be reduced to 60% in 2009, 40% by 2011, 20% by 2013 and zero by 2015. Lower duties are also supposed to be eliminated at a faster pace. Since Fiji has no 'excepted imports' (or negative list) it is required to phase out all its tariffs on PICTA originating goods by 2015.

[4] Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.
[5] These are Cook Islands, Niue, Samoa, the Solomon Islands and Vanuatu.
[6] Small island states are the Cook Islands, Kiribati, Nauru, Niue, Marshall Islands and Tuvalu. Least developed states are the Solomon Islands, Kiribati, Samoa (due to soon lose this status), Tuvalu and Vanuatu. All FICs are required to eliminate non-tariff barriers immediately. For products to qualify for trade under PICTA, they must meet the 40% local content criteria (RoO).

Currently, PICTA covers trade in goods only (temporarily excluding alcohol and tobacco). However, negotiations to include trade in services and temporary movement of natural persons are expected to be finalised in 2009. Studies will also be conducted on the possibility of including government procurement and the creation of a Pacific Single Market and Economy to promote deeper integration.

4.1.8 The Pacific Agreement on Closer Economic Relations (PACER): 2002+

PACER was signed in August 2001, and entered into force in October 2002. Fiji, Solomon Islands and Vanuatu have signed PACER in 2001. It is not a free trade agreement but a framework ('umbrella') agreement for cooperation on trade and economic integration between the 14 FICs and Australia and New Zealand, with a view towards the development of a single regional market. It also provides for assistance to FICs to enable them to implement PICTA including the Regional Trade Facilitation Programme (RTFP), which is aimed at addressing customs issues, standards and conformance and quarantine issues. PACER envisages the negotiation of Forum-wide trade arrangements eight years after PICTA enters into force (2011) or earlier when the FICs enter into a free trade agreement with any developed country (OECD) or any country with gross domestic product that is higher than that of New Zealand. The commencement of EPA negotiations and the start of the Interim EPA may require Fiji to commence formal consultations with Australia and New Zealand. Informal "PACER-Plus" consultations have already started with Australia and New Zealand but formal negotiations may commence once the office of the Chief Trade Advisor is established.

In 2009, the Forum Leaders launched negotiations on PACER-Plus. The work programme for this will be quite busy in 2012 as the FICs and Australia and New Zealand prepare themselves to negotiate what could be a comprehensive regional trade agreement. The Forum Secretariat is continuing to assist the FICs in negotiating a PICTA trade in services agreement as well as the Economic Partnership Agreement with the European Union.

4.1.9 Melanesian Spearhead Group Trade Agreement (MSG): 1993

MSG countries are relatively open island economies and are subject to natural and external shocks and these external factors undermine its efforts to participate in and benefit from the multilateral trading system. In order to address some of these challenges, MSG countries fully support regional integration as a first step towards integration into the global economy.

The MSG is a free trade agreement between Fiji, Papua New Guinea, Vanuatu and Solomon Islands and this agreement was signed in 1993. Fiji joined the MSG Agreement in 1998 and since 2006; Fiji provides duty free access to all goods originating from MSG countries except those that are expressly excluded in the Agreement. The MSG Agreement was revised in October 2005 to adopt a negative list approach to liberalisation on trade in goods.[7] The Agreement has less onerous rules of origin (change in 4-digit HS classification) compared to PICTA. With MSG members being the larger of the Pacific Island countries, the majority of intra-regional trade in goods is conducted under MSG rather than PICTA. Given the political, social and cultural ties of MSG countries, it is natural that the MSG would be the first regional platform on which a reciprocal trade agreement could be built.

4.1.10 Bilateral Trade Agreements

There are a number of bi-lateral trade agreements. With regards to fisheries, Vanuatu has bilateral trade agreements with China, Taiwan, Korea and Fiji for their vessels to ship in Vanuatu's EEZ. Fiji has also signed the Trade and Economic Cooperation Agreement (FATERA) with Australia in March 1999. The FATERA sets a framework to improve bilateral trade but excludes preferential arrangements. The non-reciprocal bilateral agreements that Fiji had with Vanuatu and Papua New Guinea have expired.[8]

Non-Trade Arrangements

[7] The negative listing approach means that all products, except those on the negative list, are deemed to qualify for preferential tariffs. Fiji has no negative list.

[8] Fiji is undertaking national consultations on the Cook Islands' request to renegotiate a bilateral agreement.

There are some non-trade arrangements which have impact on MSG countries fisheries sector that needs to be acknowledged and these are as follows.

4.1.11 Pacific Plan 2005

MSG countries who are members of the Pacific Islands Forum, have endorsed the Pacific Plan in October 2005, which amongst other things seeks to strengthen regionalism and increase sustainable regional trade, including trade in services, investment and temporary movement of persons in order to promote pro-poor economic growth. The Pacific Plan supports the negotiation and implementation of regional trade arrangements to expand market access and this is the context in which MSG countries have been participating in various inter-regional trade (Forum Secretariat, 2007).

The Pacific Plan proposes a new and innovative approach to the unique challenges that Pacific island countries face through a framework of greater regional cooperation and integration. Central to the Pacific Plan are a number of 'initiatives' that have been identified as a way to progress development across the region. These initiatives overlap to a varying degree and have been developed around four pillars. They are: 'economic growth'; 'sustainable development'; 'good governance'; and 'security'. These four pillars represents the key areas (and challenges) that the Pacific as a region must work to address should it be able to improve living standards, increase access to opportunity and stimulate pro-poor growth for the people of the Pacific (Forum Secretariat, 2007).

4.1.12 Council of Regional Organizations in the Pacific (CROP)

In 1988, the Pacific Forum Leaders established the Council of Regional Organisations of the Pacific, CROP (formerly the South Pacific Organisations Coordinating Committee, SPOCC). All MSG countries are its members. The mandate of CROP is to improve cooperation, coordination, and collaboration among the various intergovernmental regional organisations to work toward achieving the common goal of sustainable development in the Pacific region. CROP comprises the heads of the intergovernmental regional organisations in the Pacific.

CROP functions as (i) a coordination mechanism between the heads of the regional organisations in the Pacific, and (ii) a high-level advisory body, to provide policy advice and may assist in facilitating policy formulation at national, regional and international level. CROP provides a forum to enable CROP heads to collectively review progress with their respective organisations' that contribute on the Pacific Plan.

CROP takes advantage of opportunities to pool and share expertise and resources to optimise benefits to member countries and territories. Where CROP sees the need, it establishes specific working groups with clear terms of reference to address important emerging or on-going priority issues of a cross-cutting nature.

4.1.13 Parties to the Nauru Agreement (PNA)

The Nauru agreement is a sub-regional agreement that is concerned with the management fisheries of PNA countries. The PNA include countries such as Federated States of Micronesia (FSM), Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu). Two MSG countries Fiji and Vanuatu are not part of PNA. PNA has harmonized the terms of access for distant water fishing vessels, granted preferential access to the partners of the PNA and has provided a provisional limit of 164 DWFN purse seine vessels that could be licensed to fish in the PNA EEZ (Dunn et al; 2005).

4.1.14 US Treaty

There is the US Treaty that is important for the tuna industry of the PICs. The US Treaty is an agreement between 16 PICs (Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu) and US to enable the US purse seine vessels to fish in the EEZ of the sixteen PICs who are party to the agreement. Under the US Treaty provides the US vessels have the right to fish in the PICs EEZ and US pays an access fee that is shared by the PICs. PICS get around US $21 million per year under the US Treaty (Havice and Reed (2012).

4.1.15 FSM Arrangement

The FSM arrangement was established in 1995 and deals with purse seine fishery. The signatories to the FSM arrangement are FMS, Marshall Islands, Kiribati, Nauru, Palau, PNG and Solomon Islands. The FSM arrangement is an agreement between the states of the PNA regarding to access to fishing resources by other parties. This arrangement ensures that the access of domestic vessels on terms is not less favourable than those granted to the DWFN. The FSM arrangement further established a licensing regime that gives preferential access to the fishing vessels that provides genuine and quantifiable economic benefits to the parties of the FSM arrangement (Thoulag, 2010).

4.1.16 Palau Agreement

The Palau Arrangement was developed in 1995 as a sub-regional group by some members of FFA for the sustainable use of the tuna resource. The member countries are Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, and Papua New Guinea and these members are also part of the Parties to the Nauru Arrangement. Under the Palau arrangement, the PICs have developed different legal and political structures to sustainably management the tuna resources through access fees and local development of the fisheries sector. The Palau Arrangement is a unique agreement because it provides a mechanism whereby fisheries dependent states can sustainably manage migratory fish stocks (FFA, 2007).

4.2 Rules/ Regulations for Major Importing Countries: Japan, EU and USA

Each of the importing countries has their own rules to import fish and fish products.

Table 4.1: Rules/ Regulations for Major Importing Countries: Japan, EU and USA

Country	Rules for importing
Japan	1. Food and Sanitary Law (Customs and Quarantine) 2. FAO Codex Alimertius
USA	1. Food and Sanitary Law (Customs and Quarantine)

	2. HACCP 3. Assurance by government of exporting countries
EU	1. Competency Authority- Sanitary and Phytosanitary Measures (SPS). 2. HACCP 3. IUU compliant

Section 2:

4.3 Potential Value Added Fishery Products where MSG Can Benefit From Inter-Fishery Product Trade

This section outlines what products MSG countries are exporting and to which overseas markets. It also identifies the new potential value added fishery products which MSG countries can be involved in and sell to overseas markets.

4.3.1.1 Japan under Generalised System of Preferences (GSP)

- Fresh tuna for sashimi markets (have to be delivered within 48 hours).
- Frozen fish and tuna
- Uncooked loins (uncooked) (small quantities)
- Canned tuna (small quantities)

4.3.1.2 USA under Generalised System of Preferences (GSP)

- Fresh chilled tuna for sashimi markets (delivered within 48 hours)
- Frozen tuna
- Fresh loins (uncooked)
- Loins (cooked) for canneries to make canned tuna (eg form PAFCO via Bumble Bee).

4.3.1.3 EU under Cotonou Agreement (2000-2020) and now under Economic Partnership Agreements (EPA, 2007+).

- Chilled tuna
- Frozen tuna
- Fresh loins (uncooked)
- Frozen loins

- Canned tuna.

4.3.1.4 Australia and New Zealand under South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA-1981+).

- Chilled tuna
- Frozen tuna
- Fresh Loins (uncooked)
- Loins (cooked) for canneries to make canned tuna
- Canned tuna

4.3.1.5 Targeting of Pacific Diaspora Overseas

Since there are thousands of Pacific Islanders living in NZ, Australia, USA, Canada and EU MSG countries should focus on exporting more fresh fish and fish products to these countries. The Pacific diaspora is a good niche market and further development in this sector is needed. For example, the Pacific islanders prefer salt water fish rather than freshwater fish.

4.3.2 Potential value added fishery products

There is a lot of potential for MSG countries to further add value to existing fish and fish products and embark on new product types.

1.0 Value adding in Frozen Tuna

Since frozen fish markets in Japan and USA fetch good price approximately (USD$5-8 per kilo), more value adding should be done in MSG countries before fresh fish is exported. For example, instead of just freeing the whole fish, in addition to the processes of 'gutting' and 'gilling' (GG), ''gutting' and 'cutting head' (GCH), additional processes such as skinning (GHS) would add more value to the fresh tuna for frozen markets because labour is more expensive in developed countries to clean the fish. Similarly for loin exports, 'skinned and cooked' loins (SC) (as done in PACFO in Fiji) would be preferable than 'uncooked loins' which are currently sent by private sector fishing companies in MSG countries. Furthermore, MSG countries should diversify their tuna product lines and be involved in more value adding activities. New tuna products should

be embarked upon. For example, in canned tuna, another line item could be 'tuna in pouch', 'tuna salad', 'tuna paste', tuna fish balls', 'fish cake', etc.

2.0 Value adding in Loins

Similarly for loin exports, 'skinned and cooked' loins (SC) (as done in PACFO in Fiji) would be preferable than 'uncooked loins' which are currently sent by private sector fishing companies in Fiji. It would be wise for MSG countries to 'cook' and 'skin' loins before exporting. Cooked and skinned loins fetches better price.

3.0 Processing of other fish and fish Products

MSG countries should further develop processing of other fish products such as mackerel, sardine, fish meal, fertilizer, sea cucumber, tilapia and seaweeds. For example, there is high demand for processed Tilapia products in the USA market and high demand for dried sea cucumber and seaweed in the Asian markets particularly China.

4.4 New Fisheries Products and Value Adding to the USA, Japan, and EU

4.4.1 Potential Fisheries Exports to Japan

Table 4.2 shows the 2011 demand for fisheries products in Japan. MSG countries can use this demand data to target the categories of fisheries products that could be exported to the Japanese markets.

Table 4.2: Demand for Fisheries Products in Japan

No.	Product	Demand in mt 2011
	Fresh	
1	Yellowfin tuna	13611
2	Bigeye tuna	12089
3	Other fish	4,717
	Frozen	
3	Pacific sockeye	40,827
	Pacific coho	94,002
5	Other Pacific Salmon	6,510
6	Yellowfin tuna	47,817

7	Skipjack	42,244
8	Bigeye tuna	62,083
9	Cod	16,687
10	Sardine	4,977
11	Mackerel	59,398
12	Jack Mackerel	32,350
13	Rockfish	23,547
14	Tuna, fillet	24,734
15	Other fish, fillet	68,386
16	Other minced fish	119,943
17	Dried and Salted fish-Tuna	4,291
18	Other minced fish	
	Seaweed	
19	Dried	10,878
20	Salted	12,094
	Prepared Tuna	
21	Tuna	26,654
22	Sardine	1,326
23	Eel	14,642

Source: NOAA Fisheries Service Database. (2012)

Table 4.2 shows that the MSG countries should target products such as seaweed, dried and fresh tuna, frozen Pacific sockeye and coho for the US market.

Table 4.3: Demand for Fisheries Products in USA

No.	Product	Demand in kilos 2011
1	Albacore fresh and frozen	4,462,172
2	Bigeye fresh and frozen	3,497,467
3	Mackerel Fillet and Dried	46,807
4	Fresh Mackerel	264,549
5	Mackerel Smoked	182,523
6	Tilapia Fresh	20,761,834
7	Tilapia Frozen	132,486,129
8	Fish Fillets-Dried Salted and Brine	11,909,845
9	Fish Balls, Cakes and Pudding-Not in Oil	8,919,954
10	Fish Balls Cakes and Pudding-In Oil	1,069,598
11	Fish meal unfit for human consumption	31,586,000
12	Cod Liver Oil	1,305,215
13	Octopus Salted Brine and in oil	15,231,037
14	Oysters Canned	2,679,565
15	Oysters canned and smoked	4,104,944

Source: NOAA (2012)

Table 4.3 shows that there is high demand for Tilapia (fresh and frozen), fish fillets and fish meal.

4.5 New Products that could be developed

Canneries in MSG countries could also embark on new tuna products such as

- tuna in pouch
- tuna salad
- Vacuum packed fish/tuna
- tuna paste
- tuna fish balls
- fish cake

Firstly, 'tuna in pouch' is becoming popular globally and thus this is one product that maybe worth looking into (see photo attached). Consumers in overseas markets prefer cooked and easy to heat and eat tuna and 'tuna in pouch' is the best choice.

Secondly, 'tuna salad' is another tuna products canneries in MSG countries might like to consider. See photo for Bumble Bee fat free tuna salad.

Although, there might be some prospects in future to embark on new tuna products, the limitations of the existing canneries and marketing capacity of MSG countries must be noted. It is suggested that development of new products or expansion of canneries in MGS countries should be done in partnership with the existing major global marketers of tuna, for example RD canners (PNG), Frabelle (PNG), South Seas (PNG), Bumble Bee (Fiji) and Tri-marine (Solomon Islands). Without such partnership it would be difficult to sell Pacific Island tuna.

Section 3:

4.6 Strengthening cooperation on on-shore processing development of tuna within MSG members

This section examines the benefit MSG countries can from inter-fishery product trade. While there is some trade among the MSG members with regards to tuna resources but this remains minimal. Much could be achieved under the revised MSG Agreement which has extended the scope for trade and other closer co-operative relations amongst the MSG members because fisheries trade otherwise cannot be pursued without paying attention to its management regime as discussed in the earlier part of the report.

MGS countries should have more solidarity and need to cooperate to further enhance on-shore processing development of tuna within MSG members. MSG countries should be involved in more of down streaming processing and value adding to take full advantage of their fisheries resources. The existing canned tuna plants in PNG, Solomon Islands and Fiji could be expanded

in partnership with private sector. Lessons can be learnt from the past mistakes in each country. Any development of cannery in MGS countries should be done in partnership with the major global marketers of tuna, for example Bumble Bee, Thai Union, Star Kist, South Seas, etc. Without such partnership it would be difficult to sell Pacific Island tuna.

The scope for trade is also heightened by the fact that these members represent the larger island grouping of the Pacific region, in terms of land area, fishing zones, people and capacity. The MSG countries therefore are strategically placed to influence global and regional decisions in the interest of the Pacific region and the wider global community as stewards of a large area of Western and Central Pacific Ocean under their national jurisdiction. The MSG window allows for greater co-operation amongst the Pacific Island Countries that extends beyond the PNA. Thus this can be seen as a positive step towards co-operation between PNA and non-PNA states. This is particularly relevant for MSG countries fisheries sector where tuna stocks are a shared commodity within an overlapping eco-region and majority being members of the coral triangle. By identifying the strengths and constraints of each member, the complementarities amongst these countries can be identified to boost economic growth and trade.

Increasingly on the global front, there are calls to improve fisheries management to achieve sustainable outcomes that can then support sustainable trade. Economies of scale can only be realized within this framework which explores the possibilities of joint arrangements with public goods such as sharing of skills and scarce resources. Therefore, MSG Trade Agreement provides the platform where the members can engage in trade as well as implement their fisheries management measures since these are intrinsically linked to trade. For example, the sharing of resources for MCS and its enforcement tasks, movement of goods through their ports through harmonization of trade rules and environmental and social standards including customs and quarantine regulations.

The current trends with business as usual approach points to the fact the MSG members may be competing against each other and allowing investors to exploit this situation by ‘shopping around’. This leaves not only the investors at risk but also discourages innovation and long term stability in investments. This ultimately leaves large groups of local workers vulnerable and unemployed which further creates social unrest.

There are many ways opportunities for MSG countries to consolidate and integrate efforts in downstream processing and inter trade amongst them. Some of these ways are:

- Having one collaborative Regional Tuna Management Plan, rather individual national plans.
- PNG, Fiji and Solomon Islands should capitalize on the production of canned tuna whilst Vanuatu should capitalize more on the fishing of tuna.
- High preference should be given to the MSG countries vessels fishing to catch fish in each other's EEZ as compared to the DWFN tuna fishing vessels.
- The MSG countries should share their knowledge, key competencies, research and development information with each other to foster the integration of efforts for fishery downstream processing.

4.7 Conclusion

Firstly, this chapter has outlined and summarised the major international and regional trade agreements which provides MSG countries preferential market access for fish and fish products export to overseas markets and examined the rules imposed by major importing countries such as Japan, EU and USA. The following trade agreements were examined: Cotonou Agreement (2000-2020), Economic Partnership Agreements (EPA-2008+), Generalised System of Preferences (GSP), Aid for Trade, South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA-1981+), Pacific Island Countries Trade Agreement (PICTA- 2001+), The Pacific Agreement on Closer Economic Relations (PACER- 2002+), Melanesian Spearhead Group Trade Agreement (MSG-1993+), various Bilateral Trade Agreements, Pacific Plan (PP-2005+), and Council of Regional Organisations of the Pacific (CROP). For each trade agreement, the opportunity for preferential market access, tariff rates, trade barriers, threats and challenges were examined and some recommendations are made.

Secondly, this chapter outlined the types of fish and fish products that are exported to overseas markets and identified new potential value added fishery products which MSG countries can be involved in and sell to overseas markets.

Thirdly, the chapter briefly examined the benefit MSG countries can from inter-fishery product trade. It is suggested that MGS countries should continue and further strengthen the inter-trade of fish products such as canned, chilled and frozen amongst MSG members.

CHAPTER 5
OPPORTUNITIES FOR MSG TO CONSOLIDATE AND INTEGRATIONOF OF EFFORTS IN RELATIONS TO FISHERY DOWNSTREAM PROCESSING AND TRADE OPTIONS

5.0 Introduction

The primary objective of this chapter is to discuss the international and regional trade of tuna and tune commodities of the MSG countries and volume and dollar value of tuna caught in the MSG countries. This chapter is divided as follows. The first section discusses the export of tuna from Fiji and the import of tuna by Fiji. The second section outlines the export of tuna from Vanuatu and the import of tuna by Vanuatu. The third section discusses the export of tuna from PNG and the import of tuna by PNG. The fourth final section discusses the export of tuna from Solomon Islands and the import of tuna by Solomon Islands. The final section discusses the volume and dollar value of tuna caught in the MSG countries.

PART 1:

5.1 Export of Tuna from Fiji and the Import of Tuna by Fiji

The export data for year 2010 shows that Fiji exported 87% of tuna to Japan and America. The Japanese exports are mainly for the sashimi market (grade 1) chilled and frozen tuna to the American markets (grade 2) (Amoe, 2011). Albacore or Skipjack tuna are either processed at the PAFCO or exported to Pago Pago, Samoa. The primary raw material for PAFCO is received by the domestic and foreign fishing vessels. The PAFCO exports tuna in three forms, namely; canned fish, packed tuna loins, and as fishmeal. The canned tuna is mainly exported to American, Canadian and Japanese markets (Amoe, 2011). Tuna loins are exported to America whereas fishmeal is exported to Philippines and Japan. The poor grade tuna are sold locally in

the domestic market. Table 5.1 shows the export of tuna to the major international markets for year 2010.

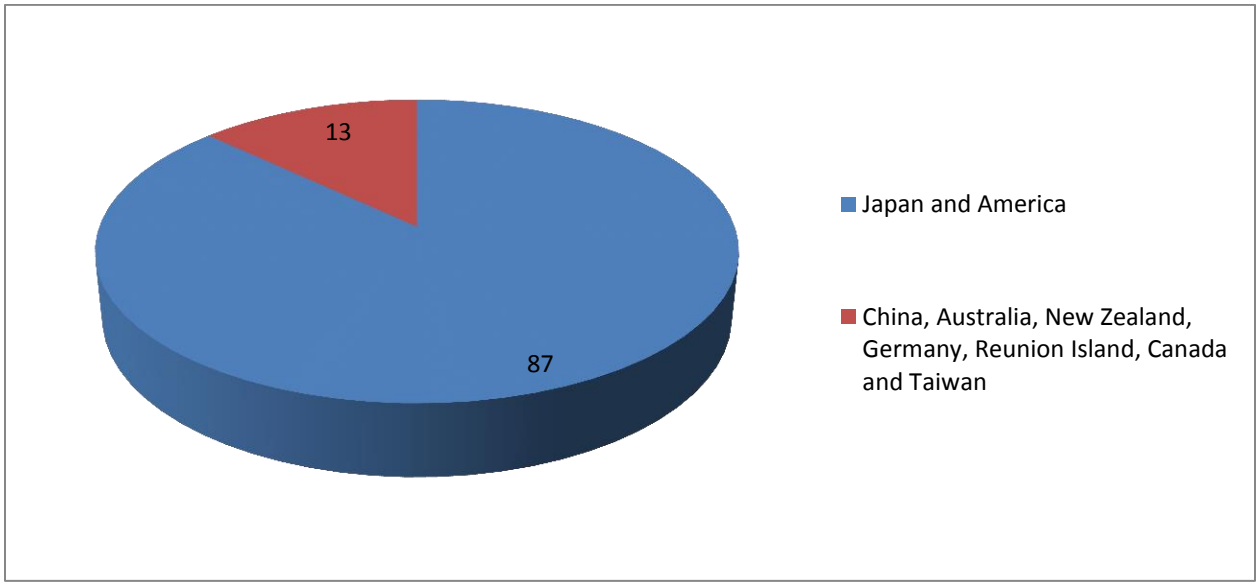
Table 5.1 shows the export of tuna to the major international markets for year 2010.

Table 5.1: Export of Tuna to the Major International Markets for Year 2010

No	Export Countries	Percentage
1	Japan and America	87
2	China, Australia, New Zealand, Germany, Reunion Island, Canada and Taiwan	13
3	Total	100

Source: Amoe (2011)

Figure 5.1: Export of Tuna to the Major International Markets for Year 2010



Source: Created by Authors, (2011)

Table 5.1 and figure 5.1 shows that 87% of tuna are exported to Japan and American, whilst 13% of tuna are exported to China, Australia, New Zealand, Germany, Reunion Island, Canada and Taiwan.

Table 5.2 and figure 5.2 shows the export of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FCMA) from Fiji islands to the international markets and amongst the MSG countries.

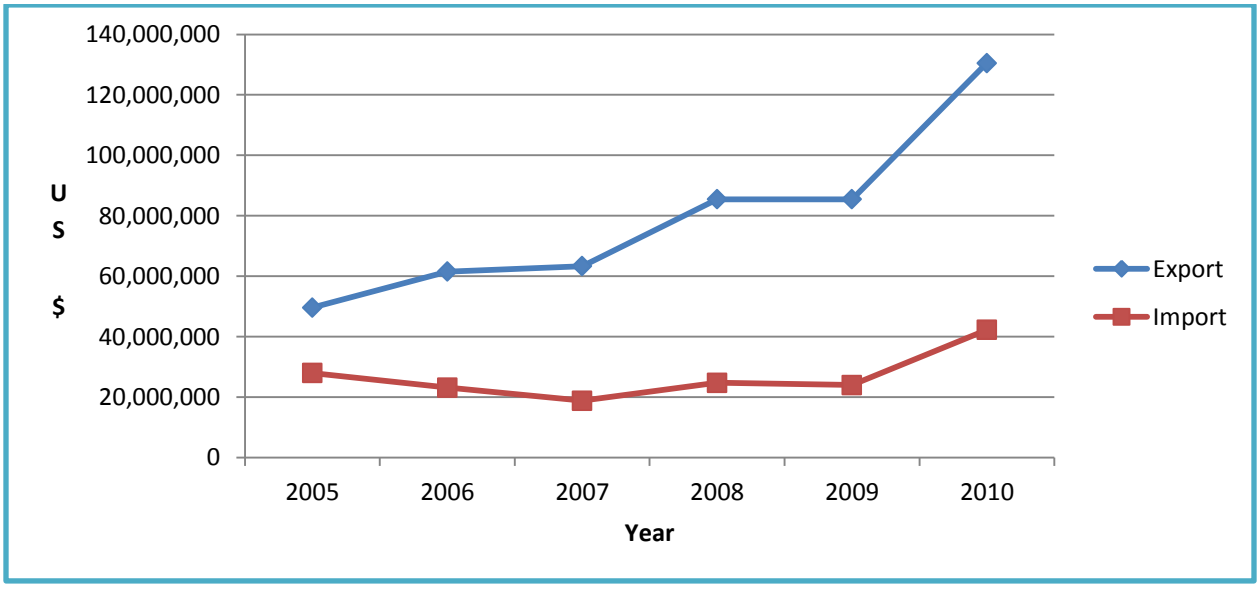
Table 5.2: Export of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FCMA) from Fiji Island to the MSG Countries

	Exports**				Imports**			
Year	**Total FCMA Export**	**PNG**	**Vanuatu**	**Solomon Islands**	**Total FCMA Imports**	**PNG**	**Vanuatu**	**Solomon Islands**
2005	49,593,732	-	43,399	-	27,918,800	281156	43,399	31,758
2006	61,529,121	1,468	-	-	23,102,123	4044	1,808	43,891
2007	63,284,669	-	-	-	18,781,095	320,567 e	-	42,435
2008	85,414,198	-	-	-	24,689,485	396,444 e	-	43,464 e
2009	85,434,457	-		-	23,956,075	152403	-	44,235 e
2010	130,521,641	-	-	-	42,235,128	405,239 e	-	45,497 e

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.2: Total Export and Import of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) ** from Fiji Island to the International Trade Markets



Source: Created by Authors (2012).

** The data for FCMA largely includes tuna species.

Table 5.2 and figure 5.2 show that Fiji's import of FMCA is less than the export of FMCA. The export of FMCA steadily increased from 2005 to 2010. However, the import of FMCA declined from 2005 to 2007 and then steadily rose to 2010.

Table 5.3 and figure 5.3 shows total FMCA export relative to total exports from Fiji.

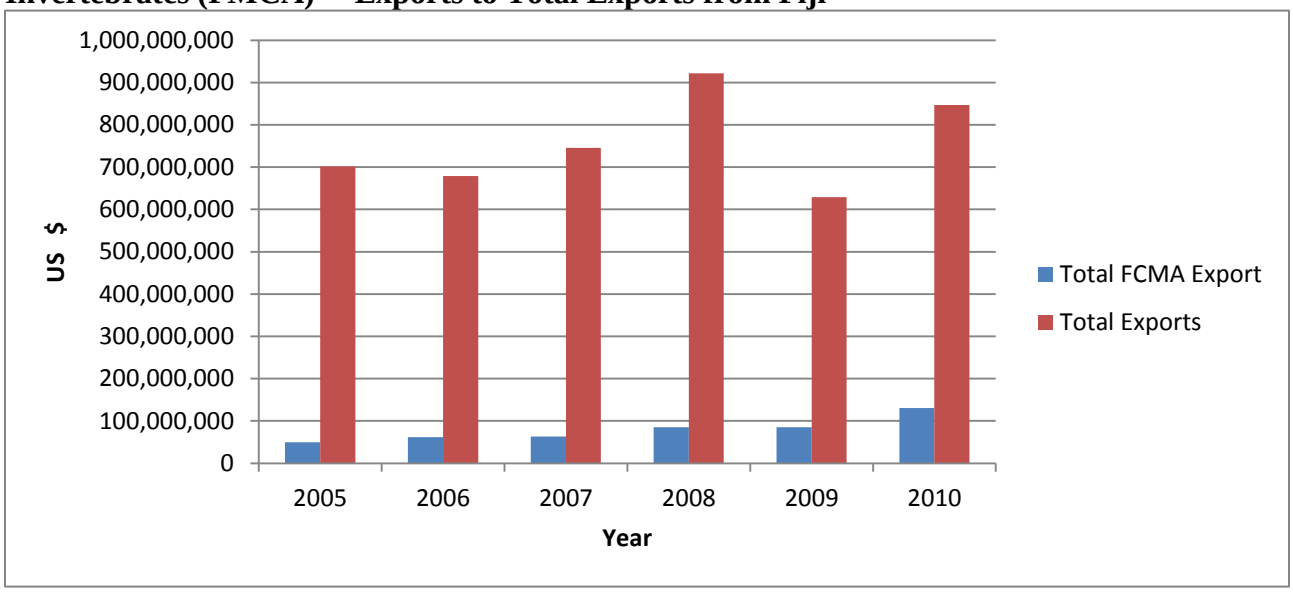
Table 5.3: Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Exports and Imports versus Total Exports and Imports from Fiji

Year	Total FCMA Export	Total Exports	% of FCMA to Total Exports	Total FCMA Imports	Total Imports	% of FCMA to Total Imports
2005	49,593,732	701,701,255	7	27,918,800	1,607,296,081	2
2006	61,529,121	678,907,787	9	23,102,123	1,803,873,354	1
2007	63,284,669	745,733,491	8	18,781,095	1,779,736,173	1
2008	85,414,198	921,911,052	9	24,689,485	2,263,879,602	1
2009	85,434,457	628,674,985	14	23,956,075	1,437,019,307	2
2010	130,521,641	846,623,523	15	42,235,128	1,820,667,281	2

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.3: Comparative Analysis of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Exports to Total Exports from Fiji**



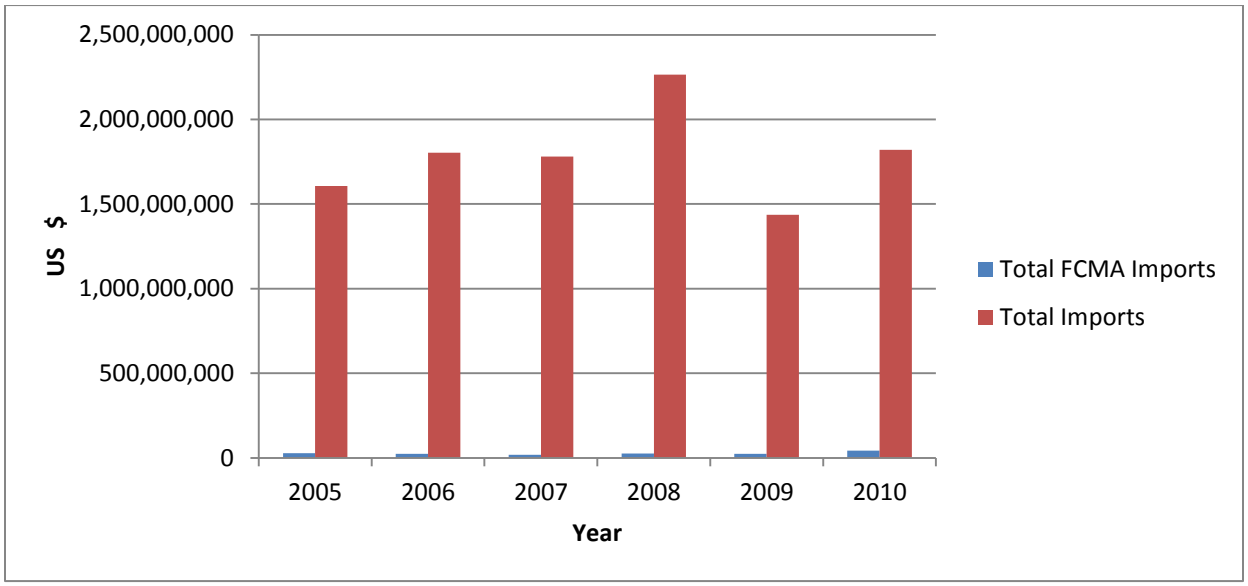
Source: Created by Authors (2012)

** The data for FCMA largely includes tuna species.

Table 5.3 and figure 5.3 show that the contribution of FMCA to total exports from Fiji increased 7% to 15%.

Table 5.3 and figure 5.4 shows total FMCA import relative to total imports to Fiji.

Figure 5.4: Comparative Analysis of Fish, Crustaceans, Molluscs (FMCA) and Aquatic Invertebrates Imports to Total Imports to Fiji**



Source: Created by Authors (2012)

** The data for FCMA largely includes tuna species.

Table 5.3 and figure 5.4 show that the contribution of FMCA to total imports from Fiji is on average between 1-2%.

Table 5.4 shows the export of FMCA to PNG from Fiji versus total exports to PNG from Fiji.

Table 5.4: Export of FCMA to PNG from Fiji versus Total Exports to PNG from Fiji**

Year	Total FCMA Export to PNG	Total Exports To PNG	FCMA Export to PNG/ Exports To PNG
2005	-	7,975,106	-
2006	1,468	3,714,260	0.03%
2007	-	5,679,716	-
2008	-	6,331,700	-
2009	-	6,414,819	-
2010	-	10,064,102	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.4 shows that the export of FMCA to PNG from Fiji was 0.03%.

Table 5.5 shows the export of FMCA to Vanuatu from Fiji versus total exports to Vanuatu from Fiji.

Table 5.5: Export of FCMA to Vanuatu from Fiji versus Total Exports to Vanuatu from Fiji**

Year	Total FCMA Export to Vanuatu	Total Exports To Vanuatu	FCMA Export to Vanuatu / Exports To Vanuatu
2005	43,399	11,439,440	0.38
2006	-	9,057,951	-
2007	-	13,023,300	-

2008	-	28,109,563	-
2009		15,439,695	-
2010	-	19,188,195	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.5 shows that Fiji's export of FMCA to Vanuatu in 2005 was 0.38%.

Table 5.6 shows the export of FCMA to Solomon Islands from Fiji versus total exports to Solomon Islands from Fiji

Table 5.6: Export of FCMA to Solomon Islands from Fiji versus Total Exports to Solomon Islands from Fiji**

Year	Total FCMA Export to Solomon Islands	Total Exports To Solomon Islands	FCMA Export to Solomon Islands / Exports To Solomon Islands
2005	-	1,995,770	-
2006	-	2,791,339	-
2007	-	4,192,712	-
2008	-	4,834,636	-
2009	-	5,214,342	-
2010	-	6,101,360	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.6 shows that there was no export of FMCA from Solomon Islands to Fiji from 2005 to 2010.

5.2 Export of Tuna from Vanuatu and the Import of Tuna by Vanuatu

The growth and development of the tuna industry in Vanuatu is relatively low as compared to other MSG countries such as Solomon Islands, Fiji and PNG. The contemporary fishing efforts for tuna in Vanuatu's EEZ are carried out by China, Fiji and Taiwan. The number of Chinese and Fijian fleets fishing in the Vanuatu's EEZ has significantly increased from 2008 to 2010.

The fresh fish caught are mainly exported to Japan whilst the frozen fish is shipped to canneries in Fiji (Ministry of Fisheries Vanuatu, 2011). Vanuatu also imports tuna from PNG followed by Solomon Islands and Fiji.

Table 5.7 shows that export of FMCA from Vanuatu to the MSG countries.

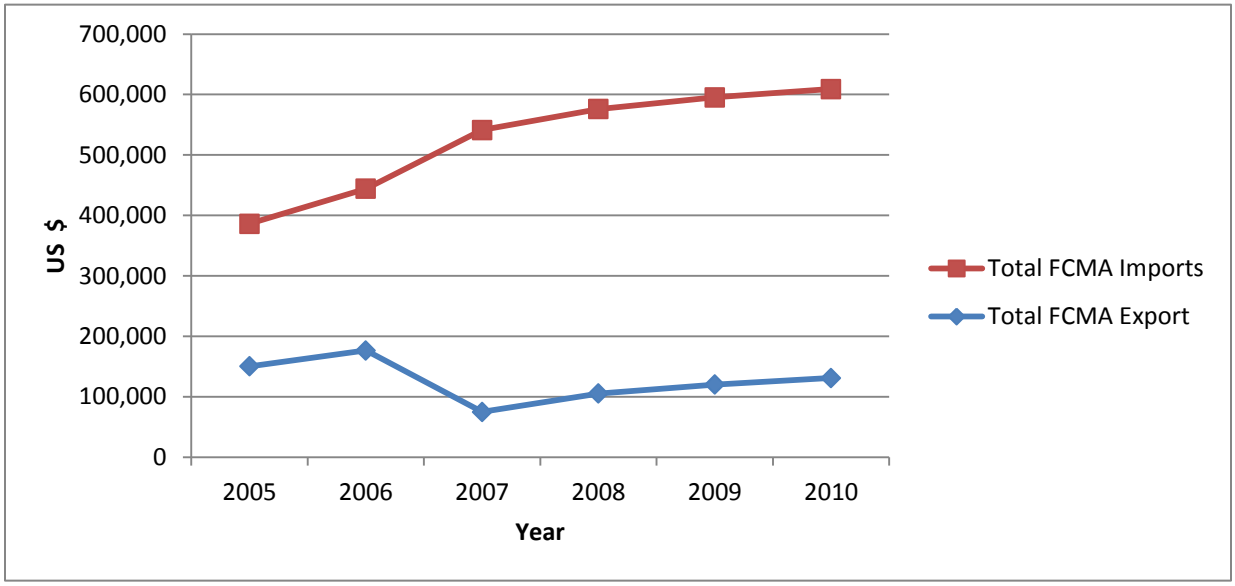
Table 5.7: Export of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) from Vanuatu to the MSG Countries**

	Exports				Imports			
Year	**World FCMA Export**	**PNG**	**Fiji**	**Solomon Islands**	**Total FCMA Imports**	**PNG**	**Fiji**	**Solomon Islands**
2005	150,236e	-	-	-	235,864 e	65,369 e	43,399	198
2006	176,486	-	1,808	-	267,699	66,897 e	-	309
2007	74,923	-	-	-	466,268	67,493 e	-	83,747
2008	105,234 e	-	-	-	470,861 e	69,238 e	-	56,567 e
2009	120,157e	-	-	-	475,034 e	70,136 e	-	60,457 e
2010	130,961e	-	-	-	478,069 e	72,569 e	-	65,489 e

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.5: Total Export and Import of Fish, Crustaceans, Molluscs and Aquatic Invertebrates from Vanuatu to the International Trade Markets



Source: Created by Authors (2012)

Table 5.7 and figure 5.5 show that Vanuatu's import of FMCA is higher than the export of FMCA. Vanuatu has a large base of fishing resource; however, these resources are not sustainably being used for economic growth. If the resources sector does not develop then level of trade deficit for the Vanuatu's fishing industry will further deepen.

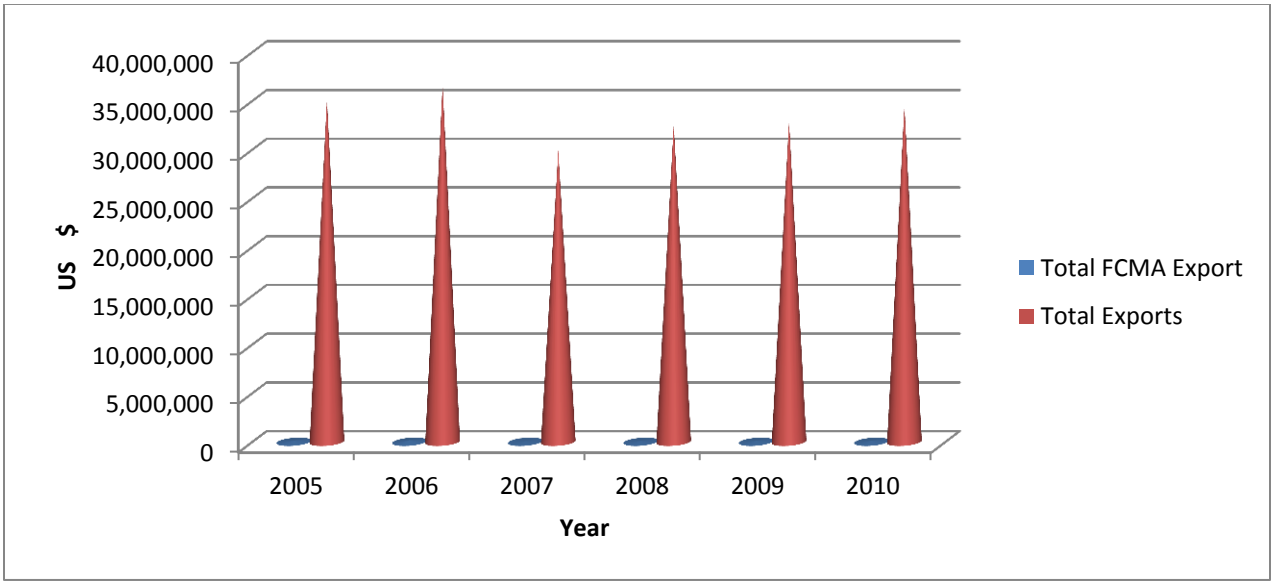
Table 5.8 and figure 5.4 shows the total exports of FMCA relative to total exports.

Table 5.8: Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Exports and Imports versus Total Exports and Imports from Vanuatu**

Year	Total FCMA Export	Total Exports	% of FCMA to Total Exports	Total FCMA Imports	Total Imports	% of FCMA to Total Imports
2005	150,236e	35,197,236 e	0.4	235,864 e	137,567,162 e	0.17
2006	176,486	36,698,396	0.5	267,699	159,110,672	0.17
2007	74,923	29,905,859	0.3	466,268	201,713,524	0.23
2008	105,234 e	32,567,129 e	0.3	470,861 e	209,234,297 e	0.23
2009	120,157e	32,947,187 e	0.4	475,034 e	211,567,396 e	0.23
2010	130,961e	34,567,891 e	0.4	478,069 e	213,267,198 e	0.22

Source: United Nations Commodity Trade Database, (2012).
** The data for FCMA largely includes tuna species.

Figure 5.5: Comparative Analysis of Fish, Crustaceans, Molluscs and Aquatic Invertebrates Exports to Total Exports from Vanuatu

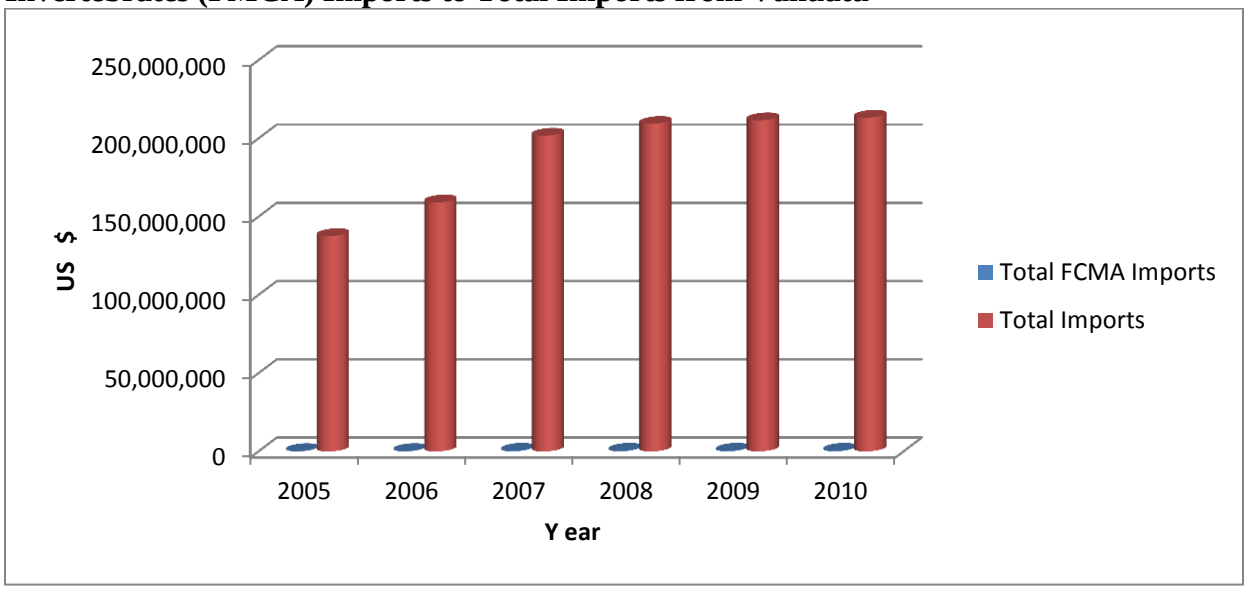


Source: Created by Authors, (2012)

Table 5.8 and figure 5.4 shows that Vanuatu's total exports are very high as compared to the export of FMCA.

Table 5.8 and figure 5.6 shows the total imports of FMCA relative to total imports.

Figure 5.6: Comparative Analysis of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Imports to Total Imports from Vanuatu



Source: Created by Authors, (2012)

Table 5.8 and figure 5.6 shows that the import of FMCA is relatively lower than the total imports.

Table 5.9 shows the export of FMCA from Vanuatu versus total exports to PNG from Vanuatu.

Table 5.9: Export of FCMA to PNG from Vanuatu versus Total Exports to PNG from Vanuatu**

Year	Total FCMA Export to PNG	Total Exports To PNG	FCMA Export to PNG/ Exports To PNG
2005	-	301,567 e	-
2006	-	316,814	-
2007	-	368,621	-
2008	-	365,378e	-
2009	-	371,349e	-
2010	-	386,267e	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.9 shows that there was no export of FMCA to PNG from 2005 to 2010.

Table 5.10 shows the export of FCMA to Fiji from Vanuatu versus total exports to Fiji from Vanuatu.

Table 5.10: Export of FCMA to Fiji from Vanuatu versus Total Exports to Fiji from Vanuatu**

Year	Total FCMA Export to Fiji	Total Exports To Vanuatu	FCMA Export to Vanuatu / Exports To Vanuatu
2005	-	4,316,237e	-
2006	1,808	4,411,976	0.041 %
2007	-	2,049,900	-
2008	-	3,706,297e	-
2009	-	3719,267e	-
2010	-	3,897,649e	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.10 show that Vanuatu's export of FMCA to Fiji was 0.041% in 2006.

Table 5.11 shows the export of FCMA to Solomon Islands from Vanuatu versus total exports to Solomon Islands from Vanuatu.

Table 5.11: Export of FCMA to Solomon Islands from Vanuatu versus Total Exports to Solomon Islands from Vanuatu**

Year	Total FCMA Export to Solomon Islands	Total Exports To Solomon Islands	FCMA Export to Solomon Islands / Exports To Solomon Islands
2005	-	431,679	-
2006	-	441,240	-
2007	-	225,477	-

2008	-	316,497	-
2009	-	320,647	-
2010	-	330,649	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.11 shows that there was no export of FMCA to Solomon Islands from 2005 to 2010.

5.3 Export of Tuna from PNG and the Import of Tuna by PNG

Out of all the MSG countries being studied, PNG's tuna industry is doing very well. The quantity and the value of tuna exports are increasing and peaked at USD $ 149 million in 2008 (Kumoru, 2010; Usu, 2011). Some of the key factors that have contributed to the growth of the tuna industry of PNG are:

1. Development of downstream processing activities.
2. Proper industry growth strategic plan.
3. Cohesiveness and cooperation amongst the various industry stakeholders and institutions.
4. Improvements in trade and tuna marketing activities.

The overall estimated value of processed exports of tuna recorded US $80.4 million in 2010. Table 5.12 shows the export of tuna and tuna products from PNG.

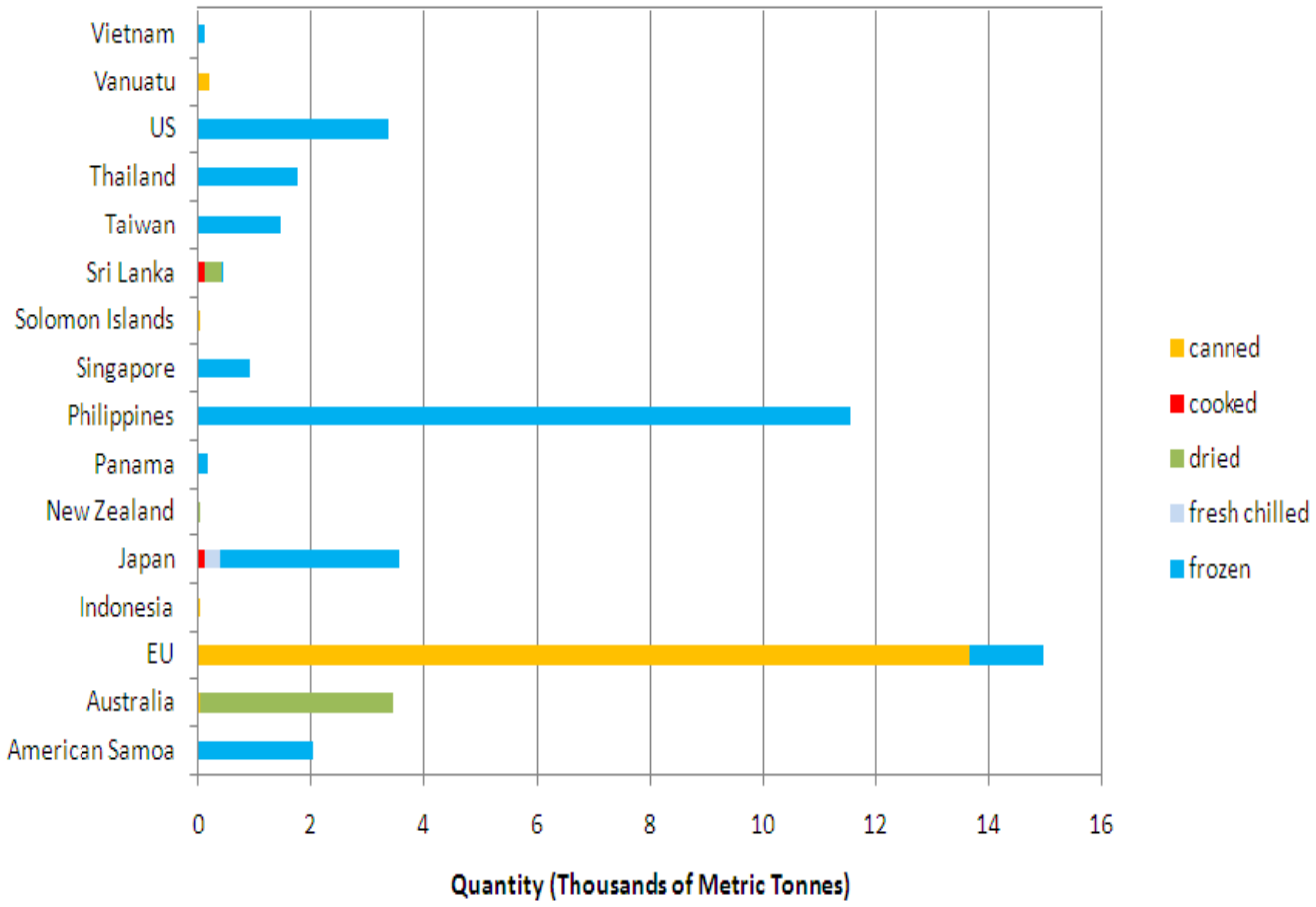
Table 5.12: Export of Tuna and Tuna Products from PNG for 2010

Species	Canned		Cooked		Dried		Fresh Chilled		Frozen		Total	
	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)
Albacore	-	-	-	-	-	-	-	-	0.40	0.43	0.40	0.43
Bigeye	-	-	-	-	-	-	0.07	0.34	0.18	0.17	0.25	0.50
Skipjack	13.39	40.67	-	-	-	-	-	-	12.65	9.96	26.04	50.62
Yellowfin	0.28	1.03	-	-	-	-	0.21	1.05	11.59	22.57	12.08	24.66
Yellowfin/Bigeye	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01
Billfishes	-	-	-	-	-	-	0.01	0.04	0.46	0.33	0.46	0.37
Others	-	-	-	-	-	-	-	-	0.07	0.04	0.07	0.04
Unspecified	0.23	0.48	0.20	0.15	3.78	2.77	-	-	0.46	0.33	4.67	3.72
Total	**13.89**	**42.18**	**0.20**	**0.15**	**3.78**	**2.77**	**0.29**	**1.43**	**25.81**	**33.83**	**43.98**	**80.35**

Source: Usu (2011)

Table 5.12 shows that the export of Skipjack tuna was the highest followed by yellowfin and Albacore.

Figure 5.7: Export of Tuna and Tuna Products from PNG to the International Markets



Source: Usu, (2011)

Figure 5.7 show that EU was the major exporter of the canned tuna from PNG whilst Philippine is the major importer of the frozen tuna.

Table 5.13 shows the export and import of FCMA from PNG to the MSG countries.

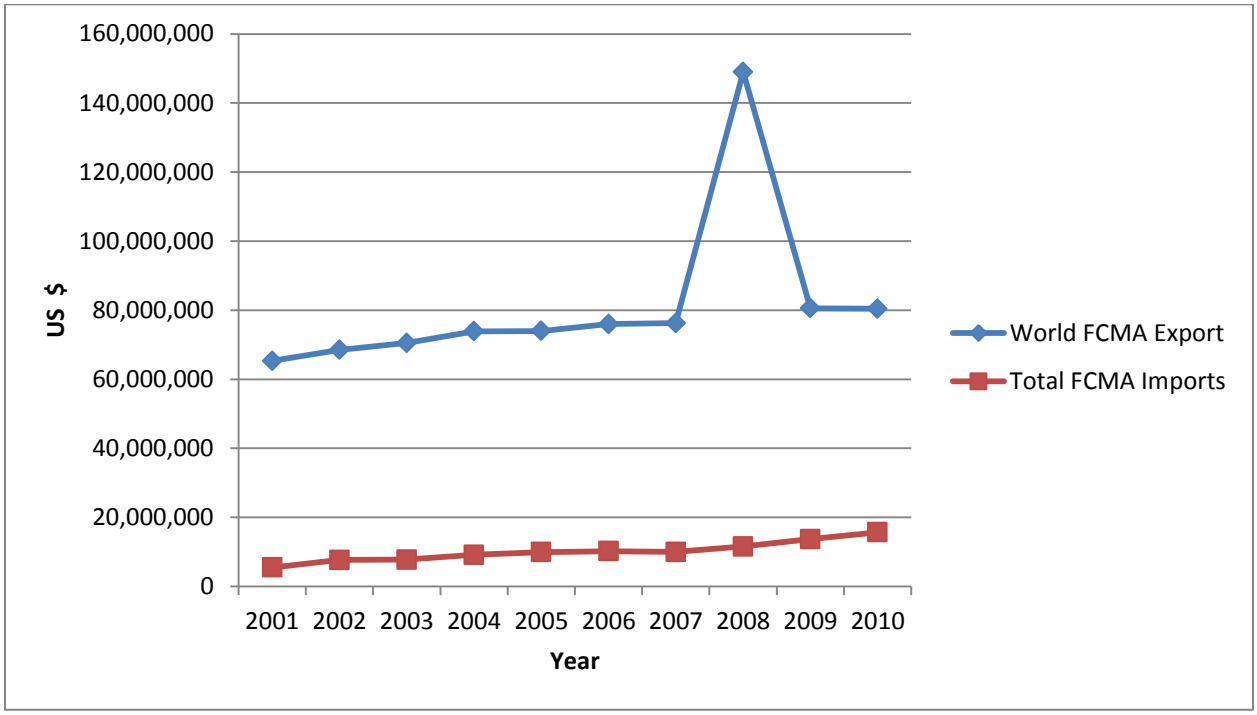
Table 5.13: Export of and Import of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) from PNG to the MSG Countries**

	Exports				Imports			
Year	**World FCMA Export**	**Fiji**	**Vanuatu**	**Solomon Islands**	**Total FCMA Imports**	**Fiji**	**Vanuatu**	**Solomon Islands**
2001	65,313,161	75,567	7,704	221,959	5,514,557	-	-	-
2002	68,494,814	-	-	-	7,670,817	-	-	-
2003	70,487,705	270,592	6,160	147,724	7,775,923	-	-	-
2004	73,888,949	314,101	64,914	153,127	9,180,234	-	325,835	-
2005	73,963,450 e	281156	65,369 e	3,042	9,956,812e	-	-	-
2006	75,968,666 e	4044	66,897 e	3,732	10,236,488e	1,468	-	-
2007	76,231,568 e	320,567 e	67,493 e	6,349	9,999,567e	-	-	837
2008	149,000,000	396,444 e	69,238 e	6,999 e	11,569,111e	-	-	-
2009	80,567,298 e	152403	70,136 e	7,645 e	13,697,564e	-	-	-
2010	80,400,000 e	405,239 e	72,569 e	7,567 e	15,699,566e	-	-	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.8: Total Export and Import of Fish, Crustaceans, Molluscs and Aquatic Invertebrates from PNG to the International Trade Markets



Source: Created by Authors, (2012) source of data will still have to be indicated

Table 5.13 and figure 5.8 shows that the total export of FMCA peaked in 2008 and then steadily declined in 2009 and 2010. The imports of FMCA by PNG are relatively low.

Table 5.14 and figure 5.9 shows the total FMCA export relative to total exports from PNG.

Table 5.14: Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Exports and Imports versus Total Exports and Imports from PNG**

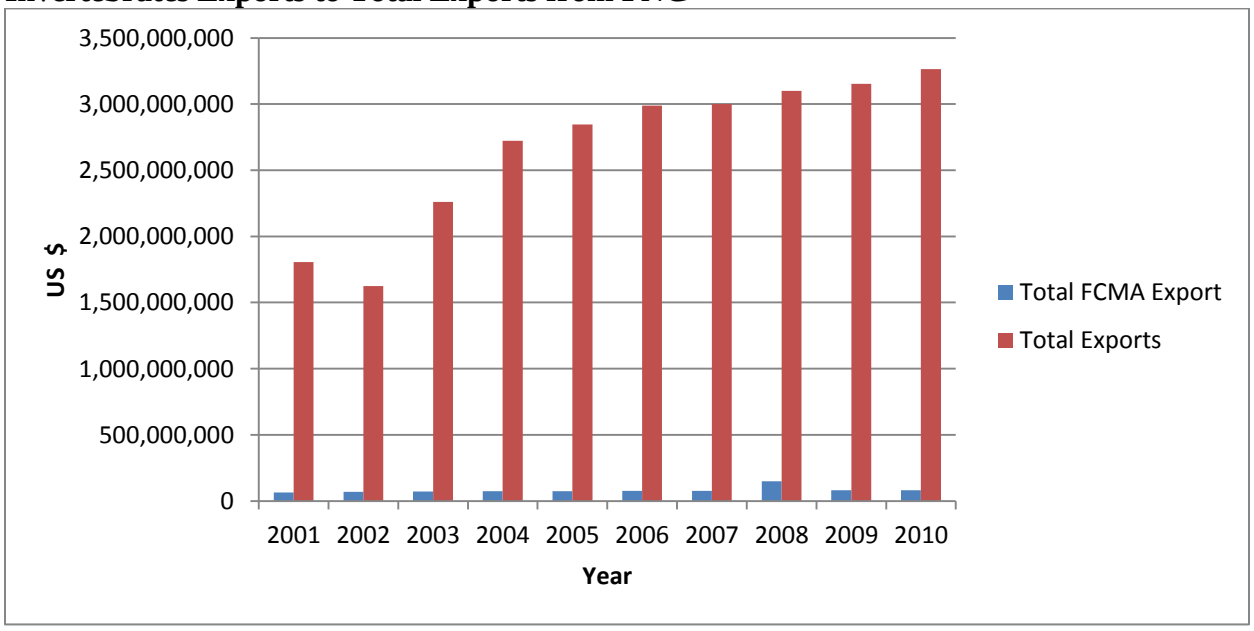
Year	Total FCMA Export	Total Exports	% of FCMA to Total Exports	Total FCMA Imports	Total Imports	% of FCMA to Total Imports
2001	65,313,161	1,804,715,007	4	5,514,557	1,309,390,914	0.4
2002	68,494,814	1,625,124,169	4	7,670,817	1,185,992,036	0.6
2003	70,487,705	2,260,152,102	3	7,775,923	1,302,434,979	0.6

2004	73,888,949	2,722,217,200	3	9,180,234	1,567,153,423	0.6
2005	73,963,450 e	2,846,257,398 e	3	9,956,812e	1,964,267,455 e	0.5
2006	75,968,666 e	2,987,634,269 e	3	10,236,488e	2,366,498,143 e	0.4
2007	76,231,568 e	3,000,697,264 e	3	9,999,567e	2,456,888,264 e	0.4
2008	149,000,000	3,100,560,488 e	5	11,569,111e	2,555,649,631 e	0.5
2009	80,567,298 e	3,152,697,264 e	3	13,697,564e	2,649,312,264 e	0.5
2010	80,400,000 e	3,264,987,666 e	2	15,699,566e	2,999,854,679 e	0.5

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.9: Comparative Analysis of Fish, Crustaceans, Molluscs and Aquatic (FMCA) Invertebrates Exports to Total Exports from PNG**

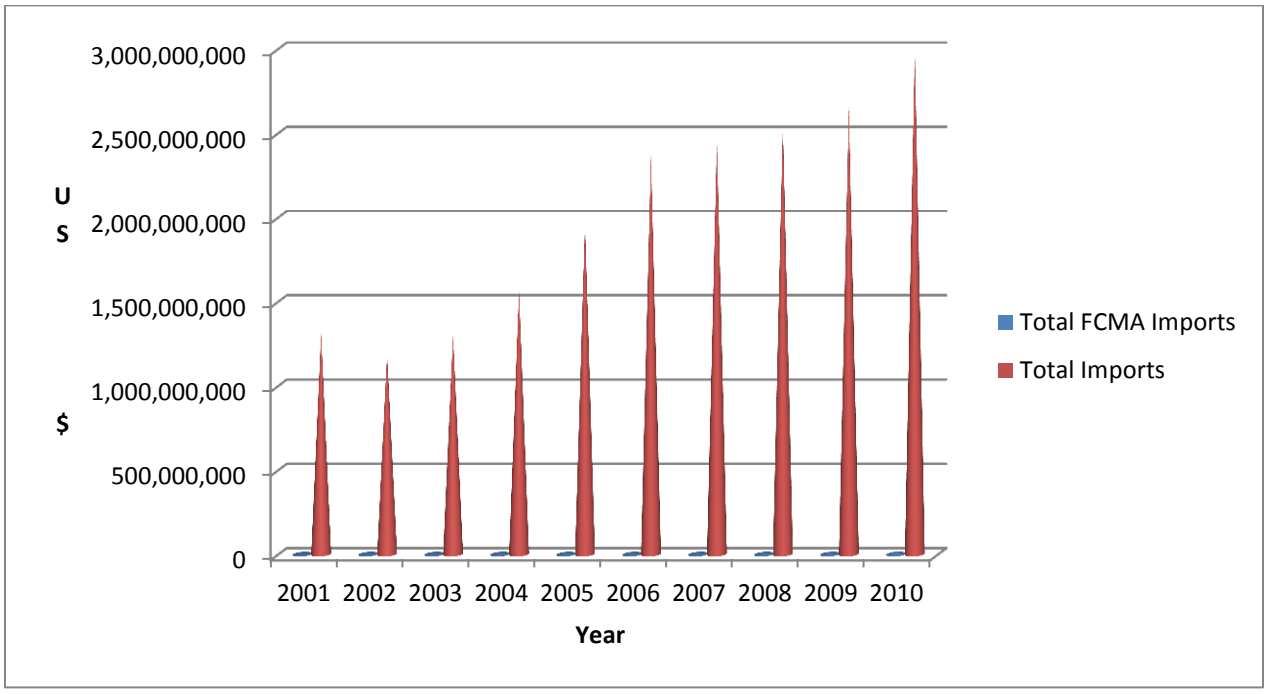


Source: Created by Authors (2012)

Table 5.14 and figure 5.9 shows the total FMCA export relative to total exports from PNG is on average between 3-4%.

Table 5.14 and figure 5.10 shows the total FMCA import relative to total imports from PNG.

Figure 5.10: Comparative Analysis of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Imports to Total Imports to PNG



Source: Created by Authors (2012)

Table 5.14 and figure 5.10 shows the total FMCA imports relative to total imports from PNG is on average between 0.4-0.6%.

Table 5.15 shows the export of FCMA to Fiji from PNG versus total exports to Fiji from PNG

Table 5.15: Export of FCMA to Fiji from PNG versus Total Exports to Fiji from PNG**

Year	Total FCMA Export to Fiji	Total Exports To Fiji	FCMA Export to Fiji/ Exports To Fiji
2001	75,567	218,689	35
2002	-	989,883	-
2003	270,592	807,672	34
2004	314,101	1,007,129	31
2005	281156	901,564 e	31
2006	4044	801,897 e	1
2007	320,567 e	1,203,264 e	-

2008	396,444 e	1,612,897 e	-
2009	152403	799,264 e	19
2010	405,239 e	1,987,236 e	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.15 shows that FMCA is the major export to Fiji from PNG. The FMCA export makes 25% of total exports to Fiji.

Table 5.16 shows the export of FCMA to Vanuatu from PNG versus total exports to Vanuatu from PNG

Table 5.16: Export of FCMA to Vanuatu from PNG versus Total Exports to Vanuatu from PNG**

Year	Total FCMA Export to Vanuatu	Total Exports To Vanuatu	FCMA Export to Vanuatu / Exports To Vanuatu
2001	7,704	211,826	4
2002	-	275,929	-
2003	6,160	1,458,900	0
2004	64,914	2,115,003	3
2005	65,369 e	2,654,156 e	2
2006	66,897 e	2,764,239 e	2
2007	67,493 e	2,879,666 e	2
2008	69,238 e	2,913,567 e	2
2009	70,136 e	3,000,264 e	2
2010	72,569 e	3,106,497 e	2

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.16 shows that FMCA makes 2-4% of the total exports to Vanuatu from PNG.

Table 5.17 shows the export of FCMA to Solomon Islands from PNG versus total exports to Solomon Islands from PNG

Table 5.17: Export of FCMA to Solomon Islands from PNG versus Total Exports to Solomon Islands from PNG**

Year	Total FCMA Export to Solomon Islands	Total Exports To Solomon Islands	FCMA Export to Solomon Islands / Exports To Solomon Islands
2001	221,959	2,712,253	8
2002	-	1,273,531	-
2003	147,724	8,820,860	2
2004	153,127	7,541,262	2
2005	155,269 e	7,613,497 e	2
2006	159,367e	7,759,467 e	2
2007	161,231e	7,894,237 e	2
2008	162,497e	7,963,666 e	2
2009	166,394e	8,049,237 e	2
2010	164,987e	8,126,788 e	2

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.17 shows the export of FCMA to Solomon Islands from PNG makes on average 2-8% of total exports.

5.4 Export of Tuna from Fiji and the Import of Tuna by Solomon Islands

The tuna industry of the Solomon Islands is the second largest source of foreign exchange earnings from the export of tuna and tuna products to the international markets. Other revenues to the Solomon Islands come from licensing of foreign fishing vessels, employment opportunities in the international fishing vessels and sale of tuna for domestic consumption (Honiwala, 2011). Tuna is caught in the Solomon Islands EEZ either by the foreign or domestic fishing vessels. In 2006, Solomon Islands exported $US 22 worth of tuna and in 2007 Solomon

Islands exported US$26 million worth of tuna (Ministry of Fisheries Solomon Islands, 2009). There are two major companies that are directly involved in the tuna industry- the National Fisheries Development Ltd (NFD) and the Soltai Fishing and Processing Ltd. The domestic processing of tuna is only restricted to the Soltai Fishing and Processing Ltd.

Table 5.18 and figure 5.11 shows the export of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FCMA) from Solomon Islands to the international markets and amongst the MSG countries.

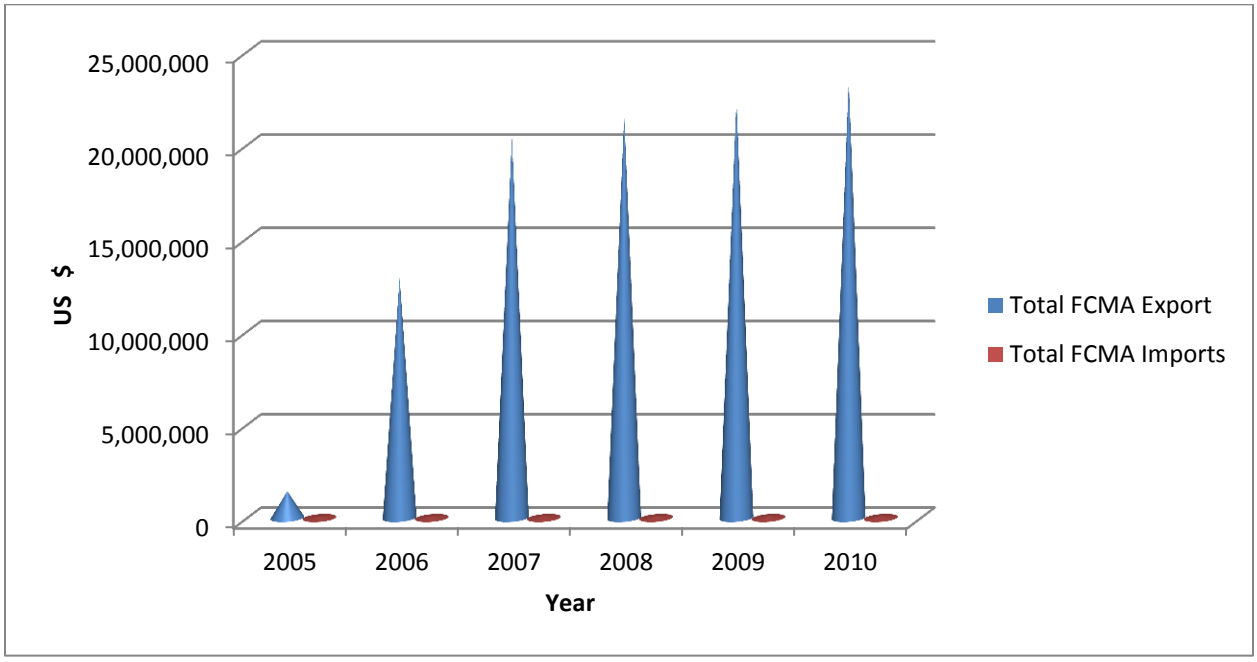
Table 5.18: Export of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FCMA) from Solomon Island to the MSG Countries

	Exports**				**Imports****			
Year	**Total FCMA Export**	**PNG**	**Vanuatu**	**Fiji**	**Total FCMA Imports**	**PNG**	**Vanuatu**	**Fiji**
2005	1,442,394	-	198	31,758	93,253	3,042	-	-
2006	12,879,149	-	309	43,891	100,910	3,732	-	-
2007	20,411,215	837	83,747	42,435	116,856	6,349	-	-
2008	21,567,234 e	-	56,567 e	43,464 e	117,233 e	6,999 e	-	-
2009	22,349,231 e	-	60,457 e	44,235 e	117,699 e	7,645 e	-	-
2010	23,476,132 e	-	65,489 e	45,497 e	118,769 e	7,567 e	-	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.11: Total Export and Import of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) ** from Solomon Island to the International Trade Markets



Source: Created by Authors (2012).

** The data for FCMA largely includes tuna species.

Table 5.18 and figure 5.11 shows that Solomon Islands import of FMCA is less than the export of FMCA. The export of FMCA steadily increased from 2005 to 2010. However, the import of FMCA is significantly less as compared to the export of FMCA.

Table 5.19 and figure 5.12 shows total FMCA export relative to total exports from Solomon Islands.

Table 5.19: Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Exports and Imports versus Total Exports and Imports from Solomon Islands

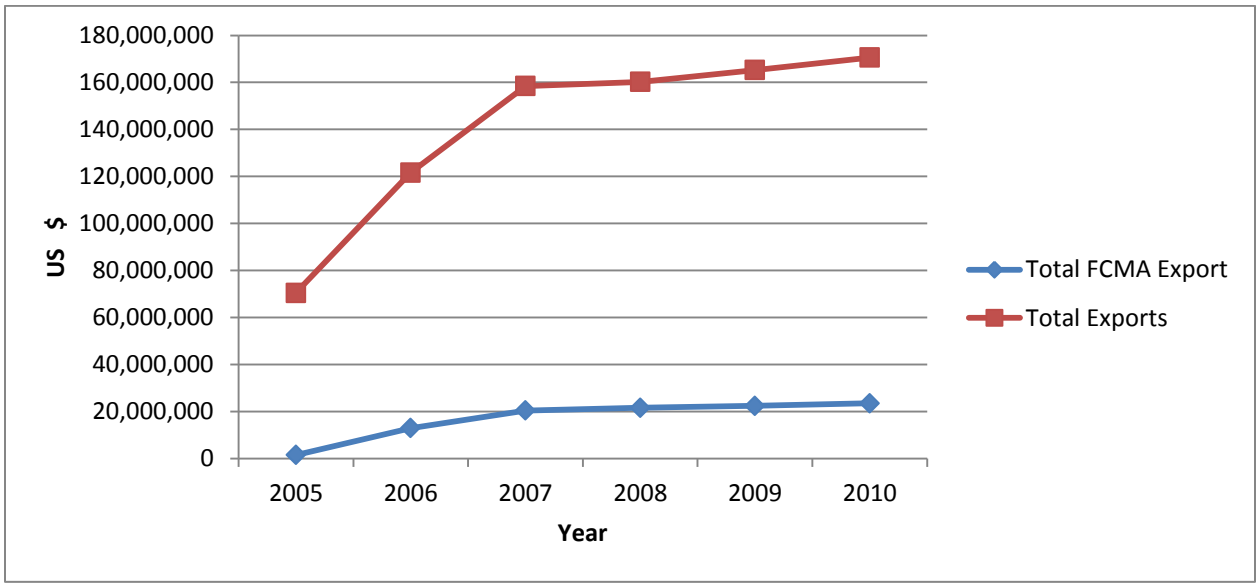
Year	Total FCMA Export	Total Exports	% of FCMA to Total Exports	Total FCMA Imports	Total Imports	% of FCMA to Total Imports
2005	1,442,394	70,436,539	2	93,253	138,837,708	0.07
2006	12,879,149	121,620,058	11	100,910	232,259,801	0.04

2007	20,411,215	158,469,361	13	116,856	284,992,585	0.04
2008	21,567,234 e	160,234,200 e	13	117,233 e	285,645,122 e	0.04
2009	22,349,231 e	165,234,546 e	14	117,699 e	285,969,444 e	0.04
2010	23,476,132 e	170,567,265 e	14	118,769 e	290,333,467 e	0.04

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Figure 5.12: Comparative Analysis of Fish, Crustaceans, Molluscs and Aquatic Invertebrates (FMCA) Exports to Total Exports from Solomon Islands**



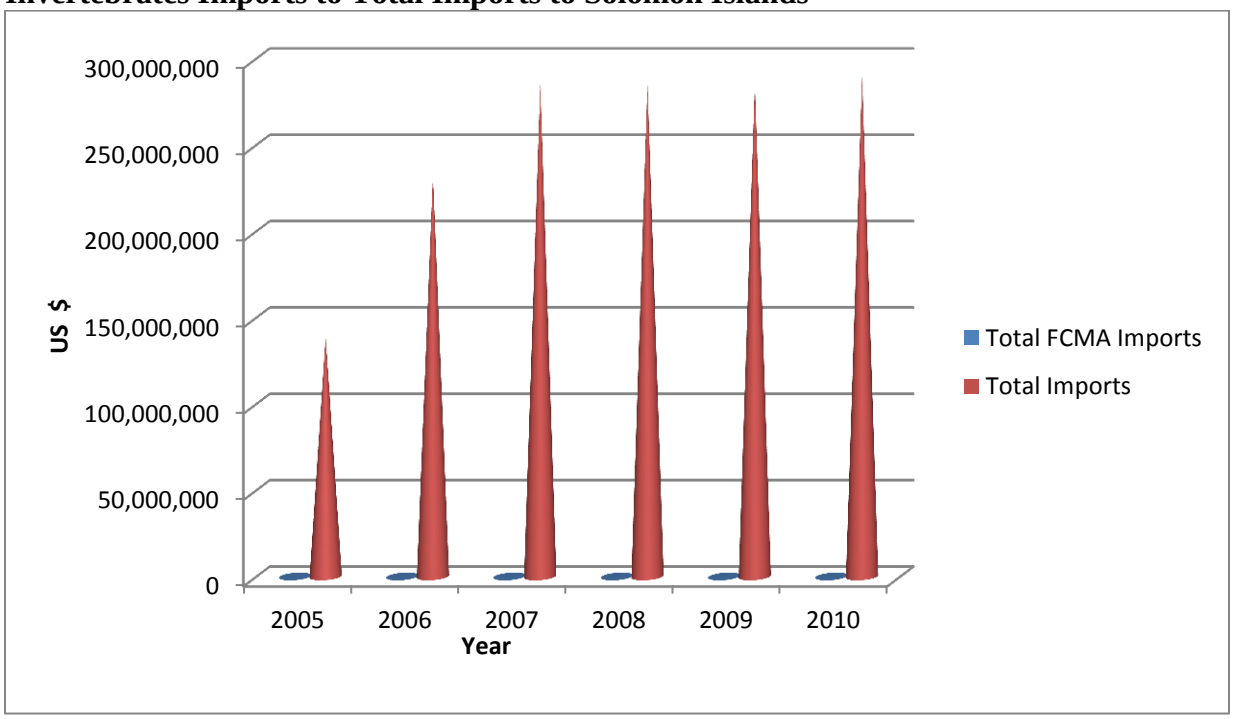
Source: Created by Authors (2012)

** The data for FCMA largely includes tuna species.

Table 5.19 and figure 5.12 show that the contribution of FMCA to total exports from Solomon Islands has increased from 2% in 2005 to 14% in 2010.

Table 5.19 and figure 5.13 shows total FMCA import relative to total imports to Solomon Islands.

Figure 5.13: Comparative Analysis of Fish, Crustaceans, Molluscs (FMCA) and Aquatic Invertebrates Imports to Total Imports to Solomon Islands**



Source: Created by Authors (2012)

** The data for FCMA largely includes tuna species.

Table 5.19 and figure 5.13 shows that the contribution of FMCA to total imports from Solomon Islands is on average between 0.04- 0.07 %.

Table 5.20 shows the export of FMCA to PNG from Solomon versus total exports to PNG from Solomon Islands.

Table 5.20: Export of FCMA to PNG from Solomon Islands versus Total Exports to PNG from Solomon Islands**

Year	Total FCMA Export to PNG	Total Exports To PNG	FCMA Export to PNG/ Exports To PNG
2005	-	133,948	-
2006	-	295,275	-
2007	837	1,011,028	0.08%
2008	-	1,100,238 e	-

2009	-	1,233,564 e	--
2010	-	1,566,497 e	-

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.20 shows that the export of FMCA to PNG from Solomon Islands was 0.08% in 2007.

Table 5.21 shows the export of FMCA to Vanuatu from Solomon Islands versus total exports to Vanuatu from Solomon Islands.

Table 5.21: Export of FCMA to Vanuatu from Solomon Islands versus Total Exports to Vanuatu from Solomon Islands**

Year	Total FCMA Export to Vanuatu	Total Exports To Vanuatu	FCMA Export to Vanuatu / Exports To Vanuatu
2005	198	500,763	0.04
2006	309	227,117	0.14
2007	83,747	321,423	26.06
2008	56,567 e	301,467 e	18.76
2009	60,457 e	320,499 e	18.86
2010	65,489 e	325,477 e	20.12

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.21 shows that Solomon Islands export of FMCA relative to total exports increased from 0.04% in 2005 to 20.12% in 2010.

Table 5.22 shows the export of FCMA to Fiji from Solomon Islands versus total exports to Fiji from Solomon Islands.

Table 5.22: Export of FCMA to Fiji from Solomon Islands versus Total Exports to Fiji from Solomon Islands**

Year	Total FCMA Export to Fiji	Total Exports To Fiji	FCMA Export to Fiji / Exports To Fiji
2005	31,758	661,323	5
2006	43,891	655,763	7
2007	42,435	1,138,628	4
2008	43,464 e	1,254,888 e	3
2009	44,235 e	1,699,657 e	3
2010	45,497 e	1,968,111 e	2

Source: United Nations Commodity Trade Database, (2012).

** The data for FCMA largely includes tuna species.

Table 5.22 shows that the export of FMCA relative to total exports to Fiji from Solomon Islands is on average between 2-7%.

5.5 Catch of Tuna from the MSG Countries

Table 5.23 and figure 5.14 shows the catch of tuna from PNG, Fiji, Vanuatu and Solomon Islands waters.

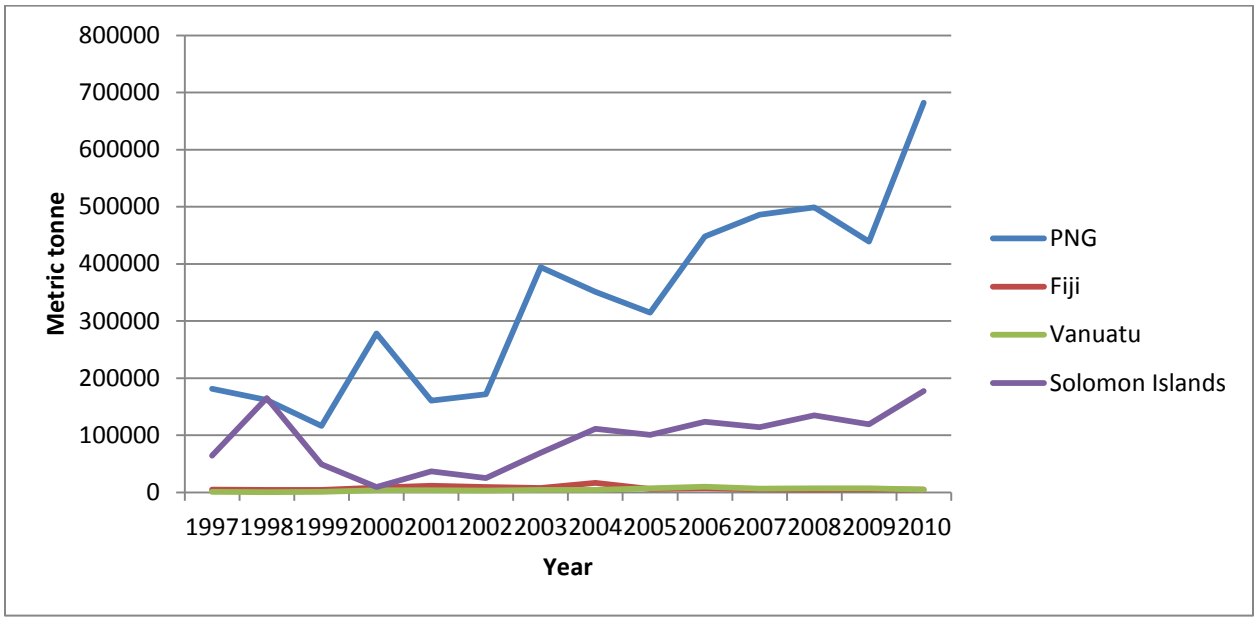
Table 5.23: Catch of Tuna from PNG, Fiji, Vanuatu and Solomon Islands Waters

Year	Metric Tonnes			
	PNG	Fiji	Vanuatu	Solomon Islands
1997	181552	4816	742	64234
1998	161613	4528	700	165336
1999	116112	4533	895	48970
2000	278490	8217	3774	9126
2001	160490	11566	3753	37018

2002	171559	9426	3412	24905
2003	394427	7722	4239	69237
2004	351318	16583	4463	111618
2005	314417	5973	6999	100653
2006	447882	7324	9702	123535
2007	486257	5614	6593	114393
2008	498973	4750	7118	134888
2009	439288	5722	7169	119067
2010	682240	4832	4886	177481

Source: Pacific Islands Forum Fisheries Agency, (2012)

Figure 5.14: Catch of Tuna from PNG, Fiji, Vanuatu and Solomon Islands Waters



Source: Created by Authors (2012)

Table 5.23 and figure 5.14 shows the highest catch is in PNG, followed by Solomon Islands, Fiji, Vanuatu waters. The catch in Vanuatu was LESS in the 1990s; however, by 2010 it was similar to Fiji. The volume of catch in Fiji has not been increasing for the last 13 years.

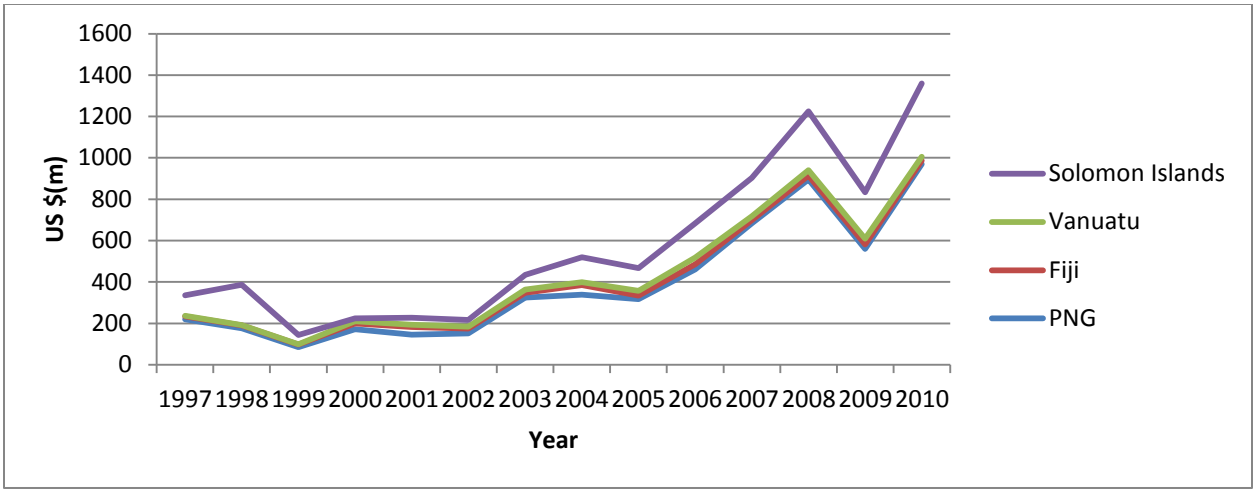
5.6 Value of Commercial Fisheries in PNG, Fiji, Vanuatu and Solomon Islands

Table 5.24: Value (in US $m) of Commercial fisheries from PNG, Fiji, Vanuatu and Solomon Islands Waters

Year	Values in US $m			
	PNG	Fiji	Vanuatu	Solomon Islands
1997	219	15	2	99
1998	177	14	1	195
1999	85	12	2	45
2000	171	29	11	14
2001	145	37	12	34
2002	151	24	9	32
2003	325	23	15	71
2004	338	47	14	120
2005	317	17	23	110
2006	461	25	32	166
2007	683	16	18	187
2008	896	18	26	285
2009	560	22	27	225
2010	970	17	18	355

Source: Pacific Islands Forum Fisheries Agency, (2012)

Figure 5.15: Catch of Tuna from PNG, Fiji, Vanuatu and Solomon Islands Waters



Source: Created by Authors (2012)

Table 5.24 and figure 5.15 shows that for PNG the value has increased by 342%, for Solomon Islands the value has increased by 259%, for Vanuatu the value has increased by 800% and for Fiji the value has increased by 13%. The value of catch in Fiji has not been increasing.

PART 2

5.7 Imports of Tuna Loins by USA

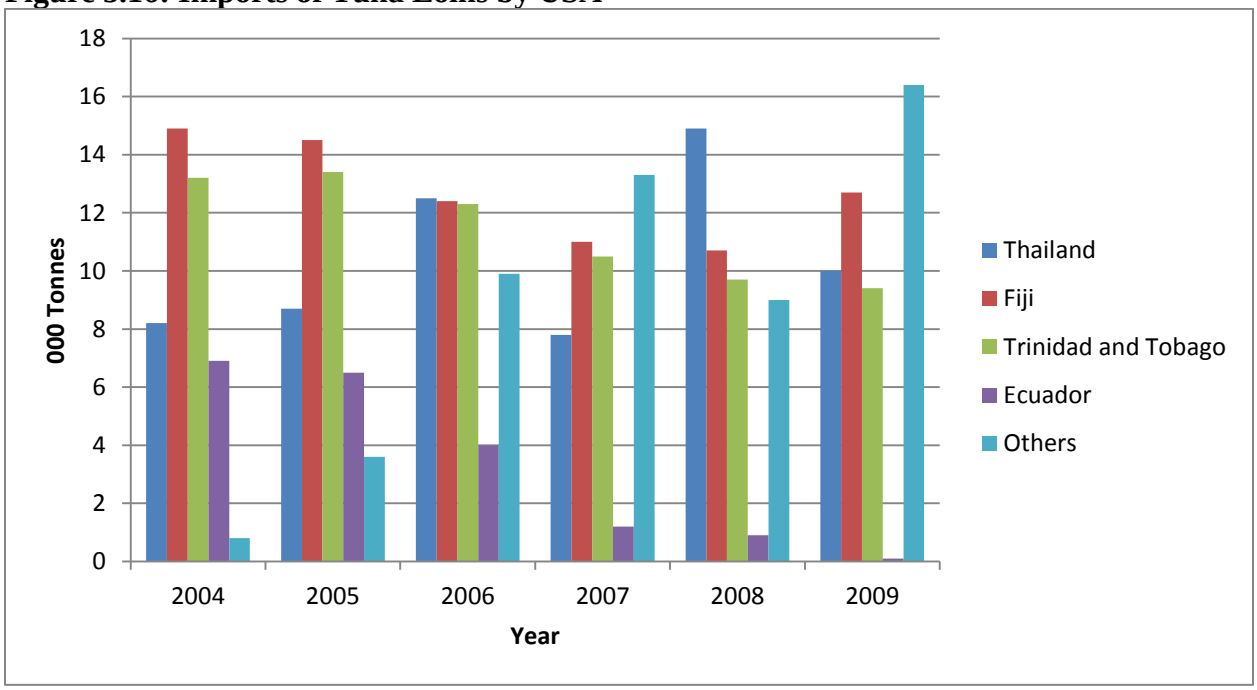
Fiji is one of the major exporters of tuna loins to the US market. It is also competing with other low cost producers of tuna loins such as Thailand, Trinidad and Tobago and Ecuador. Fiji recorded highest volume for the export of tuna loins to the US market in 2004. Thailand is catching up with Fiji in exporting to tuna loins to the US market. Table 5.25 and figure 5.16 shows the imports of tuna loins by USA.

Table 5.25: Imports of Tuna Loins by USA

Year	Countries (000 tonnes)					
	Thailand	**Fiji**	Trinidad and Tobago	Ecuador	Others	**Total**
2004	8.2	**14.9**	13.2	6.9	0.8	**44.0**
2005	8.7	**14.5**	13.4	6.5	3.6	**46.7**
2006	12.5	**12.4**	12.3	4.0	9.9	**51.1**
2007	7.8	**11.0**	10.5	1.2	13.3	**43.8**
2008	14.9	**10.7**	9.7	0.9	9.0	**45.2**
2009	10.0	**12.7**	9.4	0.1	16.4	**48.7**

Source: Globefish (2011)

Figure 5.16: Imports of Tuna Loins by USA



Source: Created by Authors (2012)

Table 5.25 and figure 5.16 shows that the export of tuna loins from Fiji to the USA decreased from 14,900 tonnes to in 2004 to 12,700 tonnes in 2009. Thailand's supply of tuna loins to the USA market increased from 8,200 tonnes in 2004 to 10,000 tonnes in 2009. Fiji is competing with Thailand, Trinidad and Tobago and Ecuador in supply of tuna loins to the US market. The

graph indicates that Fiji's standing in the tuna loin market is deteriorating quickly in comparison to its competitors.

5.8 Imports of Fresh Tuna by USA

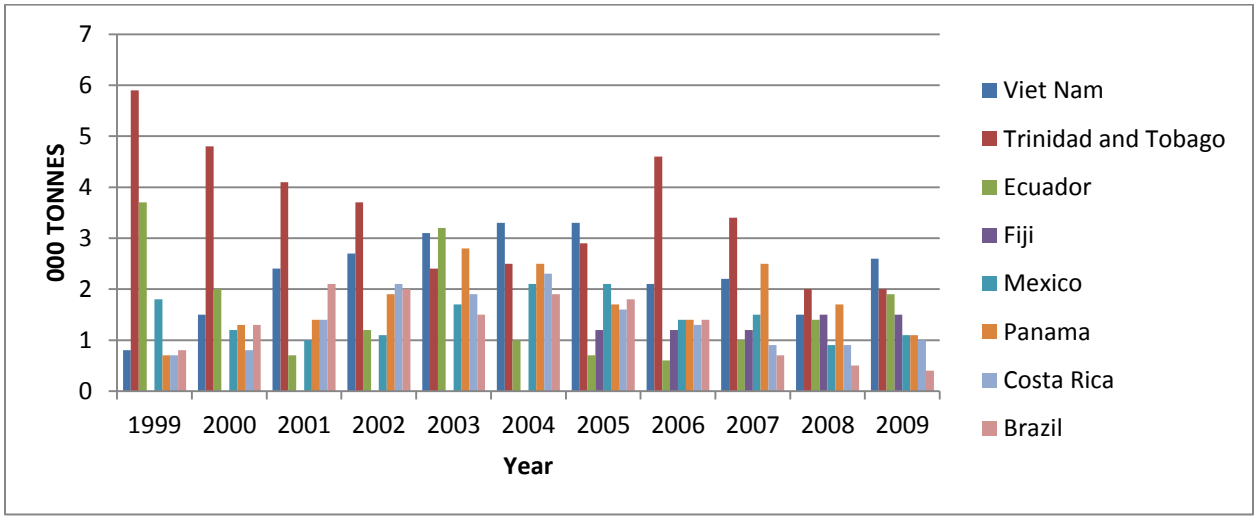
Table 5.25 and figure 5.17 shows the import of fresh tuna by USA. Fiji is competing with countries such as Viet Nam, Trinidad and Tobago, Ecuador, Mexico, Panama, Costa Rica and Brazil in supplying the fresh tuna to the USA market. As compared to its competitors, Fiji's contribution to the export of fresh tuna to the USA market is insignificant.

Table 5.25: Imports of Fresh Tuna by USA

Year	**Countries (000 tonnes)**									
	Viet Nam	Trinidad and Tobago	Ecuador	Fiji	Mexico	Panama	Costa Rica	Brazil	Others	Total
1999	0.8	5.9	3.7	-	1.8	0.7	0.7	0.8	9.3	23.7
2000	1.5	4.8	2.0	-	1.2	1.3	0.8	1.3	10.2	23.1
2001	2.4	4.1	0.7	-	1.0	1.4	1.4	2.1	9.9	23.0
2002	2.7	3.7	1.2	-	1.1	1.9	2.1	2.0	9.7	24.4
2003	3.1	2.4	3.2	-	1.7	2.8	1.9	1.5	9.0	25.6
2004	3.3	2.5	1.0	-	2.1	2.5	2.3	1.9	10.8	26.4
2005	3.3	2.9	0.7	1.2	2.1	1.7	1.6	1.8	10.6	25.9
2006	2.1	4.6	0.6	1.2	1.4	1.4	1.3	1.4	11.2	25.2
2007	2.2	3.4	1.0	1.2	1.5	2.5	0.9	0.7	12.4	25.8
2008	1.5	2.0	1.4	1.5	0.9	1.7	0.9	0.5	12.3	22.7
2009	2.6	2.0	1.9	1.5	1.1	1.1	1.0	0.4	9.3	20.9

Source: Globefish (2011)

Figure 5.17: Imports of Fresh Tuna by USA



Source: Created by Authors (2012)

Table 5.25 and figure 5.17 shows that Fiji's export of fresh tuna to the USA market increased from 1,200 tonnes in 2005 to 1,500 tonnes in 2009.

5.9 Imports of Canned Tuna by Germany

Table 5.26 and figure 5.18 show that PNG is one of the major providers of the canned tuna to Germany. PNG is competing with countries such as Philippines, Ecuador, Indonesia, Thailand, Seychelles and France. PNG needs to further enhance its core competencies in the production of canned tuna in order to gain the majority share of the Germany market.

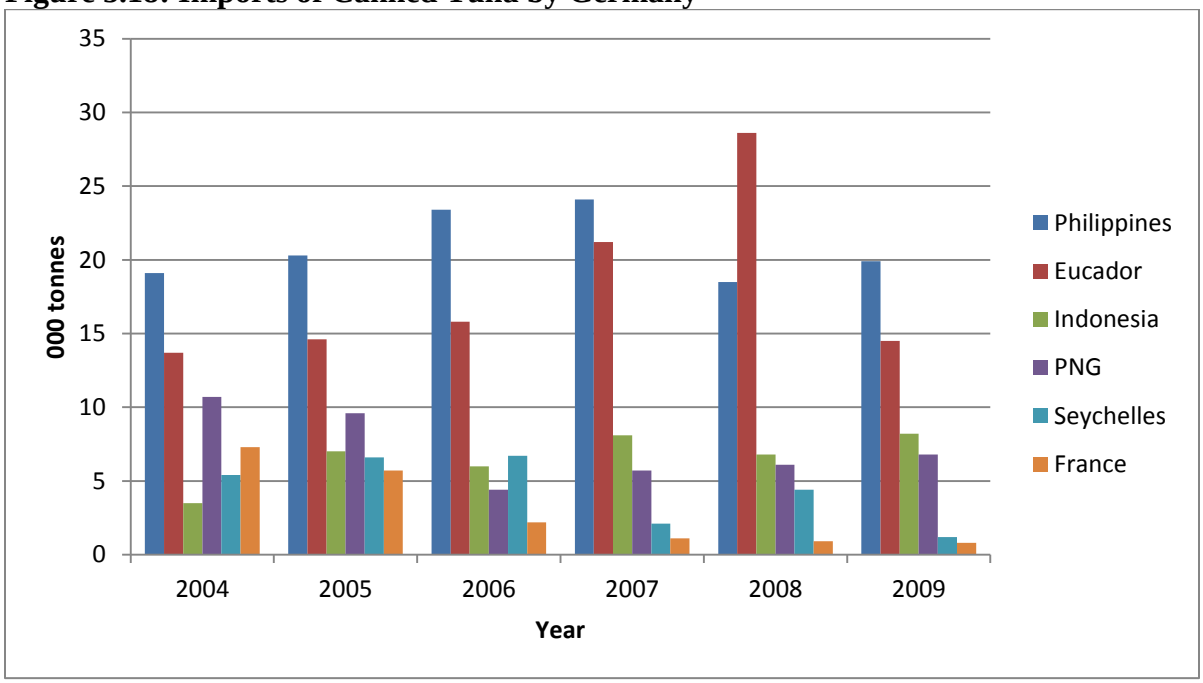
Table 5.26: Imports of Canned Tuna by Germany

Year	Countries (000 tonnes)								
	Philippines	Ecuador	Indonesia	PNG	Thailand	Seychelles	France	Others	**Total**
2004	19.1	13.7	3.5	10.7	5.6	5.4	7.3	15.9	**81.2**
2005	20.3	14.6	7.0	9.6	11.5	6.6	5.7	8.5	**83.8**
2006	23.4	15.8	6.0	4.4	18.1	6.7	2.2	10.2	**86.8**
2007	24.1	21.2	8.1	5.7	11.9	2.1	1.1	10.9	**85.1**
2008	18.5	28.6	6.8	6.1	8.2	4.4	0.9	0.7	**80.6**

2009	19.9	14.5	8.2	6.8	4.3	**1.2**	**0.8**	11.9	**67.5**

Source: Globefish (2011)

Figure 5.18: Imports of Canned Tuna by Germany



Source: Created by Authors (2012)

Table 5.26 and figure 5.18 shows that PNG's export of canned tuna to Germany decreased from 10,700 tonnes to 6,800 tonnes in 2009.

5.10 EU Imports of Tuna Loins from the MSG Countries

Table 5.27 and figure 5.19 shows that EU imports of tuna loins form the MSG countries.

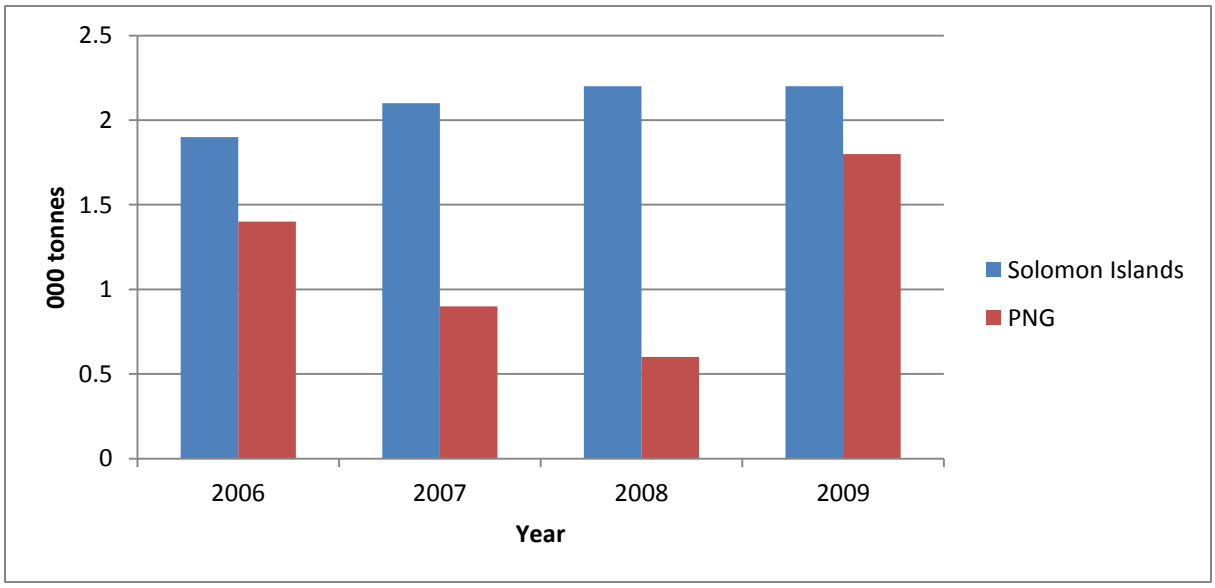
Table 5.27: EU Imports of Tuna Loins from the MSG Countries

Year	Countries (000 tonnes)		
	Solomon Islands	PNG	**Total**
2006	1.9	1.4	3.3
2007	2.1	0.9	3
2008	2.2	0.6	2.8

2009	2.2	1.8	4

Source: Globefish (2011)

Figure 5.19: EU Imports of Tuna Loins from the MSG Countries



Source: Created by Authors (2012)

Table 5.27 and figure 5.19 shows that EU imports of tuna loins from Solomon Islands increased from 1,900 tonnes in 2006 to 2,200 tonnes in 2009. The import of tuna loins from PNG also increased from 1,400 tonnes in 2006 to 1,800 tonnes in 2009.

5.11 Yearly Thai Frozen Tuna Imports in Tonnes from the MSG Countries

Table 5.28 and figure 5.20 shows the yearly Thai Frozen tuna imports in tonnes from the MSG countries

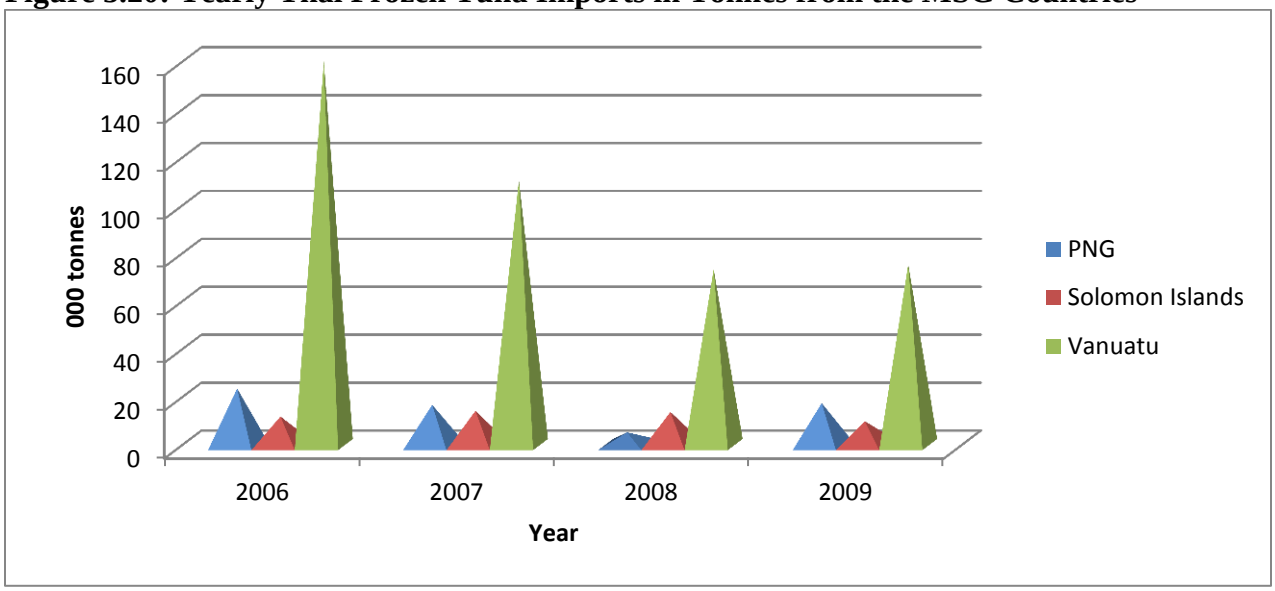
Table 5.28: Yearly Thai Frozen Tuna Imports in Tonnes from the MSG Countries

Year	**Countries (000 tonnes)**		
	PNG	**Solomon Islands**	**Vanuatu**
1985	-	3.8	-

1986	-	25.0	-
1987	-	0.5	-
1988	-	6	-
1989	-	Na	-
1990	-	Na	-
1991	-	2.8	-
1992	-	2.8	-
1993	-	3.7	-
1994	-	5.2	-
1995	-	8.5	-
1996	-	4.1	-
1997	-	13.8	-
1998	-	35.2	-
1999	-	Na	-
2000	-	Na	-
2001	-	7.9	-
2002	-	5.7	-
2003	-	7.6	-
2004	-	25.5	-
2005	-	13.2	126.0
2006	23.4	11.7	159.9
2007	16.6	14.1	110.4
2008	5.1	13.6	73.2
2009	17.3	9.7	75.3

Source: Globefish (2012)

Figure 5.20: Yearly Thai Frozen Tuna Imports in Tonnes from the MSG Countries



Source: Created by Authors

Table 5.28 and figure 5.20 show that Vanuatu is one of the largest exporters of the frozen tuna followed by PNG and Solomon Islands.

5.12 Yearly Canned Tuna Imports into UK

Table 5.29 and figure 5.21 show the yearly canned tuna imports into the UK.

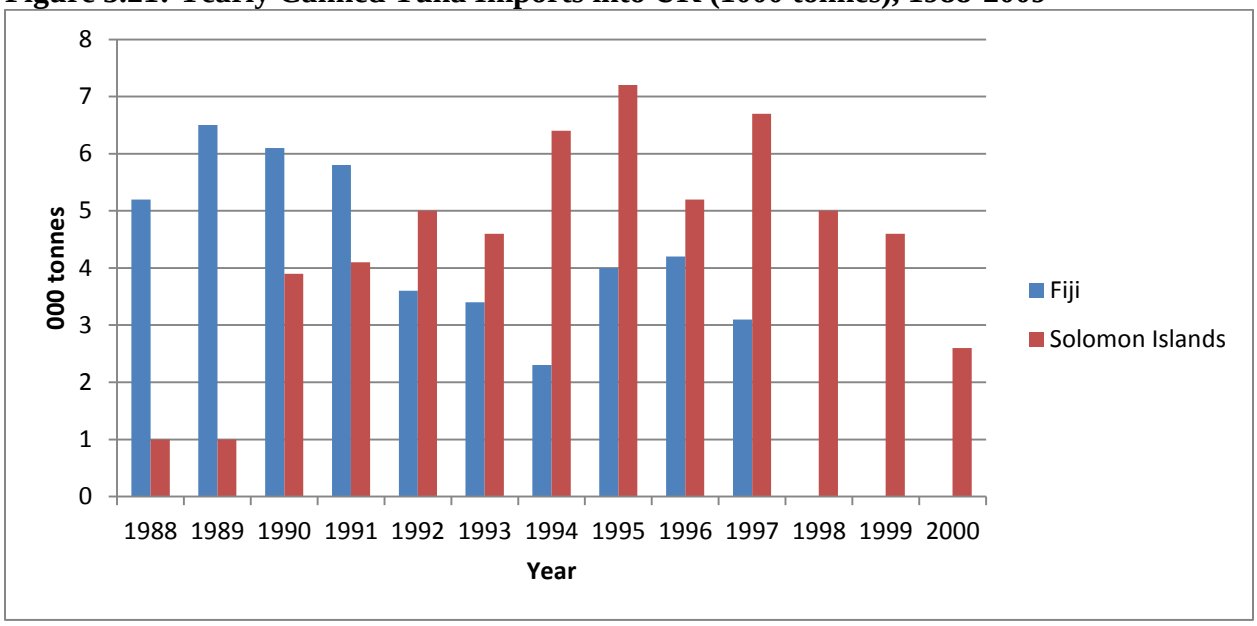
Table 5.29: Yearly Canned Tuna Imports into UK (1000 tonnes), 1988-2009

Year	Countries	
	Fiji	**Solomon Islands**
1988	5.2	1.0
1989	6.5	1.0
1990	6.1	3.9
1991	5.8	4.1
1992	3.6	5.0
1993	3.4	4.6

1994	2.3	6.4
1995	4.0	7.2
1996	4.2	5.2
1997	3.1	6.7
1998	0.0	5.0
1999	0.0	4.6
2000	-	2.6
2001	0.0	0.0
2002	0.0	0.0
2003	0.0	0.0
2004	0.0	0.0
2005	0.0	0.0
2006	0.0	0.0
2007	0.0	0.0
2008	0.0	0.0
2009	0.0	0.0

Source: Globefish (2011)

Figure 5.21: Yearly Canned Tuna Imports into UK (1000 tonnes), 1988-2009



Source: Created by Authors (2012)

Table 5.29 and figure 5.21 shows that Fijis and Solomon Islands export of canned tuna has declined to zero in the recent years. Fiji and Solomon Islands is competing with countries such as Mauritius, Seychelles, Ghana, Thailand, Philippines, Ecuador, France, Spain, Germany, Maldives, Indonesia and Senegal.

5.13 Yearly Canned Tuna Imports into Netherlands

Table 5.30 and figure 5.22 shows yearly canned tuna exports by PNG to Netherlands.

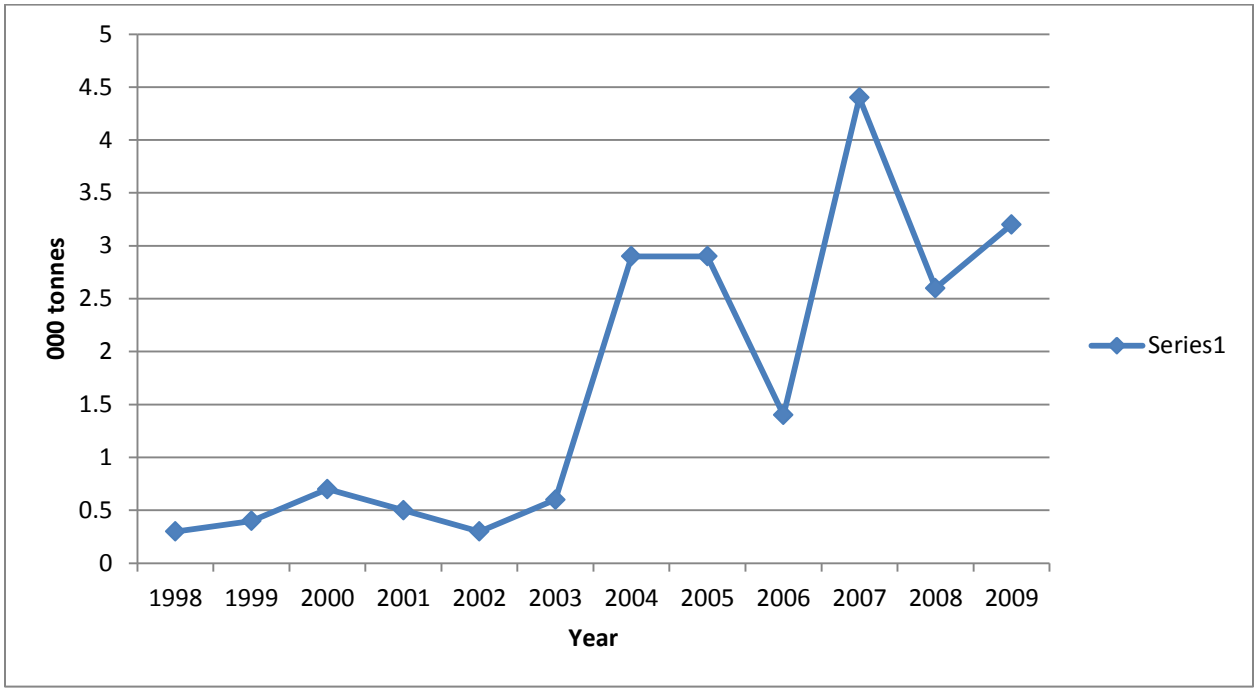
Table 5.30: Yearly Canned Tuna Imports into Netherlands (1000 tonnes), 1988-2009

Year	PNG
1988	0.0
1989	0.0
1990	0.0
1991	0.0
1992	0.0
1993	0.0

1994	0.0
1995	0.0
1996	0.0
1997	0.0
1998	0.3
1999	0.4
2000	0.7
2001	0.5
2002	0.3
2003	0.6
2004	2.9
2005	2.9
2006	1.4
2007	4.4
2008	2.6
2009	3.2

Source: Globefish (2011)

Figure 5.22: Yearly Canned Tuna Imports into Netherlands (1000 tonnes), 1988-2009



Source: Created by Authors (2012)

Table 5.30 and figure 5.22 shows the export of canned tuna by PNG to Netherlands has increased from 300 tonnes in 1998 to 3,200 tonnes in 2009. PNG is competing with other countries such as Mauritius, Seychelles, Ghana, Thailand, Philippines, Ecuador, Costa Rica, Madagascar, Maldives, Indonesia and Senegal.

5.14 Yearly World Exports of Fresh and Frozen Tuna by the MSG Countries (USD Millions)

Table 5.31 and figure 5.23 shows the yearly export of fresh and frozen tuna by the MSG countries (USD Millions).

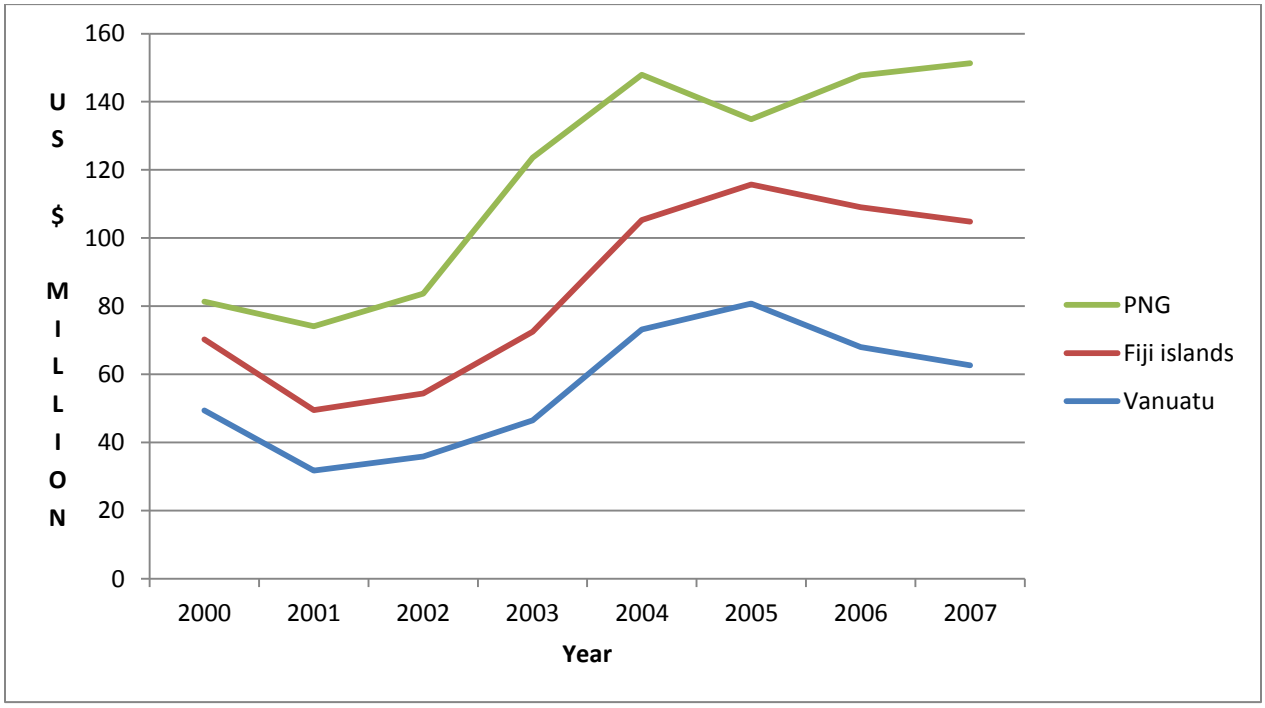
Table 5.31: Yearly World Exports of Fresh and Frozen Tuna by the MSG Countries (US$ million)

Year	Vanuatu	Fiji islands	PNG
2000	49.4	20.8	11.1

2001	31.7	17.8	24.6
2002	35.9	18.5	29.3
2003	46.5	26.0	51.1
2004	73.2	32.1	42.6
2005	80.8	34.9	19.2
2006	68.0	41.0	38.7
2007	62.6	42.2	46.5

Source: Globefish (2012)

Figure 5.23: Yearly World Exports of Fresh and Frozen Tuna by the MSG Countries (US$ million)



Source: Created by Authors (2012)

Table 5.31 and figure 5.23 shows that PNG had the highest export of fresh and frozen tuna followed by Fiji islands and Vanuatu.

5.15 Yearly World Exports of Fresh and Frozen Tuna by the MSG Countries (000 tonnes)

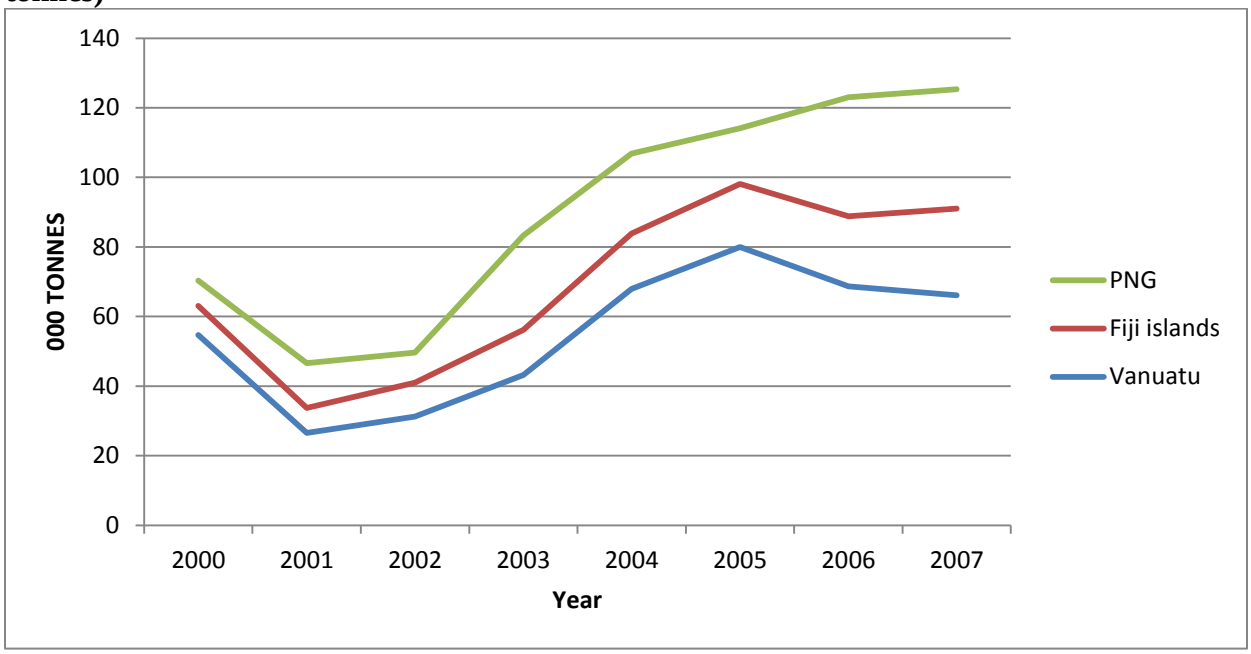
Table 5.32 and figure 5.24 shows the yearly export of fresh and frozen tuna by the MSG countries (000 tonnes).

Table 5.32: Yearly World Exports of Fresh and Frozen Tuna by the MSG Countries (000 tonnes)

Year	Vanuatu	Fiji islands	PNG
2000	54.7	8.4	7.2
2001	26.5	7.2	12.9
2002	31.2	9.8	8.6
2003	43.2	13.0	27.1
2004	67.9	15.9	23.0
2005	80.0	18.1	16.0
2006	68.7	20.1	34.2
2007	66.1	24.9	34.3

Source: Globefish (2012)

Figure 5.24: Yearly World Exports of Fresh and Frozen Tuna by the MSG Countries (000 tonnes)



Source: Created by Authors (2012)

Table 5.31 and figure 5.24 shows that PNG had the highest export of fresh and frozen tuna followed by Fiji islands and Vanuatu.

5.16 Cost Structure of the Processing Plants in the MSG countries

The estimated cost of each plant per mt per day is calculated using the following empirical model:

$$\sum \mathrm{TC_n} = \left[\left(\sum \mathrm{EM}_{\boldsymbol{n}} \times \frac{\mathrm{LC}}{\mathrm{Ut}_n} \times \frac{\sum \mathrm{H}_{\boldsymbol{n}}}{\sum \mathrm{EM}_{\boldsymbol{n}}}\right) \div \mathrm{PC}_n\right] + \left[\left[\left(\sum \mathrm{EM}_{\boldsymbol{n}} \times \frac{\mathrm{LC}}{\mathrm{Ut}_n} \times \frac{\sum \mathrm{H}_{\boldsymbol{n}}}{\sum \mathrm{EM}_{\boldsymbol{n}}}\right) \div \mathrm{PC}_n\right] \times 1.2\right] + \left[\left[\left(\sum \mathrm{EM}_{\boldsymbol{n}} \times \frac{\mathrm{LC}}{\mathrm{Ut}_n} \times \frac{\sum \mathrm{H}_{\boldsymbol{n}}}{\sum \mathrm{EM}_{\boldsymbol{n}}}\right) \div \mathrm{PC}_n\right] \times 1.5\right]$$

Where:

TC is the total cost, EM is the employees, LC is the labour cost, H is the hours of work, PC is the production capacity.

The cost structures for each of the processing plants from this model are given below:

Table 5.34: Estimated Cost Structure of the Processing Plants

Name of Plant	TC/MT/DAY (US$)	ANNUAL TC (US$)
Fiji		
PAFCO	370	10,844,434
Viti Foods	547	2,002,049
Golden Ocean	608	3,336,749
Tossa Bussan	213	1,167,862
PNG		
RD Canners	724	53,030,472
Frabelle (PNG)	388	19,886,427
Frabelle Frescomer	272	3,977,285
Southseas Tuna Corporation	435	15,909,142
International Food Corporation	435	15,909,142
SI		
Soltai	280	8,192,910

Source: FFA (2011) and authors own discretion.

Table 5.34 shows that the total cost per mt per day for PAFCO is US$370, Viti Foods is US$ 547, Golden Ocean is US$608, Tossa Bussan is US$213, RD Canners is US$724, Frabelle US$388, Frabelle Frecomer US$272, Southseas Tuna Corporation IS US$435, IFC is US$435.

5.17 Sustainability and Equity Issues: Marine Stewardship Council's and Trade Issues

Marine Stewardship Council's (MSC) core objective is to collaboratively work with partners to transform the world seafood markets that promote sustainable fishing vessels. MSC ensures that the world partners in the seafood industry such as the fishing companies, suppliers and the consumers all participate in promoting sustainable fishing practices. The blue ecolabel of MSC on seafood products ensures that the seafood is produced without environmental exploitation (MSC, 2012). For instance, Joseph (1994) conducted a study titled 'The Tuna-Dolphin Controversy in the Eastern Pacific Ocean: Biological, Economic and Political Impacts' and

concluded that since 1959 millions of dolphins have been killed by the purseine fishing vessels catching tuna in the Eastern Pacific Ocean. The combined work from the countries whose vessels participate in the purseine fishery has led to the decrease in the mortality rate of the dolphins and has fostered more sustainability in the fishing of tuna in the Eastern Pacific Ocean.

MSG can benefit largely from MSC blue ecolabel practices. These benefits are as follows:

1. The international demand for the MSG tuna will significantly increase.
2. Fish catch will be maintained at a level that will ensure that fish population is maintained at sustainable levels.
3. MSG countries gain more customers as the tuna labels will provide clear information on where the tuna is from and how it was caught.

5.18 Prices of Tuna in Japan

Table 5.34 shows the prices of Pacific Tuna in the Japanese market.

Table 5.34: Prices of Pacific Tuna in Japan Market 2011

No		TUNA SPECIES (million ¥ /mt)			
		Yellowfin	Bigeye	Albacore	Skipjack
1	Fresh	0.82	0.86	-	-
2	Frozen	-	0.81	-	0.13
3	Prepared (average for all species)	0.44	0.44	0.44	0.44

Source: National Marine Fisheries Service. (2012)

Table 5.34 shows that fresh tuna is highly valued as compared to the frozen and the prepared.

5.19 Opportunities for MSG to Consolidate and Integration of Efforts

The PICs has rich fisheries and tuna resource in its EEZ. The MSG countries are licensing the foreign tuna fishing vessels to fish in its EEZ in return for the small amount of revenue (license fees, employment etc). This return in relatively lower as compared to the thousands of dollars of tuna that is caught in the EEZ of PNG, Solomon Islands, Fiji and Vanuatu by the DWFNs. For

instance, the fees from the foreign fishing vessels contribute to 0.03% of government revenue (FAO, 2009). If the tuna caught by the foreign fishing vessels are caught by the MSG countries themselves and value added, then the government revenue from the tuna industry would increase tremendously. As mentioned above, the MSG countries canneries are competing with overseas countries such as Thailand, Philippines, Indonesia, China, Mauritius, Seychelles, Ghana, Ecuador, Costa Rica, Madagascar, Maldives, and Senegal in the production of tuna and tuna related products. The cost of production of tuna in these countries is significantly lower as compared to the MSG countries. Rather than competing with each other in the international market, there is urgency for solidarity in the MSG countries to cooperate and jointly access the overseas markets. Solidarity, collaboration and cooperation amongst the MSG countries will generate economies of scale, synergies and complementarities and these will enable the MSG countries to gain sustainable competitive advantage in the international market.

There are many ways opportunities for MSG countries to consolidate and integration of efforts in downstream processing and trade options. Some of these ways are:

- PNG, Fiji and Solomon Islands should capitalize on the production of canned tuna whilst Vanuatu should capitalize more on exporting fresh and frozen tuna. In future, Vanuatu may also be involved in small scale tuna processing.
- PNG, Fiji and Solomon Islands should continue to provide preferential licences to vessels that are based locally to supply their canneries. They should also invite foreign company investors interested in downstream processing and tuna canning plants.
- More preference should be given to the MSG countries vessels willing to catch fish in each other's EEZ as compared to the DWFN tuna fishing vessels.
- The MSG countries should share their knowledge, key competencies, research and development information with each other to foster the integration of efforts for fishery downstream processing.

5.20 Overall Analysis of trade of fish and fish products amongst MSG countries

1.0 PNG to MGS countries

The data shows that PNG is a net exporter of fish and fish products to MSG countries. PNG exports canned tuna to Vanuatu, but this trade does not have regular pattern because in some years there are more export than other years. PNG also exports some tuna to Solomon Islands and Fiji when there is shortage in the latter two countries.

2.0 Solomon Islands to MGS countries

There is some trade between Solomon Islands and Vanuatu and Solomon Island mainly exports canned tuna from Soltai ltd to Vanuatu. Furthermore, there is also some trade between Solomon Islands and Fiji. Fiji has been importing frozen tuna to supply PAFCO and imports small quantities of canned tuna from Solomon Islands when there is demand.

3.0 Fiji to MGS countries

There is some trade between Fiji and Vanuatu as Fiji exports imports small quantities of canned tuna to Vanuatu. Fiji also imports frozen tuna to supply PAFCO and Vanuatu allows Fiji based vessels to fish in Vanuatu EEZ.

4.0 Vanuatu to MGS countries

Vanuatu is a net importer of fish and fish products to MSG countries. There is some trade between Vanuatu and Fiji. Vanuatu has been exporting frozen tuna to supply PAFCO. Also Vanuatu allows Fiji based vessels to fish in Vanuatu EEZ. Since Vanuatu does not have a cannery and any processing plants, it does not export canned tuna to any country.

Overall, the analysis of the data shows that there is some inter- trade between MSG countries for fish and fish products but this trade does not have regular pattern because in some years there are more export than other years. It all depends on what is demanded by each country for each year. This report suggests that policy makers should look into the possibility for more trade amongst the MSG countries by taking advantage of the exiting trade agreement.

Table 5.35: Summary of the Key Issues

No	Country	Summary Notes
1	PNG	• The data shows that PNG is a net exporter of fish and fish products to MSG countries. • PNG exports canned tuna to Vanuatu, but this trade does not have regular pattern because in some years there are more export than other years. • PNG also exports some tuna to Solomon Islands and Fiji when there is shortage in the latter two countries.
2	Solomon Islands	• There is some trade between Solomon Islands and Vanuatu and Solomon Island mainly exports canned tuna from Soltai ltd to Vanuatu. • Furthermore, there is also some trade between Solomon Islands and Fiji. • Fiji has been importing frozen tuna to supply PAFCO and imports small quantities of canned tuna from Solomon Islands when there is demand.
3	Fiji	• There is some trade between Fiji and Vanuatu as Fiji exports imports small quantities of canned tuna to Vanuatu. • Fiji also imports frozen tuna to supply PAFCO and Vanuatu allows Fiji based vessels to fish in Vanuatu EEZ.
4	Vanuatu	• Vanuatu is a net importer of fish and fish products to MSG countries. • There is some trade between Vanuatu and Fiji. Vanuatu has been exporting frozen tuna to supply PAFCO. • Also Vanuatu allows Fiji based vessels to fish in Vanuatu EEZ. Since Vanuatu does not have a cannery and any processing plants, it does not export canned tuna to any country.

5.18 Conclusion

This chapter has discussed the international and regional trade of tuna and tune commodities in the MSG countries and volume and dollar value of tuna caught in the MSG countries. This chapter was divided as follows. The first section discussed the export of tuna from Fiji and the import of tuna by Fiji. The second section outlined the export of tuna from Vanuatu and the import of tuna by Vanuatu. The third section discussed the export of tuna from PNG and the import of tuna by PNG. The fourth final section discussed the export of tuna from Solomon

Islands and the import of tuna by Solomon Islands. The final section discussed the volume and dollar value of tuna caught in the MSG countries and outlined some recommendations.

Chapter 6 (TOR 6): Recommendations

This report makes the following recommendations/ suggestions which MSG countries policy makers may like to consider.

1. **Erosion of preferential tariffs under existing trade agreements: the major threat.**

So far, the international trade agreements have given MSG countries 'competitive advantage' over low cost producer countries such as Thailand, Philippines, Indonesia, China, Mauritius, Seychelles, Ghana, Ecuador, Costa Rica, Madagascar, Maldives, and Senegal. The cost of processing of tuna and tuna products in these countries is significantly lower as compared to the MSG countries. Since, Thailand and Philippines are the world's two largest producers of canned tuna they are the main threats in future once there further erosion of preferential tariffs (duty and quota free) as required by WTO. International trade agreements such as EPAs, GSP, SPARTECA has given preferential access of MSG countries tuna and tuna products to EU, USA, Japan, Australia and New Zealand markets. MSG together with PICs should lobby in international trade agreement meeting to ensure sure there is no further erosion of preferential tariffs under existing trade agreements.

2. **Search for New Markets**

Whilst MSG are taking advantage of duty free access and preferences that are currently available, they should be more proactive and start robustly to search new markets. The erosion of duty free access and preferences are already taking place and there is no room for complacency.

- **Greater penetration in EU Market**

Data shows that Spain, Italy, France, and Portugal are the largest importers of fresh and frozen tuna and hence these markets should be targeted within the EU market. In 2009, Spain for example imported 170, 000 tonnes of fresh and frozen tuna, France 25, 000 tonnes, Italy 20,000 tonnes and Portugal imported 15,000 tonnes. Currently, these EU countries canneries are getting tuna supplies from their EEZ and from their former colonies and territories, but in future it is predicted that these countries fishing fleets are likely to decline in the coming future because of

reduction of supply their fishing areas. Hence this presents an opportunity for MGS countries to supply frozen fish and loins to these countries in the future.

- **Greater penetration in Japan, USA and China markets**

Outside the EU, MSG countries should also target Japan and USA markets for export of more fresh fish, frozen fish, loins, canned tuna and other tuna product lines. In the case of Japan, the data shows that the two largest suppliers of fresh and frozen fish are South Korea and Taiwan and MSG countries should aggressively target these two markets. Since MSG countries do not have any trade agreements with Japan and USA, it is an opportune time for MSG countries to collectively negotiate trade agreements with Japan and USA as a reciprocal exchange for the political support MSG countries give to Japan and USA in international forums and agreements.

- **Targeting Niche Markets in the Oceania Region and International Region (Australia, NZ, USA, Canada and EU countries)**

Although Australia and NZ are exporting fish and fish products to overseas countries, MSG countries have an opportunity to target Pacific diaspora. Since there are thousands of Pacific Islanders living in NZ, Australia, MSG countries should focusing on exporting more fresh fish and fish products to these countries. The Pacific diaspora is a good niche market and further development in this sector is needed. For example, the Pacific islanders prefer salt water fish rather than freshwater fish. In addition to targeting Pacific diaspora in Australia and NZ, MSG countries should also target Pacific diaspora in USA, Canada and EU countries.

- **Solidarity for MSG countries to cooperate and jointly access the overseas markets.**

Rather than competing with each other in the international market, there is urgency for solidarity in the MSG countries to cooperate and jointly access the overseas markets. Solidarity, collaboration and cooperation amongst the MSG countries will generate economies of scale, synergies and complementarities and these will enable the MSG countries to gain sustainable competitive advantage in the international market.

3. Increase onshore downstream processing and value adding

MSG countries, particularly PNG, Fiji and Solomon Islands who already have canneries should further enhance their down streaming processing and value adding activities if they want to take full advantage of their fisheries resources. If more value adding takes place onshore in MSG countries, then MSG countries revenue from the tuna industry would increase significantly. Lessons can be learnt from the PNG success of attracting foreign companies to be engaged in tuna canning.

- **Frozen fish: More scope for value adding**

  Since labour cost is high in developed countries (EU, USA, Japan) it is suggested that more semi-processed (cleaned) should be exported rather than just instead exporting whole uncleaned frozen fish. Semi-processed (cleaned) frozen fish markets in Japan and USA fetch good price approximately (USD$5-8 per kilo) and hence more value adding should be done in MSG countries before fresh fish is exported. For example, instead of just freeing the whole fish, additional processes such as 'gutting' & 'gilling' (GG), 'gutting' & 'cutting head' (GCH) and skinning (GHS) would add more value to the frozen tuna. Similarly for loin exports, 'skinned and cooked' loins as done in PACFO in Fiji and PNG would be preferable than 'uncooked loins' which are currently sent by private sector fishing companies in Fiji.

- **Canned fish: More scope for value adding**

  There are many opportunities for MSG countries to consolidate and integrate efforts in downstream processing and trade options. Some of these ways are:

  - PNG, Fiji and Solomon Islands should capitalize on the production of canned fish (including tuna) whilst Vanuatu should capitalize more on exporting fresh, loins and frozen tuna. In future, Vanuatu may also be involved in small scale tuna processing.
  - PNG, Fiji and Solomon Islands should continue to provide preferential licences to vessels that are based locally to supply their canneries. They should also invite foreign company investors interested in downstream processing and tuna canning plants.

- More preference should be given to the MSG countries vessels willing to catch fish in each other's EEZ as compared to the DWFN tuna fishing vessels.
- The MSG countries should share their knowledge, key competencies, research and development information with each other to foster the integration of efforts for fishery downstream processing.

- **Processing of other fish Products**

MSG countries should further develop processing of other fish products such as mackerel, sardine, fish meal, sea cucumber, tilapia and seaweeds. For example, there is high demand for processed Tilapia products in the USA market and high demand for dried sea cucumber and seaweed in the Asian markets particularly China.

- **Diversify fish product lines**

Furthermore, MSG countries should diversify their fish product lines and be involved in more value adding activities. New tuna products should be embarked upon. For example, in canned tuna, another line item could be 'tuna in pouch', 'tuna salad', 'tuna paste', tuna fish balls', 'fish cake', etc

- **Factors to be considered for downstream processing**

Factors that need to be considered for enhancing downstream processing: availability and supply of raw materials at the lowest cost; level of investment (semi-processing, canneries, vessels, gear and equipment); infrastructure (wharves, transportation, airfreight facilities, electricity, water, telecommunication); availability and supply of skilled productive labour; and the capacity to handle the volume of production. For example, as of 2010, PNG has the largest capacity of around 650 mt per day, Fiji with 200 mt per day, Solomon Islands with 80 mt per day and Vanuatu with 20 mt per day. Furthermore, to guarantee a constant supply of fish to the canneries, MGS governments should regulate that more percentage of fish caught by foreign fishing vessels in MSG EEZ to be offloaded in MSG countries.

4. Consolidate and Integrate Efforts in Relation to Fishery Downstream Processing

Rather than developing their own individual downstream processing plants, it would be wise for MSG countries to consolidate and integrate their efforts in relation to fishery downstream processing.

5. Public-Private Partnership to increase onshore downstream processing

Lessons can be learnt from the past mistakes in each country which shows that government owned and operated canneries are not successful. Therefore, public-private partnership is the way to go forward and in case MSG countries want to be involved in more value adding. The existing canneries in PNG, Solomon Islands and Fiji can be further expanded with new ventures to be allowed in the country via public-private partnerships. A good example is the signing of a recent (2011) new investment project in PNG - a joint venture between Thai Union, Century Canning and Frabelle. Another example is the joint venture partnership between PAFCO and Bumble Bee of USA. It is wise for both the government sector and private sector to be involved in solving the problems and obstacles for canned fisheries industries in MSG countries. In addition, the problem of the lack of raw material (can tins, oils, etc) could be reduced with government and private sector partnership to improve the efficiency of the tuna industry.

6. Upgrade of factories

Since MSG countries do not have comparative advantage from low labour cost *vis-à-vis* Asian countries, it is wise for the MSG countries canned tuna producers to upgrade their factories and production procedure to reduce their labour cost. Again this can be done via public-private partnerships.

7. Health Standards and Certification

Canneries can be made more hygiene for compliance for food safety/ quality and to align with HACCP rules to EU, USA and Japanese markets. Certification is also crucial factor for exporting. There are ever more intense non-tariff barriers (eg HACCP, certification)

in today's international trade and thus the MSG countries canned tuna exporters and/or producers should adjust their plants, their products and their production procedures to meet the importing countries' standards and import regulations.

8. Sharing Information amongst MSG countries

Although some information is shared between government departments within a country and between MSG countries, there is need for greater degree of co-ordination and sharing of information. There should be better information sharing between relevant government ministries and MSG countries on issues such as export rules, markets, competitors, and the new production technology, etc. In addition, the government should be the representative of the MSG countries for fish exporters and negotiate preferential agreements with the importing countries in order to provide the MSG countries exporters to compete globally.

9. Joint Co-ordination in Monitoring, Control and Surveillance

MSG countries should be involved jointly in Monitoring, Control and Surveillance of fishing vessels in its EEZ. One of the major problems faced by the government of the MSG countries is the inability to monitor and control the fish that is caught in its EEZ. The tuna stocks in the MSG countries are rapidly declining and some species of tuna are overexploited such as Bigeye. This indicates the urgency for the government of the MSG countries to monitor and control the population of tuna that is present in its EEZ. The following strategies need to be implemented to strengthen the monitoring, control and surveillance:

- Maintaining proper data collection systems, e.g. stringent monitoring at the ports, seasides and docks.
- Investment in helicopter for quick search of large areas.
- Joint patrolling of fishing vessels

In addition to using the FFA's Vessel Monitoring System (VMS), MSG countries should also jointly conduct monitoring and surveillance of its EEZ.

10. Marketing: Aligning with larger global fish/tuna traders/marketers.

MSG countries should be create economies of scale and increases the chances of aligning with larger global tuna traders and international brand names and marketers. For marketing purposes, selling of tuna products should be done in partnership with the major global marketers of tuna, for example Bumble Bee, Thai Union, Frabelle, Star Kist, South Seas, etc. Without such partnership it would be difficult to market and sell Pacific Island tuna.

It would be wise for the MSG countries canned tuna producers/exporters to have their own web site to advertise and provide consumer information. The current advancement of Internet and E-Commerce technologies can help them achieve a wider sales distribution channel and can access to untapped markets easier and quicker. This is a great opportunity for them to sell more via Internet. Additionally, the government should provide support to the exporters regarding training or even giving services, such as Web Development, and E-Commerce service.

11. Brand Name: Align with Global Brand Name, Packaging and Health Information.

Instead of creating their own brands, it will be wiser for MSG countries to align with existing global marketers of tuna, for example Bumble Bee, Thai Union, Frabelle, Star Kist, South Seas, John West, etc, so that MGS tuna be certified and sold overseas. Furthermore, by certifying and promoting 'green' and 'carbon free' canned tuna from Pacific canneries can add more value to the product as well as increase the potentiality in competing with existing brand names. Currently, the packaging of most of the MSG canned tuna does not look appealing and without any 'health benefit' information (eg omega-3) which will tempt consumers to buy MSG country tuna. For example, Australian 'John West' brand uses the 'health benefit' information to appeal to consumers. Better packaging and 'health benefit' information will enhance marketing flair Pacific tuna to attract more consumers.

12. More trade among the MSG members

There is a need for more trade among the MSG members with regards to tuna products. While there is some trade among the MSG members with regards to tuna resources but this trade remains minimal. Much could be achieved under the revised MSG Agreement which has extended the scope of trade and other closer co-operative relations amongst the MSG members given that these members represent the larger island group of the Pacific region, in terms of land area, fishing zones, people and capacity. This is particularly relevant for MSG countries fisheries sector where tuna stocks as natural resources are a shared commodity.

MSG Trade Agreement provides the platform where the members can engage in trade as well as fisheries management related activities as they are becoming intrinsically linked. Economies of scale can be only be realised within this framework which explores the possibilities of joint arrangements with public goods such as sharing of skills and in conservation, management and development aspects.

There is scope for intra-regional trade in areas such as seaweeds, pearls, aquarium products and some small volumes of high values fisheries resources. The study team feels more in-depth study is needed.

13. Co-ordination and Cooperation amongst MSG countries

MSG countries would be better served if they enhanced their cooperation and coordination. For example, firstly, joint scheme for exports to EU utilizing the rules of derogation of (global sourcing) for multiple reasons – improving the economic returns as well as improving the standards of practice and creating harmonization amongst wider Pacific or the main players. Secondly, the possibility of joint monitoring, control and surveillance tasks between MSG members such as sharing of resources like observers, surveillance officers, patrols and fisheries data. Individually, it is difficult to perform this MCS functions. Thirdly, co-ordination and cooperation amongst the MSG countries in terms of sharing of technical and skilled labour amongst the processing plants in the MSG countries will foster greater economic integration. For example, PNG can temporarily recruit experienced PAFCO women to work in PNG canneries on contract

given the expansion plans that is envisaged in PNG. Fourthly, securing competitive access agreements between Fiji and Vanuatu and Fiji and Solomon or securing supplies. Fifthly, the MSG countries can also cooperate by extending benefits of PNA initiatives to wider non PNA members (Fiji and Vanuatu) and by using the strategic role of PNG and the Solomon Islands as members of both MSG and PNA. This will ensure more benefits to Fiji and Vanuatu. Sixthly, develop better strategies to access international markets. This could ensure economies of scale, synergies and complementarities which could enable the MSG countries to gain sustainable competitive advantage in the international market.

Hence, MGS countries should have more solidarity and need to cooperate to further enhance on-shore processing development of tuna within MSG members.

14. Strategy for sustainable use of fish resources

There should be a long-term strategy for sustainable use of fish resources for MSG countries. Increasingly on the global front, there are calls for improving fisheries management to achieve sustainable outcomes that also can support sustainable trade. NGOs such as Green peace and Oxfam are pushing for resource management and sustainable trade. Furthermore, MSG countries should adhere to WCPF Commissions fish management measures and they could take the lead role to emphasise its importance.

15. Further Research

Since this research was limited to desktop research and with time constraints, it is suggested that a series of more detailed in-depth research in specific areas should be conducted. Suggested areas are:

- A comparison of cost structure of canneries/loin plants in MSG countries.
- Further explore trade option in identified coastal fisheries commodities in MSG countries.
- Further investigate options for strengthening monitoring and surveillance in MSG countries.
- A more comprehensive assessment of trade related issues in each of the MSG countries.

7.0 REFERENCES

ADB. (1997). *Vanuatu-Economic Performance: Policy REFORMA Issues*. Pacific Studies Series. Asian Development Bank. Philippines: Manila.

ADB. (2007). *Background Paper: Small Pacific States.* Manila. Philippines.

ADB. (2009). *Vanuatu Economic Supervisor 2009: Accelerating Reforms*. Manila: Philippines.

Alexander, A. (1902). *Notes on the Boats, Apparatus, and Fishing Methods Employed by the Natives of the South Sea Islands and Results of Fishing Trials by the Albatross*. Report of the Commissioner. Part XXVII. USA Commission of Fish and Fisheries. USA: Washington DC.

Amoe, J. (2005, 8th –19th August). *Information on Fisheries, Research and Statistics: Fiji*. First Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. New Caledonia.

Amoe, J. (2006, 7th –18th August). *Information on Fisheries, Research and Statistics: Fiji*. Second Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Philippines: Manila.

Amoe, J. (2007, 13th –24th August). *Information on Fisheries, Research and Statistics: Fiji*. Third Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Honolulu: Hawaii.

Amoe, J. (2008, 10th –22nd August). *Information on Fisheries, Research and Statistics: Fiji*. Fourth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Papua New Guinea: Port Moresby.

Amoe, J. (2009, 10th –21st August). Information on Fisheries, Research and Statistics: Fiji. Fifth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Vanuatu: Port Vila.

Amoe, J. (2010, 10th –19th August). Information on Fisheries, Research and Statistics: Fiji. Sixth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Tonga: Nuku'alofa.

Amoe, J. (2011, 9th -17th August). *Information on Fisheries Research and Statistics: Fiji*. Ministry of Fisheries and Forests. Annual Scientific Report to the Western and Central Pacific Fisheries Commission. Federated States of Micronesia: Pohnpei.

Amos, J.M. (2007). Vanuatu Fisheries Profile: SPREPs International Waters Project. Samoa: Apia.

Aqorau, T. (1998). Analysis of the Responses on the Pacific Island States to the Fisheries Provisions of the Law of the Sea. PhD Thesis (unpublished) NSW: University of Wollongong.

Aqorau, T. (2001). Sustainable Management and Development of Solomon Island Fisheries Sector. *Pacific Economic Bulletin*, 16(2), 120-126.

Aqorau, T., and Bergin, A. (1997). Ocean Governance in the Western Pacific Purse Seine Fishery-The Palau Arrangement. *Marine Policy*, 21(2), 173-186.

Armram, T., and Dieye, M. (2008). *Project Global: Country Profile of Nauru*. Nauru Fisheries and Marine Resource Authority. Nauru.

Arnason, R. and Bjorndal, T. 1991. *Studies in Contemporary Economics: Essays on the Economics of Migratory Fish Stocks*. Berlin Heidelberg: Springer-Verlag.

Asian Development Bank, 2010. Solomon Islands Economic Report. Pacific Studies Series. Asian Development Bank. Philippines: Manila.

Asian Development Bank. (1997). The Pacific's Tuna: The Challenges of Investing in Growth. Office of Pacific Operations. Asian Development Bank. Philippines: Manila.

Asian Development Bank. (1997). *Vanuatu Economic Performance and Policy Reform Issues.* Pacific Studies Series. Asian Development Bank. Philippines: Manila.

Asian Development Bank. (1998). *Solomon Islands 1997 Economic Report.* Pacific Studies Series. Asian Development Bank. Philippines: Manila.

Aus Trade (2011). *Fiji Profile for Australian Exporters*. Australia: Canberra.

Australian Government. (2006). *SPARTECA (TCF Provisions) Scheme – Terms and Conditions*. Australia: Canberra.

Barclay, K and Ian, C. (2007). *Capturing Wealth from Tuna: Case Studies from the Pacific*. Canberra: Asia Pacific Press (Australian National University).

Barclay, K. and W. Yoshikazu (2000). Solomon Taiyo – Tuna Dreams Realised. *Pacific Economic Bulletin*, 15(1), 34-47.

Barclay. K. (2005). Tuna Dreams Revisited: Economic Contributions to a Tuna Enterprise in the Solomon Islands. *Pacific Economic Bulletin*, 20 (3), 77-93.

Barclays, K. (2010). *History of Industrial Tuna Fishing in the Pacific Islands*. Working Paper No.169. Murdoch University. Australia.

Bell, J.D., Reid, C., Batty, M.J., Allison, E.H., Lehodey, P., Rodwell, L., Pickering, T.D., Gillett, R., Johnson, J.E., Hobday, A.J., and Demmke, A. (2011). Implications of Climate Change for Contributions by Fisheries and Aquaculture to Pacific Island Economies and Communities. In Bell, J.D., Johnson, J., E and Hobday, A. J (Eds.), *Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change*. Secretariat of the Pacific Community. New Caledonia: Noumea. pp. 733-802.

Campling, L., Havice, E., Bidesi, V. (2007). *Pacific Island Countries, the Global Tuna Industry and the International Trade Regime: A Guidebook. Pacific Islands.* FFA. Solomon Islands: Honiara.

Changau, B. B. (2004). *Regional Course on Rules of Origin, Country Report PNG.* Philippines: Manila.

Chapman (1998). *Solomon Islands Oceanic Fisheries Management Plan Project – Development Alternatives: Overview of Some Options.* South Pacific Commission. New Caledonia: Noumea.

Chapman, L. (2000). *Development Options and Constraints Including Infrastructure and Training Needs within the Tuna Fishing Industry and Support Services in Vanuatu*. Fisheries Development Section. Secretariat of the Pacific Community. New Caledonia: Noumea.

Commonwealth of Australia. (2007). *Valuing Pacific Fish*. Canberra. Australia.

Cusack, P. (1995). Longline Fishing Trials in New Britain August 1993 to September 1994. *In*: P. Philipson (Ed.), *Papua New Guinea Fishing Industry Seminar: Tuna Long lining*. South Pacific Project Facility, Sydney.

Dearden, S. (2007). *The Interim Pacific Economic Partnership Agreement*. Unpublished Paper. Department of Economics. Manchester Metropolitan University. USA.

Department of Fisheries Solomon Islands. (2007, 13th –24th August). *Information on Fisheries, Research and Statistics: Solomon*. Third Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Honolulu: Hawaii.

Department of Fisheries Solomon Islands. (2008, 10th –22nd August). *Information on Fisheries, Research and Statistics: Solomon Islands*. Fourth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Papua New Guinea: Port Moresby.

Department of Fisheries Solomon Islands. (2009, 10th –21st August). *Information on Fisheries, Research and Statistics: Solomon Islands*. Fifth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Vanuatu: Port Vila.

Department of Fisheries Solomon Islands. (2010, 10th –19th August). *Information on Fisheries, Research and Statistics: Solomon Islands*. Sixth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Tonga: Nuku'alofa.

Diake, S. (2005, 8th –19th August). *Information on Fisheries, Research and Statistics: Solomon Islands*. First Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. New Caledonia.

Diake, S. (2006, 7th –18th August). *Information on Fisheries, Research and Statistics: Solomon Islands*. Second Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Philippines: Manila.

Dieye, M. (2007). *Making the Vessel Day Scheme Work*. Fisheries Training Programme. Reykjavik, Iceland

Doulman, D.J. (1986). The Tuna Industry in the Pacific Island Region: Opportunities for Foreign Investment. *Marine Fisheries Review*, 48(1), 15-22.

Dunn, S., Rodwell, L., and Joseph, G. (2005). *The Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery: Management Scheme (Vessel Day Scheme)*. Pacific Islands Forum Fisheries Agency. Solomon Islands: Honiara.

FAO. (2009). *National Fisheries Sector Overview*: Fiji. Italy: Rome.

FAO. (2009). *National Fisheries Sector Overview*: PNG. Italy. Rome.

Felando, A. (1987). *USA Tuna Fleet Ventures in the Pacific Islands*. In Doulman, D (Ed). Tuna Issues and Perspectives in the Pacific Islands. Pacific Islands Development Program. Honolulu: East-West Center. pp. 93–104.

FFA. (1992). *Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery*. Solomon Islands: Honiara.

FFA. (1995a). Do*mestic Tuna Industry Development Study - Solomon Islands.* FFA Report 95/37 Solomon Islands: Honiara.

FFA. (2006). *Gender Issues in the Pacific Island Countries*. Solomon Islands: Honiara.

FFA. (2007, December). *Fisheries Trade Briefing*, Vol. 1, Issue 1, pp. 2.

FFA. (2008). *Vessels Day Scheme*. Solomon Islands: Honiara.

FFA. (2008, February), *Fisheries Trade Briefing*, Vol. 1, Issue 3, pp.9.

FFA. (2010). *FFA Annual Report*. Solomon Islands: Honiara.

FFA. (2010, 26th - 28th October). *Maximizing the Sustainable Returns from the Fisheries Resources in the Pacific*. Forum Economic Ministers Meeting. Niue: Alofi.

FFA. (2011). *Economic Indicators Update*. Solomon Islands: Honiara.

Fiji Islands Trade and Investment Bureau. (2009*). Investment Opportunities in the Processed Fish, Fish Products and Processed Seafood Industry*. Fiji: Suva.

Foreign Investment Advisory Service. (2004). *Pacific Islands Forum Secretariat: Linkages and Flow on Impacts of Foreign Investment in Pacific Island Economies: Case Studies Report*. World Bank. USA: Washington DC.

Forum Fisheries Agency,1995b. *Tuna Industry Development Study – Papua New Guinea.* FFA Report 95/36. Solomon Islands: Honiara.

Gillett, R. (1987). *Addresses Useful to Pacific Islands Fishery Personnel*. FAO/UNDP Regional Fisheries Support Programme. Fiji: Suva.

Gillett, R. (1997). *The Importance of Tuna to Pacific Island Countries: A Report Prepared for the Forum Fisheries Agency*. Gillett, Preston and Associates. Suva.

Gillett, R. (2003). *Domestic Tuna Industry Development in the Pacific Islands: The Current Situation and Considerations for Future Development Assistance*. FFA Report. Solomon Islands: Honiara.

Gillett, R. (2007). *A Short History of Industrial Fishing in the Fiji Islands. Asia Pacific Fishery Commission. FAO of the UN*. Bangkok: Thailand.

Gillett, R. (2008a). *A Study of Tuna Industry Development Aspirations of FFA Member Countries.* Forum Fisheries Agency. Solomon Islands: Honiara.

Gillett, R. (2009). *Fisheries in the Economies of the Pacific Island Countries*. ADB. Philippines: Manila.

Gillett, R. (2010). *Marine Fishery Resources of the Pacific Islands. Food and Agriculture Organisation of the United Nations*. Italy: Rome.

Gillett, R. (2011). *Fisheries of the Pacific Island: Regional and National Information*. RAP Publication. FAO Regional Office for Asia and the Pacific. Thailand: Bangkok.

Gillett, R., and Cartwright, I. (2010). *The Future of Pacific Island Fisheries*. SPC. New Caledonia: Noumea.

Gillett, R., and Lightfoot, C. (2002). *The Contribution of Fisheries to the Economies of Pacific Island Countries. Pacific Studies Series*, Asian Development Bank. World Bank. Forum Fisheries Agency. Gillett, Preston and Associates. Suva.

Gillett, R.D. (1997). *The Importance of Tuna to the Pacific Island Countries*. South Pacific Forum Fisheries Agency. Solomon Islands: Honiara.
Gillett, R.D. (2001). *Tuna: A Key Economic Resource in the Pacific Island Countries*. ADB. Philippines: Manila.

Gillett, R.D. (2004). *Tuna for Tomorrow: Some of the Science behind an Important Fishery in the Pacific Island Countries*. ADB. Philippines: Manila.

Gillett, R.D. (2004). *Tuna for Tomorrow? Some of the Science behind an Important Fishery in the Pacific Islands*. ADB. Philippines: Manila.

Government of Papua New Guinea. (1998). *The National Tuna Management Plan: Fisheries Management Act (No.48 of 1998).* PNG: Port Moresby.

Government of Solomon Islands. (1999). *National Tuna Management and Development Plan – Part 2: Strategies and Procedures.* Honiara: Solomon Islands.

Government of Vanuatu and EU. (2002). *Country Strategy Paper and National Indicative Programme for the Period 2002-2007*. Port Vila. Vanuatu.

Grynberg, R. and R. Twum-Barima (1995). *Tuna Industry Development Study – Country Profiles: Fiji*. Report 95/35. Forum Fisheries Agency. Solomon Islands: Honiara.

Grynberg, R., D. Forsyth, and R. Twum-Barima (1995). *Tuna Industry Development Study – Country Profiles: Solomon Islands*. Report 95/37. Forum Fisheries Agency. Solomon Islands: Honiara.

Grynberg, R., Forsyth, D., and Twum-Barima, R. (1995). *Tuna Industry Development Study – Country Profiles: PNG*. Report 95/36. Forum Fisheries Agency. Solomon Islands: Honiara.

Habib G. (1984). *Fishing Fleet Development in the Republic of Vanuatu*. FAO. Rome: Italy.

Habib, G. (1997). *Papua New Guinea Fisheries Sector Review and Policies*. PNG: Port Moresby.

Hamilton, A., A. Lewis, & L. Campling. (2011). Report on the Implementation of the Derogation to the Standard Rules of Origin Granted to the Pacific ACP States in the Framework of the Interim Economic partnership Agreement. EU and LINPICO. FFA. Honiara: Solomon Islands.

Hamilton, A., Lewis, A., McCoy, M.A., Havice, E., and Campling, L. (2011). *Market and Industry Dynamics in the Global Tuna Supply Chain*. FFA. Forum Fisheries Agency. Solomon Islands: Honiara.

Hampton, J. (1993, 16th -18th June). *Status of Tuna Stocks in the SPC Area: A Summary Report for 1993*. Sixth Standing Committee on Tuna and Billfish. Federated States of Micronesia: Pohnpei.

Hand, T., Davis, D., and Gillett, R. (2005). *Republic of the Fiji Islands: Fisheries Sector Review*. ADB. Philippines: Manila.

Havice, E., and Reed, K. (2012). Fishing for Development? Tuna Resource Access and Industrial Change in Papua New Guinea. *Journal of Agrarian Change*, 12(2-3), 413-435.

Herr, R. (1990). *The Forum Fisheries Agency: Achievements, Challenges and Prospects*. Institute of Pacific Studies. Fiji: Suva.

Honiwala, E. (2011). *Information on Fisheries Research and Statistics: Solomon Islands. Ministry of Fisheries and Forests*. Seventh Annual Scientific Report to the Western and Central Pacific Fisheries Commission. Federated States of Micronesia: Pohnpei.

Honiwala, E. (2011, 9th -17th August). *Information on Fisheries Research and Statistics: Solomon Islands*. Ministry of Fisheries and Forests. Annual Scientific Report to the Western and Central Pacific Fisheries Commission. Federated States of Micronesia: Pohnpei.

Hughes , A. V. (1987). *High Speed on an Unmade Road: Solomon Islands Joint venture, Route to a Tuna Fishery Industry*. In Doulman, D.J. (Ed) Tuna Issues and perspectives in the Pacific Island region. East West Center. Hawaii. pp. 203-224.

Hughes, A. and O. Thaanum (1995). *Costly Connections: A Performance Appraisal of Solomon Taiyo Limited*. Report No. 95/54. Forum Fisheries Agency. Solomon Islands: Honiara.

Ikebe, K., and Matsumoto, T. (1937). Survey Report on Bonito Bait in the Waters Around the Saipan Island. *South Seas Fisheries News*. 1937(6), 2–12.

International Minimum Wages http://www.minimum-wage.org/international (accessed 10 March 2012).

Jayaraman, T.K. (2004). A Single Currency for the Pacific Island Countries: A Stepwise Approach. *Asia Pacific Development Journal*, 11(1), 91-108.

Kailola, P.J. (1994). *Fisheries Resources Profiles: Papua New Guinea*. FFA. Solomon Islands: Honiara.

Kuk, R. (1991). *Recent Developments in the Papua New Guinea Tuna Fisheries.* A.C.I.A.R. Project no. 8928. Australian Centre for International Agricultural Research, Canberra, Australia.

Kumoru, L. (2005, 8th –19th August). Information on Fisheries, Research and Statistics: PNG. First Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. New Caledonia.

Kumoru, L. (2008, 10th –22nd August*). Information on Fisheries, Research and Statistics: PNG*. Fourth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Papua New Guinea: Port Moresby.

Kumoru, L. (2008, 11–22 August). *Papua New Guinea: Working Paper 23*. Fourth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Papua New Guinea: Port Moresby.

Kumoru, L. (2009, 10th –21st August). *Information on Fisheries, Research and Statistics: PNG*. Fifth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Vanuatu: Port Vila.

Kumoru, L. (2010, 10th –19th August). *Information on Fisheries, Research and Statistics: Papua New Guinea*. Sixth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Tonga: Nuku'alofa.

Kumoru, L., and Koren, L. (2006, 7–18 August). *Information on Fisheries, Research and Statistics: PNG*. Second Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Philippines: Manila.

Kumoru, L., and Koren, L. (2007, 13th –24th August). *Information on Fisheries, Research and Statistics: PNG*. Third Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Honolulu: Hawaii.

Lack, M. (2007). *With an Eye to the Future: Addressing Failures in the Global Management of Bigeye Tuna*. TRAFFIC International and WWF Australia: Canberra.

Lightfoot, C. (2000). *Financial and Economic Review of the PNG Tuna Fishery*. Technical Document No.2. Fisheries Development Project. Gillett, Preston and Associates Inc. Suva.

Lodge MW. (1998). The development of the Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery. *Marine Policy*, 22(1):1–28.

Matsuda, Y. (1987). *Postwar development and Expansion of Japan's Tuna Industry*. In Doulman, D (Ed.). Tuna Issues and Perspectives in the Pacific Islands. Pacific Islands Development Program. Honolulu: East-West Center. pp. 71–91.

McCoy, M.A. (1998). *Tuna Purse Seine Fishing in Papua New Guinea: An Assessment of Benefits.* A Report to the Forum Fisheries Agency. Gillett, Preston and Associates. Suva: Fiji Islands.

Ministry of Finance and Economic Planning. (1992). *Brief on Historical and Policy Context of Solomon Taiyo Ltd*. Solomon Islands: Honiara.

Ministry of Fisheries Solomon Islands. (2007). *Solomon Islands Sources of Growth: Roundtable Meeting.*, Background Materials. Solomon Islands: Honiara.
Ministry of Fisheries Vanuatu. (2011, 9th -17th August). *Information on Fisheries Research and Statistics: Vanuatu*. Ministry of Fisheries and Forests. Annual Scientific Report to the Western and Central Pacific Fisheries Commission. Federated States of Micronesia: Pohnpei.
Ministry of Fisheries. (1998). *Fiji Fisheries Resources Profiles*. Suva. Fiji islands.

Miyake, M.P., Guillotreau, P., and Chin-Hwa, S. (2010). *Recent Developments in Tuna Industry*. FAO Fisheries and Aquaculture Technical Paper 543. Rome: FAO

Miyake, P.M., Guillotreau, P., Suba, C., Ishimura, G. (2010). *Recent Developments in the Tuna Industry: Stock, Fisheries, Management, Trade and Markets*. FAO. Italy: Rome.

Mungkaje, A.J. (1999). Commercial Fisheries Development in Papua New Guinea: An Opportunity for Economic Development in Coastal Communities. *Development Bulletin*, 50 (1), 37-40.

National Planning Office. (1982). *First National Development Plan (1982-1986.* Republic of Vanuatu: Port Vila.

Naviti, W. (2005, 8th –19th August 2005.). *Information on Fisheries, Research and Statistics: Vanuatu*. First Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. New Caledonia: Noumea.

Naviti, W., and Taleo, T. (2006, 7th –18th August). Information on Fisheries, Research and Statistics: Fiji. Second Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Philippines: Manila.

Naviti, W., and Taleo, T. (2007, 13th –24th August). *Information on Fisheries, Research and Statistics: Vanuatu*. Third Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Honolulu: Hawaii.

Oceanic Fisheries Programme. (1994, 5th -8th August). *Seventh Standing Committee on Tuna and Billfish*. Republic of Palau: Koror.

Oxfam. (2006). *Fishing for the Future*. New Zealand.
Pacific Institute of Public Policy. (2008). *Melanesian Poll Results*. Fiji: Suva.

Pacific Islands Forum Secretariat. (2004). *Linkages and Flow on Impacts of Foreign Investment in Pacific Island Economies: Case Studies Report*. World Bank. USA: Washington DC.

Paris, H., and Grafton, R.Q. (2006). Can Tuna Promote Sustainable Development in the Pacific?. *The Journal of Environment Development*, 15(3), 269-296.

Peattie, M. (1988). Nanyo – *The Rise and Fall of the Japanese in Micronesia: 1885–1945*. Pacific Islands Monograph Series No. 4. Center for Pacific Islands Studies. University of Hawaii. Honolulu.

Philipson, P. (1998). *The Fresh Tuna Longline Fishery*. Forum Fisheries Agency. Solomon Islands: Honiara.
Philipson, P.W. (2008). *Lessons Learned: A Review of Successes and Failures in Tuna Fisheries Development in the Pacific Islands*. FFA. Solomon Islands: Honiara.

Polacheck (1987). *Atlas of Longline Catch rates by Japanese Longliners in the Pacific Ocean – 1962 to 1985*. Technical Report No.21. Tuna and Billfish Assessment Programme. South Pacific Commission. New Caledonia: Noumea.

Pollard, S. (1995). *Tuna Industry Development Study – Regional Report*. Report 95/66, Forum Fisheries Agency, Solomon Islands: Honiara.

Prasad, B.C. (2005). *Impediments to Market Access for Exports and Environmental Requirements under the World Trade Organisation: The Case of Fisheries, Sugar and Garment Industries in Fiji*. WTO and Sustainable Development Working Paper Series. WTO. Switzerland: Geneva.

Preston, G. (1996). *Evaluation of the Potential for Commercialization of Small-Scale Fisheries*. TCP/PNG/6611. Food and Agriculture Organization of the United Nations. Italy: Rome.

Ram-Bidesi, V. (2003). Domestication of Tuna Industry in the Pacific Islands: An Analysis of Regional and National Strategies. PhD Thesis. NSW: University of Wollongong.

Reid, C., Squires, D., Jeon, Y., Rodwell, L., and Clarke, R. (2003). An Analysis of Fishing Capacity in the Western and Central Pacific Ocean Tuna Fishery and Management Implications. *Marine Policy*, 27(1), 449-469.

Rothschild, B. & Uchida, R. (1968). The tuna resources of the oceanic regions of the Pacific Ocean. USA: University of Washington Publications.

Skipjack Programme. (1984). *An Assessment of the Skipjack and Baitfish Resources of the Northern Mariana Islands, Guam, Palau, Federated States of Micronesia, and Marshall Islands*. Final County Report No. 18. Skipjack Survey and Assessment Programmes. South Pacific Commission. New Caledonia: Noumea.

Smith, R. (1947). Fishery Resources of Micronesia. USA Department of the Interior, Fish and Wildlife Service. *Fishery Leaflet*, 1947(239), 1–46.

Solomon Star. (2008). Two Sites Identified for Fish Loin Factories. Solomon Islands: Honiara.

Solomon Star. (2009). Government to Take Drastic Measures to Build Fishing Industry. Solomon Islands: Honiara.

South Pacific Commission. (1993). *Papua New Guinea country report 1993. Tuna and Billfish Assessment Programme Country Report no. 6.* New Caledonia: Noumea.

Sullivan, N., and Ram-Bidesi, V. (2008). *Gender Issues in Tuna Fisheries. Case Studies in Papua New Guinea, Fiji, and Kiribati*. DevFish Programme, Honiara: Forum Fisheries Agency.
Sullivan, N., and Ram-Bidesi. (2008). *Gender Issues in Tuna Fisheries: Case Studies in Papua New Guinea, Fiji and Kiribati*. FFA. Honiara: Solomon Islands.

Sutherland, W. and Tsamenyi, B. M. (1992). *Law and Politics in Regional Co-operation: A Case Study of Fisheries Co-operation in the South Pacific*. Pacific Law Press. Australia: Hobart.

Taleo, T. (2008, 10th –22nd August). *Information on Fisheries, Research and Statistics: Vanuatu*. Fourth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. PNG: Port Moresby.

Taleo, T. (2009, 10–21 August). *Information on Fisheries, Research and Statistics: Vanuatu's*. Fifth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Vanuatu: Port Vila.

Taleo, T., and Joy, L.A. (2010, 10th –19th August). *Information on Fisheries, Research and Statistics: Vanuatu*. Sixth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission Tonga: Nuku'alofa.

Taleo, T., and Joy, L.A. (2011, 9th -17th August). *Information on Fisheries Research and Statistics: Vanuatu*. Department of Fisheries. Seventh Annual Scientific Report to the Western and Central Pacific Fisheries Commission. Federated States of Micronesia: Pohnpei.

Thoulag, B. (2010). *Project Global: Country Profile of FSM*. National Oceania Resource Management Authority. Federated States of Micronesia: Pohnpei.

Tuna and Billfish Assessment Programme. (1992). *Tuna Resources of Papua New Guinea Waters, with Particular Reference to the So-called Morgado Square (0o30'-3o30'S, 149o-152oE).* South Pacific Commission. New Caledonia: Noumea.

Usu, T. (2011, 9th -17th August). *Information on Fisheries Research and Statistics: PNG. Ministry of Fisheries and Forests*. Seventh Annual Scientific Report to the Western and Central Pacific Fisheries Commission. Federated States of Micronesia: Pohnpei.

Wilson, P. (1971). Tuna Live-Bait Survey. NOAA Technical Report. Usa: Mississippi.

Wright A. (1989). A Review of Fisheries Research in Vanuatu and Suggestions for the Future. A Report Prepared for the Vanuatu Government's Ministry of Agriculture, Forestry and Fisheries Department of Fisheries. FFA Report 89/20. FFA. Solomon Islands: Honiara.

Wright, A. (1986). *An Analysis of Exports of Marine Produce from Papua New Guinea for the Period 1980 to May, 1986 with Emphasis on Produce Collected by Small-Scale Fishermen*. PNG Department of Primary Industry. PNG: Port Moresby.

Annexes

Annex 1: Terms of Reference (TOR) of this study.

i. Carry out a background literature review of the status of commercial fisheries in each MSG country;

ii. Review country level studies on commercial fishery development with emphasis on downstream processing;

iii. Identify comparative and competitive advantages of each MSG member in terms of fishery investment, business opportunities and exports;

iv. Review market access opportunities and identify potential value added fishery products where MSG can benefit from inter-fishery product trade;

v. Based on (i) to (iv) above, determine opportunities for MSG to consolidate and opportunities for integration of efforts in relation to fishery downstream processing and trade options; and

vi. Taking account of the findings of the study, provide recommendations to the MSG as to the potential for harnessing and consolidating commercial downstream processing and trade amongst MSG and with other markets. The paper should be written with a view to explaining the issues and decisions clearly to policy makers and addressing issues most important to policy makers, of resource sustainability and national and collective economic advantage and maximization.

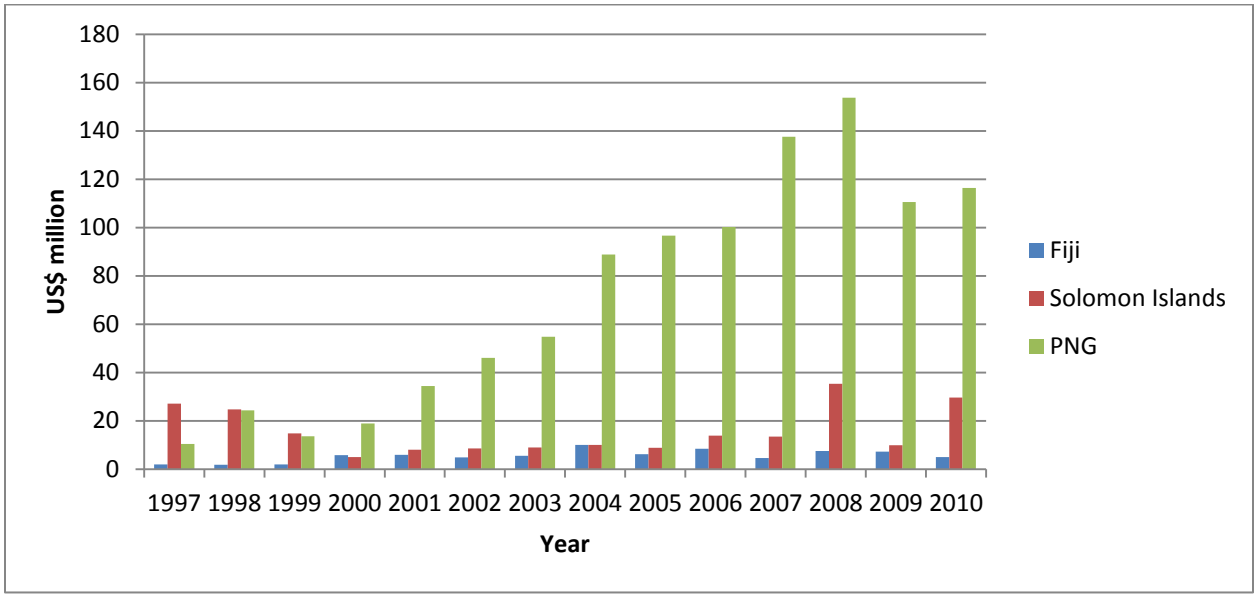
ANNEX 2: GRAPHS AND TABLES

Table A1: Value ($) of Contribution of the Tuna Industry to the GDP of the MSG Countries (Except Vanuatu)

	Country (US$m)		
Year	Fiji	Solomon Islands	PNG
1997	2.0	27.1	10.4
1998	1.9	24.8	24.4
1999	2.0	14.8	13.6
2000	5.8	5.1	19.0
2001	6.0	8.1	34.4
2002	4.9	8.6	46.1
2003	5.6	9.0	54.8
2004	10.0	10.1	88.8
2005	6.2	8.9	96.6
2006	8.5	13.9	100.2
2007	4.7	13.5	137.6
2008	7.5	35.4	153.7
2009	7.3	9.9	110.5
2010	5.0	29.6	116.4

Source: FFA. (2011)

Graph A1: Contribution of the Tuna Industry to the GDP of the MSG Countries



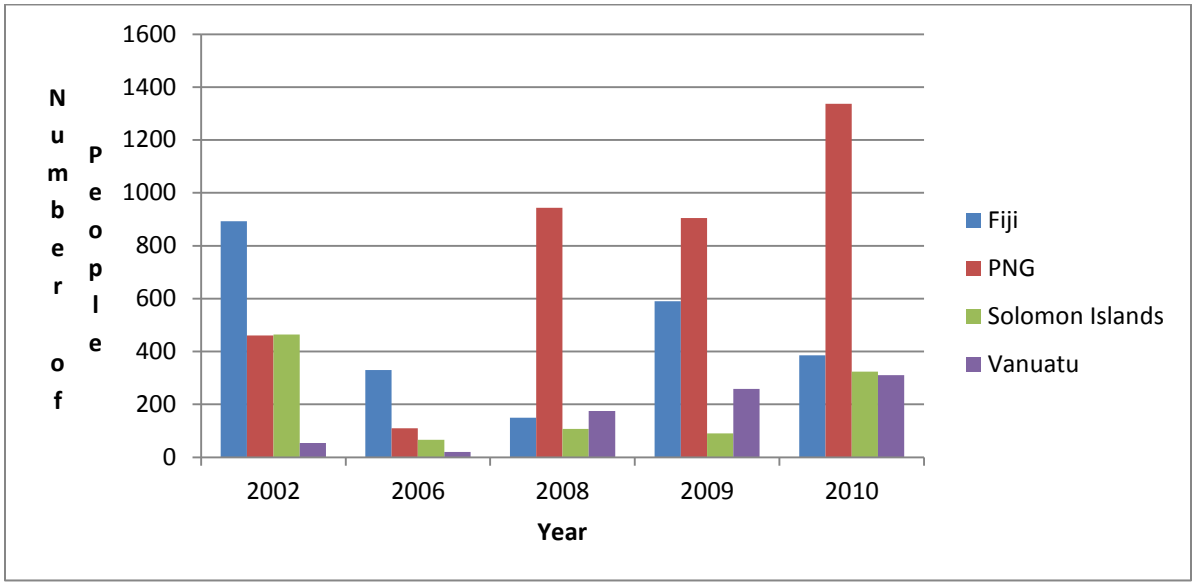
Source: FFA. (2011)

Table A2: Employment on Vessels in the MSG Countries

Year	Country			
	Fiji	PNG	Solomon Islands	Vanuatu
2002	893	460	464	54
2006	330	110	66	20
2008	150	944	107	175
2009	590	905	90	258
2010	386	1337	324	311

Source: FFA. (2011)

Figure A2: Employment on Vessels in the MSG Countries



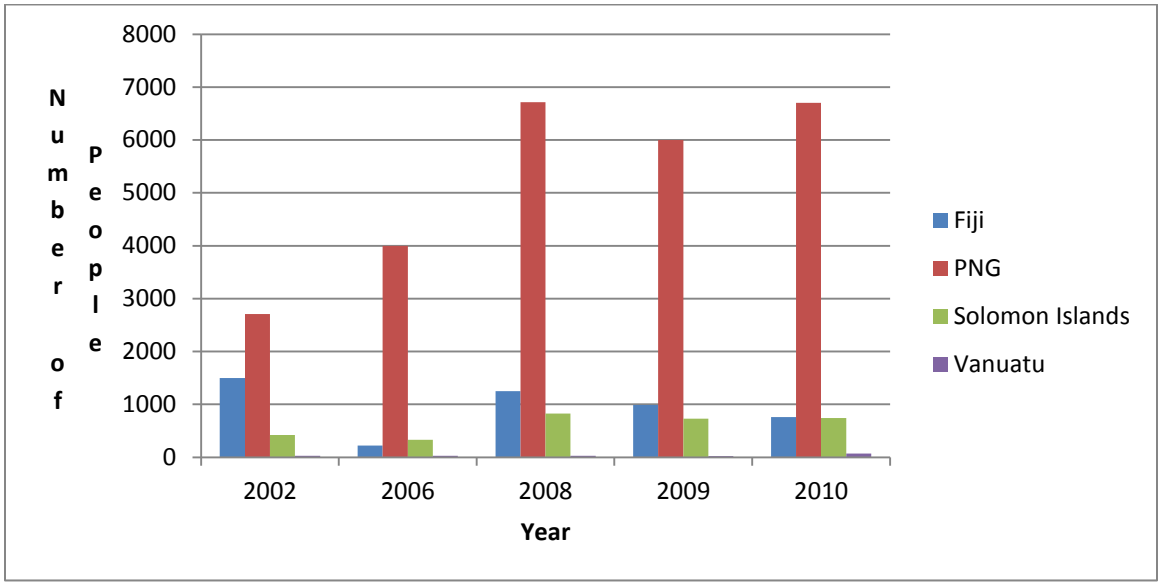
Source: Created by Authors (2012).

Table A3: Local Jobs in Shore Facilities in the MSG Countries

Year	**Country**			
	Fiji	PNG	Solomon Islands	Vanuatu
2002	1496	2707	422	30
2006	220	4000	330	30
2008	1250	6715	827	30
2009	990	6000	732	22
2010	762	6700	743	71

Source: FFA. (2011)

Figure A3: Local Jobs in Shore Facilities in the MSG Countries



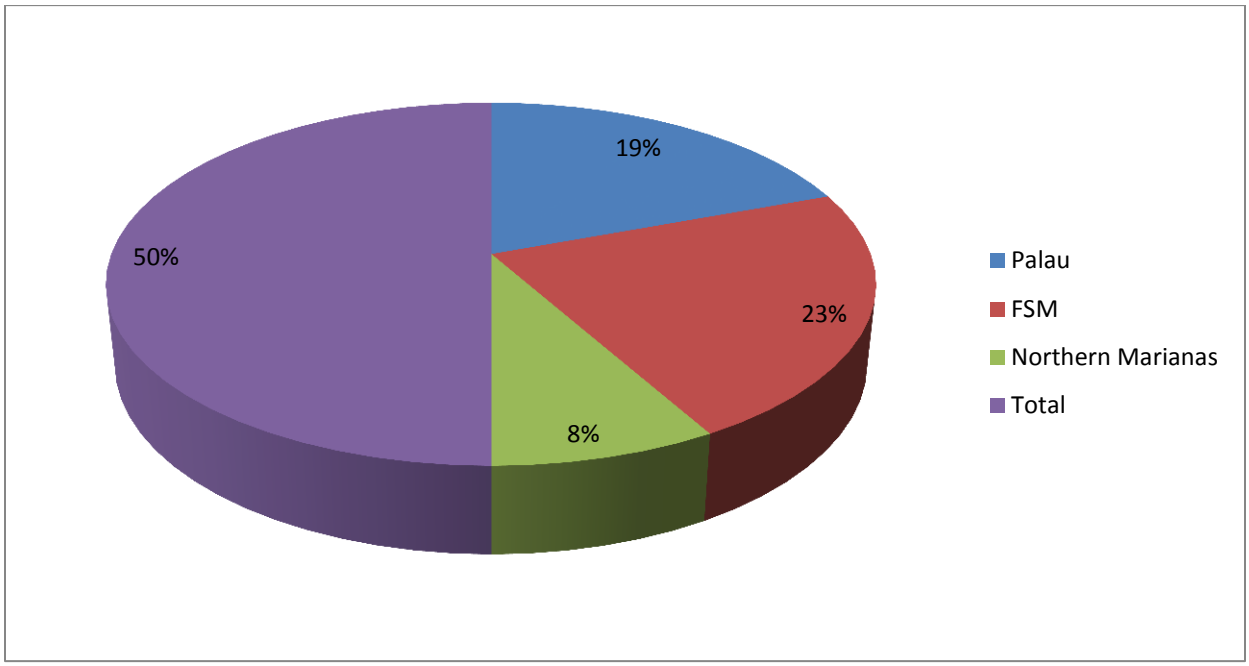
Source; Created by Authors (2012).

Table A4: The Status of the Tuna Industry in Mid-1930

No	Area	Total Number of Fishing Vessels	% of the total
1	Palau	45	39
2	FSM	52	45
3	Northern Marianas	19	16
4	Total	116	100

Source: Smith (1947), Rothschild and Uchida (1968), Wilson (1971) and Ikebe and Matsumoto (1937)

Figure A4: The Status of the Tuna Industry in Mid-1930s



Source: Smith (1947), Rothschild and Uchida (1968), Wilson (1971) and Ikebe and Matsumoto (1937)