

Investigation of the supply-chain disruption due to the pandemic and its economic impacts on business across the Forum Island Countries, including micro, small and medium enterprises.



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## Contents

Glossary.....	3
Executive Summary.....	4
Introduction .....	5
Situational Analysis – Supply Chains in the Pacific .....	6
Business Practice.....	6
Key trading destinations .....	8
Transport options and transit times .....	9
Supply Chain Stakeholder Analysis .....	14
Causes of disruptions to supply chains .....	16
Impacts to FICs and MSMEs .....	17
Freight Costs .....	17
Tourism & Overseas Visitors .....	21
Remittances .....	22
Food security.....	24
Government and donor projects .....	27
Women-led businesses and women in business .....	27
FIC Exports .....	28
Direct economic impact on MSMEs in FICs.....	30
Recommendations for Action .....	32
Embracing interdependence.....	32
Digitalisation of supply chains & Data .....	35
Education & Innovation .....	36
Preparedness & Measuring Resilience.....	37
Trade re-activation initiatives for exporters and importers .....	38
References .....	39

## Glossary

DFAT	Department of Foreign Affairs and Trade (AU)
EU	European Union
IMF	International Monetary Fund
JICA	Japanese International Cooperation Agency
JIT	Just In Time
MFAT	Ministry of Foreign Affairs and Trade (NZ)
MSG	Melanesian Spearhead Agreement
MSME	Micro Small Medium Enterprises
NFP	Not For Profit
NGO	Non-Government Organisation
PIFN	Pacific Island Forum Nations
SCM	Supply Chain Management
SID	Small Island Developing States
TEU	Twenty Foot Equivalent Units
WFH	Working From Home

## Executive Summary

This study suggests that the Covid-19 pandemic has shocked rather than simply disrupted regional supply chains. All economic sectors, including those involved in the provision of essential services, have been greatly impacted.

Despite business confidence in full or partial recovery, 75% of MSMEs in Forum Island Countries (FICs) report negative impacts and decreased profitability because of the pandemic. Many have sought or are seeking financial assistance, and a survey on a sample of MSMEs in the region showed that half of SMEs had either shut down or were expected to because of the pandemic.

The informal work sector in FICs is significant. However, it is difficult to quantify the impact of the Covid-19 pandemic as this sector does not feature in available statistics.

Women are often employed in the informal sector and other sectors that were affected by local lockdowns and the closure of international borders. These sectors include food services, hospitality, and tourism. Gendered consequences of the disruptions are discussed in the study.

This study also looked at the complexity of supply chains, key stakeholder relationships, and the causes of disruptions to supply chains. An overview of specific impacts related to the pandemic in the areas of freight costs, tourism, financial remittances, food security, exports, donor projects and how these also affect business is provided.

The supply chains linking FICs to international trades were already vulnerable and the Covid-19 pandemic has exposed these fragilities, both globally and regionally. Weaknesses in the current system include the popular lean operating process and 'Just In Time' supply chain practices which are unsustainable and require urgent review. Lean values of reducing waste in supply chains are important. However, when supply chains are driven principally by cost efficiencies and holding minimal inventories, a new balance is required to generate redundancy in the supply chain and build resilience to withstand future shocks. It is likely that business and certainly MSMEs will require support to achieve this balance and avoid failure.

Lack of supply chain visibility from a supply and demand perspective, lack of quality data, and lack of preparedness creates a bullwhip effect through the supply chain, amplifying the disruptions. This needs to be addressed with digitalisation, information sharing, and a focus on the upskilling of various stakeholders of the supply chain.

90% of goods are transported by ships. The following study demonstrates how interdependent FICs are on each other for sustainable shipping routes. A systems thinking approach to better understand these regional supply chain systems, how they are influenced, and how they can best collaborate to build back better in line with the 2050 Strategy for the Blue Pacific Continent is recommended.

## Introduction

The global impact of the Covid-19 pandemic on international supply chains has been widely experienced and reported. The Pacific Islands have not been sheltered from the consequences and are further impacted due to their remoteness and individual market size. The region has experienced significant disturbance to supply chains since 2020.

The FICs, and particularly the Small Island Developing States (SIDs) in the Pacific, are increasingly dependent on international trade due to shifting consumption patterns and economic growth. The commercial transportation options and the number of actors present in the last mile of the supply chain which link FICs to global trade are limited. High barriers of entry to the transportation sector can be attributed to the size and geographical location of these diverse markets, limited opportunities for economies of scale, geological and marine constraints, limited infrastructure, and lower prospects for growth when compared to more industrialised markets in the Asia-Pacific region.

Supply chain disruptions are not uncommon to the region. Such disruptions most commonly occur due to tropical cyclones between the months of November and May, and other natural phenomena such as earthquakes and tsunamis. Unlike previously known disruptions, the Covid-19 pandemic has shocked supply chains (Sarkis, 2020). The consequences of the pandemic not only significantly affected local supply and distribution networks, but also affected the activities of the international stakeholders that form a crucial part of the supply chain to FICs. Unlike more localised problems such as flooding, factory fires, or business bankruptcy which may have affected specific links of the supply chain, the impact of the Covid-19 pandemic has been much more widely spread. Global business continuity and the efficiency of global supply chains during pandemic situations have been put to question.

The aim of this study is to analyse the Covid-19 pandemic's impact on the supply chains in FICs, and how this has affected business in the region. This includes the impact on Micro Small and Medium Enterprises (MSMEs) conducting their business in these countries. There is a particular focus on MSMEs that are engaged in exports and therefore generate income for the FICs from which they trade.

Many exporters in FICs are MSMEs. They are either growing, preparing, or trading locally produced goods for export, or importing raw materials and finished products that are transformed or re-consolidated locally for export. The disruption to supply chains has simultaneously affected both import and export activities.

Before the Covid-19 pandemic, Pacific Island exporters had established relationships with their domestic or international suppliers. Suppliers were selected based on their ability to supply the required products. Choices of supplier were often limited to those willing to supply relatively small quantities of goods to FICs when compared with other global demands. Equally, relationships and agreements with buyers had been established for the purchase of exported goods. Whilst increased use of digital methods of communication and market

research has facilitated these processes, face to face interaction at exhibitions or meetings with buyers or suppliers had enabled the building of these business relationships.

The supply chains that facilitate trade were by no means perfect, yet they performed the critical function of providing a platform for business to be done, transactions to be executed, and goods to be moved. In the pandemic climate, the capacity, frequency, and timeliness of the delivery of raw materials for transformation or the availability of domestic products for export has been greatly affected. The local situation at both ends of these transactions had been hampered by disruption to the labour force due to illness, lockdowns, and a shift in government and community priorities towards health.

Despite their size, the importance of MSMEs and the jobs they create in the local community should not be negated. MSMEs are a vital segment of FIC economies, if not the most vital, due to the potential to address major economic and social issues of the country (Nair & Chelliah, 2012). Should MSMEs default, the resulting unemployment would simply create more dependence on government support and aid relief. According to the World Bank, MSMEs represent about 90% of businesses and more than 50% of employment worldwide. Formal SMEs contribute up to 40% of Gross Domestic Product (GDP) in emerging economies. In FICs, where the informal work sector is significant, the contribution of MSMEs to GDP, local employment, disposable income, the community, and the well-being of society is even more significant.

Ensuring the viability and growth of exporting MSME's is therefore a natural concern to FIC governments. The disruption of the supply chains that enable them to continue to create employment through growth, provide value to society through their local manufacturing and exporting operations, meet their customers' demands, is the result of a problematic situation which has been amplified by the pandemic.

## Situational Analysis – Supply Chains in the Pacific

### Business Practice

Be it through conscious decision-making to deploy lean operating and manufacturing practices as part of their supply chain management (SCM), or through the simple logic of tying up the least amount of working capital in stock and inventory, most trading businesses in the Pacific Islands operate with an element of Just in Time (JIT) methodology. This is the case with many supply chain reliant businesses globally.

In any supply chain there are bottlenecks and constraints that need to be managed to enable flow. The consequences of the Covid-19 pandemic highlighted pre-existing bottlenecks which became more pronounced. New bottlenecks were created which meant that supplies and

deliveries were not received in time. The outcome was poor customer service and an inability to meet customer demand.

The origins of lean thinking, based on the Toyota Production System, were founded on the identification, reduction, and removal of waste from the production system to improve flow (Lean Enterprise Institute, 2022). Modern global supply chains are often valued by their cost efficiency and speed. These attributes are seen to drive competitive advantage. Supply chains geared to cost minimisation and JIT allow for little redundancy in the system to provide the necessary buffer to accommodate disruptions, let alone significant shocks. These lean operating models are less focussed on the continuous flow of the supply chain, as the methodology originally intended, and are therefore more vulnerable (Stecke & Kumar, 2009).

The suppliers of MSMEs exporters are often selected based on price. Whilst a generalisation, it is fair to say that for equivalent quality, the cheaper supplier would be preferred. Due to the limited bargaining power of MSMEs in the Pacific Islands, and perhaps an admirable culture of loyalty in business, relationships are often built with a single supplier. The cheapest suppliers are often located in Asia and China due to the economies of scale and availability of both skilled and cheap labour. Whilst cost effective, sourcing from these regions often results in long transit times between factory or supply point and the customer in the FICs.

In terms of demand management, the general practice for Pacific MSME exporters is one of a 'Pull' supply chain. This practice sees the ordering, shipping, producing, and supply of only what is necessary to fulfil customers' orders. Orders are pulled through each stage of the process. These SCM practices are difficult to manage in complex supply chains such as those connecting distant suppliers to FIC markets. Working with imperfect supply chains, and having experienced previous supply chain disruptions, most importing and exporting business will hold more stock than they would probably like, but not keep enough redundancy to see them through severe disruptions.

Maintaining such ordering and production patterns and holding limited inventory presumes that the organisation and its' key operators have a good understanding of their supply and demand requirements. It also presumes that the procurement of the necessary stocks of raw material is an efficient process without significant delays. When orders cannot be efficiently pulled through the system, due to increased bottlenecks for example, there is a problem.

Visibility of demand and supply is crucial to an efficient operation, as is the ability to be able to secure supply when demand is created. In less developed economies and where digitalisation and data availability are limited, this visibility is generally derived by looking backwards through analysis of historical data on demand and supply requirements. The sharing of past, real-time, or forecasted information with key stakeholders is lacking. Formal data either does not exist or it is the social practice not to share such information, be it for fear of divulging commercially sensitive information to other stakeholders, or maintaining a reactive rather than pro-active approach to SCM.

The practice of continually reviewing supplier costs, seeking economies, and negotiating the best financial deal is the *modus operandi*. As with eliminating waste, reducing cost is celebrated and encouraged as a constant pursuit. The notion of potentially paying more for

better service, improved delivery time, reliability of supply, or ensuring stakeholder return rather than focussing solely on shareholder return is mostly a theory rather than a practice. As a result of the Covid-19 pandemic shock to supply chains, this way of thinking is changing. Lean methodologies have their value, but the process needs to be re-adjusted and refocussed. Considering supply chain waste in a different way, and in line with the 2050 Strategy for Blue Pacific Continent, is further discussed in the recommendations.

### Key trading destinations

FICs operate under numerous bilateral trade agreements and multilateral trade agreements. Such agreements include the Pacific Island Countries Trade Agreement (PICTA), the Cotonou Agreement, the Melanesian Spearhead Group Trade Agreement (MSG), and most recently the Pacific Agreement on Closer Economic Relations (PACER) Plus. These agreements encourage and facilitate trade with specified regional and global nations, as well as supporting a platform for regional trade between the different FICs. These policy arrangements naturally influence the creation, growth, and support of certain trade routes to and from the Pacific region.

Since colonial times, Great Britain and France have maintained trading relations with the many of the Pacific Islands. Australia and New Zealand have long been trading partners of the region, being both geographically suitable and capable of providing construction materials and consumables required for FICs development and growth. America maintains stronger trading ties with Australia, New Zealand, and the Northern Pacific region. Japan has developed strong trade links with the region and more recently, China, Korea, Taiwan, and Southeast Asian countries have increased their trade with the Pacific Islands in general.

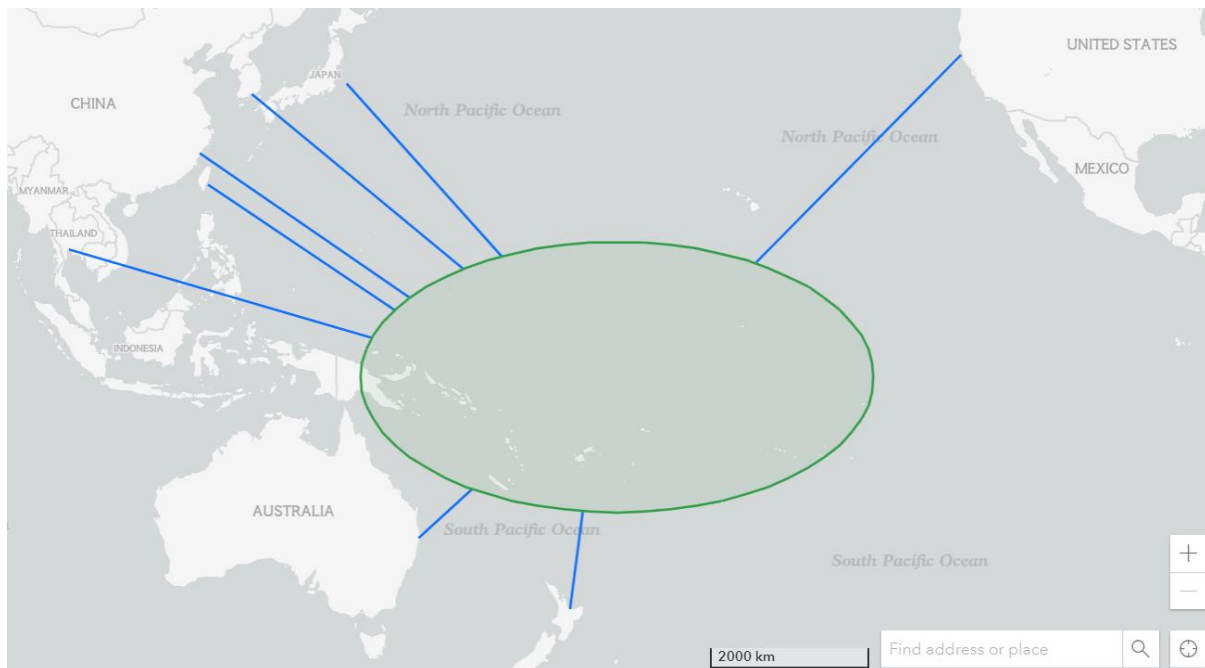
Trade is also created through aid. Donor banks and donor countries channel grants and loans into the region. The World Bank (WB), Asian Development Bank (ADB), JICA, MFAT, DFAT, the EU, and a multitude of NGOs and NFPs are very active in the region. The origins of these funds and the awarding of tenders to certain contractors over another, can dictate the origin and direction of trade flows during certain periods of time.

From an export perspective, regional trade is often developed with international markets where Pacific Island communities reside. Australia and New Zealand have large population of Pacific peoples and inter-island migration in the region is also prevalent. Exports are also traded with nations that hold relationships with the Pacific Islands through trade agreements or other political relations and inter-governmental support.

Based on data procured from the South Pacific Communities Data hub (Pacific Data Hub, 2022), recent data for FIC exports is available for the Cook Islands, Federated States of Micronesia (FSM), Fiji, French Polynesia, Kiribati, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.



The top export destinations from these countries are Japan, Korea, China, Taiwan, Thailand, Australia, New Zealand, United States of America (USA). Export values are discussed later in this study.



#### Transport options and transit times

90% of global trade is carried by ocean going vessels. The FICs are located over a vast area of the Pacific Ocean and shipping services provide vital linkage to international commerce. In the early phases of the Covid-19 pandemic, the airlines servicing the FICs either abruptly stopped or significantly reduced their services to and from the region due to the travel restrictions imposed to contain the spread of covid-19.

Whilst aircraft do have a carrying capacity for freight, airlines often face a trade-off between passengers, their baggage, fuel, and carrying freight. Airfreight is generally calculated by weight rather than volume, and comparatively is much more expensive than seafreight. A higher freight intake on a flight can affect the number of passengers allowed to board and their baggage allowance. The additional intake of freight also creates some operational and commercial quandaries around the availability and viability of refuelling at destination for the return leg.

With a lack of passenger demand, some aircraft were temporarily converted to carry more freight during the pandemic once quarantine measures to safely manage the Covid-19 risk had been established. Nevertheless, due to the cost and limited capacity of these airfreight solutions, the absence of rail and road freight systems such as those available in the American, Asian, African, and European continents, the transport supply chain focus of this study is centred on shipping.

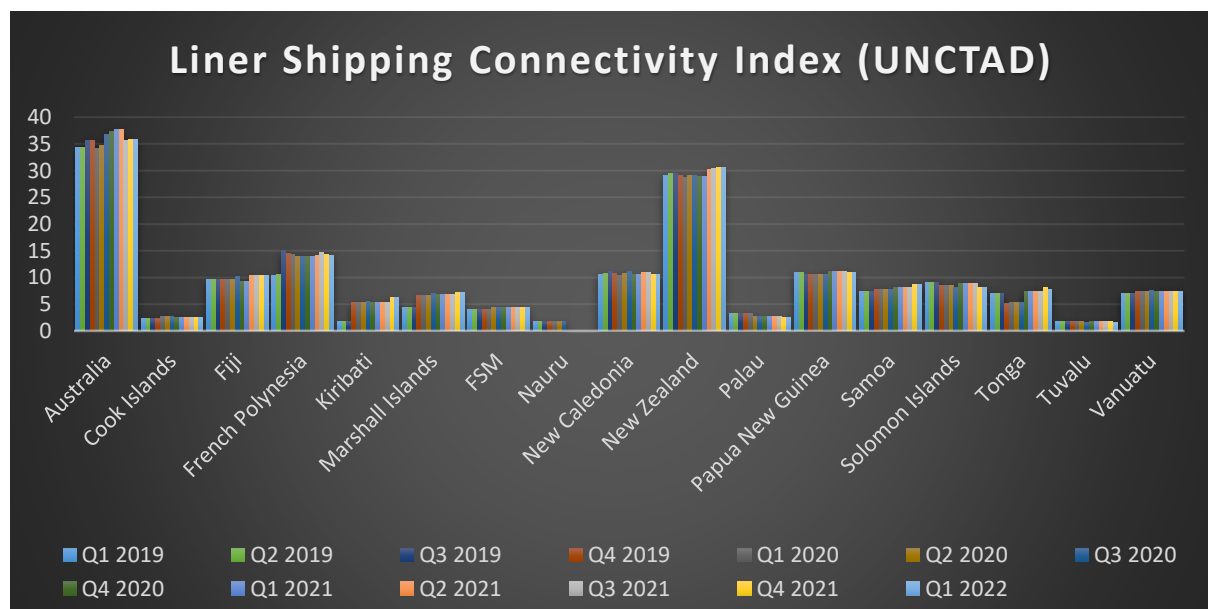
As with the airlines, shipping line schedules were also significantly disrupted due to various internal and external factors. Limitations around crew changes and crew travel created a mental and physical health crisis for seafarers (International Labour Organization, 2022), and heightened border security and quarantine levels disrupted the operations of the import, export, and marine sectors significantly.

The United Nations Conference on Trade and Development (UNCTAD) maintains the Liner Shipping Connectivity Index (UNCTADSTAT, 2022). This index provides quarterly comparative data on container shipping globally. It provides some insight into changes in connectivity over a period. The data is collected annually and is based on the below components:

- The number of shipping lines servicing a country
- The size of the largest vessel used on these services (in TEU)
- The number of services connecting a country to the other countries
- The total number of vessels deployed in a country
- The total capacity of those vessels (in TEU)

In the context of the FICs, there is no data available for Niue, and the data for Nauru expires in Q3 2020 and therefore has not been included.

Firstly, looking at the connectivity between the period Q1 2019 and Q1 2022 there appears to be no significant connectivity drop off in any of the FICs. Whilst the index does not provide information on the frequency of shipping services, it does show that the FICs were at least as well connected at the end of Q1 2022 as they were at the beginning of the Covid-19 pandemic.



Source: UNCTAD

Secondly, based on the same criteria we can look at the connectivity rankings in descending order of connectivity. As expected, the rankings as at Q2 2022 show that Australia and New Zealand are well serviced based on these 5 components. Countries like Tuvalu, Cook

Islands, and Palau, that not only have limited shipping services but also a limited number of vessels servicing their nations, low vessel capacities, and connectivity to other countries, have a very low ranking. As countries have an increase in the numbers of shipping services, size of vessel, and better connectivity to other countries, their ranking improves.

Country	Ranking
Australia	35.78504
New Zealand	30.59495
French Polynesia	14.16509
Papua New Guinea	11.02881
New Caledonia	10.49872
Fiji	10.43066
Samoa	8.62663
Solomon Islands	8.13615
Tonga	7.83531
Vanuatu	7.35087
Marshall Islands	7.21241
Kiribati	6.19677
FSM	4.41417
Cook Islands	2.52142
Palau	2.46273
Tuvalu	1.49209

To provide some further context, of the 170 nations that are assessed, Australia is the 50<sup>th</sup> most connected country. Only the Turks and Caicos Islands and Norfolk Island are ranked lower than Tuvalu which is the 3<sup>rd</sup> least connected nation. 8 of the FICs are in the 32% least well-connected nations globally. Whilst the FICs are not well connected globally according to this data, there are well connected with each other which will be further discussed in this study.

The Pacific Datahub statistics provide the top 18 destinations for FIC exports which are listed in the table below. Through a review of the services and schedules provided by the different shipping lines servicing the region or parts of it, namely ANL, Kyowa Line, Maersk - Hamburg Sud, Mariana Express Lines, Matson, MSC, Nauru Shipping Line, Neptune Pacific Direct Line, Pacific Forum Line, ONE-Line, Swire Shipping, a table of available seafreight transit times is provided. This is based on estimated best-case scenarios where transshipment vessel connections are required. A heat scale has been used to highlight the shortest and longest transit times.

SeaFreight Transit Days between Port Pairs	America	Australia	Canada	China	Fiji	France	Germany	Hong Kong	Japan	Korea	Malaysia	Netherlands	New Zealand	Philippines	Singapore	Taiwan	Thailand	UK
Australia	25	-	33	12	9	48	49	10	16	15	9	49	3	17	9	15	13	47
Cook Islands	39	24	-	34	20	-	-	34	40	38	35	-	14	37	33	41	34	-
FS Micronesia	55	35	-	9	29	72	79	14	25	21	24	69	28	24	21	25	23	77
Fiji	35	17	-	24	-	67	65	25	41	37	28	64	5	28	26	33	28	64
French Polynesia	18	19	-	30	22	61	63	29	32	29	25	59	8	31	23	29	26	59
Kiribati	45	33	-	29	5	-	-	31	20	16	35	-	25	37	33	19	35	-
Nauru	-	23	-	-	11	-	-	-	-	-	-	-	18	-	-	-	-	-
New Caledonia	42	5	-	40	2	53	55	40	43	39	37	51	4	31	35	38	31	57
New Zealand	23	5	27	15	5	39	40	17	20	20	14	37	-	19	13	18	16	38
Niue	33	18	-	-	14	-	-	-	-	-	-	-	8	-	-	-	-	-
Palau	51	26	-	18	21	-	-	21	24	20	34	-	33	29	31	21	36	-
Papua New Guinea	33	12	-	18	28	55	53	21	26	25	23	52	17	25	26	28	26	56
R Marshall Islands	51	42	-	17	13	-	-	19	53	49	44	-	41	44	42	48	43	-
Samoa	25	29	-	30	16	-	-	32	36	32	42	-	10	46	44	33	43	-
Solomon Islands	55	5	-	29	16	-	-	31	45	41	27	-	9	28	25	39	29	-
Tonga	52	23	-	25	19	-	-	27	25	21	37	-	4	40	39	24	38	-
Tuvalu	42	35	-	34	12	-	-	36	55	51	44	-	22	48	40	53	44	-
Vanuatu	45	27	-	38	7	65	63	40	47	39	50	67	5	55	52	41	51	66

Source: Various shipping line websites

Looking at the airfreight options available under normal pre-pandemic circumstances for the same 18 top export destinations, available data from the key airlines servicing the region has been used. These airlines are Air Kiribati, Air Nauru, Air New Zealand, Air Niugini, Air Solomons, Air Tahiti Nui, Air Vanuatu, Aircalin, Fiji Airways, Qantas, United Airlines. The analysis is based on the assumption that their previous service patterned are resumed. 'Y' denotes a direct air connection.

New Zealand and Fiji are clearly the most accessible markets for airfreight for FIC exporters. Connectivity, both regionally and outside of the FIC, is greatly increased through regional hubs such as Nadi, Nouméa, Auckland and various Australian airports to other destinations through one or two connecting flights. Australia is very accessible via Auckland through a multitude of carriers operating on trans-Tasman routes.

Direct Air Freight Connections	America	Australia	Canada	China	Fiji	France	Germany	Hong Kong	Japan	Korea	Malaysia	Netherlands	New Zealand	Philippines	Singapore	Taiwan	Thailand	UK
Australia																		
Cook Islands		Y											Y					
FS Micronesia	Y																	
Fiji	Y	Y						Y					Y		Y			
French Polynesia	Y					Y							Y					
Kiribati		Y			Y								Y					
Nauru		Y			Y													
New Caledonia		Y			Y	Y			Y	Y			Y		Y			
New Zealand																		
Niue													Y					
Palau																		
Papua New Guinea		Y			Y													
R Marshall Islands	Y																	
Samoa		Y			Y								Y					
Solomon Islands		Y			Y													
Tonga					Y								Y					
Tuvalu					Y													
Vanuatu		Y			Y								Y					

Source: Various airline websites

FICs have also experienced disruption in their domestic supply chains, like many nations around the globe. Domestic shipping is a crucial part of the supply chain in the Pacific Islands. Whilst international shipping services deliver and load cargo at international ports, there is a vast network of privately and publicly run shipping services linking outer islands with the main international port or ports. These operators faced many of the same problems as international operators during the pandemic, and further suffer from a lack of ready access to parts and engineering workshops. With the border closures, they also have difficulty contracting resources such as skilled labour and technicians, certification company representatives, and crew.

In Tuvalu as an example, Mackenzie Trading operate a wholesale and retail organisation in Funafuti and usually supply goods on the government operated freight service linking Funafuti with the islands of Nanumanga, Niutao and Niulakita, Nanumea, Nui, Nukufetau, Nukulaelae and Vaitupu. With pandemic related delays to the schedules of inter-island ferries, they resorted to providing the option of private boat charter to deliver urgent goods to these outer islands, albeit with a limited freight capacity and higher freight price.

## Supply Chain Stakeholder Analysis

A critical element of supply chains is inter-dependence and cooperation. In the Pacific context this is of added importance as shipping routes are built around clusters or groups of islands for geographical reasons, trade flows, or other factors.

Very few FICs are serviced exclusively on shipping routes. At the time of writing there is an exclusive service on the Australia to New Caledonia, New Zealand to Fiji, New Zealand to Tahiti, and the Fiji to Nauru routes. Except for Nauru, these trades are also serviced by other operators as part of a larger trade route. These routes are summarised in the table below.

	Route 1	Route 2	Route 3	Route 4
Cook Islands (CI)	NZ - FJ - WS - TO - NU			
Federated States of Micronesia (FM)	PW-MH	PG - SB - FJ - MH		
Fiji (FJ)	NZ	PG - SB - MH - FM	NZ - FJ - TO - CI - NU	SB-VU-NC-WS-PF-TO-KI
French Polynesia (PF)	(AU)-NZ	NZ - TO	SB-VU-NC-FJ-WS-TO-KI	
Kiribati (KI)	FJ - TV	SB-VU-NC-FJ-WS-TO-PF		
Nauru (NR)	FJ			
New Caledonia (NC)	AU - VU - FJ	NZ - FJ - VU	NZ-PG-SB-AU	SB-VU-FJ-WS-TO-PF-KI
Niue (NU)	NZ - FJ - WS - TO - CI			
Palau (PW)	FM-MH			
Papua New Guinea (PG)	SB	AU - SB	NZ - NC - SB - AU	
Republic of Marshall Islands (MH)	PG - SB - FJ - FM			
Samoa (WS)	NZ - (AS)	PF - (AS)	NZ - FJ - TO - CI - NU	SB-VU-NC-FJ-TO-PF-KI
Solomon Islands (SB)	PG	PG - FM - FJ - MH	NZ - NC - PG - AU	VU-NC-FJ-WS-TO-PF-KI
Tonga (TO)	NZ - PF	NZ - FJ - WS - CI - NU	SB-VU-NC-FJ-WS-PF-KI	
Tuvalu (TV)	FJ - KI	FJ - WS		
Vanuatu (VU)	NZ - NC - FJ	AU - NC - FJ	SB-NC-FJ-WS-TO-PF-KI	

Source: Various shipping line websites

The interdependency of FIC countries on each other as part of regional supply chain networks is clearly visible. Most trade routes involve port calls to at least two different FICs, and up to 7 different FICs in some cases. Delays and inefficiencies in one port on these trade routes will have cascading ripple effects in other ports. As a result of these delays, agreed or intended port call windows and shipping schedules are unable to be met. This causes the bunching of vessels, bottlenecks, and port congestion. The unintended outcome is a delay to imported and exported products and further disruption to domestic and regional supply chains.

Interdependency could be seen as a weakness, however, to build resilience and ensure sustainable trade routes it needs to be developed as a strength. Passive interdependency during the pandemic has caused the system to fail, but active and collaborative interdependency can also help a quicker recovery. Supply chain disruptions are clearly interrelated and these networks between FICs need to be strengthened.

Different FIC ports deploy different operating procedures under normal circumstances. Some will not operate on a Sunday; some will not operate at night. Sometimes the terminal or stevedores will charge a premium for night shifts, weekends, and public holidays. Often these

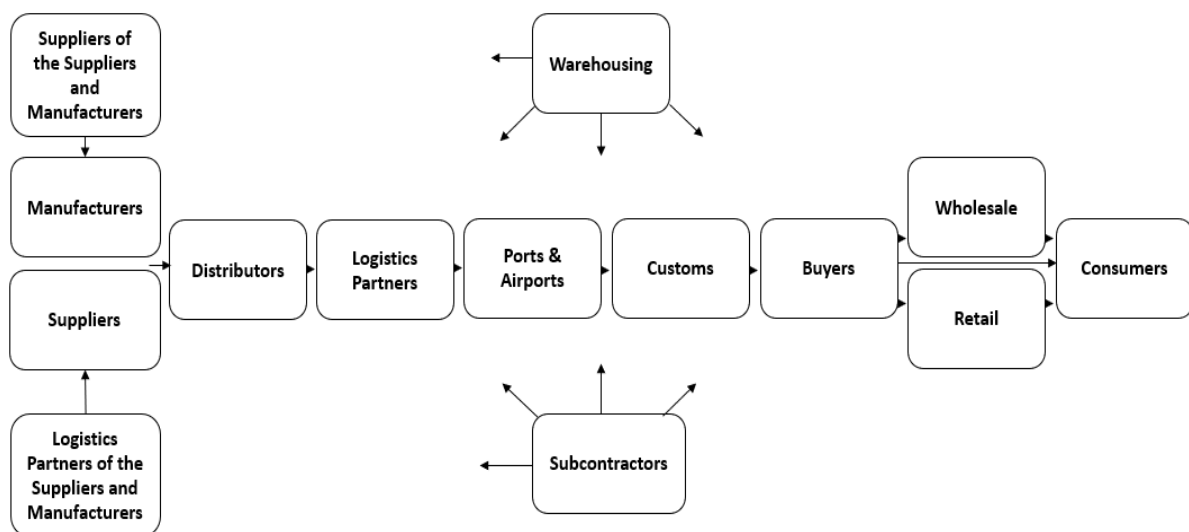
costs are prohibitive for the shipping lines and they chose not to work the ship during these periods and wait for 'normal' rates to resume before commencing or recommencing vessel operations. There may be a variety of reasons for these different terminal operating standards such as religion, the availability of labour, and the social practices of 'how this has always been done'. Again, these delays have cascading effects from one port to another. A delay of a few hours in one port may culminate in several days lost in another port and ultimately lead to less sailings to a particular port on an annual basis.

During the pandemic, adding to these causes of delays and other inefficiencies resulting from lack of infrastructure and poor equipment maintenance, was a heightened level of border control and quarantine. At the start of the pandemic, there was no guideline or rulebook to follow about managing this kind of unanticipated risk. FICs and other nations around the globe sought advice from experts in the fields of health and risk management, observed practice in other nations and regions, and developed their own pandemic plans in haste. To list some of the procedures independently introduced in the FIC marine sector in the initial period of the pandemic in late Q1 2020:

- International vessels had to anchor on arrival for up to 14 days prior to berthing
- Once discharged, containers remained on ports for up to 9 days without contact
- Crew had to provide negative covid tests from prior ports to allow vessel entry
- Crew tested upon arrival and vessels only cleared to berth upon negative test result
- No or limited interaction between ship and shore

These scenarios led to ships spending weeks, rather than hours and days in port. Considering the inter-dependence of one FIC on another for the flow of the trade routes, the cascading consequences were significant.

A simple model also shows the number of stakeholders directly involved in the supply chain. As with the connectivity apparent in the trade routes, the disruptions in the greater supply chain are not isolated.



Often a supply chain problem becomes a problem that must be shared. There is no single solution as making an adjustment in one area may amplify a problem upstream or downstream

A key stakeholder in the supply chain is the consumer. Without consumers there is no demand for supplies. Coming as a surprise to much of the business community and economic forecasters, whilst community lockdowns around the globe saw the temporary closure of many deemed 'non-essential' services, consumer demand in many sectors actually grew.

Increased access to the internet and the inability to spend on goods and services in the community, led to consumers switching to the purchasing of goods online. This increase in demand created further pressure on supply chains that were already subjected to unprecedented forces. Sudden changes in consumer purchasing patterns such as this can create a bullwhip effect (Forrester, 1961). When forecasted or estimated demand is in disparity with actual demand, the ripples of inconsistency can be amplified up and down the supply chain system like a whipping movement.

## Causes of disruptions to supply chains

As demonstrated through the stakeholder analysis, A supply-chain system is a complex dynamic system that involves many interactive relationships (Hayanda, Indrawan, & Maramin, 2022). A supply chain is most vulnerable to disruption at its weakest points where it is most exposed.

We have discussed a pre-existing weakness in the supply chains due to the focus on cost and efficiency through the practice of lean methodologies, resulting in lack of redundancy and resilience to disruption. We have also touched upon the vulnerability of the system due to significant changes in demand and supply and the ripple effects of this.

Some supply chain disruption is unavoidable (Craighead, Blackhurst, Rungtusanatham, & Beaudoin Handfield, 2007). Global disruptions occur intentionally through acts of terrorism, union strike action, and war. They also occur unintentionally through the consequences of war, accidents, and natural disaster (Stecke & Kumar, 2009). An unfortunate example of an accident which occurred during the pandemic, is the grounding of motor vessel Ever Given. This ship grounded in the Suez Canal during March 2021 and remained in this situation for days, blocking the canal and further disrupting supply chains.

At a regional level these different causes of disruption are still relevant but are most regularly occurring in the form of natural disasters. In April 2020 Cyclone Harold caused widespread destruction in the region, and in January 2021 a volcanic eruption in Tonga and the ensuing tsunami, damaged Tonga's infrastructure, and communication systems. Both events further contributed to supply chain disruptions that were already being experienced due to the Covid-19 pandemic.



Other vulnerabilities in FICs supply chains attributed to their remoteness, the of market, and heavy reliance on imported goods from few suppliers, became further accentuated during the pandemic as the restricted flow of goods in and out of these nations became noticeable.

Both the private and public sector were forced into making quick decisions prioritising the containment of the spread of Covid-19 and the health of their communities, often above economic priorities and concerns around business continuity. Whilst events having a significant disruptive impact on supply chains will occur regardless of planning (Macdonald & Corsi, 2013), with a global lack of preparedness for such a pandemic, and the need for rapid crisis management, any planning to mitigate the impact of the pandemic on supply chains was initially secondary to health concerns.

Government policies ranging from testing, vaccination, social distancing, limiting of gatherings, confinement, lockdowns, travel restrictions, and business operating restrictions, were conceived with the idea of containing the spread of the virus. Such health-related policies had the intention of reducing the exposure of communities to health risks, and the potential burden of the health systems. Such policies would appear even more prudent in FICs where high levels of non-communicable disease (NCD) meant increased risk of serious Covid-19 related illness. These decisions also factored the limited resources available to cater for any significantly increased demand for medical attention. These same policies also restricted the movements of critically ill passengers to overseas locations for treatment, the movement of Covid-19 tests to laboratories which could validate the test results, the inward flow of protective gear, and of course the commercial activity in country.

The global response to the pandemic was varied, from severe lockdowns and partial shutdown of economic systems to a herd immunity approach. Countries such as Australia and America had a mix of federal policy and state-driven pandemic policies. These differing approaches perhaps highlight how improvements could be made by engaging in collaborative responses in situations where there are high levels of inter-dependency.

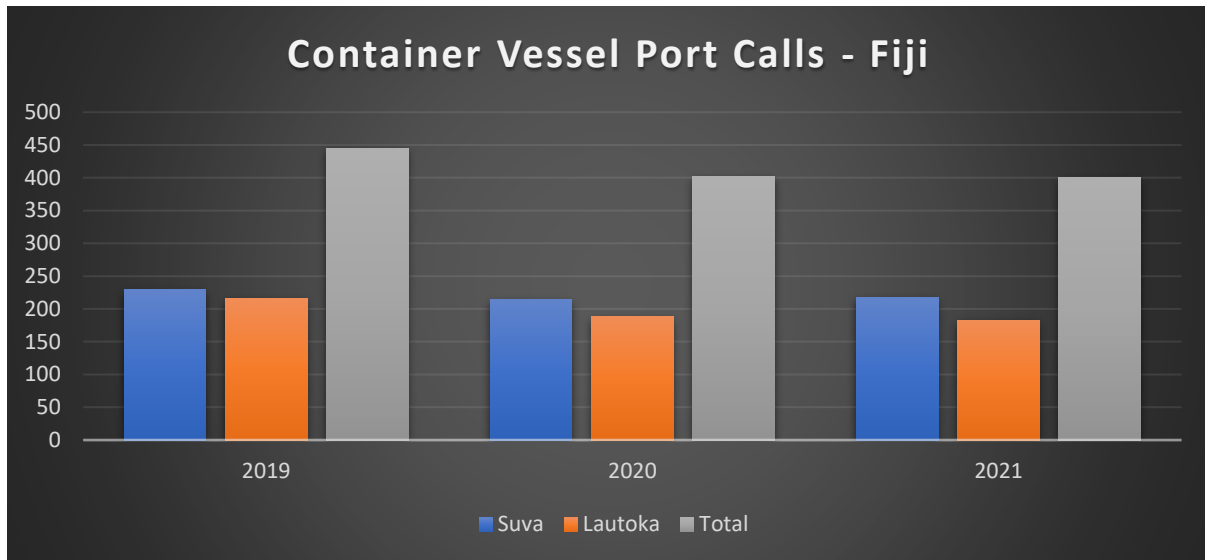
## Impacts to FICs and MSMEs

### Freight Costs

The cost of freight to and from the Pacific nations has increased since the start of the pandemic. Factors include increased consumer demand globally, a sharp reduction in airfreight options, and delays related to congestion which have led to a reduction in sailing frequencies. Supply chains were confronted with more freight needing to be moved, and less available capacity to move it.

The below table shows an overall decline in vessel calls from 2019 to 2021. It shows an average of 14 calls less per year in Suva and 30 less calls per year in Lautoka, when compared

to pre-pandemic levels in 2019. Fiji is a good gauge of the decline in service frequency in the region during this period as most of the Pacific shipping routes call at least one port in Fiji.



Source: Fiji Ports Terminal Limited

To cater for the increased demand and lack of capacity, ship charterers and operators sought more tonnage. With a limited supply of vessels, especially the size of vessels required to operate in the Pacific region, the costs of vessel charter also increased dramatically.

The below report from Clarkson's Research shows a 300%+ year on year increase in charter rates for the size of container vessels that are currently service the Pacific Islands on international trades. Data for vessels with a capacity of under 725 TEU was not available, although there are vessels in the 350-725 TEU range operating in this region which have been similarly impacted based on market research.

Feeder Market	Avg. \$/Day			Avg. \$/Day		
	2020	2021	2022	Jan	Feb	Mar
<b>6-12 Months Timecharter</b>						
Feeder 2,750 teu g'less	10,819	48,525	80,412	75,000	80,875	82,625
Feeder 2,500 teu geared	9,911	45,233	75,588	70,250	76,063	78,000
Feeder 2,000 teu g'less	8,440	39,809	63,147	59,875	62,625	64,563
Feeder ECO 1,750 teu geared	10,527	45,192	72,735	68,875	72,750	74,375
Feeder 1,700 teu geared	8,116	33,847	60,647	53,375	58,875	65,000
Feeder 1,000 teu geared	6,079	24,244	38,176	33,625	37,375	41,000
Feeder 725 teu geared	5,138	15,419	24,059	21,750	23,875	25,125
<b>Containership T/C Rate Index</b>	59	250	416	386	415	433
<b>y-o-y change</b>	3%	324%	307%	296%	283%	256%

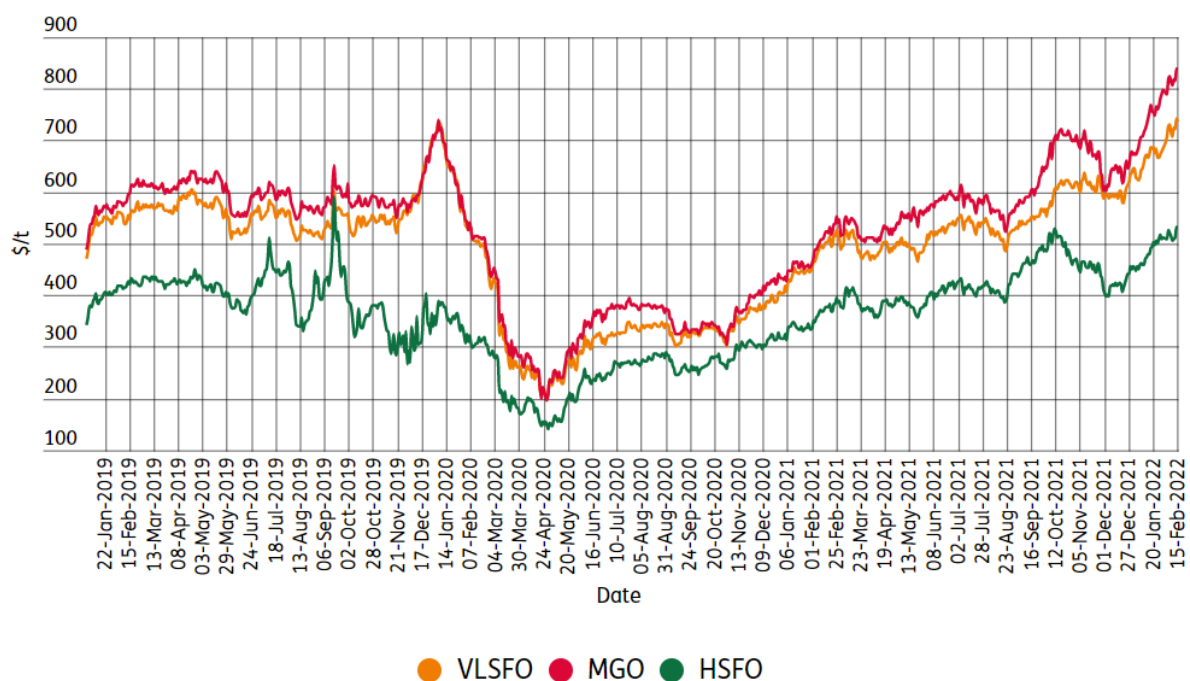
Source: Clarkson's Research – Container Intelligence Monthly

Charter rates at the time of writing are at record levels. Vessel owners can dictate both the pricing and the duration of charter for vessels that are available. With ships being fixed by operators at high charter rates and for longer charter periods, it is difficult to envisage how sea freight rates will decline in the short to medium term and allow the shipping services remain sustainable. A longer-term vision would suggest the investment in new technology and vessels with engines that were less dependent on fossil fuels for their operation, and built for purpose with the Pacific Island trades in mind. Such ‘green’ vessels are being ordered with shipyards, but not for vessels sized and equipped correctly to service the region.

MARPOL Annex VI (MEPC, 2022) effective 01st January 2020, legislated that the sulphur content of fuel oil used or carried for use on board a ship should not exceed 0.50% m/m. This legislation required the industry to use compliant lower sulphur fuel products or fit exhaust gas cleaning systems known as ‘scrubbers’ to reduce SOx emissions to the required levels.

The increased demand of compliant types of ships bunker fuel such as Very Low Sulphur Fuel Oil (VLSFO) as a replacement for higher sulphur content Heavy Sulphur Fuel Oils (HSFO) created supply issues in the region. With higher global demand and a shortage of supply, the resulting increases in bunker fuel costs were passed onto consumers. With a very limited uptake of scrubber fitting by shipping lines servicing the Pacific, and the unavailability of VLSFO in the region, most ships switched to Marine Gasoil (MGO) which also had the required sulphur content but came at a 30-40% increase in cost on traditional HSFO.

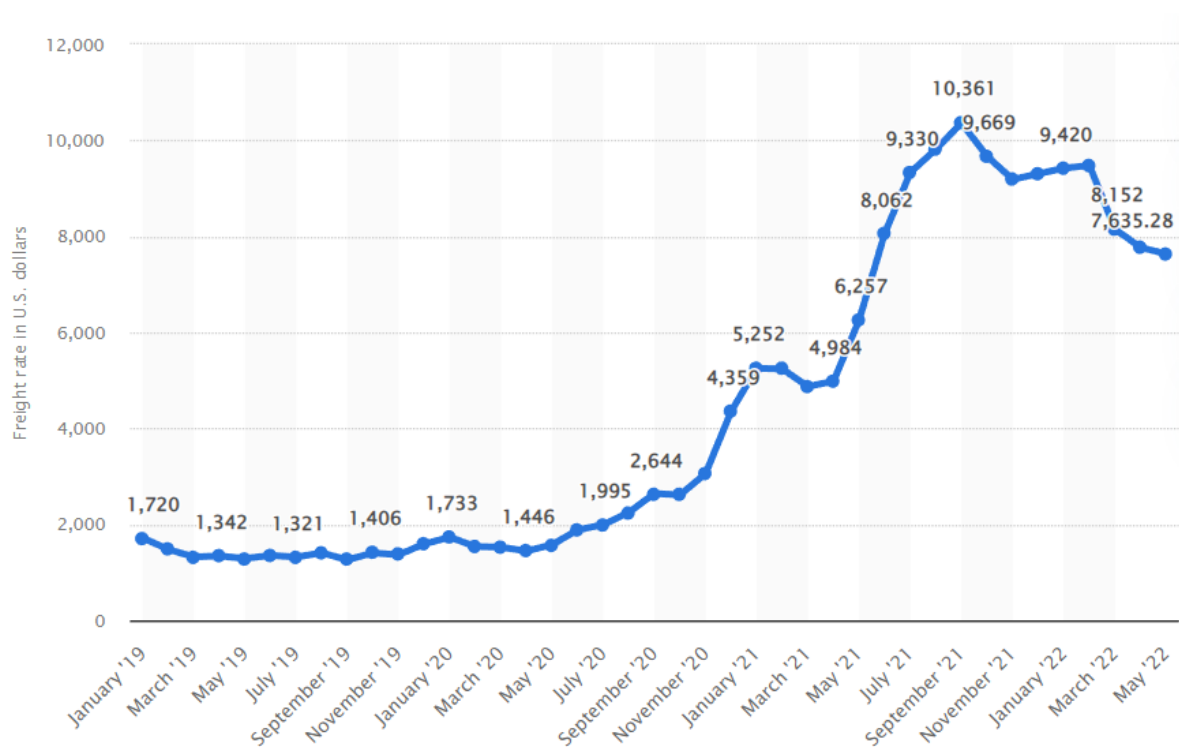
The below graph shows the spread of cost between HSFO, used predominantly prior to the ratification of MARPOL Annexe VI in January 2020, and VLSFO and MGO. Not only have prices consistently increased for all commodities, the gap in cost between previous bunker fuel types and current fuel types has increased. These increases contribute to the retail cost of seafreight.



Source: Lloyds list Maritime Intelligence

At the time of writing, bunker prices are at their highest levels since the start of the pandemic. The events in Ukraine are also a contributing factor.

Due to the pandemic induced shift in demand, vessel charter rates, and bunker fuel costs, global freight rates rose by an average of 50% in 2021. Many carriers were facing financial difficulties pre-pandemic and these freight rates were starting from a low and unsustainable base. Shipping lines have recovered well, and container shipping line profits globally have exceeded US\$ 100 billion in 2021. The below graph shows the evolution of global 40' container freight rates over eight major global routes during a 29-month period. Freight rates rose from US\$ 1,446 at the time when the WHO declared covid-19 as a global pandemic, to a peak of US\$ 10,361 a year and a half later. An increase of over 600%.



Source: Statista

Public details on freight rates to and from the Pacific are less available, but the region has seen freight rate increases. According to MSMEs in the FIC, the increases appear to have been in the 30-50% range on dedicated Pacific Island services. Steeper increases are reported on the trades to and from Asia, the Americas, and Europe where Pacific Island destined freight is competing with freight to other destinations carried on the same services.

Of direct impact to the FICs since the start of the pandemic, is the reduction in direct shipping capacity from Australia to New Caledonia, Vanuatu, Fiji, Samoa & Tonga. The restructuring of shipping consortium service networks meant that Australian cargo to the volume of

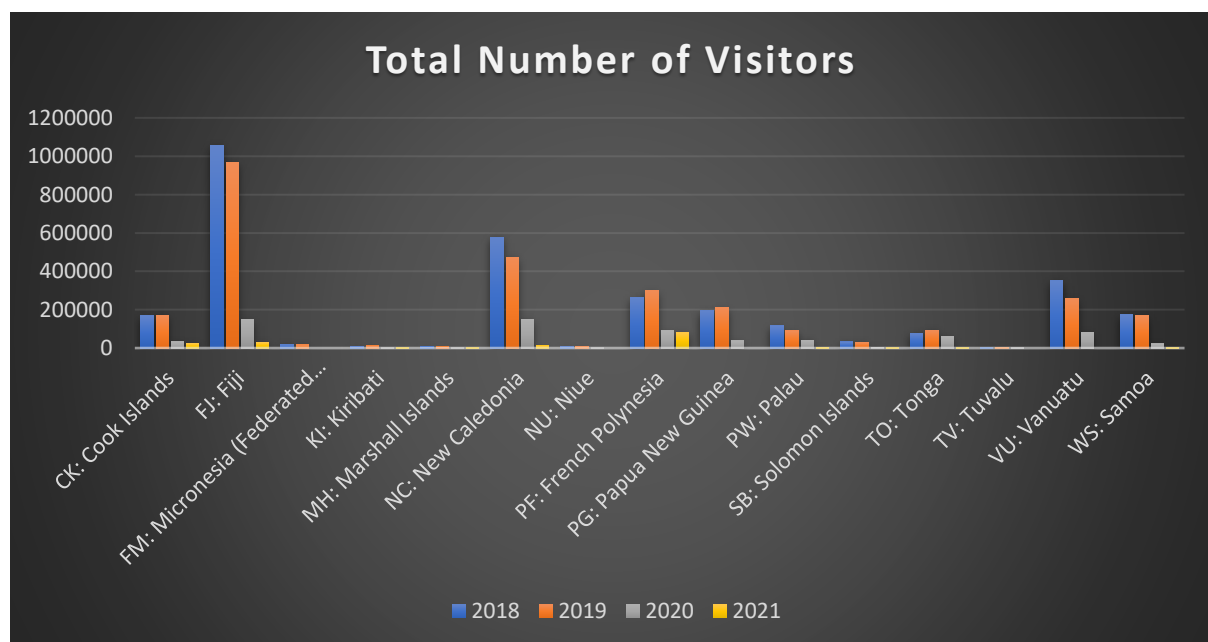
approximately 13,000 TEU was re-routed via New Zealand ports to connect with Pacific Island bound services stemming from Auckland and Tauranga. Not only did this contribute to increased shipping costs, but also to congestion through these ports.

To aid exporting MSMEs, Pacific Trade Invest (PTI) launched a freight subsidy to support exporters across the Pacific region (Pacific Islands Forum, 2022). This initiative provided eligible businesses with grants of up to NZD2,500 if they met certain criteria. 45 applications were approved for a total support package of NZD102,000. It is reported that without this assistance, some of the applicants would have had to cease trading.

Nevertheless, with the increase in freight costs, some exports were lost and the goods either wasted or sold locally to avoid total losses. In Fiji for example, exporters looked towards online platforms and communities to sell orders that had been cancelled for export due to the freight increases. Some of these exporters have now pivoted their business and whilst they will look to export again, they have successfully created new sales channels domestically.

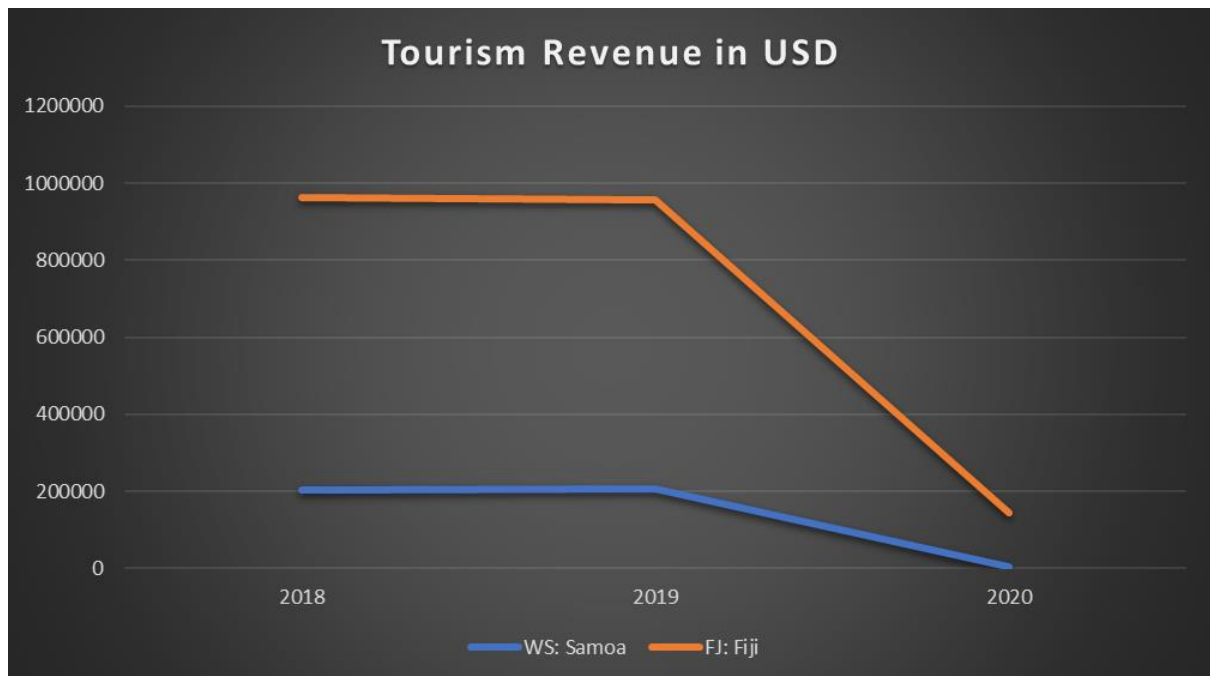
### Tourism & Overseas Visitors

With the restrictions on travel, cessation of passenger flights, and quarantine regulations, all FICs saw a sharp decline in tourists and other visitors from early March 2020. It is expected that the full recovery of the tourism sector will not be possible until 2024. With MSMEs heavily dependent on tourism, this decline has had significant impact on this sector, particularly for those involved in arts and crafts sales to cruise ship visitors, and other visitors to urban and rural areas.



Source: Pacific Datahub (SPC)

The volume of visitors directly correlates with their spend in the local economy. According to Datahub, the average gross tourism earnings per visitor is USD 764 in Tonga, USD 1,091 in Samoa, USD 2,626 in the Marshall Islands, and USD 863 in Fiji.



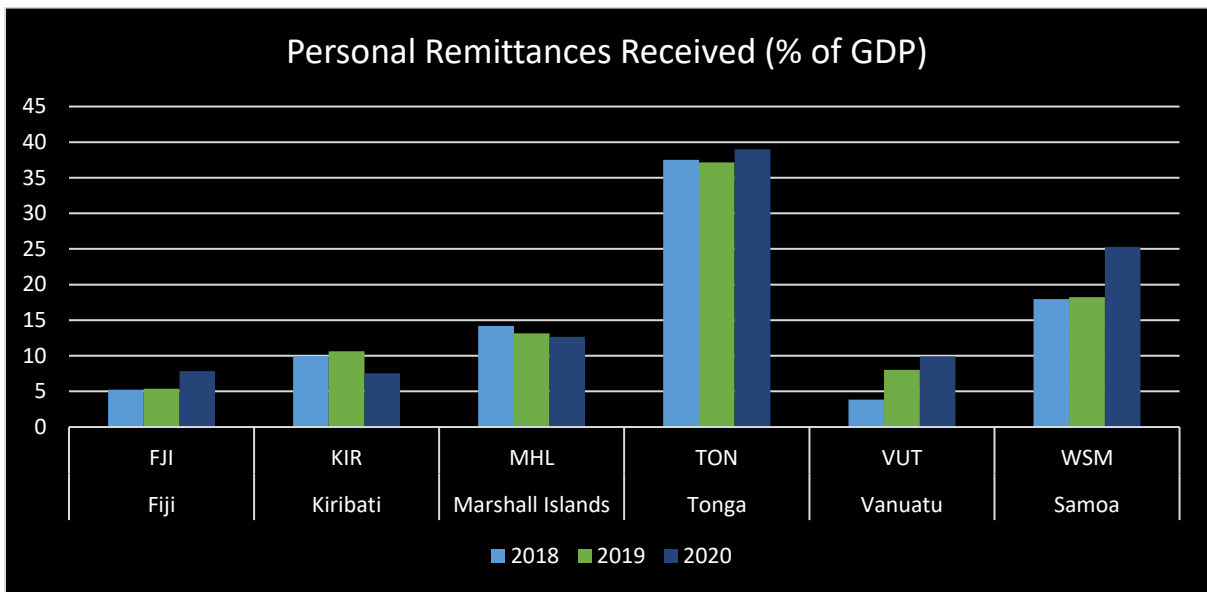
Source: Pacific Datahub (SPC)

## Remittances

Personal remittances are an important source of income for Pacific Island communities. This additional disposable income spent in the community is an important consideration for the well-being of MSMEs that depend on this. With the sudden stoppage of tourism activity and other visitors to the region, and resulting loss of economic activity and jobs, the importance of financial remittances from overseas family members was amplified.

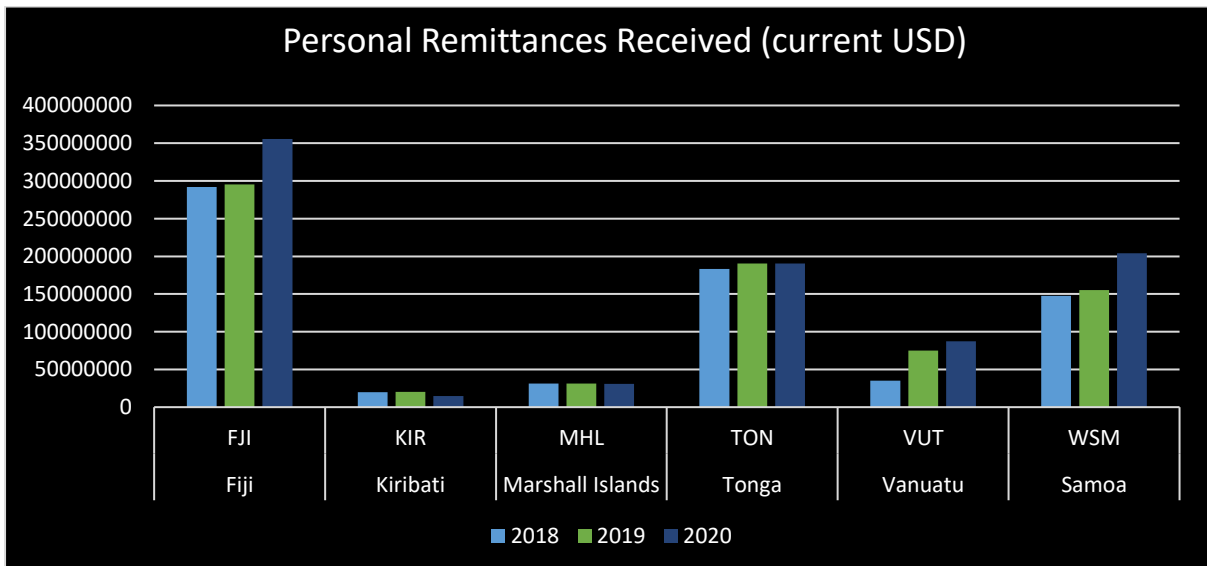
In 2019, people in Fiji received approximately US\$290 million in remittances. In Tonga, close to two-fifths of its Gross Domestic Product (GDP) came from remittances. In Samoa, remittances totalled about one-sixth of its GDP, and in both countries, around 80 per cent of households received remittances (The Lowly Institute, 2022).

Data from the World Bank for the six FICs that have the greatest percentage of their GDP contributed by remittance suggests that for 2020 in Fiji, Tonga, Vanuatu, and Samoa, remittances represented a greater percentage of GDP in 2020 than pre-pandemic in 2019. This is perhaps an expected result as other forms of income affected by the pandemic were reduced. In Kiribati and the Republic of Marshall Islands this was not the case. There is no data yet available for 2021 and 2022YTD.



Source: Pacific Datahub (SPC)

Looking at the monetary value of remittances received for these same nations over the same period, converted into current USD, there are similar trends suggesting that the amount of money transferred actually increased in some dependant FICs in the first year of the pandemic. Data is unavailable for 2021 and 2022YTD.



Source: Pacific Datahub (SPC)

Whilst further research into the trends for 2021 and 2022 is required, there are some pandemic related factors to consider when analysing this data.

Pacific Island communities residing overseas were affected by redundancies, reduced working hours, loss of revenues due to local lockdowns, and reduced demand for tourism and hospitality services.

Pacific Island workers normally employed overseas in seasonal agricultural sectors, particularly in Australia and New Zealand, were unable to travel to their place of work. Remittances from these workers to their families were likely to have been significantly affected.

Pacific Island workers employed as seafarers on commercial shipping lines or as crew on cruise ships had great difficulty in being repatriated due to the travel restrictions. Those seeking employment also struggled due to these same restrictions. As a result, these remittances were greatly affected and continue to be so.

Remittances are either conducted through traditional banking systems, but more often through money transfer operators such as Western Union. Under lockdown situations, either the operation at the sending facility will have been inaccessible, or the receiving facility unable to trade and distribute remittances locally.

### Food security.

Except for some flour production in Fiji, New Caledonia, Solomon Islands, and Papua New Guinea, staple food products such as rice, flour, sugar, and chicken are imported. Bulk wheat importation, mainly from Australia, is a necessary raw material for the flour mills that do operate in the region.

Whilst some Pacific Islands do benefit from rich volcanic soils that are very suitable for agriculture, on atolls such as Kiribati, Republic of Marshall Islands, and Tuvalu, the alkaline coral soils prohibit many forms of agriculture.

Barriers to local food production, shift in consumer tastes to international products, and a reliance on imported staple goods means that the FICs are heavily dependent on supply chains for foodstuffs. In atoll nations, 80% of daily household meals are reliant on imported and processed foods (Iese, et al., 2021).

Whilst some time sensitive produce is carried as freight on aircraft, most food is delivered in dry or refrigerated shipping containers. As mentioned, the wheat for flour production in FICs is generally sourced from Australia or in America in some circumstances. Imported flour is also sourced from Australia, but also as far as Turkey. Whilst previously sourced in Australia, due to drought most rice delivered to the Pacific is sourced from China and Vietnam, with some Calrose rice sourcing from America for the northern Pacific regions. Sugar is sourced from Australia, New Zealand, Thailand, India, and Brazil. Whilst Fiji does have sugar production, it produces brown sugar and the FIC market is a majority white sugar market. Frozen chicken is sourced and shipped in refrigerated containers from America, South



America, Australia, New Zealand, and some European countries. Due to perishable nature of fresh produce, fruit and vegetables are generally shipped from Australia, New Zealand, the West Coast of America, or sourced in neighbouring Pacific Islands to ensure maximum shelf life at destination where they are consumed.

Considering the wide range of sourcing origins and distances from market, FICs are vulnerable to shocks and disruption to the supply chain. In the context of the pandemic, the same supply chain issues linked to lockdowns, increased sanitary controls, reduced capacity, congestion, and delays, are present in the food supply chain. For the staple foods there are less tiers of suppliers. In the manufacture of other processed foodstuffs, the network and tiers of different supplier stakeholders is much greater and therefore the risk of disruption is also higher.

Supporting continuity of supply is the fact that the food manufacturing and freight sectors were considered as essential services during the pandemic and not subject to the same operational restrictions as other industries. However, there are elements of the supply chain that were outside of the food and freight sectors' influence, such as government policy.

Working against the continuity of food supply chains were factors such as lack of labour, particularly in regions such as Australia and New Zealand where the movement of Pacific Island sourced agriculture labour was restricted. Crop was wasted as a result. In the initial stages of the pandemic the increased level of sanitary controls around the receipt and packing of goods, the arrival of ships delivering foodstuffs, and the restrictions on handling discharged containers in ports, all contributed to delays which affected cargo integrity and increased food wastage.

A shift in food demand during lockdowns from the consumption of food externally in canteens, cafes, hotels, and restaurants, to consumption only at home also created disruption for domestic supply chains. Where food service providers were able to operate take away or food delivery services, their business was able to trade. Where not, and with no other revenue streams, many such business have suffered economically and been forced to reduce their number of employees, or cease trading temporarily or permanently.

Demand side shocks (Hobbs, 2020) such as panic buying or hoarding contribute to bullwhip effects in the supply chain system. Whether populations are influenced by media, misinterpretation of the situation, or concern around the private and public sector ability to control supplies fairly and competently, governments took measures to encourage communities to refrain from these abnormal purchasing practices which often targeted essential items such as rice, flour, cooking oil, and toilet paper. Such purchasing practices are particularly problematic when the products are not produced locally and require importation from overseas suppliers and can quickly become scarce. The abrupt stoppage of the tourism sector has also had a significant effect on the food and agriculture sector with reduced overall local consumption and demand.

The pandemic related supply chain disruptions also affected domestic food production in FICs. Despite the agricultural sector being considered an essential service, during waves of Covid-19 infection numbers of staff were reduced. When family members are considered close

contacts of an infected person, or they are needed to care for family members, their ability to work may have been compromised.

Lockdowns also meant that urban dwellers returned to villages. Whilst this meant an increase in availability of labour for agriculture, it also created challenges around access to resources such as water and food, disputes around access and rights to land, and theft (Iese, et al., 2021).

Those working in the agricultural sector are also dependant on the supply chain for items such as seeds, tools, fertilizers, transport to market, and cold storage facilities. In Fiji and the Solomon Islands, governments have been actively involved in encouraging communities to pursue domestic agriculture and facilitating this process with stimulus packages and the distribution of seeds (Davila, Crimp, & Wilkes, 2021).

In the Tuvalu community, because of the pandemic, local produce markets have been re-established and more traditional barter and exchange methods of produce trading have been re-introduced and encouraged. According to the Department of Trade in Tuvalu, with limited resources and small levels market demand, individual islands Tuvalu have been encouraged to specialise their agricultural efforts on certain crops. The diversity of produce available in market then results from several islands combined harvest of different crops, rather than single islands producing several different crop types. In Fiji, the Barter for Better Fiji group using the Facebook social media platform has close to 200,000 members actively exchanging goods and services in the country (Pacific Community, 2022). These new activities greatly assist business continuity and growth for MSMEs in these areas.

At an international level, we have seen indications of self-protectionism whereby producing nations are not permitting the export of certain foodstuffs to ensure supply to their own community. The fragility of the global food commodity supply chain has been further highlighted by current events in Ukraine and trade restrictions with Russia. Whilst Ukraine and Russia may not directly supply wheat to FICs, the indirect impact of rising wheat prices and the impacts resulting from other goods either produced by Ukraine and Russia or produced from materials supplied by Ukraine and Russian traders, will affect FICs.

In the fishing sector, the transfer of fish from internationally owned but FIC based fishing fleets, either to carriers at sea that provide linkage to international markets, or transfer on shore to refrigerated shipping containers for re-export, has been greatly affected. Local policies around social distancing and revised sanitary protocols for vessel berthing have restricted the interaction between ship's crew and shore, making the offloading of fish difficult. Local observers who would normally board the fishing vessels have not been able to continue their work for the same reasons. With fish transfer being conducted offshore, and often further from shore than pre-pandemic circumstances, there has been less fish filtering through to local communities, albeit in some FICs there are reports of increased activity by fishing cooperatives and informal distribution networks.

## Government and donor projects

Over USD2bn of aid is committed to the Pacific region annually in the form of grants and loans (Lowly Institute, 2022). Many of the projects related to roading, transport and infrastructure have been paused because of the restrictions around travel, quarantine, and local lockdown.

Apart from the delivery of construction materials, which will be impacted by the increased costs associated with manufacture and transport, such projects rely on the ability of expatriates to join, coordinate, and execute the work on the ground.

On a positive note, the Asian Development bank reported in early June that although border restrictions and reduced flight schedules persist across most of the Pacific developing member countries, together with local lockdowns, activity is resuming across the region (ADB, 2022).

## Women-led businesses and women in business

The covid pandemic appears to have magnified pre-existing barriers to women successfully conducting their work. A study in Quebec, Canada, suggested that women were worse hit than men, as their sectors of work in personal services, retail (except for food), hotels and restaurants were hit hard and have not yet recovered. (Tremblay & Lachapelle, 2020). In Pacific Islands heavily reliant on tourism, which is a predominantly women led sector, these same impacts are felt.

In FICs, women are often employed in the informal sector and such employment may fall through gaps in traditional methods of data collection and statistical analysis. A July 2020 report by Pacific Trade Invest Australia shows female owned and led business had been more negatively impacted by the pandemic. 77% of these businesses had experienced a significant decline in revenue. 23% of those that had not received government support believed that they would require it (Pacific Trade Invest Australia, 2020). Of 12 women-operated business co-operatives in Fiji supported by the women led organisation Fusion Hub, 5 were unable to survive the pandemic which has resulted in 70 to 80 individuals with reduced professional activity and affected income streams.

Gendered impacts of the pandemic include heightened levels of health risk directly related to Covid-19. Women form most of the healthcare workforce in the Pacific and are therefore more likely to be exposed to infection at medical facilities. Disruptions to domestic supply chains and travel had consequences on the availability and distribution of contraceptives (Dawson, et al., 2021), maternal healthcare and menstrual hygiene management (Pacific Women Shaping Pacific Development, 2020)

The situation seems to have been particularly problematic due to community lockdowns where higher levels of domestic violence were informally reported.

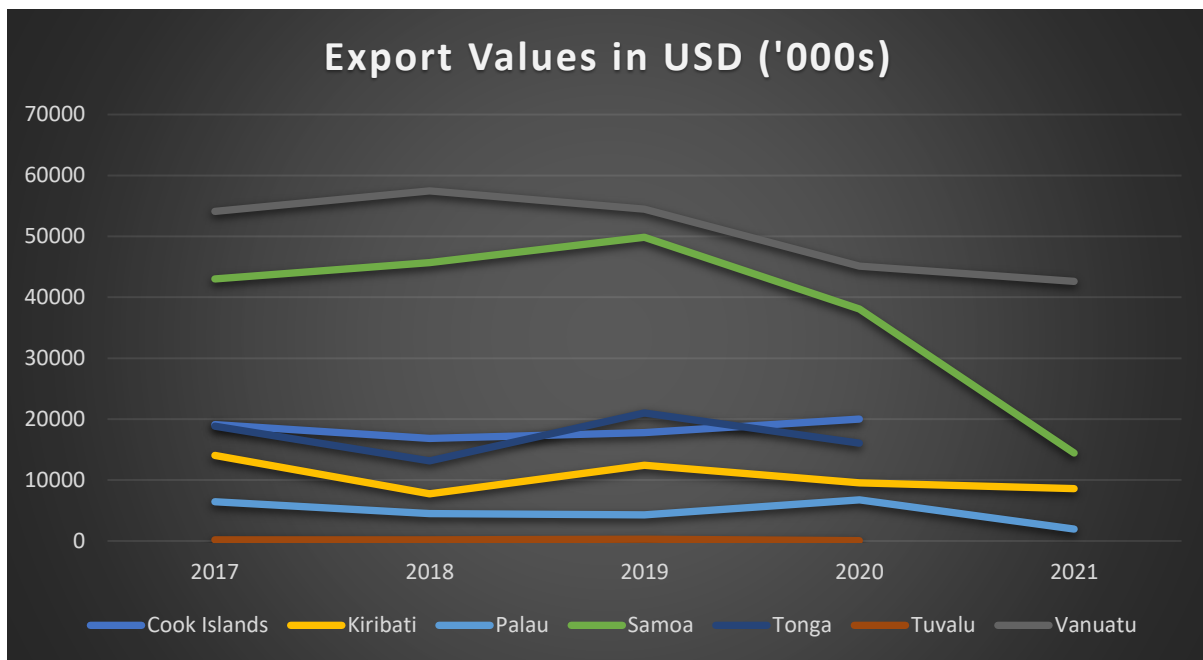
With schools closed during lockdowns, mothers had the additional responsibility of caring for children during what would normally be school hours. This care could also include online or home education requirements which prevented efficient working from home (WFH) for women who were still expected to operate remotely. With non-essential services being closed, many women were responsible for increased domestic responsibilities with more members of the family spending time in the family foyer during daytime hours. Mothers and young women were therefore increasing their hours of unpaid work.

The difficulties for women in holding gainful employment and growing business in the community had previously been on the radar for Sagufta Janif, entrepreneur and owner of Fusion Hub and Outsource Fiji. The need for gender adapted training for women in business focussing on women's mental health, the availability of counselling, encouraging a shift in cultural perception around WFH, and the acceptance of women working in the community to provide for the community, had been recognised pre-pandemic and made more obvious a requirement during it. The inclusion of a nannying service for the duration of their training sessions held for women in the community was one such initiative resulting from this refocus.

A survey coordinated by the World Bank suggests that fewer women are represented in trade associations and are less regularly consulted on matters of trade. Salote Cocker, an entrepreneur, and businesswoman in Tonga involved in the import and shipping sector, commented that in their community, women's voices have increasingly been heard and representation of women in a larger scope of society is more commonplace. She believes this is thanks to increased access to education which helps women acquire the skills and confidence to participate in different areas of business and trade.

## FIC Exports

A review of Pacific Datahub export data for the FICs that have information available, shows a drop in export values for Kiribati, Samoa, Tonga, and Vanuatu. Exports appear to rise for the Cook Islands and Palau. For Palau and Tonga there is no data for 2021 and the data for Samoa is partial for 2021, which limits the analysis.

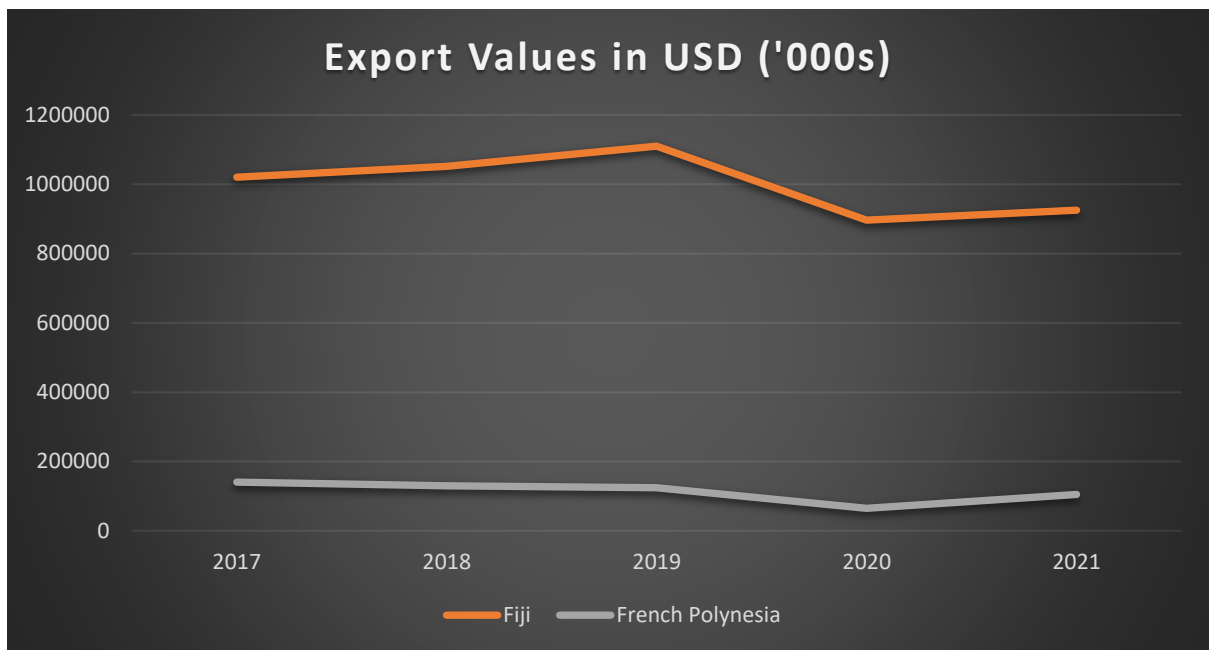


Source: Pacific Datahub (SPC)

Contrary to this market trend in Samoa, Natural Foods International, a coconut exporter based in Apia, have managed to innovate their way through the pandemic and maintain business growth. They exported 32 TEU of refrigerated product in 2019, 36 TEU in 2020, 40 TEU in 2021 and hope to achieve 52 TEU in 2022. Impacted by the increased freight cost, cessation of direct shipping services to Australia, an increased transit time via Auckland, resulting in reduced product shelf life on arrival in Australia, owner Grant Percival looked to new fumigation techniques to decrease the perishability of the product during transit. By adding value to the product with a longer shelf life, frequent communication with buyers on product availability, and forecasting shipping container requirements with the shipping lines, this well-established exporter was able to manage the flow of exports and work with the buyer to hold increased stocks to avoid rupture.

Looking at the Fiji and French Polynesia Markets in isolation there is a similar market trend. When comparing export values for 2019 and 2021, Fiji's annual export value has decreased by USD184.7m from USD1.11bn to USD92.5m. French Polynesia's annual export value has dropped by USD18.8m from USD124m in 2019 to USD105m in 2021. Both markets show recovery between 2020 and 2021.

Fijian turmeric grower and exporter Island Magic commented that despite restrictions on movements during lockdowns and reduced airfreight capacity, their domestic supply chains were able to perform. A major concern of theirs was the supply of hessian bags for exporting their product, these being sourced in Sri Lanka. They experienced significant delays in delivery and were unable to purchase from Australian suppliers who also procured from the same source and were therefore subject to the same delays. Their export volumes dropped initially by 50% due to the disruptions, but they were able to recover through agile business practices.



Source: Pacific Datahub (SPC)

#### Direct economic impact on MSMEs in FICs.

The full extent of the pandemic and the impact of disrupted supply chains on MSMEs in FICs is still unknown. Only some FICs have re-opened their borders, and at the time of writing others are planning to do so in July and beyond. Those MSMEs that have survived this period of isolation and depend on tourists and visitors for their business will be able to resume trade to some extent.

In New Zealand, 97% of businesses are defined as SMEs. Accounting software firm MYOB surveyed over 500 SME owners and decisions makers in New Zealand during each of the 4 quarters of 2021. In November of that year, 77% of SMEs were concerned about pandemic related supply chain disruptions effecting their business.

Perhaps a result of specific lockdown periods at the time, however, in Q4 a total of 48% respondent reported that their revenue was down on Q4 2020. 44% of respondents also confirmed that they would be increasing their prices to offset increased cost of wages, transport, losses due to the pandemic, or price increases from their suppliers. (MYOB, 2022).

Short of extensive in-country research requiring a greater timeframe than allocated for this study, Pacific Trade Invest Australia's Pacific Business Monitor is one of the few sources of data gauging the pandemic impact on MSMEs on a regional scale. The Q1 2022 report gathering responses from 76 businesses across the Pacific region, including 41 female-led/owned businesses, indicates 84% of these business suffered negatively due to Covid-19

over Q1 2022, 74% report a decline in revenue, with 87% confident that their business will survive the crisis (Pacific Trade Invest, 2022).

Such findings are supported by SME survey results from 542 respondents from the Cook Islands, Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, and Vanuatu, conducted by Business Link Pacific between the 19<sup>th</sup> of April and 6<sup>th</sup> of June 2021 (Business Link Pacific, 2021). 50.2% of businesses surveyed said that they had already shut down or expected to permanently shut down in the future, with 84% of respondents advising that they had seen a decrease in their profitability. 82% of respondents were currently seeking financial support, with 62.5% having accessed governmental financial assistance, and 54.4% having accessed financial assistance from banks or other institutions. On a more positive note, 64% of Fijian respondents representing 46% of all respondents, reported positive impacts.  $\frac{3}{4}$  of all respondents had incorporated, or had become increased users of new technologies in their business because of the pandemic.

The significance of the informal work sectors is substantial in FICs and qualifying or quantifying the real impact on this sector is very difficult due to the lack of data and access to markets with current travel restrictions. Further research is required to ascertain the economic impact to this sector and how the informal sector could be formalised to increase data and economic visibility.

## Recommendations for Action

FICs have demonstrated incredible resilience in both recent and historical disruptions to their supply chains and ways of life. Building and developing resilience to future shocks and pandemics is about being prepared and learning from past experiences, but also through agility and innovation. Most FIC organisations had no business continuity plans in place. It is important that the lessons and knowledge acquired by all sectors of society in FICs during the pandemic, are shared as part of a continuous improvement process.

Building greater resilience sustainably, with a growth mindset rather than a survivalist approach should be a focus for regional stakeholders. With climate change of crucial importance and relevance to the FICs, there is great opportunity for channelling both the recovery and resilience efforts through a lens that prioritises the United Nations Sustainability Goals (SDGs). The focus of building back better, stewardship, and the 2050 Strategy for the Blue Pacific, must be at the forefront of stakeholders thinking as there is no better time to reset a sustainable course than after such a shock.

### Embracing interdependence

Understanding the inter-dependencies in FIC supply chains is crucial to recognising the strengths and weakness of the different links with them. As demonstrated in the stakeholder analysis, each FIC is dependent on at least one, if not numerous other FICs as part of the current shipping routes. These supply chain networks between FICs should be strengthened to create opportunities for regionalised trade and cooperation for sourcing. Failure to collaborate is a threat to the efficiency of these regional supply chains and a missed opportunity to build resilience within them.

Independent rather than inter-dependent policies on how to manage border control, particularly with regards to the handling of cargo vessels, crew health and crew Covid-19 testing, created significant disruption to shipping schedules during the initial stages of the pandemic. Vessels were often idling whilst waiting for permission to berth, crews to be tested, and specific documentation to be provided. An inconsistency of approach by local authorities meant that vessels were delayed, had to change port rotation, and important cargoes missed delivery windows. The ripple effect has serious implications in terms of the number of ship calls per year into a given port, which in turn affects business of all sizes.

These relationships also extend to non-FIC members. Dey et al., go as far as to suggest the creation of a league of nations through an Intercontinental Pandemic Preparedness Organization (IPPO) (Dey, Cheng, & Tan, 2020).

A deeper analysis of supply-chains is suited to a systems thinking approach. A supply-chain itself is a system which contains many systems operating within it, forming links within the chain or system. Supply chains are often complex and contain numerous stakeholders. None

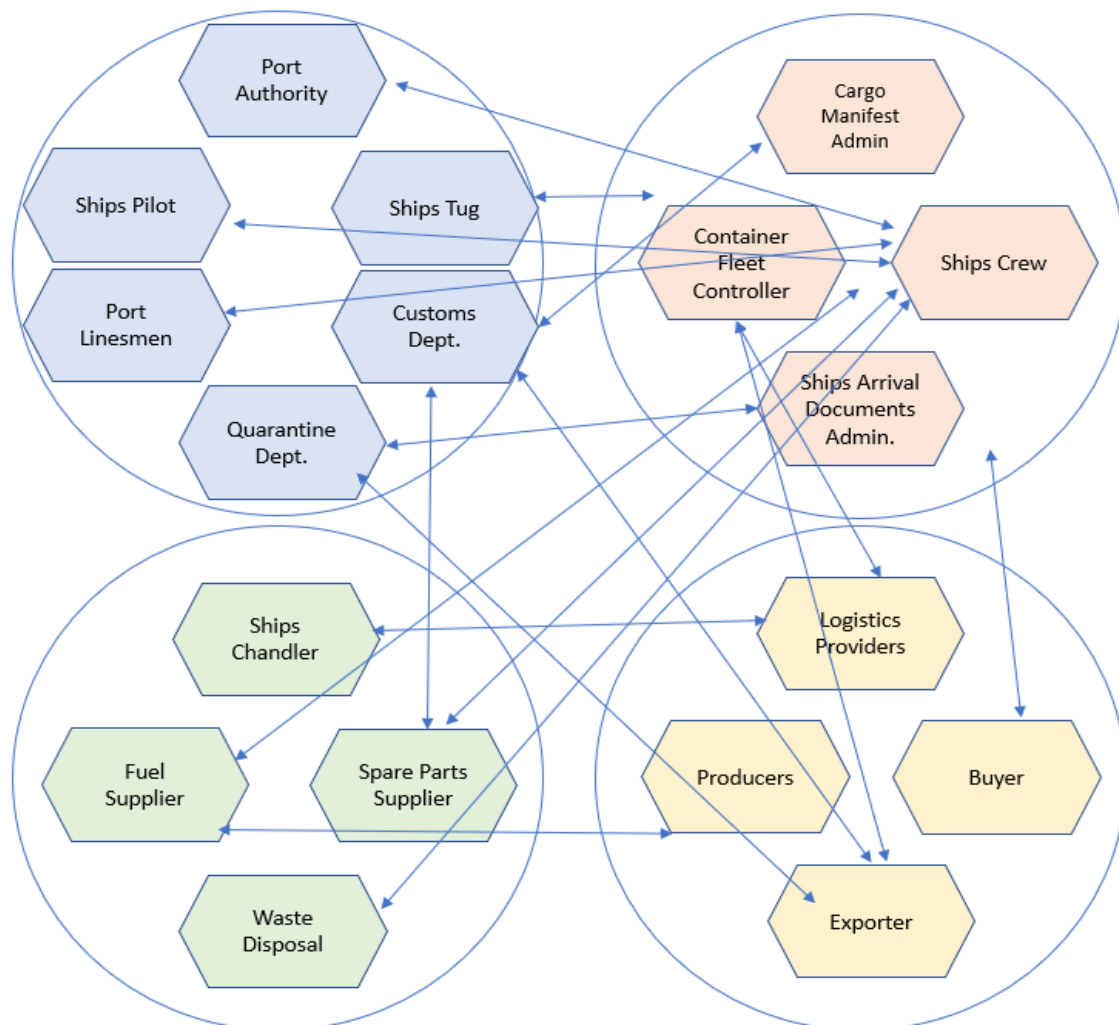


more so that those processing the movement of often small quantities of product from industrialised, hi-tech, and densely populated nations to more remote FICs.

A systems thinking approach to further analyse these supply chain interdependencies in FICs is recommended. Interwoven systems operate within community, society, business, and government. Understanding these systems and improving their interconnectedness is vital. As recommended by the World Economic Forum, is important to develop a common resilience framework, and identify public-private partnerships to build more resilient societies and communities (World Economic Forum, 2022).

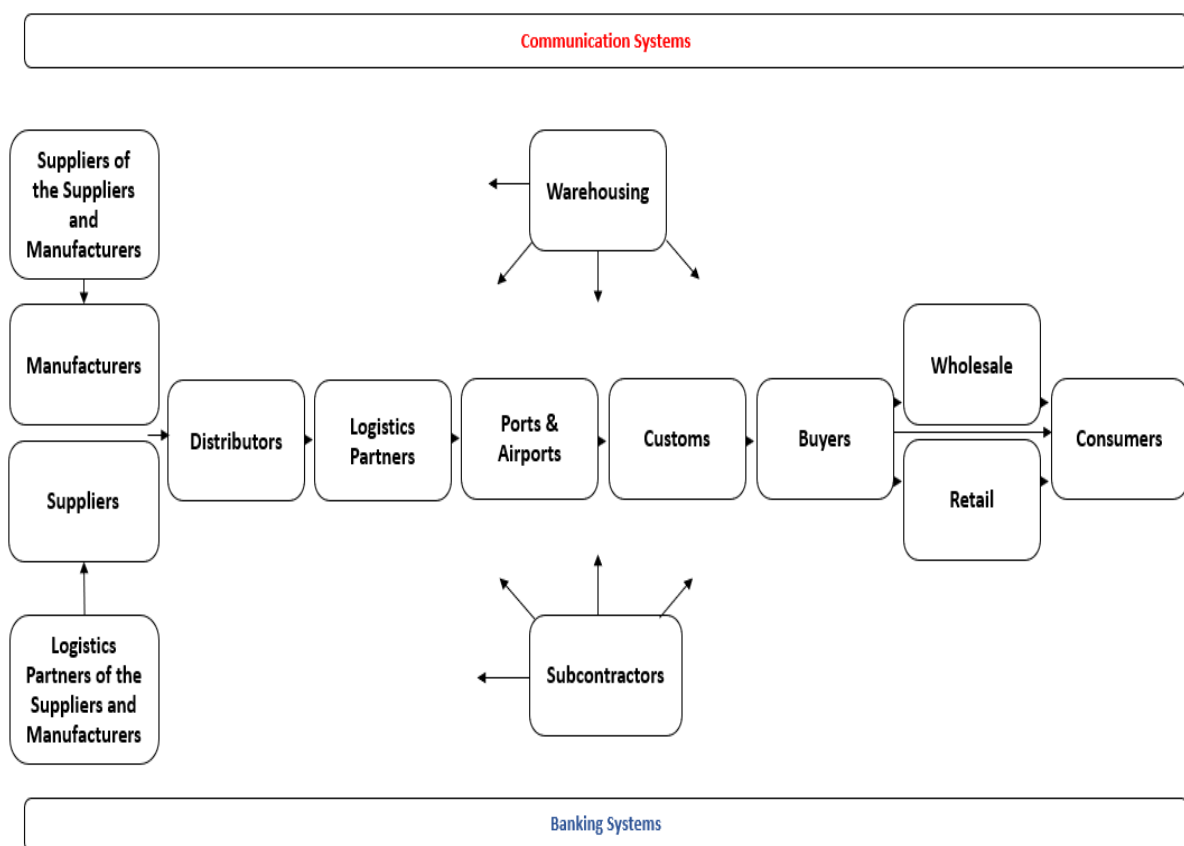
Such analysis would be best narrowed to one or two FICs and focussed on a particular element of the supply chain, such as food supplies and security. Starting the analysis on a small scale with an explicit problem, would allow the development of a model that can then be tested in different contexts and scenarios to analyse the influences on the supply chain, and ultimately create a shared better understanding of it.

A simple example of different systems and their interaction during a ships port call is demonstrated below. Although there are 4 groups operating within their own system, Authorities – Shipping Line – Local Supply Network – Trade, they operate both separately within themselves, but are also dependant on the other systems to exist.



Private and public sector systems are also inter-dependent and the gaps between them should be bridged through sharing of knowledge and ideas through increased and efficient interaction. Such interaction, defined by a review of the current stakeholders and the systems in which they currently operate, could be in the form of working groups or clusters. As suggested by Michael Porter, government working with the private sector, should reinforce and build on existing and emerging clusters rather than attempt to create entirely new ones (Porter, 1998). It is not a case of reinventing the wheel, but rather better understanding it better and how it can best turn smoothly. Supply chain and value chain mapping would be useful to visualise and help explain these systems and their inter-dependencies. These are specialised skills, but very accessible remotely.

Revisiting the stakeholder analysis again, the supply chain cannot function without the necessary communications and banking systems providing support to the various stakeholders of the chain. Other systems operating separately and in conjunction with the supply chain system to consider might be legal systems, insurance systems, and environmental systems.



Whilst lean methodology aligns very well with the sustainable goal of reducing waste, lean practice in SCM is often more focussed on cost and time efficiencies. Integrating some 'Just In Case' thinking into SCM may require government intervention.

Holding additional inventory is also holding cash from for FIC businesses and MSMEs with limited access to working capital. Whilst additional stocking of inventory, spare parts, and raw materials is easily recommended, MSMEs capacity to manage this is limited. Governments should consider the possibilities for publicly funded or publicly supported but privately funded bonded storage facilities to allow the safe and viable storage of commercial goods and foodstuffs between the time of importation and the time that they will be consumed or used for manufacture.

These same interdependencies in the region could also be investigated to consider alternative sourcing amongst FICs. Deloitte refers to the practice of 'Friendshoring' whereby suppliers are sourced in nations that share values or relations with them (Deloitte, 2022). The current industrial capability of some of the Pacific SIDs may be limited, but the more industrialised Pacific nations are already current suppliers to FICs. Increased regional collaboration would help build sustainable resilience and help to reduce the severity and impact of supply chain disruptions when there is heavy dependence on sourcing from distant markets. Whilst much of the imported goods will still need to be sourced from beyond the Pacific region, regional suppliers being able to fulfil some supply requirements would be help develop increased levels of supply security.

#### Digitalisation of supply chains & Data

The availability of data and the integrity of available data has been a hindrance to this study and a common theme in literature relating to the Pacific region. Access to historical and current data is crucial to provide government and private sector decision makers with the ability to make informed decisions. The Covid-19 pandemic has also highlighted the need for gender disaggregated data, and that data for the informal sector is not readily available.

Lack of visibility in the supply chain means a lack of understanding of it. Lack of data for certain trades or sectors makes an analysis of FICs imbalanced and bias against those nations that do have access to richer data.

Better supply chain visibility reduces risk. Whilst a pandemic supply chain shock was not expected, society could have been better prepared for it, and better prepared for what to do about it. Development of Industry 4.0 tools and greater transparency through digitalisation of supply chains would help with this.

Facilitation of trade through digitalisation is a real opportunity for FICs. Transport documentation has shifted to paperless electronically transmitted versions during the pandemic. Vessel calls to ports became contactless and remotely managed because of heightened sanitary procedures. The IMO is now encouraging and facilitating a maritime single window for data exchange to be mandatory in ports around the world from the 01<sup>st</sup> of January 2024.

The UNCTAD Automated System for Customs Data (ASYCUDA) has already been adopted by many of the FICs and is helping the shift to digitalisation in this sector, creating accuracy of

data, efficiencies, and transparency. Adoption of other blockchain type software and technologies by supply chain stakeholders is recommended. This will create a higher-level transparency and information sharing within the sector and assist businesses with more accurate supply and demand sensing and forecasting.

The IMF's working paper on the incorporation of data generated by cargo vessels' Automatic Identification System (AIS) and statistical analysis of historical and current cargo flows, to provide real-time data for the tracking port and trade activity, shows what can level of data accuracy could be achieved with the right sets of skills, tools and data (Arslanalp, Koepke, & Verschuur, 2021).

Opportunities for MSMEs to create new sales channels in the domain of ecommerce are increasingly attractive and available to them. With the growth of ecommerce from an import perspective, protecting locally registered business is also important as ecommerce growth brings with it new external competition to FIC markets.

With the shift to remote working, an opportunity exists for MSMEs providing outsourcing services to international business. There is also opportunity for the growth of FIC based remote individuals working for international businesses. To create these opportunities, suitable digital communications and internet bandwidths are essential, as is access to IT software and hardware within the financial means of MSMEs and communities. From a government perspective, assisting communities and business with access to digital networks, aiming for increased digital literacy in the community, and helping develop both digital opportunities for growth and digital resilience are important

Businesses interviewed in Samoa, Tuvalu and Kiribati all commented that increased use of online banking systems enabled their business to continue trading locally during domestic lockdowns. With better cash flow monitoring and higher levels of financial security, these business hope that this uptake in the local community will continue to grow. When 75% of the population in in Solomon Islands, and 85% in Papua New Guinea remain unbanked (Asian Development Bank, 2020), there is plenty of progress to be made in this area.

With increased digitalisation also comes increased digital risk that needs to be mitigated. Matters of cyber security for business and individuals need to be addressed. Ensuring that businesses are as safe as possible when transacting online, and security options such as Legal Entity Identifiers (LEI) are considered. At an individual level, data access, privacy and security are crucial, as is ensuring that children accessing the internet and digital resources are staying safe.

## Education & Innovation

FIC communities will need to have the right sets of digital skills to accommodate and incorporate these technologies into their businesses and organisations. Recommended strategies would support R&D investment, training of human resources, entrepreneurial

support, as well as cluster policies for knowledge transfer amongst businesses (Tremblay & Lachapelle, 2021)

Online education platforms have become greatly accessible during the pandemic. Universities, schools, and other traditional education services have developed the capacity to offer online courses. Paid and free short courses on platforms such as LinkedIn, Thinkific, LearnWorlds, and Kajabi to name a few, are easily accessible online. Such opportunities for online education should be encouraged and supported to upskill the population, employees of MSMEs, and nurture digital entrepreneurship in FIC communities.

Agility and innovation are at the heart of the recovery and many FIC businesses have been successful in navigating the throes of the pandemic with these mindsets. The development of these skills, with a focus on environmental and sustainability values, should be supported. Ensuring the inclusion of these values in education programs with youth in the community and professional sectors helps to ensure that they remain a focal point as FICs seek renewed sustainable growth.

Innovation in the agricultural sector to achieve increased sovereignty over food security should be considered. The revival of traditional agricultural agriculture, food markets, barter systems have proven successful during the pandemic. Modern techniques such as hydroponic and aquaponic farming might also be suitable for atolls that have difficulty with traditional agricultural practices.

### [Preparedness & Measuring Resilience](#)

Simple steps of preparedness for FIC business and MSMEs start with the learnings from their experiences. Born from the pandemic are numerous business guides to assess organisational vulnerability, advise on how to perform scenario planning, and create risk management plans. Mentoring programs would be recommended to provide support for MSMEs from either other local FIC business or through international partnerships.

For governments, considering and encouraging the ability of local industries to switch their operations to produce essential items (pandemic related or not) if required would be beneficial. The establishment and revision of crisis management plans and the augmentation of taskforce groups at a local and regional level, with a focus on ensuring the flow of supply chains is recommended.

Taking the learnings from a deeper supply chain analysis, establishing what the important metrics are, how they can be positively and negatively influenced, and creating the ability to define and measure resilience going forward, will be important to ensuring regional supply chains can better absorb shocks.

## Trade re-activation initiatives for exporters and importers

Export support in the form of freight assistance packages will help stimulate exports and MSME efforts. Reviewing export taxes, even temporarily, and considering tax credits could also stimulate trade during this recovery period.

Governments can encourage the public sector to procure services and goods through MSMEs and avoid the receipt of aid in the form of goods that MSMEs currently trade for profits. Financial aid that creates spending in the community and generates revenue for FIC business and MSMEs is better than flooding the market with foodstuffs and other goods that create a loss of sales for these enterprises.

Simplification of the administrative processes to apply for grants, loans, education scholarships, applications with financial institutions, and trade related documentation such as health certificates, would help reduce barriers to access these facilities.

The use of collective resources and private-public collaboration to promote and market FIC products on digital platforms and through ecommerce channels would help create and build awareness. These promotions could be conducted in cooperation with marketing efforts in the tourism sector.

Research suggests that freight costs for Less than Container Load (LCL) exports is prohibitive to the growth of the export sector without subsidy. To assist with this, a review of air and seafreight opportunities for small packages and quantities to be easily and cost effectively exported to market is recommended.

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