

The role of Pacific states in decarbonising the international shipping sector

By

Avnita Krishna Goundar

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Marine Affairs

School of Marine Studies

Faculty of Science, Technology and Environment, The University of the South
Pacific,

Suva, Fiji

2020

Declaration of Originality

Statement by Author

I hereby declare that the work contained in this thesis is my very own and where I have used the thoughts and work of others, I have clearly indicated this.



Avnita Krishna Goundar
S96007930

6 May 2020

Statement by Supervisor

I hereby confirm that the work contained in this thesis is the work of Avnita Krishna Goundar, unless otherwise stated.



Professor Ciro Rico

Head
School of Marine Studies
Faculty of Science, Technology and Environment
The University of the South Pacific
Suva, Fiji

6 May 2020

Dedication

To Caesar and Noorie...my two-year old fur babies, shining light in my life.

Abstract

The Pacific states are among the world's lowest emitters of greenhouse gas (GHG) emissions, and yet the most vulnerable to the effects of climate change. The heightened level of vulnerability makes Pacific states some of the most influential climate advocates in the world. There is however a lack of visibility of the Pacific's role in decarbonisation of the international shipping sector, which is responsible for around 2% of total global GHG emissions. This study undertakes an inquiry into the role of Pacific states in decarbonisation of the international shipping sector and explores policy options for strengthening efforts towards transitioning to a net zero emissions future in shipping. The study revealed that Pacific states have shifted from an obscured position to play a highly influential role in the International Maritime Organization (IMO) shipping emissions negotiations during the study period 2015–2018. Transitioning to a net zero emissions future in shipping however is a challenging exercise for Pacific states due to resource constraints, technical expertise limitations, potential impact on trade, inter-agency communication issues, open registry dynamics, and the gaps in national and regional policy landscape. In order to strengthen the efforts of Pacific states in decarbonising the international shipping sector, this study recommends the following: (i) The head of the maritime administration lead international shipping emissions negotiations at IMO; (ii) A long-term sustainable financing mechanism be developed to improve resourcing within maritime administrations for low carbon shipping work; (iii) A review of national development plans and relevant sector plans be undertaken in order to mainstream and harmonise provisions for shipping emissions across these policies; and (iv) A regional strategy for decarbonisation of the international shipping sector be developed using an all-inclusive approach.

Acknowledgment

Professor Ciro Rico, you have been a great mentor throughout the study process. I have been inspired by your professionalism, kindness and genuine desire to see your students progress. Thank you for guiding me to the finishing line.

Dr Michael Traut, I am having trouble finding the right words to convey my gratitude to you. You came on board at the right time and made a huge impact with your technical input and experience in the field, and all within a year. Thank you very much.

Ms Isabelle Rojon, many thanks for the expert review of the draft thesis, and above all, for all the times you have been responding selflessly to my queries in the last few years and supporting us Pacific colleagues at the IMO shipping emissions negotiations.

Professor Elizabeth Holland, Dr Peter Nuttall, Alison Newell and Dr Jeremy Hills, my initial years of research spent with you holds many good memories. Thank you for giving me the opportunity to experience the numerous international platforms that have contributed to my professional growth. The brainstorming sessions in particular were much appreciated.

Dr Tristan Smith and team at the University College London, thank you for your support and guidance over the years. It has been a remarkable experience working with your team on low carbon shipping initiatives and the IMO shipping emissions negotiations.

I am extremely grateful to the Pacific government officials (maritime administrations, foreign affairs ministry, diplomatic missions, and climate change divisions) and regional organisations (listed in Annex 1) who have taken out time from their tight schedules to share their views on the subject and provide relevant data/information. Special thanks to the maritime administrations of Cook Islands and Kiribati for in-country research support, and to Maritime Cook Islands for the frank discussions and tour of their operations in the Cook Islands.

Maa and Pa, my drive and passion for academic pursuits comes from you. So, I know how much this means to you. My siblings, thank you for always being there for your little sister, in your own special ways.

C. Samressan Goundar, my rock, my anchor, my greatest support in this journey. Can't wait to complete my study and just chill with you and our bubbas!

Table of contents

Declaration of Originality.....	ii
Dedication.....	iii
Abstract.....	iv
Acknowledgment.....	v
Table of contents	vi
List of figures and tables	viii
Abbreviations	x
 Chapter 1: Introduction.....	 12
1.1 Study objectives.....	15
1.2 Significance	16
1.3 Introduction to methodology	17
1.4 Structure of thesis	18
1.5 Key definitions.....	20
 Chapter 2: Literature review.....	 22
 Chapter 3: Shipping in climate change, development and the Pacific context.....	 33
3.1 Introduction.....	33
3.2 Shipping and trade	34
3.3 Top economic sectors of Pacific states	41
3.4 Shipping and the sustainable development regime.....	46
3.5 Shipping in the global climate change regime.....	47
3.6 The scientific rationale for supporting decarbonisation of the international shipping sector.....	49
3.7 Drivers of low carbon shipping in the Pacific	54
 Chapter 4: Research methodology.....	 60
4.1 Introduction.....	60
4.2 Philosophical framework	60
4.3 Research approach.....	61
4.4 Methods	63
4.4.1 Scope and sampling	63
4.4.2 Data sources and collection	65
4.4.3 Data analysis	69
4.5 Validity and reliability	73
4.6 Limitations	75
 Chapter 5: The role of Pacific states in international shipping emissions negotiations	 76
5.1 Introduction.....	76
5.2 International shipping emissions negotiations at UNFCCC and the response of Pacific states	77
5.3 The evolution of IMO GHG emissions regime	82
5.4 Negotiations to develop an IMO GHG strategy and emission reduction target	86
5.5 Trends in representation of Pacific states in MEPC negotiations.....	89
5.6 Trends in Pacific submissions on shipping emissions	97
5.7 Response of Pacific states at IMO GHG negotiations	102
5.8 Solidarity of Pacific states in shipping emissions negotiations	107
5.9 Support from other IMO member states	109
5.10 Support from the international shipping industry and open registries.....	112
5.11 Impact of Pacific interventions on shipping emissions negotiations	115
5.12 Factors affecting Pacific’s negotiating role at MEPC	117
5.13 Reflections	124
5.14 Chapter summary	127
 Chapter 6: Is the Pacific ready for transiting to a net-zero future in shipping?.....	 130
6.1 Chapter introduction	130
6.2 Development priorities in the maritime sector	131
6.3 Development priorities for low carbon shipping	134
6.3.1 National development plans.....	134

6.3.2 National maritime policies.....	136
6.3.3 National transport sector plans	138
6.3.4 Climate change policies.....	140
6.3.5 Nationally Determined Contributions.....	144
6.3.6 National energy policies	148
6.4 Managing open registry dynamics.....	152
6.5 Inter-agency communication and cooperation.....	155
6.6 Legislation	158
6.7 Resource constraints	160
6.8 Potential impact on trade	162
6.9 Fuel consumption data	162
6.10 Reflections on the readiness of the national policy landscape.....	164
6.11 Chapter summary	167
Chapter 7: International shipping emissions and the gaps in Pacific regional architecture	169
7.1 Chapter introduction.....	169
7.2 Regional organisations in the Pacific: Origins and significance.....	170
7.3 Regional efforts to decarbonise the international shipping sector	174
7.4 Limitations and gaps in the regional coordination process	180
7.5 Prioritisation in regional policy frameworks and communiqués	182
7.6 Feasibility of a regional policy framework for decarbonisation of the international shipping sector	188
7.7 Chapter summary	194
Chapter 8: Conclusion and recommendations	196
8.1 Overview.....	196
8.2 Testing findings against the research questions.....	196
8.3 Limitations	200
8.4 Future research.....	202
8.5 Recommendations.....	202
Reference	206
Annex 1: List of individuals consulted during study.....	227
Annex 2: Guiding questions for discussions with Pacific states	228
Annex 3: Guiding questions for discussion with regional organisations	231
Annex 4: List of IMO member states and date of membership.....	232
Annex 5: The structure of IMO	233

List of figures and tables

List of figures

Figure 1: International seaborne trade, selected years.....	34
Figure 2: Seaborne trade of developing economies.....	34
Figure 3: Building, ownership, registration and scrapping of ships, 2017.....	35
Figure 4: Basic forecast for the future supply-demand balance for officers.....	37
Figure 5: Global greenhouse gas emission levels for major emitters and per type of gas.....	49
Figure 6: Pacific states worst affected by the consequences of climate change.....	51
Figure 7: Global trends in crude oil prices 1950–2019 (in USD)	54
Figure 8: Average share of CO ₂ emissions by flag state, 2013–2015.....	59
Figure 9: IMO member representation at MEPC 68 (May 2015), by region.....	91
Figure 10: IMO member representation at MEPC 69 (April 2016), by region.....	91
Figure 11: IMO member representation at MEPC 70 (October 2016), by region.....	92
Figure 12: IMO member representation at MEPC 71 (July 2017), by region.....	92
Figure 13: IMO member representation at MEPC 72 (April 2018), by region.....	92
Figure 14: Attendance of Pacific states at MEPC meetings (2011–2018)	93
Figure 15: Attendance at MEPC meetings: Cook Islands.....	94
Figure 16: Attendance at MEPC meetings: Fiji.....	94
Figure 17: Attendance at MEPC meetings: Kiribati.....	94
Figure 18: Attendance at MEPC meetings: Marshall Islands.....	94
Figure 19: Attendance at MEPC meetings: Palau.....	94
Figure 20: Attendance at MEPC meetings: Papua New Guinea.....	94
Figure 21: Attendance at MEPC meetings: Samoa.....	94
Figure 22: Attendance at MEPC meetings: Solomon Islands.....	94
Figure 23: Attendance at MEPC meetings: Tonga.....	94
Figure 24: Attendance at MEPC sessions: Tuvalu.....	94
Figure 25: Attendance at MEPC meetings: Vanuatu.....	94
Figure 26: Trends in overall attendance of Pacific states per MEPC session (MEPC 61–72)	96
Figure 27: MEPC 68: Response of Pacific states to setting a GHG target for shipping.....	103
Figure 28: MEPC 69 (Agenda item 7): Response of Pacific states to adopting a workplan for progressing GHG work (Paper MEPC 69/7/2)	103
Figure 29: MEPC 70 (Agenda item 7): Response of Pacific states to progressing GHG work at IMO (Papers MEPC 70/7/6 and MEPC 70/7/13)	103
Figure 30: GHG-emissions submissions involving Pacific states (joint/individual) versus other IMO members (MEPC 68–72)	116
Figure 31: Number of attendees at MEPC sessions: Cook Islands.....	120
Figure 32: Number of attendees at MEPC sessions: Fiji.....	120
Figure 33: Number of attendees at MEPC sessions: Kiribati.....	120
Figure 34: Number of attendees at MEPC sessions: Marshall Islands.....	120
Figure 35: Number of attendees at MEPC sessions: Palau.....	120
Figure 36: Number of attendees at MEPC sessions: Papua New Guinea.....	120
Figure 37: Number of attendees at MEPC sessions: Samoa.....	120
Figure 38: Number of attendees at MEPC sessions: Solomon Islands.....	120
Figure 39: Number of attendees at MEPC sessions: Tonga.....	120
Figure 40: Number of attendees at MEPC sessions: Tuvalu.....	120
Figure 41: Number of attendees at MEPC sessions: Vanuatu	120
Figure 42: Representation of maritime administrations at MEPC (61–72)	123
Figure 43: Prioritisation of the maritime sector in the national development plans of Pacific states.....	132
Figure 44: Number of inhabited islands per Pacific state.....	133
Figure 45: Status of national maritime policy in Pacific states (2018)	137
Figure 46: Number of Pacific states with shipping emissions provisions in national climate change policies and strategies.....	143
Figure 47: Sectoral GHG emissions of Pacific states.....	147
Figure 48: Number of Pacific states with domestic shipping emission provisions in their national energy policies.....	149
Figure 49: Rate of attendance of various agencies from MEPC 61–70.....	160
Figure 50: Number of staff in Pacific maritime administrations (as at 31 December 2018)	163

List of tables

Table 1: Top three economic sectors of Pacific states.....	40
Table 2: Shipping CO ₂ emissions compared to global CO ₂ emissions.....	52
Table 3: Low carbon shipping projects undertaken in the Pacific region in mid-1980s.....	54
Table 4: Key analysis details for Chapter 5.....	69
Table 5: Key analysis details for Chapter 6.....	71
Table 6: Key analysis details for Chapter 7.....	72
Table 7: Key GHG emissions-related instruments adopted by IMO from 1990–2018.....	83
Table 8: Trends in MEPC submissions by Pacific states on GHG emissions from ships from 2011 to April 2018 (MEPC 61–72)	98
Table 9: List of Pacific sponsored submissions on shipping emissions tabled at MEPC from 2011 to 2018.....	100
Table 10: Eight of the top ten flag states that supported the EU-Pacific paper (MEPC 69/7/2) at MEPC 69 in 2016...	115
Table 11: Representation of Pacific states at MEPC (61–70) by category.....	122
Table 12: Provisions for shipping emissions and prioritisation of the maritime sector in the national development plans of Pacific states.....	135
Table 13: Provisions for addressing shipping emissions in the national transport sector plans of Niue, PNG, Samoa and Solomon Islands.....	139
Table 14: Provisions for shipping emissions in the climate change policies of Pacific states.....	141
Table 15: Provisions for shipping emissions in the energy policies of Pacific states.....	150
Table 16: Number of Pacific states with shipping emissions provisions in relevant national policies and strategies...	153
Table 17: Open registries in the Pacific region.....	155
Table 18: Status of MARPOL Convention ratification in Pacific states (2018)	162
Table 19: Key regional inter-governmental organisations in the Pacific.....	171
Table 20: Provisions for shipping emissions in key regional policy frameworks.....	184
Table 21: Provisions for shipping emissions in key regional communiqués and declarations.....	187
Table 22: Differences in governance structure for domestic and international shipping emissions regimes in the Pacific	190

Abbreviations

ADB	Asian Development Bank
ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
AILAC	Independent Alliance of the Latin America and the Caribbean
AOSIS	Alliance of Small Island States
AusAID	Australian Aid
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action
BAU	business-as-usual
BIMCO	Baltic and International Maritime Council
BRICS	Brazil, Russia, India, China and South Africa
CANCC	Coalition of Atoll Nations on Climate Change
CBDR	Common But Differentiated Responsibility
CDPA	Cartagena Dialogue for Progressive Action
CEBR	Centre for Economic and Business
CEPA	Comprehensive Economic Partnership Agreement
CfRN	Coalition of Rainforest Nations
CIA	Central Intelligence Centre
CLIA	Cruise Lines International Association
CO ₂	Carbon dioxide
COP	Conference of the Parties
CPSC	Central Pacific Shipping Commission
CROP	Council of Regional Organisations in the Pacific
CSC	Chamber of Shipping
CVF	Climate Vulnerable Forum
DFAT	Department of Foreign Affairs and Trade (Australia)
EC	European Commission
EEDI	Energy Efficiency Design Index
EIG	Environmental Integrity Group
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FATS	Framework for Action on Transport Services 2011–2020
FFA	Pacific Islands Forum Fisheries Agency
FOC	flag of convenience
FPCL	Fiji Ports Corporation Limited
FSM	Federated States of Micronesia
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	greenhouse gas
GVA	gross value added
HAC	Coalition of High Ambition
IAPH	International Association of Ports and Harbors
ICAO	International Civil Aviation Organisation
ICCT	International Council on Clean Transportation
ICHCA	International Cargo Handling Coordination Association
ICS	International Chamber of Shipping
IEA	International Energy Agency
IMO	International Maritime Organization
NDCs	Nationally Determined Contributions
INTERCARGO	International Association of Dry Cargo Shipowners
INTERTANKO	International Association of Independent Tanker Owners
IPCC	Inter-governmental Panel for Climate Change
IPTA	International Parcel Tankers Association
IRI	International Registries Incorporation
ISWG-GHG	Intersessional Working Group on Reduction of GHG Emissions from Ships
ITC	International Trade Centre
ITF	International Transport Workers' Federation
JNAP	Joint National Action Plan
KSSL	Kiribati Shipping Services Limited
LDCs	Least Developed Countries
LNG	Liquid Nitrogen Gas
LTS	Long Term Strategy
ODA	Official Development Assistance

ODS	ozone depleting substances
OECD	Organisation for Economic Co-operation and Development
MARAD	The United States Maritime Administration
MARPOL	The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
MBMs	market-based measures
MCST	Micronesian Centre for Sustainable Transport
MDGs	Melanesian Development Goals
MEPC	Marine Environment Protection Committee
MOU	Memorandum of Understanding
MRV	Melanesian Spearhead Group
MSAF	Maritime Safety Authority of Fiji
MTCC	Maritime Technology Cooperation Centre
MTDS	Medium Term Development Strategy
NDCs	Nationally Determined Contributions
NMDP	National Maritime Development Plan
NMFT	No More Favourable Treatment
NMSA	National Maritime Safety Authority of Papua New Guinea
NO _x	Nitrogen oxides
NZ	New Zealand Dollars
PASO	Pacific Aviation Safety Office
PFL	Pacific Forum Line
PhD	Doctor of Philosophy
PIANGO	Pacific Islands Association of Non-Government Organisation
PICL	Pacific Islands Conference of Leaders
PICs	Pacific Island countries
PICTs	Pacific Island countries and territories
PIDF	Pacific Islands Development Forum
PIDP	Pacific Islands Development Program
PIF	Pacific Islands Forum
PIFS	Pacific Islands Forum Secretariat
PIPSO	Pacific Islands Private Sector Organisation
PNA	Parties to the Nauru Agreement
PNG	Papua New Guinea
PPA	Pacific Power Association
PSIDS	Pacific Small Island Developing States
PSSA	Particularly Sensitive Sea Area
SBSTA	Subsidiary Body of Scientific and Technological Advice
SCF	Save the Children Fund
SEEMP	Ship Energy Efficiency Management Plan
SDGs	Sustainable Development Goals
SHAC	High Ambition Coalition for Shipping
SIDS	Small Island Developing States
SIS	Small Island States
SO _x	Sulphur oxides
SPC	Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SPTO	South Pacific Tourism Organisation
TLCSeaT	Transitioning to Low Carbon Sea Transport
TMTI	Tuvalu Maritime Training Institute
UCL	University College London
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference for Trade and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	United States Dollars
USP	The University of the South Pacific
VMR	Vanuatu Maritime Regulator
VOC	volatile organic compounds
WSC	World Shipping Council
WTO	World Trade Organization

Chapter 1: Introduction

Regulation of GHG emissions from the international shipping sector has been a much debated and rather contentious issue at global negotiation forums. Two decades of unsuccessful negotiations allowed the international shipping sector to function freely without any obligation to reduce its contribution to global GHG emissions. In 2012, the international shipping sector accounted for approximately 2.3% of the global GHG emissions, a figure predicted to increase by 50% to 250% by 2050 under ‘business as usual’ (BAU) conditions (Smith et al., 2014; Smith et al., 2015). The United Nations (UN) body mandated for setting maritime standards and regulations, IMO, received considerable criticism for its slow response to addressing the matter in the past (Zhang, 2016; Bows-Larkin, 2015a; Wilensky, 2014; Chrysostomou & Vågslid, 2012; Strong, 2011; and Okur, 2011).

Exclusion of international shipping emissions from the 1997 Kyoto Protocol, and then the 2015 Paris Agreement, raised further concerns on the difficulties faced by the United Nations Climate Change Conference (UNFCCC) in allocating an emission-reduction target for this complex sector under its overarching climate change regime (Shi, 2016). If the international shipping sector does not reduce its share of GHG emissions in proportion to other sectors, experts warn that it may not be possible to achieve the Paris Agreement commitments with regards to limiting the rise in global temperature to well below 2°C while striving for no more than 1.5°C (Goundar et.al, 2017; Bows-Larkin, 2015b; Smith et al., 2015).

Prior to 2015, the possibility of IMO setting a cap on international shipping emissions seemed bleak. But consistent lobbying by many countries, including some Pacific states, led IMO to set an emission-reduction target for the international shipping sector in April 2018. This was officiated through the adoption of the *Initial IMO Comprehensive Strategy on Reduction of Greenhouse Gas Emissions from Ships* (IMO, 2018a). The strategy expects international shipping to reduce the total annual GHG emissions by at least 50% by 2050 (compared to 2008 baseline), while pursuing efforts to phase them out completely in this century. The implementation schedules

for short, medium and long-term measures are yet to be finalised, but it is envisaged that some short-term measures could come into force prior to 2023, the year when the initial IMO GHG strategy will be revised and adopted as the final version. The period 2018–2023 will witness another crucial phase of GHG negotiations as IMO member states seek consensus on implementation timelines and contents of the final strategy.

Where do Pacific states stand in this important decarbonisation debate, and how effective is their role in decarbonising the international shipping sector? Is the Pacific standing as a single voice or exhibiting signs of fragmentation in response to reducing GHG emissions from international shipping? Is the national and regional policy landscape adequately placed to support Pacific states in transitioning to a net zero emissions future in shipping? An understanding of these issues is vital to advancing further policy work in this area. While the Pacific's role in overall climate change negotiations at UNFCCC is well documented (Goulding, 2016; Carter, 2016), not much is known about their involvement in international shipping emissions forums at IMO or their efforts in decarbonisation of the international shipping sector. The gaps in information and literature in this area are quite pronounced. Holland et al. (2014) also agree that the relationship between global shipping emissions and Pacific states' sea transport scenarios remains an unexplored territory.

Pacific states are low emitters, responsible for ~0.03% of global emissions of carbon dioxide (CO₂) from fuel combustion (IPCC, 2001). But their extreme vulnerability to climate change builds a strong case for them to drive a hard bargain at international negotiations in favour of high ambition for emission-reduction. The Pacific's fight against climate change needs to keep momentum as the current impacts on the region continue to magnify with extreme economic and social consequences. High-strength Category 5 cyclones have been causing considerable damage in some of the Pacific states in recent years. In 2015, Cyclone Pam, affected more than 70% of the population in Vanuatu (Oxfam, 2016). A year later Cyclone Winston, the strongest Category 5 cyclone ever recorded in the southern hemisphere, struck Fiji and caused damages worth one fifth of the nation's Gross Domestic Product (GDP). Due to sea-level rise and coastal erosion, five reef islands in the Solomon Islands have disappeared completely, while six more are severely eroded (Albert, 2016). Tuvalu and Kiribati, labelled as 'sinking islands', face a much graver threat of becoming completely

uninhabitable within a generation due to sea level rise (Smith, 2013). Sea levels in Kiribati are reportedly rising at about 2.9 mm per year, significantly above the observed global average of 1–2 mm per year (ADB¹, 2019). Against this backdrop, it is crucial that Pacific states step into strong leadership roles to negotiate high ambition climate deals with the top emitters.

Besides their climate change obligations and the desire to fill the role of ‘good global citizens’ (Holland et al. 2014), Pacific states have additional reasons for supporting decarbonisation of the international shipping sector, such as their high dependency on imported fossil fuels and flag state responsibility. The transport sector (land, air, and maritime) utilises at least 70% of imported fossil fuels in some Pacific states (Newell et al., 2016). In most instances, land transport is the biggest consumer of fossil fuels within the overall transport sector but for some Pacific states, such as Tuvalu, maritime takes a greater proportion (Nuttall, 2014). In 2012, the maritime transport sector in Tuvalu utilised around 64% of total imported transport fuel. This high dependency is attributed to servicing of numerous domestic shipping routes, and Tuvalu engaging its own international ships for regular trade voyages to Fiji (SPC, 2014a).

Pacific states that allow foreign ships to fly their flags under the system of open registry, or flag of convenience (FOC), have even greater accountability towards reducing emissions from international ships. According to the United Nations Conference for Trade and Development (2018a), over 70% of commercial fleet are registered under a flag that is different from the country of ownership. The developing countries account for around 76% of world fleet tonnage. Panama, the Marshall Islands and Liberia, the top three registries, are included in this figure among many other developing countries. Other Pacific states that operate open registries include Cook Islands, Kiribati, Niue, Palau, Tuvalu, and Vanuatu. They are much smaller operations compared to the Marshall Islands, and are listed below top 25 registries of the world. With 3.63% of the world fleet flying its flag in 2018, the Marshall Islands registry ranked third in terms of deadweight tonnage, and second value-wise (UNCTAD, 2018a). Apart from the Cook Islands, the open registry businesses of other Pacific states are managed by designated offshore companies. Due to the nature of operations,

¹ Asian Development Bank

the relationship between Pacific flag states and the registry management companies is not well understood. The lines are even more blurry when it comes to understanding the involvement of registry management companies in international shipping emissions negotiations.

In order to gain a comprehensive insight into the role of Pacific states in decarbonisation of the international shipping sector and the support mechanisms they require to execute their responsibilities, it is crucial to study the case from international, regional and national angles. This Doctor of Philosophy (PhD) study attempts to take a similar three-dimensional approach to research. The international segment focuses primarily on the GHG emissions negotiations at IMO, with some consideration for UNFCCC negotiations. The regional segment brings attention to the nature of support Pacific states receive from relevant regional organisations, namely the Pacific Islands Development Forum (PIDF), The University of the South Pacific (USP), Pacific Islands Forum Secretariat (PIFS), Pacific Community (SPC), and the Secretariat of the Pacific Regional Environment Programme (SPREP). The national segment examines national developments plans, relevant sectoral policies and institutional processes of 14 Pacific states in order to assess the readiness of the national policy landscape to support a transition to net zero future in shipping. The study is expected to result in policy recommendations aimed at strengthening the role and efforts of Pacific states in decarbonisation of the international shipping sector.

1.1 Study objectives

The overall aim of this study is to undertake an inquiry into the role of Pacific states in decarbonisation of the international shipping sector and explore policy options for strengthening their efforts in transitioning to a net zero future in shipping.

The objectives of the study are:

- (i) To analyse the role of Pacific states in the international shipping emissions negotiations at IMO and UNFCCC, and the level of influence they have on the outcomes;
- (ii) To assess the readiness of the national policy landscape in supporting Pacific states to transition to a net zero future in shipping;

- (iii) To analyse the role of regional organisations in supporting the efforts of Pacific states to decarbonise the international shipping sector; and
- (iv) To recommend policy options that would assist in strengthening the role and efforts of Pacific states in decarbonisation of the international shipping sector.

1.2 Significance

Decarbonisation of the international shipping sector is a relatively new policy area for Pacific states. Even though it falls under the broad agenda of climate change, global agencies have not treated it with the same level of urgency as domestic shipping emissions. The 1997 Kyoto Protocol and the 2015 Paris Agreement are proof of this, as these instruments incorporated domestic shipping emissions only, leaving the international aspect unresolved for many years. The 1997 Kyoto Protocol mandates IMO to work with countries to reduce GHG emissions from international shipping. However, it wasn't until April 2018 that IMO finally managed to set a target for reducing emissions in the international shipping sector. There is currently no published literature² that captures the role of Pacific states in the international shipping emissions negotiations or provides some indication of related regional and national support mechanisms. This study therefore intends to close an important gap in this body of knowledge and contribute to overall global climate change research works.

Moreover, the study will bring attention to the efforts required of relevant regional and national agencies to strengthen the Pacific's negotiation power at global emissions forums. Pacific states that are already engaged in the IMO shipping emissions negotiations, will benefit from the analysis of issues relating to representation, submissions, positions, support from other IMO member states and the shipping industry, and regional solidarity. Furthermore, Pacific states will be better informed of the gaps in their national policies and processes, including institutional arrangements for managing associated responsibilities. The study will also contribute to an improved understanding of the links between relevant Pacific flag states and registry management companies and any impact that current arrangements may have on IMO

² Further details contained in the literature review section

negotiations. It is crucial to look at what impacts these arrangements have had in the past, and what possible future arrangements could be, and what impact they may have. The study also holds significance for Pacific states that are not engaged in IMO negotiations or any form of decarbonisation work in the international shipping sector. An accurate analysis of the situation may provide the impetus and justification for these nations to increase their decarbonisation efforts and join other fellow Pacific states in what has been a long-standing climate change battle. For regional organisations, the study will increase awareness of the gaps in current regional implementation efforts and provide policy guidance on how Pacific governments can be better supported in the transition to a net zero emissions future in shipping.

In a wider context, the outcomes of this study will contribute to the overall advocacy and research work linked to the global climate change agenda. Climate change is an important problem to respond to and of great significance to Pacific states, given that they are highly vulnerable states, already experiencing devastating impacts and limited in their capacity to address mitigation and adaptation challenges. Pacific states also have an important role to play as ocean states that are highly dependent on sea transport for trade, mobility, livelihood and growth. This study will bring attention to how the Pacific states have been balancing their responsibilities towards economic growth, sustainable development and climate change.

1.3 Introduction to methodology

Based on the Pragmatic Research Philosophy, this study adopted a mixed methods research approach, utilising a combination of qualitative and quantitative elements. The study involved extensive desktop research and gathering of data and information from a wide range of sources, such as journals, published reports and papers, newspapers, relevant organisations' websites, and semi-structured interviews. The 14 Pacific states under study included Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Due to funding limitations, field visits were possible for Cook Islands and Kiribati only, and attending a regional transport ministerial meeting in Tonga in 2017. In the case of other countries and regional organisations, interviews with relevant officials were conducted on the sides

of regional or international meetings, or over the phone. The researcher also participated in the Paris Agreement negotiations in 2015, as well as in the IMO GHG emissions negotiations from 2016–2017, which provided first-hand experience of working closely with a number of Pacific state governments, regional organisations and other IMO member states in the negotiations. Chapter 4 contains the full methodology.

1.4 Structure of thesis

This thesis is organised into eight chapters, of which three are stand-alone or key analysis chapters. The content of each chapter is outlined below:

Chapter 1: Introduction

This chapter introduces the context of the study and familiarises the reader to the study's aim and objectives, significance, an introduction to methodology, structure of thesis and some key definitions.

Chapter 2: Literature review

This chapter contains a comprehensive literature review and a set of research questions to guide the study.

Chapter 3: Shipping in climate change, development and the Pacific context

This chapter sets the scene for this PhD study, providing insight into the role of international shipping within the broader climate change and sustainable development context, and its linkage with world trade and economic growth. Highlighting the importance of shipping to Pacific states, this chapter provides an account of the value that the overall maritime sector adds to these minute economies. Understanding these dynamics is important for a number of reasons. It may help explain why some nations hesitate to support the global efforts to decarbonise the international shipping sector, despite overwhelming scientific evidence. It may also help rationalise why Pacific states should support reduction of GHG emissions from the international shipping sector while being fully aware of the negative consequences on trade and economy.

Chapter 4: Research methodology

This chapter contains a detailed account of the methodology of the study, including the research framework and design, data collection analysis methods, verification and validity, scope and limitations.

Chapter 5: The role of Pacific states in international shipping emissions negotiations

This chapter analyses the role of Pacific states in the international shipping emissions negotiations and the impact they have on the outcomes of the negotiations. The focus is primarily on the IMO Marine Environment Protection Committee (MEPC) negotiations that took place during the period 2015 to 2018. The UNFCCC shipping emissions negotiations are also examined broadly. In order to assess the type and magnitude of the role Pacific states assume at IMO GHG emissions negotiations, the following factors are considered in this chapter: representation of Pacific states in MEPC sessions; submissions made by Pacific states at MEPC; response of Pacific states to MEPC GHG submissions; solidarity of Pacific states during GHG emissions negotiations; support from other IMO member states and the shipping industry for submissions involving Pacific states; and the overall impact of Pacific's intervention on MEPC negotiations and decisions. The chapter concludes with identification of factors that affect the negotiating power of Pacific states in MEPC GHG negotiations, and some reflections on the research findings.

Chapter 6: Is the Pacific ready for transiting to a net-zero future in shipping?

This chapter assesses the readiness of the national policy landscape in supporting Pacific states to transit to a net zero future in shipping. A gap analysis was conducted of the national development plans and relevant sectoral policies (transport, maritime, energy and climate change) of 14 Pacific states to identify provisions for maritime sector goals and shipping emissions. The intention was to ascertain the extent to which low carbon shipping is prioritised in the development priorities of the Pacific states. The domestic shipping sector was included in the analysis for comparative purposes, and to gain a holistic view of the policy issues affecting the overall shipping sector. This chapter also examined the key factors that Pacific Island governments need to address or manage as IMO advances towards finalising a global policy on decarbonisation of the international shipping sector by the year 2023. The factors

include: open registry dynamics, inter-agency cooperation and coordination, maritime legislation, resources constraints and impact on trade and fuel consumption data.

Chapter 7: International shipping emissions and the gaps in Pacific regional architecture

This chapter analyses the role of regional organisations in supporting the efforts of Pacific states to decarbonise the international shipping sector. The chapter begins with an overview of the origins and significance of key regional organisations. This is followed by an assessment of the support provided by regional organisations to enable effective participation of Pacific states in international shipping emissions negotiations. The assessment helps to identify gaps in the regional coordination process. In addition, a review is undertaken of relevant regional policies and communiques to assess provisions for advancing international shipping emissions work. The chapter also assesses the feasibility of developing a regional strategy for decarbonisation of the international shipping sector.

Chapter 8: Recommendations and Conclusion

This is the final chapter of the thesis, containing the conclusion and recommendations. The chapter outlines the extent to which the research questions have been answered by the study. Also included are issues of interest, limitations of the study and the potential for further research on the subject.

1.5 Key definitions

Flag state: “a State whose flag a ship flies and is entitled to fly” (UNCTAD, 1986). Another definition is, “the State in whose territory a ship is registered” (UN, 1985).

Flag of convenience: “the business practice of registering a merchant ship in a sovereign state different from that of the ship owner's and flying that state's civil ensign on the ship. Ships are registered under flags of convenience to reduce operating costs or avoid the regulations of the owner's country” (PanamaShipRegistry.net., 2016.). This term is often used interchangeably with open registry.

Maritime instrument: a collective term used to refer to conventions, codes, regulations, recommendations, legislation and policies pertaining to the maritime sector.

National maritime administration: “any State authority or agency which is established by the State of registration in accordance with its legislation and which, pursuant to that legislation, is responsible, inter alia, for the implementation of international agreements concerning maritime transport and for the application of rules and standards concerning ships under its jurisdiction and control” (UNCTAD, 1986).

Open registry: A closely related term to flag of convenience, used to describe “an organization that will register ships owned by foreign entities. A ship operates under the laws of its flag state, and the laws of such state are used if the ship is involved in an admiralty case.” (PanamaShipRegistry.net. 2016.). The United Nations and IMO Member States prefer the term ‘open register’ over FOC to describe “those flag states which permit the registration of ships that may be beneficially owned in another country.” (ICS³, 2015).

Registry management companies: refers to companies that are authorised by respective flag states to manage their open registries. Most of these companies operate out of foreign locations. For example, the International Registries Incorporation (IRI) provides support to the Marshall Islands open registry, operating out of the United States (US).

³ International Chamber of Shipping

Chapter 2: Literature review

Literature pertaining to the role of Pacific states in decarbonising the international shipping sector is thin. Holland et al. (2014) provides literature that is conceptually closest to this PhD study. The paper examines the relationship between the global discourse on reduction of emissions from international shipping and the need for more sustainable Pacific Island sea transport services. In essence, Holland et al. (2014) gives a balanced coverage of domestic and international shipping emissions issues, while establishing links to climate change. The paper identifies five policy areas that link Pacific sea transport and the current global discourse on emissions. These include: the role of Pacific states as good global citizens; reducing fossil fuel dependency; the need to attract alternative sources of financing for sea transport; need for more appropriate domestic shipping; and emissions from foreign ships transiting Pacific waters. The paper also provides a brief update on IMO shipping emissions negotiations, but it does not make any reference to the role of Pacific states in these sessions or how this could be further strengthened.

Goundar et al. (2017) examines the barriers faced by Pacific states in transiting to a low carbon shipping environment and is the first paper to analyse the NDCs of 14 Pacific states in order to ascertain commitments towards reducing shipping emissions. The paper also examines related climate finance and regional support mechanisms. Even though Goundar et al. (2017) focuses primarily on domestic shipping emissions, some synergies exist between the paper and this PhD study. This PhD study also directs attention to policy and financing barriers, and the gaps in regional support mechanisms. Goundar et al. (2017) alludes to the silo nature of the major regional actors in progressing shipping emission-reduction efforts. It further concludes that a radical change in the region's policy landscape is needed to set the course for low carbon sea transport in the Pacific. The regional policies and declarations that Goundar et al. (2017) refers to also fall under the scope of this PhD study. It is noted that Prasad et al. (2013), Nuttall et al. (2014a), and Newell et al. (2016) have all identified financing and policy as dominant transition barriers for low carbon sea transport development in the Pacific.

Prasad et al. (2013) introduces the Sustainable Sea Transport Research Programme at USP, established in 2013 to investigate renewable energy options for powering domestic ships in the Pacific region and improving sustainability of sea transport. The paper highlights that, despite growing interest in alternative energy technologies at the global level, Pacific states have not seriously explored the use of renewable energy powered boats for small scale domestic needs. Building on the work of the Sustainable Sea Transport Research Programme at USP, Newell et al. (2016) reports on progress with developing a regional research and education strategy for Pacific states and communities that wish to transit to a low carbon sea transport future. The paper justifies the need for such a strategy based on the lack of visibility of low carbon shipping in regional development, including marginal commitments from regional and development agencies. Newell et al. (2016) also briefly mentions the need for reducing emissions from the international shipping sector, and links this to the Majuro Declaration for Climate Leadership, which was endorsed by Pacific leaders in 2013 to instigate emission reduction from all sectors.

Wilensky (2014) and Kutner & Wilensky (2014) provide analysis of the overall legal authority of Pacific flag states to regulate GHG emissions from international shipping under international law. Both papers are legal-centric, with a primary focus on open registries, but only Wilensky (2014) brings specific attention to the Pacific case. Kutner & Wilensky (2014) examine the overarching issue of open and franchised registries but the overall conclusion is similar to that of Wilensky (2014). Both papers confirm that flag states have principal authority over ships in their open registries, including the power to regulate GHG emissions of their registered ships, regardless of whether a country operates an open registry or a franchised one. Wilensky (2014) and Kutner & Wilensky (2014) also conclude that increasing regulatory measures on open registries could have an adverse impact on them. The papers do not mention the linkage between IMO GHG negotiations and open registry representation of Pacific states. The findings of the two papers are based purely on desktop research and legal analysis of flag state responsibilities under international law, and as such do not contain the views of Pacific Island governments on the matter.

One of the key options explored by Wilensky (2014) is the possibility of states working together outside of IMO to establish a regional agreement to reduce emissions from

the international shipping sector. The paper further suggests that, in order to maximize the reach of a regional agreement and strengthen enforcement capabilities, Pacific states should consider forming partnerships with countries that have active ports or a large fleet registered under its flag. Kutner & Wilensky (2014) also agree with the regional agreement concept and consider port state control to be an ideal enforcement mechanism for implementing the regional agreement. These policy recommendations are aimed at addressing the problem of regulating international shipping emissions at a regional level and through bilateral partnerships of Pacific states with other countries. But it does not address how the role of Pacific states could be strengthened within the IMO negotiation context, where regulations are developed and adopted through consensus of member states. Establishing a regional agreement outside of the IMO may work but would need substantial resources and assistance of regional agencies to coordinate this effort in the Pacific.

Wilensky (2014) also undertakes a case study of the European Union's (EU) actions to control emissions from shipping and aviation within its region. The EU's Monitoring, Reporting and Verification (MRV) regulation for carbon dioxide emissions from maritime transport was developed in the wake of the slow pace of IMO negotiations. Wilensky (2014) suggests that Pacific states may consider developing arrangements similar to the EU's MRV while waiting for IMO to adopt a global-level regulation. The EU's MRV scheme takes a monitoring and evaluation approach to controlling emissions, rather than imposing a mandatory cap on GHG emissions from ships. Further analysis is needed to assess whether the EU's MRV system is appropriate for the Pacific states, given the huge differences in emission levels and shipping scenarios between the two regions. In addition, the resource implications of implementing this type of scheme in the Pacific needs to be assessed. There is also a need to identify a suitable regional or international agency that would fund and manage this work on behalf of Pacific states.

Kutner & Wilensky (2014) and Wilensky (2014) touch briefly on the Marshall Islands open registry but do not mention other open registries in the Pacific. Wilensky (2014) concludes that the Marshall Islands has the capacity to regulate a large number of foreign vessels but "may be limited in its practical capacity to effectively impose regulations since ships may choose to leave the registry if onerous regulations are put

in place”. The paper does not elaborate further on the nature of limitations that the Marshall Islands would face in enforcing GHG regulations.

A study undertaken by SPC in 2009 provided the first comprehensive literature on open registries in the Pacific Islands region (SPC, 2009a). The study identified five Pacific states that were engaged in open registry business during that period, namely, the Cook Islands, Kiribati, the Marshall Islands, Tuvalu, and Vanuatu. The study also noted the closure of the Tongan open registry in 2002, and highlighted the intention of Palau, Nauru and the Solomon Islands to establish open registries. In light of the negative impacts associated with open registries, such as maritime security breaches, unscrupulous practices and loss to national repute, the SPC study recommended that Pacific Island governments need to disengage completely from these ventures. Although the study did not explore the linkage between Pacific open registries and the reduction of international shipping emissions, it remains the only regional-based study that provides detailed information on the Pacific open registries.

Kutner & Wilensky (2014) and Wilensky (2014) highlight the long-standing controversial issue of identifying the ‘genuine link’ between vessel owners and countries hosting open registry, as highlighted by several other papers (Herman, 1978; Behnam & Faust, 2003; Hosanee, 2009; SPC, 2009a). Even though the United Nations Law of the Sea Convention (UNCLOS) calls for a genuine link between the ship and its flag state, Wilensky (2014) claims that this requirement has little meaning in practice. Herman (1978), while providing a detailed legal analysis of the genuine link issue, states that the problem of FOC registries and genuine link is less of an international issue and more about the lack of robust rules to deter substandard shipping. Hosanee (2009) claims that the United Nations Convention on the Conditions for Registration of Ships (1986), developed by the United Nations Conference on Trade and Development (UNCTAD), has not entered into force because of issues relating to the ‘genuine link’ discussion (Hosanee, 2009). These papers provide an understanding of the complex environment under which Pacific states operate open registries, and the difficulties that could arise when registries are held accountable for reducing emissions from their flagged ships.

A number of studies and reports have been published on the impact open registries have on labour (seafarers), maritime safety, maritime security, environment and countries' reputation (Goldie, 1991; OECD⁴, 2001; SPC, 2009; Hosanee, 2009; Gregory, 2012). Goldie (1991) reviewed the problem of FOC in terms of the growing consciousness of the need for international maritime environmental regulations. It is generally agreed that FOC flag states disregard their responsibilities because they are not sufficiently exposed to real liabilities (Goldie, 1991; OECD, 2001) and in the process undermine regulatory attempts to address the issues (Goldie, 1991). An analysis done by OECD (2001) identified the direct cost of substandard shipping involving the *Erika* incident, and revealed the liabilities and costs to all parties concerned. The study noted that no liabilities were imposed on the flag state. This boosts the confidence of flag states to continue their open registry operation.

On the issue of maritime security and disrepute to nations, SPC (2009) provided an account of the experiences of the Tongan open registry in 2002, where foreign ships flying its flag were apprehended for smuggling illegal weapons in the Middle East. A case of the Tuvalu open registry from 2003 was also shared, where the owners of the vessel *Pong Su* (reflagged from North Korea to Tuvalu) were caught smuggling drugs into Australia. Gregory (2012) examined the impact of open registries on labour and concludes that the seafarers working on open registry ships were at a higher risk of giving up their rights to bargain collectively and being subjected to substandard pay and working conditions. Evidently, a wide range of papers have captured various impacts of open registries, but there is currently no literature on the impact open registries have on the negotiation power of Pacific flag states in international shipping emissions negotiations at IMO.

At the global level, some research has been done on a number of policy issues relating to international shipping emissions, such as: shipping and climate change policies (Ahman, 2008; Bows-Larkins, 2015; Bows-Larkins et al., 2016); environmental impact of emissions (Endresen et al., 2003); market-based measures and global emissions trading system (Zetterberg, 2008; Stochniol, 2012; Davidson & Faber, 2012; Rahim et al., 2016; Shi, 2016); Common But Differentiated Responsibilities –

⁴ OECD – Organisation for Economic Co-operation and Development

CBDR (Okur, 2011; Kopela, 2014); IMO's efforts in regulating GHG emissions from ships (Bows-Larkins et al., 2015; Bodansky, 2016; Zang, 2016); and international maritime transport under the UNFCCC process (Vladu and Hackmann, 2012). Bows-Larkins et al. (2015) bring attention to the opportunities available for emissions cuts in the international shipping sector and how the complexity of the shipping system places barriers in advancing efforts.

In terms of literature that covers IMO and UNFCCC negotiations, Chrysostomou & Vågslid (2012), Bows-Larkin (2015) and Zhang (2016) provide analyses of IMO's efforts and challenges to address reduction of GHG emissions from ships. Vladu & Hackmann (2012), Anderson & Bows (2012), Goulding (2016) and Carter (2016) examine the UNFCCC process. Bodansky's (2016) paper includes a comparative analysis of IMO and UNFCCC processes. With the exception of Goulding (2016) and Carter (2016), none of the papers cover Pacific states but nevertheless provide adequate background information on the development and status of negotiations at the two UN agencies.

Even though Goulding (2016) and Carter (2016) do not focus specifically on international shipping emissions negotiations, they provide literature of some relevance to this PhD study. Both papers examine the support mechanisms aiding Pacific's response and interventions at UNFCCC climate change negotiations. Goulding (2016) brings attention to the role of regional agencies, while Carter (2016) looks at various coalition blocs. Goulding (2016) examines how each Pacific state coordinates its submissions and responses at the UNFCCC Conference of Parties (COP) sessions with the nations in the Pacific region or with a wider alliance group, such as the Alliance of Small Island States (AOSIS). The paper finds that, over the years, Pacific states have been increasingly inclined towards making individual submissions and interventions at COP sessions. The paper also assesses the efforts of regional organisations, namely SPREP, PIDF, the Pacific Islands Forum (PIF) and the Melanesian Spearhead Group (MSG), in facilitating a more coordinated Pacific response to climate change at UNFCCC. The paper claims that the interference of Australia and New Zealand in PIF and SPREP affected the implementation efforts of these agencies. While the paper commended the budding efforts of MSG and PIDF, it concluded that there was no means to develop a Pacific position in climate change

negotiations leading up to the Paris climate change conference in 2015. These revelations are useful to this PhD study, which aims to undertake a similar assessment of regional agency efforts but targeting the international shipping emissions area primarily. This PhD study will also include two other regional players in the assessment – SPC and USP.

Carter (2016) takes an in-depth look at the role of coalition blocs in UNFCCC negotiations. The paper also discusses how Pacific states associate and benefit from the blocs at the negotiations. These blocs include G77 and China, Least Developed Countries (LDCs), AOSIS, Coalition of Rainforest Nations (CfRN), Climate Vulnerable Forum (CVF) and the Cartagena Dialogue for Progressive Action (CDPA). The paper notes the emergence of two new coalition blocs in the past five years – Pacific Small Island Developing States (PSIDS) and the Coalition of Atoll Nations on Climate Change (CANCC). The paper concludes that, although the coalition blocs have empowered Pacific states and given them a louder voice at the negotiations, they have not delivered on Pacific-specific needs. Although PSIDS is still young, its formation is evidence of a new Pacific diplomacy “driven in this case by the urgency of the issue in the Pacific Islands – where it is one of survival – and by the wide divergence between climate change positions of the forum island countries and those of Australia and New Zealand” (Carter, 2016). Golding (2016) shares similar views on the positions of New Zealand and Australia. It will be interesting to find out, through this PhD study, how the position of Australia and New Zealand compare with that of Pacific states in international shipping emissions negotiations.

Vladu & Hackmann (2012) provide comprehensive coverage of international shipping emissions negotiations at UNFCCC, highlighting lessons learnt from the development of this process and the status of current negotiations. The paper documents how the international maritime emissions negotiations have progressed under the Subsidiary Body for Scientific and Technological Advice (SBSTA) since 1995. The paper gives an analysis of implementation progress against the Kyoto Protocol and the Bali Action Plan. Vladu & Hackmann (2012) link the slow progress at UNFCCC to the inability of member states to reconcile UNFCCC’s CBDR principle with IMO’s non-discriminatory principle. Other researchers in the field (Bodansky, 2016; Zhang, 2016; Chrysostomou & Vågslid, 2012; Faber et al., 2010) share similar views. Vladu &

Hackmann (2012) do not mention the role of Pacific states in international shipping emissions negotiations at UNFCCC.

Bodansky (2016) considers the following three international regimes as relevant to the regulation of emissions from ships: (1) UNFCCC; (2) IMO; and (3) UNCLOS. The paper discusses each regime's strengths and weaknesses, and the blockades to progressing international policies and regulations on reduction of international shipping emissions. A comparative analysis of IMO and UNFCCC reveals the differences in the regimes' principles (CBDR principle versus non-discriminatory principle), decision-making processes and nature of operations. The paper concludes that while IMO has made good progress with the adoption of technical and operations measures, these efforts fall short of what is needed to tackle climate change, and it is unclear when IMO might adopt additional measures, such as market-based mechanisms.

Zhang (2016) places IMO rules, relating to reduction in GHG emissions, into two categories: technical and operational measures, and market-based measures. The paper recognises that mandatory regulations relating to technical and operational measures have been adopted by IMO, irrespective of flag, but regulations pertaining to market-based measures are still in the drafting process and is an issue that has split member states, making consensus difficult. The paper claims that CBDR conflicts severely with the non-discrimination principle, which has long been a traditional and basic principle of IMO regulation, and that a fuller understanding of CBDR will be necessary in order to find a reasonable and feasible way to reconcile these two principles.

Anderson & Bows (2012) explore the implications of the highly controversial Copenhagen Accord (and Cancun Agreement) commitments for the shipping sector and conclude that nothing short of an immediate 'Scharnow turn' is necessary if the industry is to negate wider efforts to hold the increase in global temperature below 2°C. The analysis provides an historical record of UNFCCC agreements and sets the scene for analysis of the UNFCCC agreement under discussion during that period, ie. the Paris Agreement. The paper also makes reference to the implications of deleting international shipping emissions wording from the Paris Agreement.

Bows-Larkin (2015) goes a step further than Zhang (2016), Bodansky (2016) and Chrysostomou & Vågslid (2012) to provide a comparison of IMO's as well as the International Civil Aviation Organization's (ICAO) efforts to reduce GHG emissions. The paper reveals that, while IMO has set no metric targets for reductions, ICAO has already quantified a 2% annual fuel efficiency improvement until 2050 for the aviation sector. The paper also highlights that the governance arrangements pertaining to CO₂ pollution produced by international aviation and shipping are different from other sectors because their emissions are released in international airspace and waters. This comparison by Bows-Larkin (2015a) shows how a similar functioning sector, one that is also excluded from the Paris Agreement, is able to break the political barriers to set a fuel efficiency target. While the ICAO analysis falls outside the scope of this PhD study, the Bows-Larkin (2015a) paper provides a template of how to improve the process of negotiations in setting a target for the international transport sector.

Hinchcliff (2012) and Shi (2014) share the shipping industry's views on regulating international shipping emissions. Hinchcliff (2012) presents the collective views of shipowners through the International Chamber of Shipping (ICS), which has a global membership representative of around 90% of world tonnage of ships engaged in international trade. The paper questions the need for a market-based measure, and whether its purpose was to reduce the global GHG emissions produced by the industry or to generate funds for developing nations. If the latter, the paper suggests that a deeper analysis is needed because raising funds from the international shipping sector is likely to increase transport costs and impact trade. Shi (2014) assesses the response from China's shipping industry to this issue and concludes that the interests of the shipping industries from developing countries will need to be taken into account in the development of a regulation on international shipping emissions. This is an important consideration for developing nations and will be discussed in this PhD thesis, together with recent views of the industry and Pacific states on the matter.

Based on observations relating to the state of literature on Pacific states and climate change negotiations, Carter (2016) claims that "the general literature is disappointing in its attention to the Pacific Islands experience." He concludes that, despite Pacific states being highly vulnerable to the impacts of climate change, and seek to maximise their negotiation power through coalitions, their diplomacy in the climate change

regime is the subject of very little empirical research. To a large extent, Carter (2016) and Goulding (2016) have closed this gap with regards to UNFCCC climate change negotiations. By providing insight into the shipping emissions negotiations at UNFCCC, this PhD study will further shorten the literature gaps in Pacific diplomacy and international climate change negotiations.

Research questions

This literature review clearly points to the absence of a single comprehensive study that examines the role and efforts of Pacific states in decarbonising the international shipping sector. The gaps in literature are obvious with regards to the role Pacific states play in the shipping emissions negotiations at IMO and UNFCCC, the level of influence they have on the decisions and the factors that affect their negotiating power. Gaps in literature are also pronounced in relation to what support mechanisms are available at the national and regional level to assist Pacific states in transitioning to a net zero emissions future in shipping. Where literature does exist, it shares minor synergies with one or two areas of this PhD study, such as the barriers to low carbon shipping in the domestic shipping sector, with its focus on analysis of NDC, regional support mechanisms and climate financing (Goundar et al., 2017); the Pacific's overall response to climate change in UNFCCC negotiations (Goulding, 2016; Carter, 2016); the legal authority of Pacific flag states to regulate greenhouse gas emissions from the international shipping sector (Wilensky, 2014; Kutner & Wilensky, 2014) or open registries in the Pacific (SPC, 2009).

In recent years, several researchers have been building a case as to why Pacific states should consider transiting to low carbon shipping futures (Nuttall, 2012; Prasad et al., 2013; Holland et al., 2014; Nuttall et al., 2014a; Nuttall et al., 2014b, Newell et al., 2016; and Goundar et al., 2017). Though these papers predominantly focus on the domestic shipping emissions, they are pioneers in terms of bringing attention to the issues and challenges associated with advancing overall low carbon shipping efforts in the Pacific. Holland et al. (2014) provides literature that is conceptually closest to this PhD study. The paper touches briefly on IMO shipping emissions negotiations, and the role of Pacific states as good global citizens with strong moral obligations to combat climate change. But the paper does not provide any insight into the specific

role of Pacific states in IMO and UNFCCC shipping emissions negotiations, or the support mechanisms available to them at the national, regional and international level.

Against this backdrop, this PhD study seeks answers to the following set of research questions:

- (i) What is the role of Pacific states in the international shipping emissions negotiations at IMO and UNFCCC, and the level of influence they have on the outcomes?
- (ii) What factors affect the negotiating power of Pacific states in IMO shipping emissions negotiations?
- (iii) Is the national policy landscape in Pacific states adequate to support a transition to net zero emissions future in shipping?
- (iv) What level of support is available from regional organisations to assist Pacific states in their efforts to decarbonise the international shipping sector?
- (v) What are the policy options that could assist in strengthening the role and efforts of Pacific states in decarbonising the international shipping sector?

Chapter 3: Shipping in climate change, development and the Pacific context

3.1 Introduction

In recent years, international shipping has entered into an extremely challenging phase in which the industry is pressured to balance its critical role in world trade development with that of climate change mitigation. Ships carry over 80% of global trade by volume and more than 70% of its value (UNCTAD, 2018a). The figures are known to exceed 90% for most countries, developed and developing nations alike. In the case of the United States, more than 90% of cargo is transported by ships, and nearly 40% of the world's oil supply is shipped through the Straits of Hormuz (Meyer, 2010). For Pacific states, shipping facilitates import of over 90% of cargo brought into the region (SPC, 2014a). As international shipping continues to facilitate the demands of global trade and economic growth, it has to brace for a radical change as IMO moves to regulate GHG emissions in this sector.

The international shipping sector is expected to reduce its total annual GHG emissions by at least 50% by 2050, while pursuing efforts to phase them out completely in this century. This emission-reduction target, set in April 2018 by IMO (IMO, 2018a), signals the start of international shipping's commitment towards global climate change efforts. However, one of the key concerns that remain on the table for IMO member states is the impact increased regulation would have on international shipping costs and trade, particularly for SIDS that rely heavily on imports. Some Pacific states have submitted proposals to IMO to consider developing methods for analysing the impacts of potential measures on transport costs and on states (IMO, 2017; Paper MEPC⁵ 71/7/3). This is a crucial period for IMO member states as they prepare to meet their climate change commitments and sustainable development goals, while striving to minimise impacts on trade.

This chapter sets the scene for this PhD study, providing insight into the role of international shipping within the broader climate change and sustainable development

⁵ Marine Environment Protection Committee

context, and its linkages with world trade and economic growth. Highlighting the importance of shipping to Pacific states, this chapter provides an account of the value that the overall maritime sector adds to these minute economies. Understanding these dynamics is important for a number of reasons. It may help explain why some nations hesitate to support the global efforts to decarbonise the international shipping sector, despite overwhelming scientific evidence at hand. It may also help rationalise why Pacific states should support reduction of GHG emissions from the international shipping sector while being fully aware of the potential impacts on trade and economy.

3.2 Shipping and trade

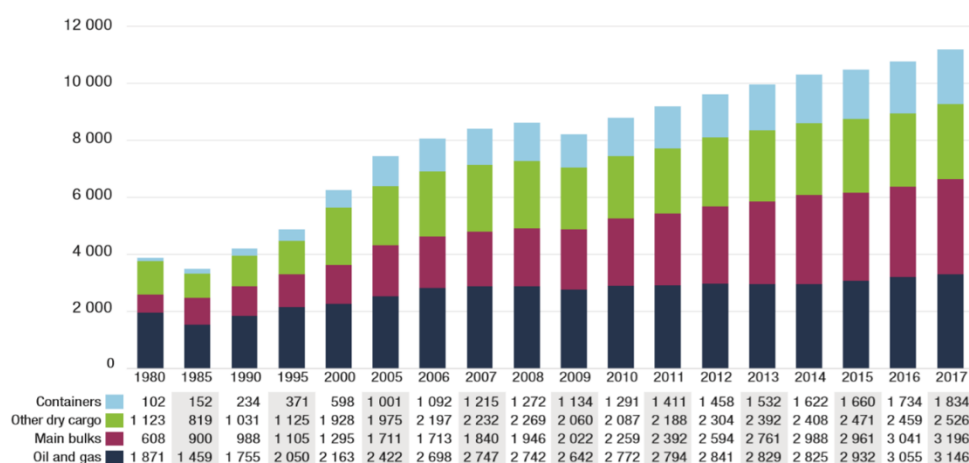
Global context

International shipping plays a dominant role in world trade, transporting over 80% of cargo by volume. In 2017, the world seaborne trade expanded by 4% (from 2016), the fastest growth in five years (UNCTAD, 2018a). In comparison, the world seaborne trade expanded by 2.6% in 2016, up from 1.8% in 2015, but the growth was short of the historical average of 3% recorded over the past four decades (UNCTAD, 2017). The outlook for world seaborne trade for 2018 was positive, with a projected increase of 4%, equivalent to the 2017 growth figure. UNCTAD further forecasts a 3.8% compound annual growth rate between 2018 and 2023, ‘contingent on continued favourable trends in the global economy.’ (UNCTAD, 2018a).

The major downside risks to world seaborne trade are weak global demand and investment, political uncertainties and trading uncertainties in developing economies (UNCTAD, 2016). The global economic and financial crisis during the period 2008–2009 had a negative impact on international seaborne trade. After a downward growth post-2008, the international seaborne trade grew in tandem with the expansion of the global economy from 2010 onwards (see Figure 1). The increased trade tensions between US and China in 2018, as well as those between Canada, Mexico, US and the European Union, carried the risk of disrupting world seaborne trade (UNCTAD, 2018a). In addition, the overall maritime sector of the United Kingdom (UK) was expected to experience a sluggish growth over the next five years due to the

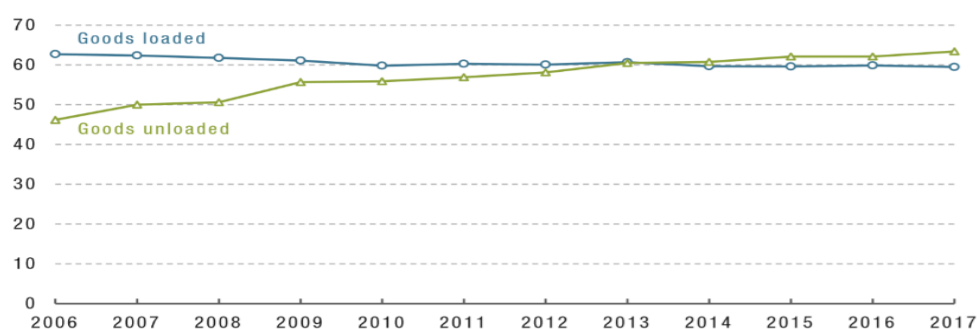
uncertainties associated with the Brexit process (CEBR⁶, 2017). Global energy transitions, structural transformations in economies and shifts in global value chain development patterns also added to the uncertainty in outlook for world seaborne trade (UNCTAD, 2018a).

Figure 2: International seaborne trade, selected years ((millions of tons loaded).
Source: UNCTAD (2018a)



A fundamental shift in world trade has been observed over the last four decades, with developing countries increasingly driving growth in global seaborne trade (Valentine et al., 2013). During the period 2006–2013, the percentage of seaborne goods loaded in developing countries outweighed the offloads (UNCTAD, 2018b). However, from 2013 onwards, the percentage of goods unloaded became higher (see Figure 2). In 2017, developing countries accounted for 60% of goods loaded and 63% of goods unloaded (UNCTAD, 2018a). Developing countries now account for almost two thirds of goods loaded and unloaded worldwide.

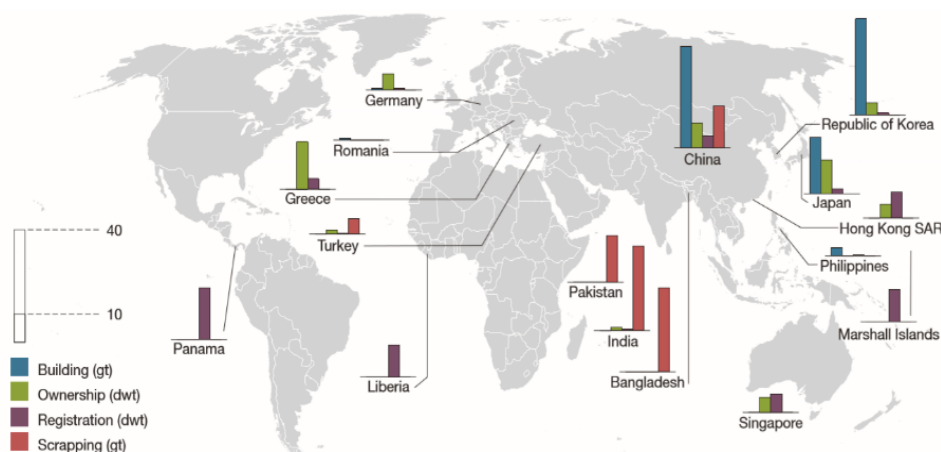
Figure 2: Seaborne trade of developing economies (percentage of corresponding world tonnage). Source: UNCTAD (2018b)



⁶ Centre for Economic and Business

The international shipping sector makes a significant contribution to the economy of many countries in terms of generating business and employment opportunities. Notable areas include ship ownership and operation, open registries, shipbuilding, ship repair, ship recycling, port services and seafaring. Greece maintains its lead in ship ownership, owning 17.3% of the market share in 2017, followed by Japan (11.7%), China (9.6%) and Germany (5.6%) (UNCTAD, 2018b). China, Korea and Japan dominate the ship building industry, and collectively accounted for 90.5% of ship deliveries in 2017 (UNCTAD, 2018a). India leads the ship scrapping industry, followed by Bangladesh and Pakistan (see Figure 3).

Figure 3: Building, ownership, registration and scrapping of ships, 2017 (Percentage of world total). Source: UNCTAD (2018b)



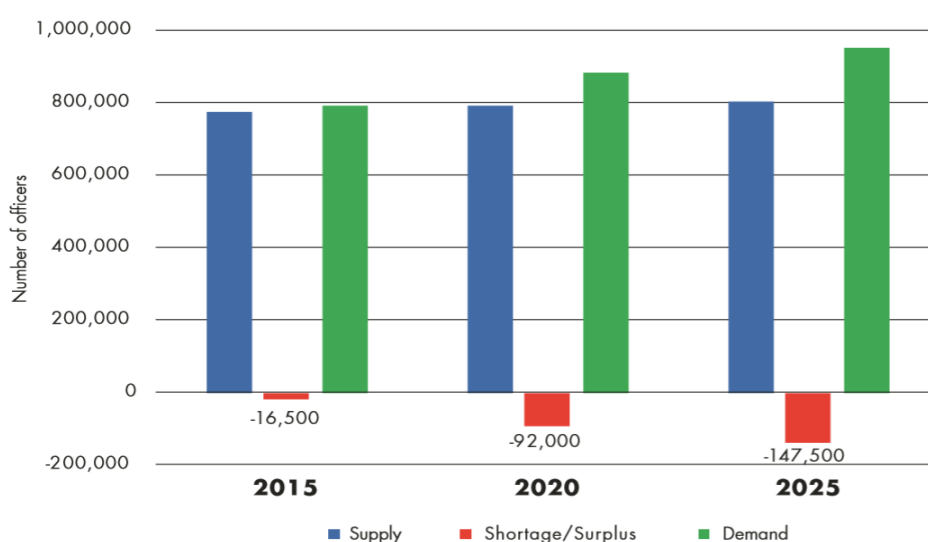
The open registry system, a revenue-generating arm for many flag states, accounts for over 70% of total world fleet tonnage (UNCTAD, 2015). An increase in open registry business has been observed in recent years, with developing countries accounting for 76% of global registrations (in terms of tonnage) in January 2018 (UNCTAD, 2018b). The top five open registries are Panama, Marshall Islands, Liberia, Hong Kong and Singapore. Panama's open registry, with 8.40% of total world fleet registered under its flag in 2018 (UNCTAD, 2018a), reportedly injects half a billion dollars into the Panamanian economy (British Broadcasting Corporation, 2014).

The overall world fleet tonnage has increased significantly in recent years. In January 2018, the world fleet reached a carrying capacity of 1.9 billion dwt, 62 million dwt more than in the previous year (UNCTAD, 2018a). The global demand for seafarers

also continued to increase to meet the needs of growing world fleet. The estimated demand for ship officers and ratings increased between 2005 and 2010 by 33.8% and 27.5% respectively (BIMCO⁷, 2015). In 2015, there was a shortage of approximately 16,500 officers and a surplus of around 119,000 ratings (BIMCO, 2015). Recent estimates indicate a shortage of 92,000 ship officers in 2020, followed by a shortage of 147,500 officers in 2025 (See Figure 4). In order to address this shortage, BIMCO (2015) suggests increasing efforts to promote careers at sea, enhancing maritime education and training, and addressing retention of seafarers.

Figure 4: Basic forecast for the future supply-demand balance for officers

Source: BIMCO (2015)



For bigger nations, the maritime sector is a lucrative billion-dollar industry. The US shipbuilding and repair industry alone contributes around USD 37.3 billion to the national GDP, while supporting more than 110,000 jobs nationwide (MARAD, 2015). The cruise industry is also an important segment of the US maritime sector. It generated over USD 42 billion in 2012, and supported more than 350,000 jobs (Mäkinen, 2013). China's maritime sector employs more than 34 million workers and reported a total production value of 5 trillion yuan in 2012, equivalent to 10% of the country's GDP (Gao, 2013). Moreover, the total production value of China's maritime industry is predicted to exceed 20 trillion yuan by 2030, accounting for 15% of the national GDP (Gao, 2013). China's ship building industry, which is ranked largest in

⁷ Baltic and International Maritime Council

the world in terms of gross tonnage and value (UNCTAD, 2018a), employs over 400,000 workers (Gao, 2013). This industry was one of the driving forces behind China overtaking the US as the world's top trading nation in 2014 (Hossain et al., 2017). China is also the leading supplier of international seafarers, particularly ship officers, whereas Philippines supplies the highest number of ratings (BIMCO, 2015). The Filipino seafarers remit over USD 4 billion in foreign currency to the Philippine economy, and the remittance has been growing since 2003, averaging 14% (Jouttenus, 2013).

Growth in the Australian maritime sector is largely driven by its cruise industry, exports base and port activity. The international shipping sector contributed around 30% to national GDP in 2017, while the overall maritime industry added around AUD 4 billion to the economy (Australian Industry Standards, 2018). In addition to being the largest Liquid Nitrogen Gas (LNG) exporter in the world (Jagnathan, 2018), Australia holds the fourth largest cruise ship industry. An estimated two million cruise ship visitors are forecast to visit the country by 2020 (Australian Industry Standards, 2018).

In the EU region, direct economic contribution of the maritime sector exceeds those of other similar industries. The EU shipping industry directly employed 590,000 people in 2012, more than that employed in the aviation and forestry/logging sectors (Goodwin, 2016). The same year, the shipping industry directly contributed €56 billion to the EU's GDP, and €145 billion indirectly. In Greece, shipping accounts for around 13.5 billion euros on an annual basis, equivalent to 7.3% of GDP (Roussanoglou, 2013). A key contributing factor is the high number of ships that Greece owns.

In the UK, the maritime sector directly supported around £40 billion in business turnover, £14.5 billion in gross value added (GVA) and 185,700 jobs in 2015 (CEBR, 2017). The UK leads in terms of the maritime professional services it offers globally, such as ship brokering, insurance, legal, management and financial services. The UK government plans to maximise on these strengths as part of its Maritime 2050 Strategy (Department of Transport UK, 2019). The headquarters of IMO, the United Nations body responsible for regulating maritime transport, is also located in London.

Pacific context

No other region in the world understands the challenges of dispersion, remoteness, and small populations better than the Pacific. Home to 22 Pacific Island countries and territories (PICTs), the Pacific region is spread over 30 million square kilometres, more than 98% of which consists of ocean. Papua New Guinea accounts for 83% of the total land area, while Nauru, Pitcairn, Tokelau and Tuvalu each claim less than 30 square kilometres of dry land (SPC, 2006). Shipping therefore plays a crucial role in Pacific's trade and economic development, as it cuts through vast oceans and remoteness to connect the small nations in the region with other countries and trade markets afar.

Based on the measure of average GDP-weighted distance to any other country, the Pacific states have been identified as the most remote in the world (Gibson & Nero, 200X). The extreme remoteness of Pacific states from major trade markets results in high cost of transportation and landed goods in the island nations. Other factors that affect development of trade and shipping in the Pacific include small-sized populations, minute economies, limited natural resources and low export volumes. (ADB, 2007; SPC, 2014a).

In the 1980s, trade within the South Pacific islands was said to represent a very small fraction of world trade, probably about .05% (Ross, 1985; SPEC, 1988). Chen et al. (2014) bring attention to the weak trade performance of Pacific states over the past decade, with the exception of countries that have a comparative advantage of exporting natural resource-based commodities, such as Fiji, PNG and the Solomon Islands. PNG is the sole exporter of copper ores and concentrates in the region, valued around USD 400 million in 2019 (World Bank, 2019a). Since 2014, PNG's trade performance has been further boosted through LNG production. The petroleum industry of PNG constitutes around 20% of the country's GDP (ADB, 2019). PNG and Fiji are the sole producers and exporters of gold in the region. PNG's export of base metals, silver or gold clad with platinum was worth USD 1,493,437 million in 2019 (World Bank, 2019a), while Fiji gold export was valued at USD 54,370 million in 2018 (World Bank,

⁸ South Pacific Bureau for Economic Co-operation (SPEC) is now known as the Pacific Islands Forum Secretariat (PIFS).

2019b). PNG and the Solomon Islands are the major exporters of palm oil in the region, valued at USD 458,726 million for PNG in 2019 (World Bank, 2019a) and USD 22,825 million for the Solomon Islands in 2018 (World Bank, 2019c).

For most Pacific states, the import volumes far outweigh the export volumes. In an extreme case such as Nauru's, the ratio (by value) of imports to exports is over 600:1 (Meyrick, 2007). PNG is the greatest exception as the value its physical exports outweighs the value of physical imports. Smaller Pacific states, such as Nauru, Tuvalu and Kiribati, rely heavily on imported goods and incur high import and freights costs by trading with countries outside the region (SPC, 2014a).

Four major international shipping routes connect Pacific states to overseas trade markets: (i) Asia and around-the-world routes; (ii) North American routes; (iii) European routes; and (iv) Australia and New Zealand routes (ADB, 2007). For South Pacific countries, the major trade markets are Australia and New Zealand, while US and Asian markets are more common with the North Pacific states (Meyrick, 2007). International shipping liners that commonly service the Pacific routes include Neptune Pacific Line Pte, Kyowa Shipping Company Limited, Nippon Yusen Kaisha, Swire Shipping, Bali Hai, Mariana Express Lines, Pacific Direct Line and Matson. Some Pacific Island governments have ventured into operating regional liner services, in trying to improve frequency and reliability of shipping services. The Pacific Forum Line (PFL) and the Kiribati Shipping Services Limited (KSSL) were formed through a consortium of Pacific governments. PFL was later run as a single government entity when Samoa took over 100% ownership in 2012. At present, a public-private partnership arrangement is running PFL, with Neptune Pacific Line and the Samoan Government investing 50% shares each in the company.

The international shipping sector is also a significant source of employment and income for some Pacific states. It contributes remittance to Pacific economies, and quite substantially in countries that have a large number of seafarers working on foreign ships. In 2003, an estimated 4,000 Pacific seafarers, employed on international ships, remitted about USD 19 million in foreign exchange earnings to their respective countries (Seidel and Lal, 2010). In the Pacific, Kiribati and Tuvalu have been most dependant on seafarer remittance. In the early 2000s period, seafarer remittance in

Kiribati and Tuvalu constituted around 25% of GNP (Clark, 2003). For Kiribati alone, remittance from seafarers used to average about 14% of GDP. A decline in the recruitment of Kiribati and Tuvalu seafarers on foreign vessels has led to a substantial fall in the flow of remittances. In 2012, seafarer remittances constituted 5.8% of GDP in Kiribati and 9% in Tuvalu (IMF, 2014).

Open registries provide a source of revenue for seven Pacific states, namely Cook Islands, Kiribati, Marshall Islands, Niue, Palau, Tuvalu, and Vanuatu. More than 76% of the world fleet tonnage is registered in developing countries, including the top three: Panama, Marshall Islands and Liberia (UNCTAD, 2018a). The Marshall Islands operates the second largest open registry in the world (in terms of dead-weight tonnage) and recorded an impressive growth of over 13% in 2015, over 2014 figures (UNCTAD, 2015). Since its establishment in 2012, the Palau International Shipping Registry (PISR) has reportedly earned USD 345,334.30, of which USD 103,600.29 is allocated to the Palau government (Pacific Islands Report, 19 August 2014). Information on revenue earnings for most Pacific open registries is not available publicly, but some indications exist about the share of revenue allocated to governments. The Marshall Islands government, for example, is paid about 25% of the operating revenue of its registry (Holden & Holden, 2003), whereas the Palau government receives 30% share (Pacific Islands Report, 19 August 2014). It is highly likely that the figures would be similar for other Pacific open registries.

3.3 Top economic sectors of Pacific states

For many Pacific states, the top two economic sectors are tourism and fisheries, followed by agriculture and shipping. Table 1 contains a list of top economic sectors per country, as identified by SPC (2016). The top economic sectors for Cook Islands are tourism and fisheries. Tourism is main driver for the country's economy, constituting 68% of national GDP (Cook Islands Office of the Prime Minister, 2011). Fish, which constitutes around 62% of total merchandise exports, continues to be the top export commodity (SPC, 2016). Cook Islands open registry for ships is also an important source of revenue for the government. According to SPC (2016), it is assumed to be recorded under merchandise exports for the country, which makes it the second ranked economic sector, worth USD 5.1 million in 2014.

Table 1: Top economic sectors of Pacific states⁹

Cook Islands	Tourism, Fisheries, Shipping
Federated States of Micronesia	Fisheries, Tourism, Agriculture
Fiji	Tourism, Fisheries, Beverage
Kiribati	Fisheries, Shipping, Agriculture
Marshall Islands	Fisheries, Shipping, Handicraft
Nauru	Phosphate, Fisheries, Beverage
Niue	Shipping, Agriculture, Postage stamps
Palau	Tourism, Fisheries, Agriculture
Papua New Guinea	Petroleum, Minerals, Fisheries, Forestry
Samoa	Agriculture, Fisheries, Tourism
Solomon Islands	Forestry, Agriculture, Fisheries
Tonga	Tourism, Agriculture, Fisheries
Tuvalu	Fisheries, Shipping
Vanuatu	Tourism, Agriculture, Fisheries

The FSM economy is largely supported by the public sector funds received from the US through the Compact of Free Agreement. In 2016, the public sector generated 37 percent of GDP, while agriculture and fisheries contributed around 26 percent of GDP, and foreign grants generated 33% of GDP (World Bank, 2018). Tourism accounts for more than 20% of GDP (World Bank, 2014). Fish is the top export commodity, valued at USD 32.2 million in 2014 (SPC, 2016).

There are limited opportunities for growth of export and tourism industries in Kiribati. Phosphate mining used to account for 80% of exports and 50% of government revenue until the supply exhausted in 1979 (The Commonwealth, 2018b). Though not as significant as the phosphate industry, the fisheries sector is currently the top economic sector in Kiribati, accounting for 92% of the country's total export value for 2014 (SPC, 2016). Fish exports in 2014 were valued at USD 69.8 million, inclusive of fishing licence fees. After fisheries, the second most important economic sector is shipping, which generates revenue through the Kiribati open registry and remittance from Kiribati seafarers working on foreign ships. According to SPC (2016), ships &

⁹ Source: Compiled with information available from: SPC (2016); Cook Islands Prime Minister's Office, 2011; The Commonwealth (2018a); World Bank (2014); World Bank (2014); CIA (2018); UNDP & GEF (2007); Solomon Islands National Development Strategy (2016); DFAT (2018).

boats had an export value of USD 2 million in 2014, believed to be inclusive of open registry fees. Agriculture also contributes to the national GDP, accounting for 25.8% in 2011 (The Commonwealth, 2018b).

For the Marshall Islands, the fisheries sector is the strongest primary industry in the country. Fish exports alone were worth USD 124.3 million in 2014 (SPC, 2016). This is supplemented by the country's membership to the Parties to the Nauru Agreement (PNA), which coordinates purse seiner fishing policy among eight Pacific states. The total value of skipjack tuna within PNA-governed waters was USD 3 billion in 2012 (PNA, 2013). According to SPC's (2016) trade statistics, the top merchandise export for Marshall Islands in the year 2014 was ships and boats, worth USD 702 million. While it not completely clear, this revenue could be generated through registration of international ships under the Marshall Islands open registry. As an industry, shipping then becomes the most prominent revenue stream for the Marshall Islands. Overall, the largest source of revenue for the Marshall Islands' government remains the coffers it receives from the US through the Compact agreement. Under the renegotiated Compact, Marshall Islands receives USD 1.5 billion in direct assistance for the period 2005–2024 (CIA, 2018).

Nauru, the world's smallest independent nation, is a single coral atoll in the Pacific Ocean with a land area of 21 square km and a population of around 13,049. Mining and export of phosphate in early 1900s made Nauru the nation with the highest per capita income in the world. But the economy was greatly affected when the mining ceased in 2006 as primary reserves of phosphates had been depleted (CIA¹⁰, 2018). In addition, 90% of the land had been declared unusable for agriculture due to mining. Mining of secondary reserves of phosphate resumed in 2007, but the supply was estimated to last for 30 years only. Phosphate continues to be the top export commodity, worth USD 27.5 million in 2014 (SPC, 2016). Other primary sector export commodities, such as fish, beverage and root/vegetables, are not as significant as phosphate, and valued below USD 1 million. Additional streams of revenue for the government are derived from hosting the Australian Regional Processing Centre for asylum seekers since 2012, and from fishing license fees under the PNA (CIA, 2018).

¹⁰ Central Intelligence Centre

Lack of natural resources and export industries limits the growth of Niue's economy. The average value of imports for 2018 was NZD 25,820,861, which is approximately 60% of the GDP, while exports stood at NZD 2,583,148 (Niue Statistics, 2018). The top economic sectors for Niue are shipping (open registry) and agriculture. Export of vegetable, fruit and nut products were worth USD 235,000 in 2015 (SPC, 2016). The government also benefits from the Niue open registry for ships, but the exact revenue figures are not known. The sale of postage stamps to foreign collectors is also an important source of revenue.

Apart from the revenue Palau receives through the COFA agreement with the US, the small island nation relies heavily on tourism and fisheries to support its economy. Tourism's contribution to GDP was estimated to be 45% in 2005 (Palau Government, 2014). The combined contribution of agriculture, forestry and fisheries sectors to GDP is very small; less than 4%, and about one fifth of the Pacific Island average. In 1995, fisheries used to account for 26% of GDP, but it declined dramatically over the years, constituting less than 2% of GDP in 2007 (Palau Government, 2014).

The top economic sectors for PNG are petroleum, minerals, fisheries and forestry. The primary sectors combined (agriculture, forestry, fisheries, oil, gas and mining) contribute to 63.4% of GDP (Government of PNG, 2010). The USD 19 billion LNG venture, which began in 2014, produces over 8 million tonnes of LNG each year, and supplied to four major companies in China and Japan (PNG LNG, 2018). One-tenth of the world's tuna is caught off the shores PNG, with the yearly catch estimated to be around USD 1.3 billion (Murtaugh and Williams, 3 June 2017).

The total value of Samoa's merchandise exports was USD 49.3 million in 2014, while imports constituted USD 341.2 (SPC, 2016). The key economic sectors are fisheries, agriculture and tourism. In 2014, fish topped the primary sector export commodity, valued at USD 2.7 million, while export of vegetables, fruits and nuts fetched USD 2.3 million. Major crops include coconuts, taro, pineapples, mangoes, and other fruits. Beverage exports surpassed fish as the top export commodity in 2013, valued at USD 5.3 million, but declined sharply in 2014 to below one million dollars.

The top economic sectors for Solomon Islands are forestry, agriculture and fisheries. Forestry constitutes more than 50% of national GDP and a significant proportion of export earnings (Government of Solomon Islands, 2016). Wood exports have been steadily increasing over the years, and is a top export commodity at present, valued at USD 515.4 million in 2014 (SPC, 2016). This was followed by meat and seafood preparations at USD 60.6 million, fats and oils at USD 44.5 million, precious stones at USD 28.3 million and fish at USD 18 million. The agriculture sector is targeted to increase its contribution to GDP from 33% (in 2012) to 40% by 2020 (Government of Solomon Islands, 2016). The commercial export crops include cocoa, coffee, kava, vanilla, copra, coconut oil, palm oil and honey. Revenue from the fisheries sector is derived through licensing of foreign fishing vessels under Vessel Day Scheme (VDS) and fish exports. Tourism remains one of the smallest contributing sectors to the national economy.

Tourism is the top economic sector of Tonga. The revenue generated by tourism is four times greater than that of total merchandise exports (Government of Tonga, 2015). The merchandise export sector has gradually weakened over the years. The contribution of total exports fell from around 12% of GDP in 2003 to 2-4% in 2015. The top merchandise export for Tonga in 2014 was roots/vegetables/tubers valued at USD 3.8 million, followed by fish at USD 3.3 million, fruits and nuts at USD 1.1 million, artwork at USD 1.1 million and cocoa at USD 1 million (SPC, 2016).

International trade is mostly one-way, import-heavy, and can constitute 50-100% of GDP (Government of Tuvalu, 2016). The total value of Tuvalu's merchandise exports was USD 7.5 million in 2014, while the total value of Tuvalu's merchandise imports was USD 121.5 million in 2014 (SPC, 2016). Fish is Tuvalu's main export commodity and considered to be the backbone of the country's economy. But in recent years this industry has started showing signs of weakening. Fish exports declined sharply from USD 23.8 million in 2013 to USD 4.7 million in 2014 (SPC, 2016). This is a major blow to an economy that is already fragile, with limited opportunities in agriculture and tourism industries.

The top economic sectors of Vanuatu are tourism, agriculture and fisheries. The tourism sector accounts for approximately 40% of GDP and one third of people in

formal employment (DFAT, 2018). Exports are dominated by agricultural products, such as kava, coconut products, beef and cocoa (Pacific Trade invest, 2018). But fish is the top export commodity, valued at USD 132.9 million in 2014 (SPC, 2016). Vanuatu's open registry is also a significant revenue stream for the government.

3.4 Shipping and the sustainable development regime

The concept of sustainable development was first introduced in international policy debates in 1987 through the Brundtland Report (Brundtland, 1987). It has been successfully incorporated into major development policies since then and shaped the Millennium Development Goals (MDGs) during its implementation period from 2005–2015. It also set a firm foundation for the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs). The concept of sustainable development continues to feature strongly in global policy debates, national policy planning, and the work plans of implementing agencies.

The 2030 Agenda is more ambitious than the MDGs in terms of focus and scope. The MDGs' primary focus was on poverty alleviation in developing states, whereas the 2030 Agenda prioritises a higher number of areas. Unlike MDGs, the 2030 Agenda directs attention to issues affecting developed states as well. The treatment of climate change under the two regimes also differs vastly. The MDGs' link to climate change was less weighty, inclusive of one target only (Target #28) under the Environmental Sustainability goal (MDG #7). The 2030 Agenda has a dedicated goal (SDG #13) on 'climate action', in recognition of the serious threats to humanity from this growing global issue. The transition of environmental priorities indicates growing prominence of climate change in the sustainable development regime. Certainly, a timely action considering present climate challenges.

The MDGs made no direct reference to shipping or transport, and the same is true for the 2030 Agenda. However, due to international shipping's strong links with trade and economic growth, it forms indirect lines with all SDGs. Organisations with a maritime focus have aligned their respective work programmes accordingly. The IMO, for example, had initially aligned its work on technical cooperation to four MDGs: Poverty and Hunger (#1), Gender Equality (#3), Ensuring Environmental

Sustainability (#7), and Developing a Global Partnership for Development (#8). A number of policy initiatives, including adoption of an Assembly resolution, were aligned to these goals. In relation to the 2030 Agenda, IMO considered three SDGs – Clean Energy (#7), Innovation and Infrastructure (#9), and Life Below Water (#14) – as most important to its work programme (IMO, 2015). Even though IMO values the importance of a global approach to climate change regulation for the shipping industry (IMO, 2017b), it did not prioritise SDG #13–Climate Action in 2015.

The Climate Action goal calls for urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy. IMO has a key role to play in setting global standards to regulate GHG emissions from international ships. By not prioritizing SDG #13, IMO may send out mixed signals about its commitment to this pressing matter. There seems to be a stronger preference for using ‘energy efficiency’ to describe certain IMO climate change related projects. A recent EU-funded project implemented by IMO involved setting up five regional Maritime Technology Cooperation Centres (MTCCs) to help mitigate the harmful effects of climate change. Though this project is labelled as an energy efficiency initiative, it falls under capacity building and climate change, and aligns to SDG #13–Climate Action.

3.5 Shipping in the global climate change regime

The issue of climate change was first raised at the United Nations General Assembly in September 1988 by Malta and gained widespread support from many countries (Bodansky, 1994). This led to the establishment of IPCC in December of the same year to begin proper scientific assessment of the situation. The IPCC’s first Scientific Assessment Report on climate change was presented at the Second World Climate Conference (SWCC) in 1990. Following this, a recommendation was put forth to the 45th session of the United Nations General Assembly, which resulted in the adoption of a resolution to establish an Inter-governmental Negotiation Committee (INC) tasked with formulating a framework convention on climate change (Djoghla, 1994). The INC gave the world’s policy makers the first comprehensive framework for dealing with climate change, ie. UNFCCC, which was adopted in 1992 at the Earth Summit in Rio de Janeiro.

Vladu & Hackmann (2012) state that international shipping (and aviation) emissions have been on the agenda of the UNFCCC from the first meeting of the COP held in 1995. The UNFCCC's SBSTA was assigned to address this issue. The issue continued to be discussed at SBSTA sessions without much success in regulating international shipping emissions under the UNFCCC regime. The scenario is different for domestic shipping emissions. As part of national GHG inventories, UNFCCC requires countries to report on overall transport emissions, inclusive of GHG emissions from domestic ships.

The major arguments for excluding international shipping emissions from the UNFCCC regulatory process have been well explained by a number of experts (Bodansky, 2016; Zhang, 2016; Vladu and Hackmann, 2012; Chrysostomou & Vågslid, 2012; Faber et al, 2010; and Bodansky, 1994;), and are summarised as follows:

- Inability of member states to reconcile UNFCCC's CBDR principle with IMO's non-discriminatory principle.
- Difficulties associated with allocating emissions by countries, which is the UNFCCC's current method, rather than by sector. This is a huge problem for shipping, being international/sectoral in nature.
- Potential negative impacts on global trade and economic growth if GHG-reduction policies are imposed on international ships.
- The possibility of competitive distortions and carbon leakage.

The UNFCCC Kyoto Protocol, adopted in 1997, failed to include regulatory measures for international shipping emissions, but instead included a provision (under Article 2.2) that requested member states to work with IMO to address the issue. Technical and methodological matters pertaining to international shipping emissions continued to be discussed under SBSTA and raised in COP sessions until the Paris Agreement negotiations in 2015. Despite intense lobbying from some member states, all explicit reference to international shipping emissions was removed from the Paris Agreement. IMO was directed to resolve the matter under its environmental negotiations and report the outcomes to SBSTA meetings.

Leading researchers and industry experts claim that IMO, entrusted with the responsibility of regulating GHG emissions from international shipping, has been slow and ineffective in providing necessary solutions (Strong, 2011; Okur, 2011; Wilensky, 2014; CSC¹¹, 2014). Bodansky (2016) claimed that, while IMO made good progress with the adoption of technical and operations measures (such as EEDI and SEEMP), these efforts fell short of what was needed to combat climate change. Since 2015, GHG emissions negotiations have accelerated at IMO, resulting in a number of major developments at MEPC 70 (2016) and MEPC 72 (2018). These include adoption of the *Roadmap for Developing a Comprehensive IMO Strategy on Reduction of GHG Emissions from Ships* in October 2016; and the *Initial Comprehensive IMO Strategy on Reduction of GHG Emissions from Ships* in April 2018. Under the initial strategy, a target has been set for the international shipping sector to reduce its GHG emissions by at least 50% by 2050 compared to 2008, whilst pursuing efforts to phase them out completely by the end of this century (IMO, 2018a). Current negotiations at IMO are focusing on measures for implementation and the adoption of a final IMO GHG strategy in the year 2023.

3.6 The scientific rationale for supporting decarbonisation of the international shipping sector

The first proof of increasing carbon dioxide levels in the earth's atmosphere was provided by Charles Keeling in 1960 (Scripps, 2019; Keeling, 1960). Five years later the first expert report was released to the United States, warning of impending global warming (Rahmstorf, 2012). Since then, many scientific studies have been conducted, including sector specific ones, all warning of growing GHG emissions levels, increasing temperature levels and dramatic climate change consequences.

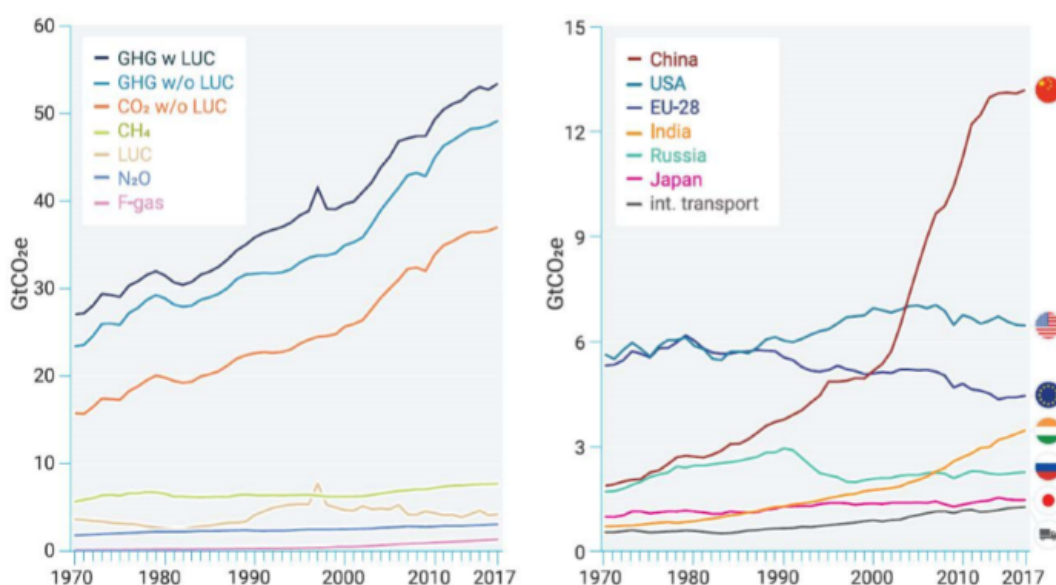
Rising global emissions and temperature

In recent years, many countries have undertaken substantial efforts to reduce global GHG emissions, in line with the goals of the Paris Agreement and the NDC pledges. Despite this, global GHG emissions reached a record high of 53.5 GtCO₂e in 2017, an

¹¹ Chamber of Shipping

increase of 0.7 GtCO₂e compared with 2016 (UNEP¹², 2018; see Figure 5). Global energy-related CO₂ emissions grew by 1.7% in 2018, the highest rate of growth since 2013, and 70% higher than the average increase since 2010 (IEA¹³, 2019). The increase in emissions in 2017 and 2018 were driven by higher GDP growth (about 3.7%) and increased demand for energy (IEA, 2019; UNEP, 2018). Not all countries recorded an increase in emissions in 2018. China, India and the US were responsible for 85% of the net increase in emissions, while Germany, Japan, Mexico, France and the UK recorded a decline in emissions. See Figure 5 for GHG emission levels for major emitters.

Figure 5: Global greenhouse gas emission levels for major emitters and per type of gas.
Source: IPCC (2018)



Based on the current NDC commitments of countries, global warming of 3°C is anticipated by 2100, with warming continuing afterwards (UNEP, 2018). The Paris Agreement's goal is to keep the increase in global average temperature to well below 2°C above pre-industrial levels, and to limit the increase to 1.5°C. This could be achievable if global emissions peak by 2020. But current policy and NDC scenarios suggest that global emissions will not peak even by the year 2030, unless NDC ambitions are increased and achieved. Only up to 57 countries, representing 60% global emissions, are expected to peak by 2030 if they fulfil their NDC commitments

¹² United Nations Environment Programme

¹³ International Energy Agency

(UNEP, 2018). Experts also warn that all sectors must decarbonise in order to avoid a 2°C rise in the global temperature (Bows-Larkin, 2015; Bows-Larkin et al., 2016). This includes international shipping and aviation, two sectors that collectively account for approximately 5% of global GHG emissions and are excluded from countries' NDC commitments.

Projected impacts of climate change in the Pacific

All temperature records from Pacific Island observation stations show that, over the past 50 years, the warming trends for the Pacific region are mostly between 0.08 to 0.20°C per decade (AusAID¹⁴, 2011). This is consistent with global warming trends over this time period. According to ADB (2013; 2019), the average annual mean temperatures in the Pacific will continue to increase over the next five decades, with some variation across countries. For example, temperatures are projected to rise by 2.0°C by 2070 in Fiji and Samoa, and by more than 2.5°C in PNG, Solomon Islands, and Vanuatu relative to the 1990 level. The frequency of El Niño and La Niña weather patterns in the Pacific is also expected to increase by more than 40%, increasing the likelihood of more severe droughts and intense rainfall, accompanied by more severe cyclones (ADB, 2013; ADB, 2019).

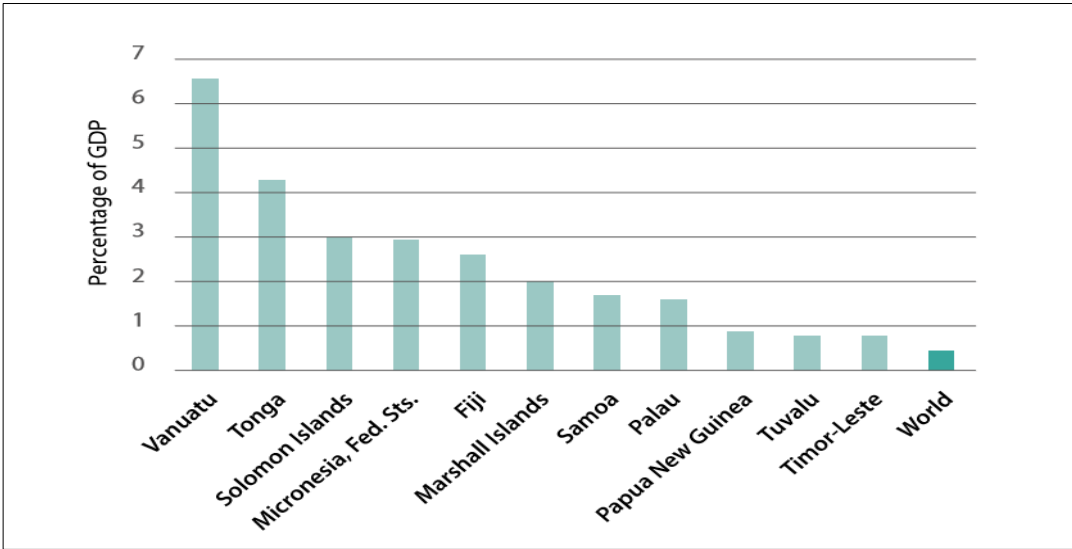
The projected increase in temperature and erratic/extreme weather conditions is expected to result in economic losses for key sectors, such as agriculture, marine resources, health, tourism and infrastructure. Many Pacific states have already sustained massive damages in recent years due to powerful Category 5 cyclones and floods (Oxfam, 2016; ADB, 2019). An extreme case of Cook Islands is noted in early 2005, where five cyclones hit the nation within a five-week timeframe, four of which were classified as Category 5. Figure 6 shows countries in the Pacific that are most affected by climate change.

By 2100, rises in sea level across the Pacific are projected to be significantly higher than the anticipated global average increase of 0.21–0.48m (ADB, 2013). Sea levels could rise by as much as 1.74m in the Solomon Islands and 0.92m in Kiribati, increasing risk of coastal flooding and inundation. The impact of increasing sea levels

¹⁴ Australian Aid

is already visible in many Pacific states. In Kiribati, the main islands are getting overcrowded as people on low lying islands are relocating due to lack of freshwater supply (ADB, 2019). Since 2012, three coastal villages in Fiji have been relocated to higher ground, and few more are in the process of moving (COP23, 2019). In the Solomon Islands, five low lying reef islands have submerged completely (Albert, 2016). If the sea level continues to rise as projected, all islands of Tuvalu and Kiribati may submerge completely within a generation (Smith, 2013).

Figure 6: Pacific states worst affected by the consequences of climate change, by share of GDP, from 2016–2017. Source: UNDP (2017)



Ocean acidification is another issue linked to increased GHG emissions. Oceans absorb approximately 30% of CO₂ from the atmosphere (NOAA, 2019). When atmospheric GHG emissions are high, the ocean absorbs a greater concentration of CO₂ from the atmosphere, which then raises the acidity level of waters. In the Pacific waters, ocean acidification is projected to increase over the course of the 21st century, and this carries the risk of damaging reef ecosystems (SPREP, 2016; COP23, 2019). Inadequate reef systems will affect the food supply and livelihoods of reef-dependent communities, in addition to increasing exposure of land to forceful waves and sea flooding.

Projected increase in international shipping emissions

The IMO has been monitoring the level of GHG emissions from international ships and has published three sequential study reports on GHG emissions from ships since

2000 (IMO, 2000; Buhaug et al., 2009; Smith et al., 2014). The studies provide strong justification for countries to take serious action and are frequently referenced by other leading researchers in the field (Wilensky, 2014, Bows-Larkin, 2015; Lloyd's Register, 2016; Shi, 2016). Since the completion of the *Third IMO GHG Study 2014*, other studies have emerged (ICCT¹⁵, 2017; CE Delft, 2017; Cames et al., 2015), providing updated emissions data and revised projections for increase in international shipping emissions. A fourth study of GHG emissions at IMO commenced in 2019, with an expected completion timeline of 2020 (IMO, 2019a).

The first IMO GHG study, *Study of Greenhouse Gas Emissions from Ships*, was completed in 2000 and estimated that shipping was a small contributor to the world total CO₂ emissions – 1.8% of world total CO₂ emissions in 1996 (IMO, 2000). The *Second IMO GHG Study 2009* estimated that international shipping emissions accounted for 2.7% of the global emissions in 2007 and further predicted that, by 2050, those emissions could grow by a factor of 2 to 3 under BAU conditions (Buhaug et al., 2009). According to the *Third IMO GHG Study 2014* (Smith et al., 2014), international shipping accounted for approximately 2.33% of global CO₂ emissions over the period of 2007 to 2012. Comparison of the 2009 and 2014 IMO GHG Study reports shows a drop in international shipping emissions from 2.7% to 2.33%. Smith et al. (2014) state that the analysis done in the 2014 study ‘removes any uncertainty attributable to the use of average values and represents a substantial improvement in the resolution of shipping activity, energy demand and emissions data.’

Table 2: Shipping CO₂ emissions compared to global CO₂ emissions. Source: ICCT (2017)

	Third IMO GHG Study (million tonnes)						ICCT (million tonnes)		
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Global CO ₂ emissions	31,959	32,133	31,822	33,661	34,726	34,968	35,672	36,084	36,062
International shipping	881	916	858	773	853	805	801	813	812
Domestic shipping	133	139	75	83	110	87	73	78	78
Fishing	86	80	44	58	58	51	36	39	42
Total shipping	1,100	1,135	977	914	1,021	942	910	930	932
% of global	3.5%	3.5%	3.1%	2.7%	2.9%	2.6%	2.5%	2.6%	2.6%

¹⁵ International Council on Clean Transportation

During the 2012–2015 period, international shipping emissions grew by 1.4% despite improvements in operational efficiency (ICCT, 2017). This was attributed to increased demand for shipping and high fuel consumption. According to the 2014 IMO GHG Study, international shipping emissions are projected to increase by 50% to 250% in the period leading to 2050, depending on future economic and energy developments (Smith et al., 2014). Recent assessments show a slight drop in the projected emissions for international ships. Based on updated emissions data for the period 2007–2015 (see Table 2), a separate study by CE Delft projected international shipping emissions to increase by 20%–120% between 2012 and 2050 (CE Delft, 2017; BIMCO¹⁶, 2017). Projections may vary slightly but all studies point to a definite increase in international shipping emissions by the year 2050, under BAU conditions. Unless strong and immediate mitigations actions are taken, there are indications that the international shipping sector could account for 17% of global CO₂ emissions in 2050 (Cames et al., 2015).

3.7 Drivers of low carbon shipping in the Pacific

Seeking pathways to a low carbon shipping environment is not entirely new for Pacific states. A number of projects were funded in the Pacific in the mid-1980s and showed strong potential in the domestic shipping industry (see Table 3). The projects, which were mainly driven by high fossil fuel prices, reportedly ceased because of the fall in global fuel prices in the 1990s (Newell, 2016). In the 2000s period, the fuel prices skyrocketed again (See Figure 7), reinforcing the importance of reducing fossil fuel dependency. However, during this period, climate change began dominating global policy forums, and eventually, this became the key driving force for low carbon shipping initiatives worldwide.

Pacific states continue to rely heavily on imported fossil fuel to meet their energy demands. Fossil fuel accounted for 95% of total Pacific energy supply in 2006, almost 99% if Fiji and Papua New Guinea are included (Holland et al., 2014). When global fuel prices increase, the demand falls, but this is not the case in the Pacific. The high

¹⁶ Baltic and International Maritime Council

energy demands of Pacific states is unavoidable, and results in higher import bills in the face of rising fuel prices. Fuel continues to top the list of imported merchandise for most Pacific states, constituting between 15-30%¹⁷ of the value of total merchandise imported (ADB, 2014; SPC, 2016). Fiji is the only Pacific state that has high fuel exports, in addition to fuel imports. This is due to re-export of fuels to other Pacific states and supplies for ships' stores and bunkers.

Table 3: Low carbon shipping projects undertaken in the Pacific region in mid-1980s.
Source: Newell (2016)

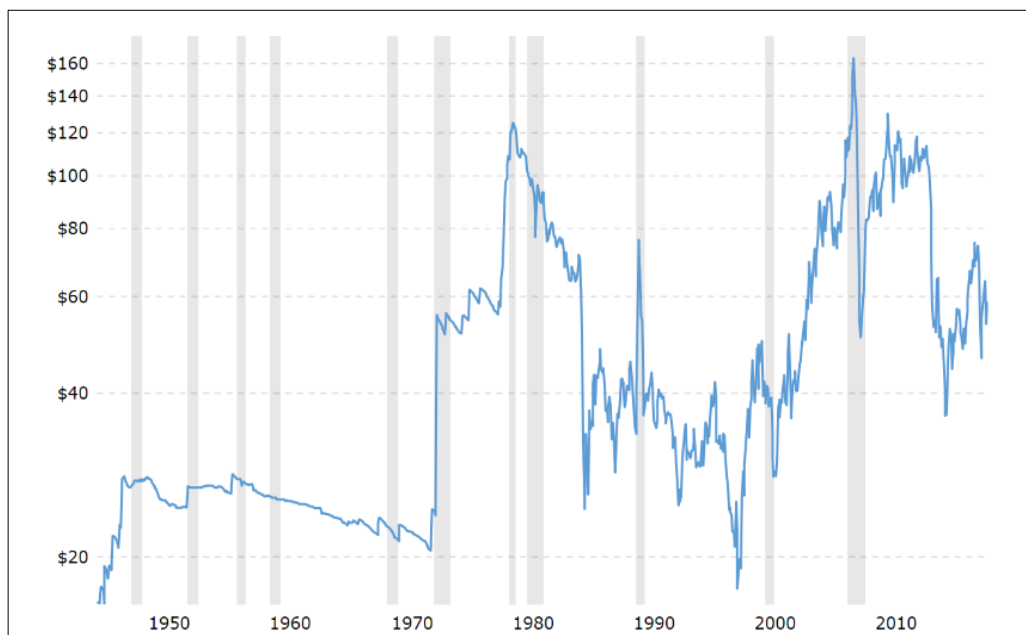
Project	Description	Outputs	Agencies	Comments
Fiji soft sail retrofit (1984-1986)	Auxiliary rig retrofitted to two government vessels of ~300t. Rigs built and installed in-country	Fuel savings 23-30%, but also 30% engine/prop wear reduction, greater stability, increased passage times. IRR on best route = 127%, average route = 33%	ADB, Southampton University, McAllister Elliot	Southampton University collated historical wind data for all Fiji routes and produced fuel saving ratios for all routes.
Lau Passenger / cargo (1984-2006)	50-ton primary sail powered trading vessel, designed and built on <i>Kabara</i> by local builders (1984-87). First of 3 planned vessels to service Lau and Lomaiviti Groups.	<i>Tai Kabara</i> became the main vessel operating on the Southern Lau route until she was scuttled in 2006. Used local materials wherever possible.	European Union	Construction of the other two ships was cancelled when the oil crisis abated.
Ha'apai Freighter	Needs assessment and design analysis led to commissioning of build plans for a 100-ton energy efficient freighter	Needs assessment, transport census and full build plans for a 100 -on energy efficient freighter.	UNESCAP, UNCTAD, UNDP, ADB	Vessel never constructed due to end of crisis. Similar needs assumed today.
SCF/Jim Brown	Save the Children Fund Tuvalu employed catamaran designer Brown to develop locally built boats for Tuvalu/Kiribati	A range of designs and processes for locally built/operated catamarans for artisanal and commercial fishing and local and inter-island transport. Training of local shipwrights. Local materials favoured	SCF	This project closely associated with the FAO/UNDP project. Local build/materials used wherever possible. Fuel savings of up to 60%.
FAO/UNDP (1982-1989)	A multi-county fisheries programme to develop RE artisanal and small-scale commercial vessels for local community benefit.	A portfolio of 10 designs from single dugouts to 11m trimarans. 350 vessels built in 8 countries. Demonstrated need for vessels to be affordable and locally appropriate.	FAO UNDP	Uptake ceased with end of project and falling fuel prices. Communities with 'living tradition' of sail had greatest uptake.

The transport sector (land, air and marine) is the largest user of imported fossil fuels, accounting for roughly 70% of fuel use in all Pacific states (SPC, 2011a). Reducing the fossil fuel dependency of this sector is extremely important for environmental as well as economic reasons. Most Pacific states are paying a higher retail price for fuel compared to the global average. In 2018, the average price for fuel in the Pacific was USD 1.25/litre, while the global average was USD 0.97/litre (SPC, 2018). The

¹⁷ Figure excludes 'ships and boats' as a merchandise import item. If 'ships and boats' are included as an import item, then the percentages are very low for open registry states, such as 2% for Marshall Islands, 5% for Tuvalu and 7% for Vanuatu.

variations in fuel prices across the countries arise due to respective governments' policies on taxes and subsidies. Other factors contributing to fuel price variations in Pacific states include the geographical location, shipping routes and the currency conversion rate to USD (SPC, 2018).

Figure 7: Global trends in crude oil prices 1950–2019 (in USD). Source: Macrotrends (2019)



Davies & Sugden (2010) claim that Pacific states are likely to remain dependent on imported fossil fuel in the medium to long term, as these countries have fewer alternatives for diversification. But given the intense focus on climate change in recent years, the scenario could change by the year 2030 as countries race to implement their climate policies in line with the Paris Agreement. Many Pacific states and associated development partners are already investing in major projects in the region to reduce fossil fuel dependency and prepare for transiting to a net zero emissions future. Most of these investments are directed at the power sector, while the transport sector, which consumes roughly 70% of the total fuel imports into the region, has been neglected to a large extent (Goundar et al. 2017; SPC, 2017). However, since 2017, notable efforts are visible in the domestic shipping sector of the Pacific. Three major low carbon shipping projects commenced in 2017 with the aim of reducing GHG emissions and increasing energy efficiency of domestic ships.

The SPC is the host agency for the three-year Pacific Maritime Technology Cooperation Centre (MTCC-Pacific) project, which is part of the Global MTCC Network initiative. The IMO is implementing this project at the global level through EU funding. The overall objective of the MTCC-Pacific is to support Pacific states in their efforts to reduce their GHG emissions and reliance on fossil fuel, mainly through capacity building, data collection on ship fuel consumption, and improvement of technical and operational areas of ships.

The other two low carbon shipping projects are being implemented in the Marshall Islands. The Transitioning to Low Carbon Sea Transport (TLCSeaT) project is a USD 11 million bilateral project between Marshall Islands and Germany, scheduled to end in 2022 (Beetz, 2017). The project focuses on improving technical, operational, institutional and infrastructural components for all fleets owned by the Marshall Islands Shipping Cooperation. The other major component is strengthening traditional/sustainable sail transport on the country's lagoons. The EU is funding the other project in the Marshall Islands, called the Micronesian Centre for Sustainable Transport (MCST). This project aims to establish a centre of excellence that would enable Marshall Islands to transition to a low carbon transport future and be a pilot for other Micronesian and small island states in the Pacific. The project is managed by USP in coordination with the Marshall Islands government.

The success of such projects in the domestic shipping sector hinges, to a large extent, on the uptake of renewable energy technology by the Pacific communities. The current trials may produce desired outcomes in the short term, but the ultimate success of these projects can only be gauged on the continued use and management of zero carbon vessels in the long run. On the positive side, wind-assisted sailing is not a new practice for Pacific communities. The rich and long history of Pacific's sailing traditions is well known and documented (Nuttall, 2013; SPC, 2017b). Sailing played an integral part in connecting Pacific states to the world, cutting through remoteness and geographical barriers. Over time, globalisation led to modernisation of the shipping industry, and sails were swapped for fossil fuel powered ships. But the Pacific's reliance on shipping for trade and connectivity did not diminish. For many archipelagic states in the Pacific, shipping remains the only means of sustainable transport for the island communities.

Against this backdrop, current efforts to encourage uptake of wind-assisted technology and revive sailing traditions in the Pacific may produce positive outcomes. On the downside, certain barriers exist that may hamper a smooth transition to low carbon shipping environment in the Pacific. Policy and financing have been identified as the major barriers affecting low carbon shipping transition in the Pacific (Goundar et al, 2017; Newell et al., 2016; Prasad et al., 2013; Nuttall et al., 2014a). Since 2017, efforts have increased to address these barriers, and visible through projects such as TLCSeaT, MTCC-Pacific and MCST. However, the success of low carbon shipping projects in the Pacific is not dependent on the availability of financing and appropriate policies only. Where wind-assisted projects are concerned, buy-in of Pacific communities is crucial.

Even though Pacific Islanders have a rich history of sailing traditions, this practice has been disrupted by outside influences and lay dormant for a long time. Sailing groups, such as the Pacific Islands Voyaging Society and Uto Ni Yalo Trust, are renewing interest in traditional sailing, and use voyaging for climate change and environmental demonstrations (SPC, 2017b). But these sailing vessels are not used for commercial or trading purposes. Reviving traditional sailing practices for commercial or trade purposes in the Pacific could prove challenging for implementing agencies, particularly in this digital era where commercial companies are under pressure to deliver services with speed and efficiency. According to a study by SPC (2014c), the use of wind power for commercial shipping operations in the Pacific is limited. The study argues that it is not financially viable to invest in sail assisted ships that are involved in large-scale inter-island operations, carrying freight and passengers on a regular scheduled basis. It is still early days for MCST and TLCSeaT projects, and therefore premature to evaluate the legitimacy of arguments contained in the SPC (2014c) study.

As small economies, Pacific states depend heavily on foreign aid to fund their sustainable development needs. The Pacific's Official Development Assistance (ODA) is higher than any other region in the world, on a per capita basis (Dornan & Pryke, 2017). The total amount of ODA received by Pacific states almost doubled between 2000 and 2012, from USD 915 million to almost USD 2 billion, but declined to USD 1.69 billion in 2014 (UNDP, 2017). For some Pacific states such as Kiribati

and FSM, foreign aid constitutes between 30–40% of GDP. There is no doubt that external funding plays a major role in creating opportunities for small island states. But the associated negative impacts of aid dependency are equally concerning, and this is another factor that could affect low carbon development in the Pacific shipping sector. Without a continuous flow of external funding, Pacific states may not have enough incentive to take full ownership of transitioning to a net zero environment. The problem is further compounded by the fact that Pacific states, as technology takers, do not have the capacity to make changes to the modern technology that is brought into the region. They are often left with no choice but to adjust accordingly or depend heavily on external assistance, technically and financially, to sustain projects. Navigating a transition to low carbon futures in the domestic shipping sector of Pacific states may turn out to be far more challenging than expected.

In the international shipping sector, climate change is driving the global efforts towards emission-reduction, prompted by concerns raised on the projected increase in GHG emissions from international ships under BAU conditions. IMO has already set a target to reduce international shipping emissions by at least 50% by the year 2050, and phase them out completely by the end of this century (IMO, 2018a). For the Pacific, this target holds greatest implications for flag states that are operating open registries, namely, Cook Islands, Kiribati, Marshall Islands, Niue, Palau, Tuvalu and Vanuatu. These countries are responsible for

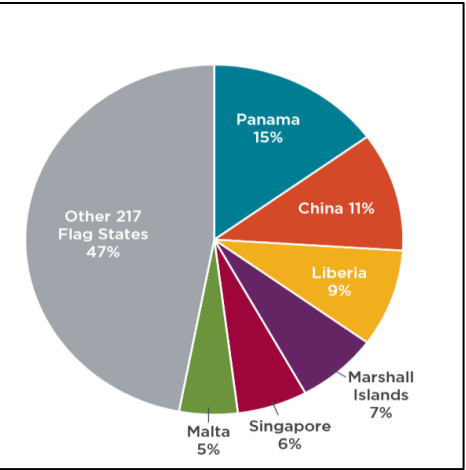


Figure 8: Average share of CO₂ emissions by flag state, 2013–2015.
(Source: ICCT, 2017)

ensuring that vessels registered under their flag comply with the international regulations and policies for GHG emission reduction. As the second largest open registry in the world, the Marshall Islands shoulders a bigger responsibility, particularly when its flagged ships contribute to around 7% of the total CO₂ emissions emitted by 223 flag states (ICCT, 2017). Figure 8 gives a breakdown of average CO₂ emissions per flag state.

Chapter 4: Research methodology

4.1 Introduction

The chapter contains a detailed methodology for this PhD study. Sections 4.2 and 4.3 present arguments for selecting *Pragmatism* as the most appropriate philosophical framework for this study and adopting a mixed methods approach to research. Sections 4.4 onwards discuss the research approach, methods of data collection and analysis, validity and reliability considerations and limitations of the study.

4.2 Philosophical framework

Creswell (2009) describes three types of research design commonly used by investigators – qualitative, quantitative and mixed methods. This PhD study adopted a mixed methods research approach, combining elements of both, the qualitative and quantitative traditions. This approach aligns well with *Pragmatism*, a philosophical framework considered most suitable for this PhD study compared to other existing paradigms or worldviews, such as *Positivism*, *Post-Positivism*, *Interpretivism* and *Constructivism*.

The concept of *Pragmatism*, derived from the work of Peirce, James, Mead and Dewey, provides an alternative paradigm for researchers who seek a mixed methods approach to studies (Bloomberg & Volpe, 2012). This concept is widely accepted by many social and behavioural science researchers (Tashakkori & Teddlie, 1998). Pragmatists are of the view that paradigms alone should not determine the kind of inquiry a researcher undertakes, instead, the problem should be tackled with a wide range of conceptual and methodological tools as deemed appropriate (Tashakkori & Teddlie, 1998). The concept stands on the belief that there are enough similarities in fundamental values between the qualitative and quantitative methods to collectively form an effective research approach.

4.3 Research approach

A *mixed methods* research approach provided sufficient flexibility in selecting appropriate strategies of inquiry and methods for this PhD study. Tashakkori & Teddlie (1998) define mixed methods studies as “those that combine the qualitative and quantitative approaches into the research methodology of a single or multi-phased study”. This should not be confused with a mixed model study, where a combined use of approaches is evident in all phases of the research process, in the paradigm, design, data collection, data analysis and interpretation of results. In contrast, a mixed methods study makes this distinction at the methods level only.

Rationale for using a mixed method approach

In the conceptual stage of this study, the primary focus was on choosing methods that would best address the objectives and the research questions. This ultimately led to selection of a combination of qualitative and quantitative methods. The elements of both approaches are evident this study, which include: semi-formal interviews, direct observation, field research, collection of quantitative and qualitative data, document analysis and statistical analysis (elaborated further under Section 4.4 of this chapter). The study demanded a rigorous design that would strengthen the credibility of evidence and reduce bias.

The credibility factor was crucial for a number of reasons. Firstly, this study has strong implications for policy makers in 14 Pacific states and the regional organizations. It was important that policy recommendations of this study be based on a robust methodology for wider acceptance. A pure qualitative or quantitative approach would not have provided a holistic view of the research problem. Secondly, the researcher had the opportunity to observe and participate in three MEPC negotiation sessions on international shipping emissions during the study timeframe. This hands-on experience translated into an additional method of data collection, which proved to be an important validator of findings that resulted from other methods, such as semi-formal interviews and quantitative data collection.

Concurrent mixed method

Recognizing that mixed methods strategies are less well known than quantitative or qualitative approaches, Creswell (2009) suggests three general strategies: *Sequential* mixed methods, *concurrent* mixed methods and *transformative* mixed methods. Bloomberg & Volpe (2012) limit the categories to *sequential* and *concurrent* only. This PhD study found *concurrent* mixed methods an appropriate fit for this research, which is similar to *parallel/simultaneous studies* as described by Creswell (1995) and Tashakkori & Teddlie (1998). In a *concurrent* mixed methods procedure, qualitative and quantitative data are collected at the same time and integrated in the interpretation of the overall results. Although both types of data are collected during the same stage, priority may be given to one form of data over the other (Castro *et al.*, 2010). In this PhD study, data collection through interviews, direct observation of negotiations, policy documents, meeting outcomes and quantitative means ran simultaneously.

Fixed mixed method design

In line with the principles for designing a mixed method study (Creswell & Clark, 2011), this PhD study adopted a *fixed* mixed method design as opposed to an *emergent* design. In a *fixed* design, the quantitative and qualitative methods are predetermined at the start of the research process, whereas in an *emergent* design the methods arise as the study progresses. In this study, the designing of the research was aligned to the study objectives, research questions and structuring of the chapters. This provided clear direction to the data requirements for the standalone chapters and the methods of analysis at the onset of research. The funding allocation for the research was also a determinant of the number of Pacific states that the researcher could visit for research purposes. This was fixed prior to the research and remained status quo upon completion of the study.

Research questions

In a qualitative study, the researcher states qualitative research questions, not objectives or hypotheses, whereas a quantitative study entails use of quantitative research questions and hypotheses (Creswell, 2009). For pragmatists, the research questions determine the methods used (Bloomberg & Volpe, 2012), and are considered “more important than either the method they use or the paradigm underlying the method” (Tashakkori & Teddlie, 1998). In mixed methods approaches, the researcher

collects and analyses both qualitative and quantitative data based on the research questions. This PhD study adopted a similar approach in this regard. The research questions are included at the end of the literature review section in Chapter 2. This study also chose to maintain an overall aim and four objectives to set the overall direction for the research. The findings of the study were tested against both elements, the objectives and the research questions.

4.4 Methods

4.4.1 Scope and sampling

This study was conducted on a part-time basis within a five-year timeframe, from 2015–2019. The research fits within the broad framework of climate diplomacy and low carbon shipping. The primary focus of this study is on decarbonisation of the international shipping sector, but some comparisons have been made with relevant developments in the domestic shipping area. The scope of study is limited to the role of 14 Pacific states in decarbonising the international shipping sector. In order to gain a holistic view of the subject, the study was designed to examine relevant factors at international, regional and national levels.

At the international level, the study limited the scope to the international shipping emissions negotiations that took place at IMO from 2015–2017¹⁸, with some consideration for UNFCCC bunker negotiations. The year 2015 was the starting point of Pacific's interventions at IMO MEPC, and the end of international shipping emissions negotiations at UNFCCC. It made sense to begin a critical analysis of the Pacific's role in the negotiations from the year 2015 onwards. But archival records for attendance of Pacific states at MEPC meetings have been analyzed for 10 MEPC sessions – MEPC 61 to MEPC 70, over the period of October 2010 to October 2016. At the national level, the scope of the study was limited to examining the national development plans, relevant sector policies and institutional arrangements in 14 Pacific states. At the regional level, the study focused on the efforts of regional inter-

¹⁸ Due to unanticipated delays in the review process of this draft thesis, the study was completed at the end of 2019. In order to keep the study current, key developments that took place at the MEPC negotiations in 2018 are also discussed in this chapter

governmental organizations in supporting Pacific states in decarbonisation of the international shipping sector.

The core group under study comprised of 14 Pacific states – Cook Islands, FSM, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, PNG, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. In order to achieve the overall aim of this study, it was important that the scope be extended to include all 14 Pacific states, rather than limit it to the Pacific IMO member states only. When the study commenced in 2015, 11 Pacific states were members of IMO. In 2018, FSM became the latest Pacific state to join IMO, while Niue and Nauru had yet to attain membership.

Within each Pacific state, the subgroups of interest to this study were the maritime administrations, ministry of transport, ministry of foreign affairs, ministry responsible for climate change, permanent representatives to IMO, shipping emissions negotiating team and open registry management companies. Each of these stakeholders play a distinct role in decarbonisation of the international shipping sector, such as regulating the maritime sector, policy formulation and implementation, leading shipping emissions negotiations at UNFCCC and IMO, engaging in regional consultative forums, representing the government at IMO meetings, and managing open registry business. While the study broadly scrutinized the role of all key stakeholders, only the maritime administrations, and in some cases foreign affairs, were officially approached for semi-formal interviews.

The lead role of maritime administrations in national maritime regulatory affairs, and as the authorized agents for all communication to IMO, made them ideal candidates for the interview. Any decarbonisation work relating to the international shipping sector will ultimately be channeled through the maritime administrations and executed as part of their flag state responsibilities. The maritime administrations will also be targeted for any attempts to strengthen the role of Pacific states in IMO shipping emissions negotiations. Time permitting, the interviews could have been extended to other stakeholders, but scheduling discussion sessions with 14 maritime administrations, located in different countries, turned out to be a fairly lengthy and difficult exercise.

In addition, the funding allocations for this research covered travel to three Pacific states only: Cook Islands, Kiribati and Tonga. Few factors were taken into consideration in selecting these countries. They vary significantly in terms of representation at IMO shipping emissions negotiations. As evident during the conceptual phase of this study, the Cook Islands has been represented by an expatriate, appointed by the government as the Permanent Representative to IMO. Kiribati has been represented by its open registry management company. The Ministry of Foreign Affairs of Tonga, through its diplomatic office in London, has been representing its government at MEPC sessions. It was obvious that the maritime administrations played an insignificant role in the negotiations, therefore it was crucial to get a wide range of viewpoints on this matter. Moreover, the Cook Islands' open registry operates out of its capital city, whereas other Pacific open registries are located offshore. This provided an opportunity to interact with the open registry and examine its relationship with the maritime administration in the Cook Islands.

The regional organisations under study comprised of PIDF, PIFS, SPC, SPREP and USP. The USP is primarily an academic institution and does not engage in technical assistance missions to Pacific states in the same manner as other regional inter-government organisations. But in recent years, USP has raised its profile in the area of decarbonisation of the shipping emissions, through research work and policy advice to Pacific states. It was therefore important to assess the effectiveness of USP's support in this area in addition to other regional organisations' efforts.

4.4.2 Data sources and collection

There were multiple sources of data for this study: documents, semi-formal interviews, direct observations and field research. The data collection strategies used during this study are discussed below:

(i) Direct observations

During the study time period, the researcher participated in five international shipping emissions negotiations, four at IMO in London and one at UNFCCC (ie. COP 21) in Paris. The IMO negotiations included: MEPC 69, 70 and 71; and the First

Intersessional Meeting of the Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 1) in London. A number of milestones have been achieved for the international shipping sector through these negotiations. The *Paris Agreement* resulted from COP 21 negotiations in 2015. The *Roadmap for developing a comprehensive IMO Strategy on reduction of GHG emissions from ships* was adopted at MEPC 70 in 2016. Through ISWG-GHG 1, IMO member states received a week-long dedicated discussion space for international shipping emissions.

First-hand experience of these negotiations added consideration substance to the whole research, as it allowed the researcher to observe the proceedings directly and understand the context in Pacific states operate with regards to global shipping emissions negotiations. It was also an important source of qualitative and quantitative data, such as number of Pacific states represented, number of responses in favour of setting a target for emissions-reduction, number of states opposing a cap on emissions and the nature of arguments from the floor. In addition, the observational data and information derived from this process was used to strengthen various discussion points in the thesis, particularly where literature was lacking.

Another useful experience for the researcher was being part of different Pacific government delegations at each of these sessions: COP 21 – Marshall Islands; MEPC 69 – Solomon Islands; MEPC 70 and 71 – Fiji; and ISWG-GHG 1 – Fiji. This led to a deeper understanding of the issues affecting various governments in global negotiation forums. During COP 21, interactions with various groups, such as AOSIS and PSIDS, increased understanding of the role coalition blocs play in supporting SIDS in climate change negotiations.

(ii) Documents

The national development plans and relevant sector policies of 14 Pacific states were reviewed and analysed for shipping emissions provisions. The sector plans included: national maritime policies, national transport sector plans, national climate change policies, energy sector policies, and the NDCs. The documents are available on the internet and websites of respective government ministries.

Another source of data for this study was the regional policies and communiques. All documents are available on the website of various regional organisations. The study reviewed the following regional policies: *Forum Principles on Regional Transport Services* (PIFS, 2004), *The Pacific Plan* (PIFS, 2005), *Framework for Action on Transport Services 2011-2020* (SPC, 2011a), *Pacific Islands Framework for Action on Climate Change 2006-2015* (SPREP, 2006), *The Framework for Pacific Regionalism* (PIFS, 2014), *Framework for Resilient Development in the Pacific 2017-2030* (PIFS, 2016a), and the *Pacific Roadmap for Sustainable Development* (PIFS, 2017).

The following communiques and declarations were sourced and reviewed: *The Niue Declaration on Climate Change* (PIFS, 2008), *Maritime Ministerial Communique 2009* (SPC, 2009b), *Cairns Compact on Strengthening Development Coordination in the Pacific* (PIFS, 2009), *Port Vila Declaration On Accelerating Progress On The Achievement Of The Millennium Development Goals* (PIFS, 2010), *Waiheke Declaration for Sustainable Economic Development* (PIFS, 2011), *Communique – Inaugural Pacific Regional Meeting of Energy, ICT and Transport Ministers* (SPC, 2011b), *Communique – Second Pacific Regional Energy and Transport Ministers' Meeting* (SPC, 2013a), *Majuro Declaration on Climate Leadership* (PIFS, 2013), *The Suva Declaration on Climate Change* (PIDF, 2015), *Smaller Island States Leaders' Port Moresby Declaration on Climate Change* (PIFS, 2015a), *Pacific Islands Forum Leaders Declaration on Climate Change Action 2015* (PIFS, 2015b), *Forum Communique 2016* (PIFS, 2016b), *Communique – Third Pacific Regional Energy and Transport Ministers' Meeting* (SPC, 2017a), *Forum Communique 2017* (PIFS, 2017), and the *Forum Communique 2018* (PIFS, 2018).

Reports of MEPC meetings and the participants' lists formed an additional source of qualitative and quantitative data and provided substantial input into Chapter 4 analysis. The MEPC reports are available on the IMO website at IMODOCs (www.docs.imo.org) but require registration to access the documents on this site. The researcher registered as a public user on this site to gain access to all publicly available MEPC meeting records.

(iii) *Semi-structured interviews and field research*

Stakeholder perspective on the subject was an important consideration for the study. The primary target groups for the semi-formal interviews were maritime administrations of 14 Pacific states and representatives of regional organisations. In some cases, interviews were held with representatives of other ministries that were closely involved in shipping emissions negotiations and consultations. The researcher approached all interviewees officially through an email request, which also enclosed a confirmation letter from the researcher's university authenticating the study. The interviews proceeded with the consent of the interviewees. A list of semi-structured interview questions was used to guide discussions with the stakeholders, which contained a larger number of open-ended questions. Annex 1 contains a list of all people interviewed for the study. Annex 2 contains the list of interview questions for Pacific states. Annex 3 contains the list of interview questions for regional organisations.

The interviews were conducted through two main modes, phone and face-to-face. The study managed to conduct majority of the interviews on a face-to-face mode, either through field visit trips or on the back of regional and international meetings. Organizing face-to-face interviews at the back of regional/international meetings was a time-consuming process, and often required rescheduling sessions at the convenience of the interviewees. It should be noted that face-to-face interviewing is the most effective approach to data collection in the context of Pacific states, where email responses to questionnaires can be low and slow. The interviews were not audiotaped or recorded due to the sensitivities involved with the participation of influential government officials in the research process. Interview notes were kept through the process.

With limited funding, the researcher was able to undertake field visit trips to three Pacific states only: Cook Islands, Kiribati and Tonga. This mode of research allowed the researcher to interview other relevant government ministries in addition to maritime administrations. In Cook Islands, the researcher held an informal discussion with the open registry management company. This was the only registry management company visited under this study, as it was located in the Pacific region.

4.4.3 Data analysis

This study utilised a combination of quantitative and qualitative data analysis methods, predominantly constituting of statistical analysis, document analysis (gap analysis of policy documents) and narrative data analysis. The results section of the thesis is split into three standalone chapters, each with a distinct style of analysis. While there is a balance of quantitative and qualitative data analysis in the overall study, the ratio differs for each of the standalone chapters. There is heavier emphasis on quantitative data analysis in Chapter 5, a balance of both approaches in Chapter 6 and a stronger qualitative analysis component in Chapter 7 (see tables 4–6 for details). Appropriate analysis techniques for the substantive chapters were selected based on the demands of corresponding objectives and research questions.

Statistical analysis was carried out through Microsoft Excel, a simple yet powerful analysis tool that met the needs of the study adequately. This study contains a fairly wide range of quantitative analyses, but the volume of data for each set of analysis is not very large. Therefore, the study did not find any need to utilize special computer softwares to analyse quantitative or qualitative data. For qualitative data analyses, tables were sufficient for recording narrative data from the semi-formal interview sessions and the document analysis. A detailed account of analysis carried out for each of the substantive chapters is discussed below.

Chapter 5 analysis details

The specific objective of Chapter 5 was to analyse the role of Pacific states in the international shipping emissions negotiations and the impact they have on the outcomes of the negotiations. Two research questions were linked to Chapter 5:

- What is the role of Pacific states in the international shipping emissions negotiations at IMO and UNFCCC, and the level of influence they have on the outcomes?
- What factors affect the negotiating power of Pacific states in IMO shipping emissions negotiations?

A number of separate sets of analysis were conducted to address the objective and research questions. Statistical analysis featured strongly in this chapter, followed by analysis of narratives obtained through direct observations of negotiations and interviews. As evident from Table 4, the quantitative analysis component of this chapter is heavier than qualitative, but it met the needs of this chapter adequately.

Table 4: Key analysis details for Chapter 5

Areas/Indicators	Data used	Type of analysis
Representation of Pacific states in MEPC sessions	Attendance records from MEPC 61–70 sessions	Quantitative (statistical)
Submissions made by Pacific states at MEPC	Submission records from MEPC 61–70 sessions	Quantitative (statistical)
Response of Pacific states to UNFCCC negotiations	Researcher’s narratives from direct observation of COP21 negotiations; interview narratives	Qualitative (narrative)
Response of Pacific states to MEPC GHG submissions	Researcher’s narratives from direct observation of MEPC 68–70 negotiations; interview narratives	Quantitative (statistical)
Solidarity of Pacific states during GHG emissions negotiations	Researcher’s narratives from direct observation of MEPC 68–70 negotiations; interview narratives	Quantitative (statistical); Qualitative (narrative)
Support from other IMO member states	Researcher’s narratives from direct observation of MEPC 68–70 negotiations; interview narratives	Quantitative (statistical);
Support from the shipping industry for submissions involving Pacific states	Researcher’s narratives from direct observation of MEPC 68–70 negotiations; interview narratives	Quantitative (statistical)
Impact of Pacific’s intervention on MEPC negotiations and decisions	Researcher’s narratives from direct observation of MEPC 68–70 negotiations; Submission records from MEPC 61–70 sessions; interview narratives	Quantitative (statistical)
Factors that affect the negotiating power of Pacific states going into MEPC GHG negotiations	Researcher’s narratives from direct observation of MEPC 68–70 negotiations; Submission records from MEPC 61–70 sessions; interviews narratives	Quantitative (statistical); Qualitative (narrative)

Chapter 6 analysis

The specific objective of Chapter 6 was to assess the readiness of the national policy landscape in supporting Pacific states to transit to a net zero future in shipping. The research question linked to Chapter 6 was:

- Is the national policy landscape in Pacific states adequate to support a transition to a net zero emissions future in shipping?

This was a fairly large chapter with a balance of quantitative and qualitative analysis. The two analysis techniques prevalent in this chapter were document analysis and semi-formal interview narratives. A gap analysis was conducted of the national

development plans and relevant sectoral policies (transport, maritime, energy and climate change) of 14 Pacific states to identify provisions for maritime sector goals and shipping emissions. The domestic shipping sector was included in the analysis for comparative purposes. Table 5 contains the key analysis details.

Table 5: Key analysis details for Chapter 6

Areas/Indicators	Data used in analysis	Type of analysis
<i>Analysis of national development plans</i>		
Provision of shipping emissions in national development plans	National development plans of 14 Pacific states	Qualitative analysis (document); Quantitative analysis (statistical)
Number of Pacific states that prioritise the maritime sector in national development goals	National development plans of 14 Pacific states	Quantitative analysis (statistical)
Level of prioritisation for shipping services	National development plans of 14 Pacific states; secondary data from various sources (archival data)	Qualitative analysis (document); Quantitative analysis (statistical)
<i>Analysis of sector policies</i>		
Status of national maritime policies in Pacific states	National maritime policies in Pacific states; interview narratives	Quantitative analysis (statistical)
Shipping emissions provisions in national maritime policies	National maritime policies of 14 Pacific states	Qualitative analysis (document)
Shipping emissions provisions in national transport sector plans of Pacific states	National transport sector plans of 14 Pacific states	Qualitative analysis (document)
Shipping emissions provisions in national energy policies	National energy policies of 14 Pacific states	Qualitative analysis (document)
Number of Pacific states with shipping emissions provisions in national energy policies	National energy policies of 14 Pacific states	Quantitative analysis (statistical)
Status of shipping emissions provisions in national climate change policies	National climate change policies of 14 Pacific states	Qualitative analysis (document)
Number of Pacific states with shipping emissions provisions in climate change policies	National climate change policies of 14 Pacific states	Quantitative analysis (statistical)
Shipping emissions provisions in NDCs	NDCs of 14 Pacific states	Quantitative analysis (statistical)
<i>Analysis of institutional arrangements and limiting factors</i>		
Open registries dynamics	Secondary data and information from various sources; Interview narratives;	Qualitative analysis (narrative)
Pacific government agencies and registry management companies involved in shipping emissions work at national level	Interview narratives	Qualitative analysis (narrative)
Rate of attendance of various national agencies at MEPC shipping emissions negotiations	Attendance records from MEPC 61–70 sessions	Quantitative analysis (statistical)
Status of legislation and ratification of MARPOL convention	IMO records on ratification of Annex VI of MARPOL Convention	Quantitative analysis (statistical); Qualitative analysis (narrative)

Resource constraints	Interview narratives	Qualitative analysis (narrative)
Number of staff in maritime administration of Pacific states	Maritime administration staff records	Quantitative analysis (statistical)
Impact on trade	Secondary data and information from various sources	Qualitative analysis (narrative)
Fuel consumption data	Secondary data and information from various sources	Qualitative analysis (narrative)

Chapter 7 analysis details

The specific objective of Chapter 7 was to analyse the role of regional organisations in supporting the efforts of Pacific states to decarbonise the international shipping sector. The corresponding research question was:

- What level of support is available from regional organisations to assist Pacific states in their efforts to decarbonise the international shipping sector?

This chapter is dominated by qualitative analysis. The two analysis techniques prevalent in this chapter are document analysis and the narratives analysis derived from the semi-formal interviews with regional organisations. A number of key regional policies and communiques were analysed to identify provisions for international shipping emissions. This was expected to identify the gaps in regional policy development in relation to emissions-reduction in the international shipping sector. The interview narratives provided an indication of the overall regional efforts to decarbonise the international shipping sector, and the support provided to Pacific states. The analysis undertaken in this chapter also led the researcher to assess the feasibility of a regional strategy for decarbonising the international shipping sector. Table 6 contains the analysis details.

Table 6: Analysis details for Chapter 7

Areas/Indicators	Data used in analysis	Type of analysis
Key regional inter-governmental organisations in the Pacific	Data and information from websites and other various sources	Qualitative analysis (narrative)
Regional efforts to decarbonise the international shipping sector	Interview narratives; Data and information from websites and other various sources	Qualitative analysis (narrative)
Limitations and gaps in the regional coordination process	Interview narratives; Data and information from websites and other various sources	Qualitative analysis (narrative)
Provisions for shipping emissions in regional policies and frameworks	Key regional policies and frameworks (from 2004–2017); interview narratives	Qualitative analysis (policy/document)

Provisions for shipping emissions in regional communiques and declarations	Key regional communiques and declarations (from 2008–2018); interview narratives	Qualitative (policy/document)
Feasibility of a regional strategy for decarbonising the international shipping sector	Information from websites of regional organisations and other related various sources; analysis of previous sections in this chapter	Qualitative (narrative)

4.5 Validity and reliability

Addressing researcher bias – “A single observer with deep personal involvement in the research introduces the possibility of selective perception and bias in the observation” (Patton, 2015). The risk of bias in this study was extremely high, as the researcher was directly involved in the IMO shipping emissions negotiation process, and part of various Pacific state delegations that were advocating for a cap on international shipping emissions. There was a possibility that countries opposing a cap on international shipping emissions would be judged subjectively, and unfavourably, in the study. To prevent bias, the researcher has attempted to take an objective stance, basing arguments on hard evidence and statistics derived through multiple methods of data collection and analysis.

The researcher’s background, experiences and values also increased the possibility of injecting bias into this study. Born and raised on a small island developing state in the Pacific, the researcher understands the serious repercussions of inaction when it comes to climate change. Having experienced the devastating impacts of climate change, it is only natural for the researcher to gravitate towards efforts that aim to reduce global GHG emissions. The researcher did enter this study as an advocate for putting a cap on international shipping emissions but was fully aware of the need to prevent bias from affecting the credibility of the study. With a balance of quantitative and qualitative analysis, and triangulation of data, the study strived to deliver a balanced research output.

Personal involvement over a prolonged time period – where personal involvement breeds the possibility of bias, it also leads to a deeper understanding of the context and phenomena under study, particularly if the researcher has spent a prolonged time in the field (Creswell, 2009). In this study, the researcher spent about three years, 2015–

2017, interacting closely with the maritime administrations of Pacific states and relevant regional organisations on matters relating to decarbonisation of the international shipping sector. These interactions were regular and took many forms, such as: regional consultations on shipping emissions, national consultations on shipping emissions, drafting of MEPC shipping emissions papers, onsite interactions during MEPC shipping emissions negotiations and regional organisation led forums in the Pacific.

Triangulation of data – The mixed methods approach contributed greatly to validating findings using multiple methods of data collection. For example, during the semi-formal interviews, the Pacific states were asked about their government's position on the issue of reduction of greenhouse emissions from international ships and setting a target for emission-reduction. The response to this question was cross-checked against the information gathered by the researcher through direct observation of positions Pacific states assumed during the MEPC shipping emissions negotiations. The quantitative analysis of MEPC meeting transcripts further confirmed the validity of this response. This proved to be a reliable form of verification as the secondary data for analysis was sourced from proper IMO records. But due to restrictions from IMO, the MEPC meeting transcripts could not be referenced in this thesis.

Credibility of data sources – This study has taken care to collect data and information from credible sources. In terms of selecting stakeholders for semi-formal interviews, the researcher was mindful of engaging with government officials authorised by their respective governments to lead MEPC negotiations or regional consultations. In regional organisations, interviews were conducted with staff that were closely involved with shipping emissions work. All data and information were collected from the official websites of these organizations, peer reviewed journals and other reliable online sources. Information referenced from newspapers and other online news sources were cross-checked with the stakeholders concerned. Credibility of data was further strengthened through use of official IMO records of attendance and meeting outcomes.

4.6 Limitations

Studies involving government officials, and in this case of 14 Pacific states, can be extremely challenging as it requires a high degree of sensitivity and patience on the researcher's part. Audiotape recording and transcribing of interviews could be not done due to the sensitivities involved. While none of the Pacific states declined the researcher's request for semi-formal interviews, it was difficult to schedule appointment with some maritime administration officials. It became more than a year-long process, and delayed information and data expected through this particular method. This then affected timing of comparative analysis across all 14 Pacific states using interview data. Some of the interviews were completed during the writing phase of the substantive chapters.

It was not possible to conduct all the interviews using the same mode of communication, hence inconsistency in the process. The researcher managed to conduct most of the interviews face-to-face, and the remaining via telephone. The face-to-face interviews were more thorough and interactive. In addition, due to limited funding, field research was possible for three countries only, leading to further inconsistency in the research process. Field research to countries enabled interviews with a wider group of stakeholders, such as ministry of foreign affairs, climate change division and ministry of environment. In the absence of field research to other countries, the researcher was exposed to the viewpoints of the maritime administrations only. Engaging with other relevant stakeholders would have provided a wider range of perspectives on issues at the national level.

The study could have benefited further from member checking to improve validity and reliability of research. The delays in overall interview process has not allowed this to happen fully. However, during the interviews with Pacific states, the researcher presented the statistical analysis on member states' attendance and trends in positions at MEPC shipping emissions negotiations. This was new information for member states and was well received. But a follow-up meeting with interviewees could not be arranged due to time constraints, and therefore the analysis of interview narratives could not be presented for member checking.

Chapter 5: The role of Pacific states in international shipping emissions negotiations

5.1 Introduction

Transiting to a net-zero emissions future will require strong commitment and action from all countries, irrespective of their contribution to global greenhouse gas emissions. The Pacific states, collectively, account for ~0.03% of the global emissions of carbon dioxide from fuel combustion (IPCC¹⁹, 2001). The level of emissions Pacific states produce may not be a significant cause of concern, but the extent of destruction they face due to climate change is. Many Pacific states are already experiencing the devastating effects of climate change – stronger cyclones, severe droughts, saltwater inundation, sea level rise and ocean acidification (World Bank, 2013; Oxfam, 2016; ADB, 2019). The associated economic and financial implications are huge for small island developing states. The consequences are far more serious for low lying countries, such as Kiribati and Tuvalu, where an entire nation sits on the brink of extinction (Albert, 2016; Smith, 2013). Against this backdrop, it is crucial that the Pacific states play an influential role in global climate change negotiations. Where the overall climate change agenda is concerned, the Pacific's strong stance on the matter is widely known and revered (Goulding, 2016; Carter, 2016; COP23, 2017). However, the role of Pacific states in international shipping emissions negotiations, and the level of influence they have on global policy outcomes, remain largely unexplored.

The international shipping emissions negotiations are currently taking place at IMO under the MEPC sessions. This matter was also under negotiation at UNFCCC's climate change forums for many years but remained unresolved. The UNFCCC members were not able to reach an agreement on the methods to reduce GHG emissions from the international shipping sector under UNFCCC principles (Bodansky, 2016; Zhang, 2016; Shi, 2016; Vladu and Hackmann, 2012; Chrysostomou & Vågslid, 2012). At the Paris Agreement negotiations in 2015, UNFCCC took a decision to cease all negotiations relating to international shipping

¹⁹ Inter-governmental Panel for Climate Change

emissions at its climate change forums. The matter continues to be discussed at UNFCCC forums but limited to the progress reports submitted by IMO to the SBSTA sessions.

This chapter analyses the role of Pacific states in the international shipping emissions negotiations at IMO and UNFCCC, and the level of influence they have on the outcomes. The focus is primarily on the IMO MEPC negotiations that took place during the period 2015 to 2018. The UNFCCC shipping emissions negotiations are also examined broadly. In order to assess the type and magnitude of the role Pacific states assume at IMO GHG emissions negotiations, the following factors are considered in this chapter: representation of Pacific states in MEPC sessions; submissions made by Pacific states at MEPC; response of Pacific states to MEPC GHG submissions; solidarity of Pacific states during GHG emissions negotiations; support from other IMO member states and the shipping industry for submissions involving Pacific states; and the overall impact of Pacific's intervention on MEPC negotiations and outcomes. The chapter concludes with identification of factors that affect the negotiating power of Pacific states in MEPC GHG negotiations, and some reflections on the research findings.

5.2 International shipping emissions negotiations at UNFCCC and the response of Pacific states

The complex, sector-based nature of international shipping emissions has presented significant challenges for UNFCCC, the global climate change regulatory body, in resolving the matter successfully through its climate change negotiations. Several attempts have been made since 1995 by SBSTA to allocate GHG emissions from international shipping, and to develop regulatory principles and reduction targets (UNFCCC, 2019a). However, UNFCCC members were not able to reach a consensus on any of the proposals due to varying interests of states on regulatory matters and the technical barriers in gathering the required data (IMO, 1999; UNFCCC, 1999; Shi, 2016; UNFCCC, 2019a). This section broadly analyses the international shipping emissions negotiations that took place during the overall discourse of the 1997 Kyoto Protocol and the 2015 Paris Agreement. The response of Pacific states to the

international shipping emissions negotiations at the UNFCCC Paris conference in 2015 is analysed in detail. The post-Paris developments are also discussed briefly.

The Kyoto Protocol

The 1997 Kyoto Protocol, the first international agreement that committed UNFCCC parties to reduce GHG emissions, delegated IMO the responsibility for regulating GHG emissions from marine bunker fuels. Article 2 of the Kyoto Protocol states that *“The Parties included in Annex 1 shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively”* (UN, 1998). Even though IMO had a clear mandate to deal with GHG emissions from ships, the matter continued to be negotiated at UNFCCC COP sessions until 2015. Under the *Revised 1996 Guidelines for National Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change*, UNFCCC member states were required to provide data on shipping emissions to UNFCCC (IMO, 1998). Under the revised guidelines, emissions based on fuel sold to ships or aircraft engaged in international transport had to be reported separately, and therefore not included in national GHG totals. As a result, emissions from international transport were not included in the quantified emission limitation or reduction commitments under the Kyoto Protocol.

The UNFCCC SBSTA was requested to consider how international bunker emission allocations could be included in the overall greenhouse gas inventories of UNFCCC Parties. At its 10th session in 1999, SBSTA noted that the data on emissions from international bunker fuels provided by Annex I Parties were often incomplete and inconsistent (UNFCCC, 1999; IMO, 1999). Further work was required to improve the methodology for estimating and reporting emissions from international maritime transportation. The SBSTA requested IMO to make available their data and expertise as a large number of countries experienced difficulties in reporting the appropriate split into domestic and international emissions (UNFCCC, 1999; IMO, 2000b). The next few years saw IMO and UNFCCC work closely together to seek options for addressing issues relating to data and the methodology for allocating emissions.

A special group was established at SBSTA 24 to continue the work on emissions from international aviation and maritime transport. Referring to Article 2.2 of the Kyoto Protocol and decision 2/CP.3, a number of SBSTA delegations stated that the issue should be referred to ICAO and IMO, while some delegations proposed to delete the agenda item entirely (IMO, 2006a). Several delegations wanted to have a substantial discussion on this issue but, as the UNFCCC required consensus, no conclusions could be agreed upon. This matter continued to be deliberated at subsequent SBSTA sessions, but the group was unable to reach any conclusion on regulating emissions from the international aviation and shipping sectors (IMO, 2008a; IMO, 2008b).

The Paris Agreement negotiations

The international shipping emissions matter was tabled for the consideration of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) during the Paris Agreement negotiation in 2015. Established in 2011 by COP, ADP was mandated to develop a legal instrument or agreed outcomes on climate change by the year 2015. The ADP therefore became the key negotiation space for the Paris Agreement, and international shipping emissions. Despite a strong push from EU and the Environmental Integrity Group (Switzerland, Republic of Korea, Mexico and Liechtenstein), there was not enough support from a majority of UNFCCC member states, including Pacific states, to retain the international transport (maritime and aviation) emissions text in the Paris Agreement.

The major roadblock came in the form of an official statement issued by G77 and China on 1 December 2015 during the 21st session of the Conference of the Parties (COP 21), which expressed strong reservations about including international transport emissions in the Paris Agreement. The Group was of the view that *“the secretariats of ICAO and IMO should continue to report, at future sessions of the SBSTA, on relevant work on this issue, and Parties presenting their views in this regard. Thus, the G77 and China support to keep this matter under this agenda item under SBSTA, avoiding any attempts to include it in the ADP”* (SBSTA 43, 2015).

Though Pacific states were not particularly vocal on the matter during the negotiation sessions of ADP, their membership with G77²⁰ automatically placed them in support of G77's official statement. Despite the reservations from G77 and China in the early stages of the negotiation, the EU negotiators pushed for inclusion of international transport emissions text in the Paris Agreement. The efforts were successful to a certain degree, as the draft Paris outcome released on 5 December 2015 included the following text under Article 3, paragraph 20: *[Parties [shall][should][other] pursue the limitation or reduction of greenhouse gas emissions from international aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively, with a view to agreeing concrete measures addressing these emissions, including developing procedures for incorporating emissions from international aviation and marine bunker fuels into low-emission development strategies.]* However, this insertion did not find much support from the floor, even though the wording was very similar to that in the Kyoto Protocol.

In a final attempt, the EU negotiators proposed a much watered-down version of the previous text and submitted the following revised text on 8 December 2015, for Article 3, paragraph 20 of the first draft Paris outcome: *“In the context of the long term mitigation goal pursuant to Article [2], paragraph [1], Parties [shall][should][other] pursue the reduction of greenhouse gas emissions from international aviation and maritime transport, working through ICAO & IMO, respectively.”* The EU negotiators reached out to other UNFCCC member states, including the Pacific states, in a bid to gather wider support for the proposed text, but did not receive any official response in time for the submission deadline on 8 December 2015. Due to lack of support, all reference to international transport emissions was removed from the second draft Paris outcomes document released on 9 December 2015. The status remained the same in the final Paris Agreement.

In the context of the overall Paris Agreement negotiation, the Pacific states have proven to be effective and influential players (King, 2015; Brun 2016). The Marshall Islands in particular, through its then Foreign Minister, the late Honourable Tony de

²⁰ In particular for Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu

Brum, spearheaded the Coalition of High Ambition (HAC) group, which was instrumental in the successful negotiation of the Paris Agreement. The brainchild of Connie Hedegaard (former EU Commissioner for Climate Action), HAC was established as an informal group in 2011 to increase dialogue among countries that were negotiating for ambitious outcomes from the UNFCCC climate change conferences (Brun, 2016). The European Commission and Norway funded and convened several ministerial meetings in the lead up to the Paris Conference before the Marshall Islands was handed over the role of convener in May 2015. During the Paris Conference, HAC pushed for a five-year review process of the Paris Agreement, a long-term goal to cut emissions and a recognition of the dangers of warming above 1.5°C (Pashley, 2015) – all of which were ultimately reflected in the Paris Agreement to a large extent. Initially, HAC comprised of about a dozen countries, but during the Paris Conference, the HAC's ambitions were supported by over 100 countries, including some major emitters, such as the US and Brazil.

The HAC is a success story of how back channel negotiations can crack an ambitious climate deal, and how a small island state of the Pacific can lead over 100 countries to negotiate a desired outcome. However, in the context of specific international shipping emissions negotiation during the Paris Conference, neither HAC nor any of the Pacific states could prevent the removal of the international transport emissions text from the Paris Agreement. The EU negotiators, who were driving for the inclusion of the international transport emissions text, did not find support from Pacific states on this matter despite their strong connections through HAC. It is possible that the Pacific states' unsupportive stance may have been influenced by the affiliation they have with other formal groups at UNFCCC negotiations, such as G77 and China, AOSIS and LDC. With over 130 developing countries in the G77 group, G77 exerts a powerful influence in UNFCCC negotiations. Most members of AOSIS (43 states) and LDC (50 states) also fall in the G77 group.

Another grouping that uplifted Pacific cohesion during the Paris Agreement negotiations was PSIDS, a high-level grouping that functions outside UNFCCC to improve collaboration among Pacific states on issues pertaining to sustainable development and climate change. Though PSIDS members convened regularly during the Paris negotiations, the issue of international shipping emissions was never injected

into the group's deliberations. The PSIDS' role in improving Pacific cohesion, including making Pacific voices more audible at COP sessions in Cancun, Durban and Doha, is well recognised (Goulding, 2016). The same influence was evident in Paris. However, the group did not make any obvious impact on the specific issue of international shipping emissions during the Paris Agreement negotiation.

Post-Paris developments

The removal of international shipping emissions text from the Paris Agreement did not signal the end of all related discussions at UNFCCC. The IMO is required to provide updates on international shipping emissions negotiations to COP but limited to SBSTA sessions only. The exchange of communication between SBSTA and IMO, with regards to international shipping emissions is not a new undertaking. It has been routine for many years in attempts to meet the requirements of the Kyoto Protocol and the IMO Assembly Resolution A.963(23).

It is also noted that the Paris Agreement does not make any reference to IMO or the decisions to implement the agreement, including on the pre-2020 ambition. In addition, Article 4 of the Paris Agreement refers to the required reduction of 'anthropogenic emissions' but there is no specific mention of international shipping emissions, or any other industry (UNFCCC, 2015). If the wording is left open to interpretation, then shipping emissions can be rightly categorised under anthropogenic emissions. Regardless of the wording inherent in the Paris Agreement, and any such interpretations, the international shipping emissions issue is not open for negotiation under the UNFCCC ADP sessions. The case differs for domestic shipping emissions. Under the Paris Agreement, UNFCCC member states are responsible for setting targets in their NDCs to reduce domestic shipping emissions and provide regular updates to UNFCCC on implementation efforts.

5.3 The evolution of IMO GHG emissions regime

It is widely agreed that the evolution of the IMO GHG emissions regime has been lengthy and intermittent (Wilensky, 2014; CSC, 2014; Strong, 2011; Okur, 2011). In the history of overall air pollution prevention efforts, the first regulatory steps were taken in the late 1980s to phase out ozone depleting substances (IMO, 2011). Since

then, a number of key air pollution prevention-related instruments and resolutions have been adopted by IMO, such as the *Prevention of Air Pollution from Ships* (adopted through Resolution IMO A.719 (17)) and the *Protocol of 1997 to MARPOL*²¹ 73/78, Resolution 8 on *Carbon Dioxide Emissions from Ships*, Resolution A.963(23) on *IMO Policies and Practices related to Reduction of Greenhouse Gas Emissions from Ships*, the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP). The most recent instruments include adoption of a data collection system for monitoring fuel oil consumption, the *Roadmap for Developing a Comprehensive IMO Strategy on Reduction of GHG emissions from Ships*, and the *Initial IMO GHG Strategy on the Reduction of GHG Emissions from Ships*. Table 7 contains a list of key GHG emissions-related instruments adopted by IMO.

Table 7: Key GHG emissions-related instruments adopted by IMO from 1990–2018
(Source: Author's research)

Instrument/measures	Purpose	Adoption and entry into force
Resolution on Prevention of Air Pollution from Ships (see Resolution A.719(17))	To instruct MEPC to prepare a new Annex to the MARPOL Convention to provide requirements to prevent air pollution from ships.	Adopted: 6 November 1991
MARPOL Annex VI (under the Protocol of 1997 to MARPOL 73/78)	To limit emissions from ships related to SO _x , NO _x , ODS, VOC, and shipboard incineration.	Adopted: September 1997 ²² In force: 19 May 2005
Resolution 8 on Carbon Dioxide Emissions from Ships	To mandate IMO to undertake a study on GHG emissions from ships and to consider feasible emissions reduction strategies	Adopted: September 1997
IMO policies and practices related to reduction of greenhouse gas emissions from ships (see Resolution A.963(23))	To request MEPC to progress work on GHG emissions; develop a workplan with a timetable, establish a GHG baseline and develop CO ₂ indexing methodology.	Adopted: December 2003
The Energy Efficiency Design Index and the Ship Energy Efficiency Management Plan	To reduce greenhouse gas emissions from ships through mandatory technical and operational energy efficiency measures. EEDI is a technical measure aimed at new ships using energy efficient equipment and engines. SEEMP is an operational measure aimed at existing ships better managing ship efficiency performance.	Adopted: July 2011 In force: 1 January 2013
Data collection system for fuel oil consumption of ships (see Resolution MEPC 278.70)	To enforce mandatory requirements for ships of 5,000 gross tonnage and above to collect and submit fuel oil consumption data to their flag state for aggregation and then submission to IMO. Data collection begins 1 January 2019.	Adopted: 2016 In force: 1 March 2018 (of amendment to MARPOL Annex IV)
Roadmap for Developing a Comprehensive IMO Strategy on Reduction of GHG emissions from Ships	To guide development of a strategy on reduction of GHG emissions from ships, where an initial GHG reduction strategy is adopted in 2018 and a revised one in 2023	Adopted: October 2016
Initial IMO GHG Strategy on the Reduction of GHG Emissions from Ships	To define a vision and level of ambition for reducing GHG emissions from international ships. A target has been set to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008 whilst pursuing efforts towards phasing them out by the end of this century. Revised Strategy to be adopted in 2023.	Adopted: April 2018

²¹ The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978

²² A revised Annex VI with tightened emissions limits was adopted in October 2008 and entered into force on 1 July 2010.

The Protocol of 1997 to MARPOL 73/78, which was adopted in September 1997, added a new Annex VI titled ‘Regulations for the Prevention of Air Pollution from Ships’. This regulation was an important step in addressing air pollution prevention issues, but initially it only covered emissions from shipboard incinerations, Nitrogen oxides (NO_x), Ozone Depleting Substances (ODS), Sulphur oxides (SO_x) and Volatile Organic Compounds (VOC). The regulation excluded CO₂ emissions, which forms a significant proportion of global total international shipping emissions, compared to other GHGs. On a twenty-year timescale (based on average figures for the years 2013–2015), CO₂ accounts for 76% of CO₂-eq emissions from ships, followed by black carbon at 21%, methane at 2% and nitrous dioxide at 1% (ICCT, 2017).

Specific steps towards addressing GHG emissions from ships, and in particular CO₂ emissions, commenced with the adoption of *Resolution 8 on Carbon Dioxide Emissions from Ships* in 1997 (MP/Conf. 3/35, 1997). This resolution led to the emergence of a series of GHG emissions negotiations within MEPC. In particular, *Resolution 8 on Carbon Dioxide Emissions from Ships* set in motion three initiatives: (i) co-operation between the IMO and the UNFCCC in the exchange of information on GHG emissions; (ii) a study to establish the amount and relative percentage of GHG emissions from ships as part of the global inventory of GHG emissions; and (iii) MEPC’s work to consider feasible GHG emission-reduction strategies. As a result, the IMO Study on Greenhouse Gas Emissions from Ships was completed and presented to MEPC 45 in June 2000 (IMO, 2000b) while MEPC continued discussions on feasible GHG emission strategies.

In an effort to further address the issue of GHG emissions from ships, the IMO Assembly²³, the highest governing body of the organisation, adopted Resolution A.963(23) on *IMO Policies and Practices related to the Reduction of Greenhouse Gas Emissions from Ships* in December 2003. Resolution A.963(23) requested MEPC to identify and develop the mechanisms needed to achieve the reduction of GHG emissions from international shipping by considering technical, operational and

²³ See Annex 5 for IMO structure. Further information on the structure of IMO and the responsibilities of its Assembly, Council and committees is available on the IMO website: <http://www.imo.org/en/About/Pages/Structure.aspx>

market-based solutions (IMO, 2014). Work on the technical and operational solutions progressed successfully, leading to the adoption of two mandatory measures, EEDI and SEEMP, in July 2011. The EEDI is a technical measure that requires new ships to use more energy efficient equipment and engines. SEEMP is an operational measure aimed at improving energy efficiency of existing ships through operational changes.

Market-based measures, such as an emissions trading system (ETS) and a global GHG fund, have been discussed in the period 2006–2013 (MEPC 56 to MEPC 65) but MEPC was not able to reach a consensus on the proposals (MEPC 60/4/8; MEPC 60/4/37; MEPC 60/4/40; MEPC 60/4/12; MEPC 60/4/39; MEPC 61/4/22; MEPC 60/4/26; MEPC 60/4/41; MEPC 60/4/10; MEPC 60/4/55)²⁴. MEPC 63 “recognised the need for a continued impact assessment and that its focus should be on possible impacts on consumers and industries in developing countries” (MEPC 63/23, paragraph 5.14; MEPC 63, 2011). Some delegations argued that the proposed market based measures (MBMs) showed incompatibility with the World Trade Organization (WTO) Rules, and that the GHG working group’s conclusion that MBMs were, in principle, compatible with the WTO Rules was premature as most of the MBM proposals had not been deliberated enough to support that conclusion (document MEPC 64/5/3; MEPC 64, 2012). MEPC 64 agreed that the matter could be further considered at MEPC 65, subject to the impact assessment of the proposed MBMs, but MEPC 65 (May 2013) decided to suspend MBM discussions to a future session (IMO, 2019c).

The GHG sessions from MEPC 65 to MEPC 67 focused on completing the third IMO study on greenhouse gases by 2014 and developing a data collection system for fuel consumption of ships. MEPC 67 (October 2014) agreed, in principle, to develop a data collection system for ships. Following further deliberation, MEPC 68 (May 2015) agreed that development of a data collection system for ships should progress and follow a three-step approach: data collection, data analysis, followed by decision-making on what further measures, if any, are required. MEPC 70 (October 2016) adopted mandatory Annex VI requirements the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978

²⁴ All MEPC papers mentioned in this chapter are available from IMODOCS <http://docs.imo.org/>

(MARPOL Convention) for ships to record and report their fuel oil consumption, by resolution MEPC.278(70). The resolution entered into force on 1 March 2018, while data collection commenced on 1 January 2019.

5.4 Negotiations to develop an IMO GHG strategy and emission reduction target

Discussions on developing an IMO GHG strategy or policy have been running parallel to the technical, operational and MBM matters at MEPC. The initial MEPC discussions on developing an IMO strategy on greenhouse gas emissions from ships can be traced back to MEPC 42 (in November 1998), where IMO member states noted that, “in response to the Kyoto Conference, IMO had a clear mandate to deal with emissions of greenhouse gases from ships and agreed to develop a policy document on greenhouse emissions from ships” (MEPC 42, 1998). The mandate for IMO to develop a GHG strategy is also embodied in *Resolution 8 on Carbon Dioxide Emissions from Ships*, which was adopted in 1997 by the IMO Assembly, inviting MEPC to consider what CO₂ reduction strategy may be feasible (IMO, 2017c).

MEPC 42 also approved the scope of work for IMO to begin the first study on greenhouse gas emissions. The study was expected to form the background for the development of an IMO GHG policy paper, as well as provide a basis for IMO’s reporting to UNFCCC on GHG emissions from ships, in line with Article 2(2) of the Kyoto Protocol. The study was completed and presented to MEPC 45 in the year 2000. From thereon, IMO member states began submitting proposals towards the development of an IMO policy on GHG emissions from ships. At MEPC 46, Norway submitted a proposal (MEPC 46/10/1 and MEPC 46/INF.9) on the merits of developing an emission standard on GHG emissions from ships. Several delegations, including the UK, Spain and Japan, supported Norway’s proposal and expressed the view that discussions should take into account operational and market-based measures, and not be limited to technical issues only (MEPC 46, 2001).

At MEPC 47, a working group was established to take into consideration the submissions and comments by delegations on the GHG emissions matter. The negotiations thereon led to the adoption of a general workplan and associated timetable

by MEPC 55. AT MEPC 57, an Intersessional Correspondence Group on GHG Related Issues was established under the leadership of Australia and the Netherlands, instructed to discuss possible approaches on technical, operational and market-based measures to address GHG emissions from ships. At MEPC 59, some delegations submitted methods to determine international shipping's fair share of GHG emissions reduction (paper MEPC 59/4/24).

Despite the effort, MEPC was not able to reach a decision on the matter, as the views of member states varied greatly on a number of issues. Several delegations were of the view that CO₂ emissions were governed by UNFCCC and its Kyoto Protocol and that the guiding principle of CBDR for developing and developed countries also should be applied in IMO's work on reduction of greenhouse gases from international shipping (MEPC 57, 2007; MEPC 58, 2008). Other delegations stated that for the regulation of international shipping the principle of NMFT should be applied and that any measure aimed at controlling emissions of GHG from international shipping should be flag neutral. Some delegations cautioned MEPC not to rush to conclusions and deliberate only on technical and methodological considerations, leaving policy issues to UNFCCC. Majority of the delegations that spoke at MEPC 57 maintained that IMO should follow the work plan adopted by MEPC 55, and that a future IMO GHG strategy should be binding and equally applicable to all flag states in order to avoid evasion.

The discussion continued at MEPC 60 (January 2010) where questions were raised on the type of emission reduction target that was needed, the appropriate methodology for calculation and which agency, UNFCCC or IMO, would be responsible for establishing the target (IMO, 2017b). MEPC 60 agreed that the debate on emission reduction target was a vital part of IMO's GHG work (paper MEPC 60/22) and included it in the agenda but due to time constraints, MEPC held the matter in abeyance until MEPC 68. During that timeframe, the focus of MEPC had shifted to EEDI, SEEMP and the development of a data collection system.

Discussions on setting an emission-reduction target for the international shipping sector resurfaced in 2015 at MEPC 68 through the Marshall Islands' proposal (paper MEPC 68/5/1) requesting the committee to define international shipping's fair share

of GHG emissions (IMO, 2015b). This submission can be viewed as a bold move by a Pacific small island state that also operates the world's second largest open registry (UNCTAD, 2018a). Following COP 21 and the removal of international shipping emissions from the UNFCCC ADP negotiations, IMO came under pressure to address this issue at its next MEPC session. There was no confusion about IMO's responsibility to set an emission reduction target for the international shipping sector in agreement with its member states.

The GHG emissions negotiations at MEPC 69 (April 2016) and MEPC 70 (October 2016) can be considered to be the most intensive but productive at the same time compared to previous debates. It led to the adoption of the *Roadmap for Developing a Comprehensive IMO Strategy on Reduction of GHG Emissions from Ships* at MEPC 70 (MEPC 70, 2016). The roadmap contained two key milestones – the adoption of an initial IMO GHG strategy on the reduction of GHG emissions from ships at MEPC 72 (April 2018) and the adoption of a revised IMO GHG strategy at MEPC 80. The next two MEPC sessions that followed, MEPC 71 (July 2017) and MEPC 72 (April 2018), were equally crucial, resulting in the adoption of an initial *IMO GHG Strategy on the Reduction of GHG Emissions from Ships* (IMO, 2018b) at MEPC 72 in line with some of the agreed milestones in the roadmap. Defining the visions and levels of ambition, this initial strategy calls for GHG emissions from international shipping to peak as soon as possible and to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008, whilst pursuing efforts towards phasing them out completely by the end of this century (IMO, 2018b).

All IMO instruments are adopted by consensus of member states (UN, 2003; IMO, 2019b). As such, MEPC works on the same principle of consensus, therefore delegations have to re-consider and shift from their positions at some point in order to cut deadlocks in negotiations. This was acutely evident during the adoption of the initial IMO GHG strategy. The deal was considered to be a major compromise by IMO member states as some nations were pushing for a 70–100% reduction by 2050 and others a 50% reduction by 2060, while the US and Saudi Arabia were opposing the very adoption of this strategy (MEPC 72, 2018). Kiribati et al. (paper SWG-GHG

2/3)²⁵ proposed zero GHG emission by 2035. Belgium et al. (paper ISWG-GHG 2/2/12) proposed 90% efficiency improvement and 70% volume reduction, pursuing efforts to 100% reduction by 2050. ICS et al. (paper ISWG-GHG 2/2/1) proposed maintaining emission volumes below the 2008 level and 50% efficiency improvement by 2050. Japan proposed 40% efficiency improvement by 2030 and 50% volume reduction by 2060 (paper MEPC 72/7/3). IMO viewed the initial IMO GHG Strategy as ‘the result of fruitful negotiations involving many Member States with a variety of shared and different interests to find a compromise solution that represents a strong middle ground.’ (SBSTA 48, 2018).

The current focus of the GHG negotiations at MEPC is on implementation measures for the initial IMO GHG strategy, completion of the fourth IMO GHG study by 2020, and the adoption of the revised IMO GHG Strategy by 2023 at MEPC 80. Beyond 2023, the GHG negotiations will focus on developing, implementing and reviewing the measures contained in the revised IMO GHG Strategy. It is also likely that the debate on MBMs will be reopened as it has been mentioned explicitly in the Initial IMO GHG Strategy. Chircop et al. (2018) believe that the ideal scenario for an MBM in the future revised IMO strategy would be the one that is least likely to generate conflict with the WTO regimes and is adopted, by consensus, within the framework of an international maritime convention or an alternative instrument.

5.5 Trends in representation of Pacific states in MEPC negotiations

There are 22 PICTs within the Pacific region, of which 14 are independent states: Cook Islands, FSM, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu²⁶. As of 31 December 2019, 12 of the 14 independent Pacific states²⁷ were on IMO’s membership list, which is comprised of 174²⁸ IMO member states in total. Annex 4 contains a list of IMO member states. Papua New Guinea was the first Pacific state to become an IMO member in 1976 whereas Nauru, the most recent one, became a member in May 2018.

²⁵ ISWG-GHG papers mentioned in this chapter are available from IMODOCs upon login

²⁶ Classification consistent with the 14 independent Pacific Island countries under membership of Pacific Community and the Pacific Islands Forum.

²⁷ Includes Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Note: Nauru became a member on 14 May 2018 and is not included in this study analysis, as scope is limited to MEPC 72 (April 2018).

²⁸ IMO had 171 member states prior to December 2016. Therefore, study analysis involving MEPC 68 and 69 is based on 171 members whereas MEPC 70–72 is inclusive of 172 members. Belarus joined IMO in 2016; and Armenia and Nauru in 2018.

Of the 14 study countries, only two – FSM and Niue – have yet to join the IMO. As maritime nations, FSM and Niue have shown interest in attaining IMO membership (PACNEWS, 2008) but progress has been slow. FSM and Niue are also party to several IMO instruments without attaining IMO membership status, an unusual but legitimate international maritime regulatory arrangement. Niue's accession to over 20 IMO instruments is driven mainly by its open registry operation (Niue Ship Registry, 2018).

Notwithstanding funding and resourcing issues, representation of IMO member states at MEPC sessions is an indicator of the level of priority governments place on maritime environmental and energy efficiency issues, and recently on the specific matter of international shipping emissions. This section analyses trends in representation of IMO member states at from MEPC 68–72. For the purpose of this analysis, IMO member states have been categorised into five regional groups²⁹ – Africa, America, Asia, Europe and Oceania. Oceania is represented by 13 states, inclusive of Australia, New Zealand and 11 Pacific states.

Analysis shows that Oceania is commonly the best represented group at recent MEPC sessions, followed by Europe, America, Asia and Africa (see figures 9–13). The Oceania is also the smallest of the five regional groups, with a total of 13 members, compared to 43 in Africa, 35 in America, 40 in Asia and 41 in Europe (as at April 2018). The Oceania's higher rate of representation compared to others could be attributed to its size, but also an indicator of the group's growing interest in the international shipping emissions agenda. Section 5.5 of this chapter contains a detailed analysis of the Pacific's interest and response on this matter.

A gradual increase in representation is seen for Oceania, from 77% at MEPC 68 to 85% at MEPC 69. The figures remained 85% at MEPC 70 and MEPC 71. The representation of Oceania decreased to 77% at MEPC 72 due to the absence of Papua New Guinea, Samoa and Tonga at the meeting. Samoa did not attend MEPC 68–72. Tonga and PNG were present at MEPC 69 and MEPC 71. In addition to Oceania, a gradual increase in representation is also evident for Asia and America, indicating

²⁹ Classification based on UN Statistics Division grouping system (<http://unstats.un.org/unsd/methods/m49/m49regin.htm>)

greater interest in the negotiations. Europe, which is the second-best group commonly represented after Oceania, has an erratic pattern of attendance. Its representation dropped from 73% at MEPC 69 to 69% at MEPC 70 and MEPC 71, while curving upwards to 71% at MEPC 72. There is however no uncertainty that Europe contains the highest number of countries that have been advocating for a cap on international shipping emissions for a long period of time (MEPC 46, 2001; Wilensky, 2014; MEPC 72, 2018c). Africa is poorly represented at MEPC with below 50% attendance from MEPC 68 to MEPC 72. This could indicate a low level of interest from African countries on the GHG matter, perhaps also driven by the fact that with the exception of Liberia, none of the African states fall in the top ten flag states bracket or ship owning economies (UNCTAD, 2015; UNCTAD, 2019).

Figure 9: IMO member representation at MEPC 68 (May 2015), by region

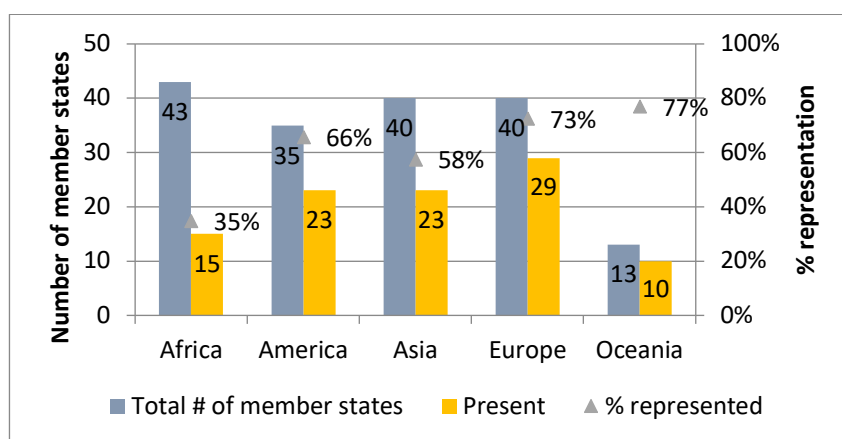


Figure 10: IMO member representation at MEPC 69 (April 2016), by region

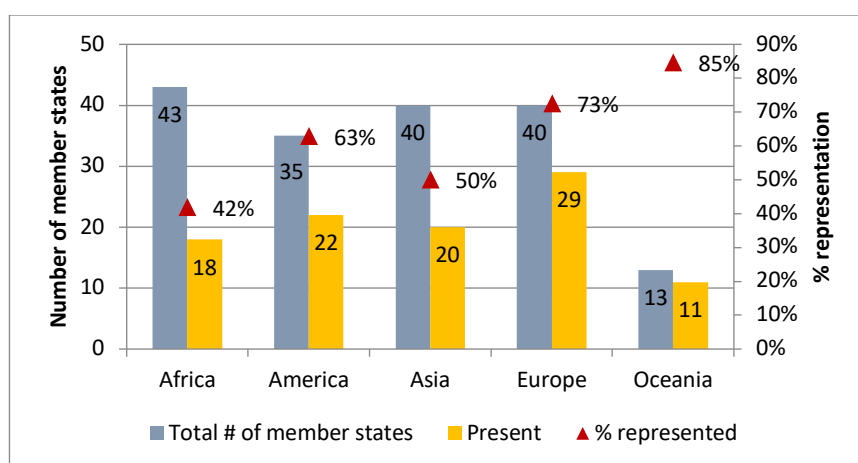


Figure 11: IMO member representation at MEPC 70 (October 2016), by region

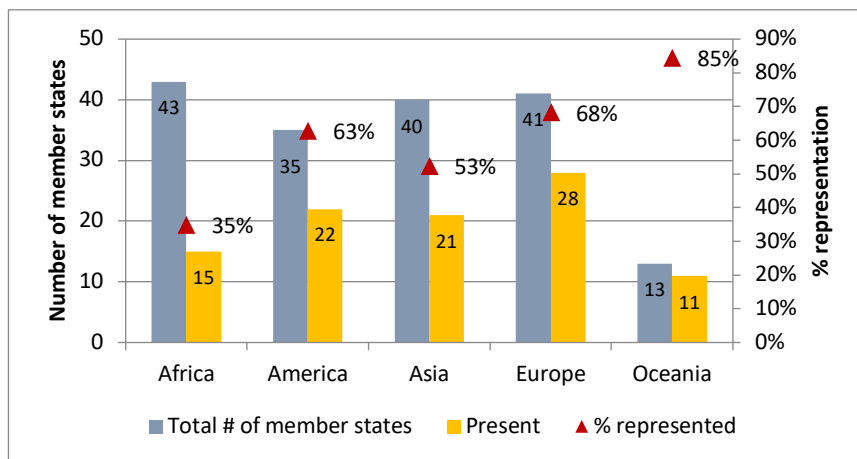


Figure 12: IMO member representation at MEPC 71 (July 2017), by region

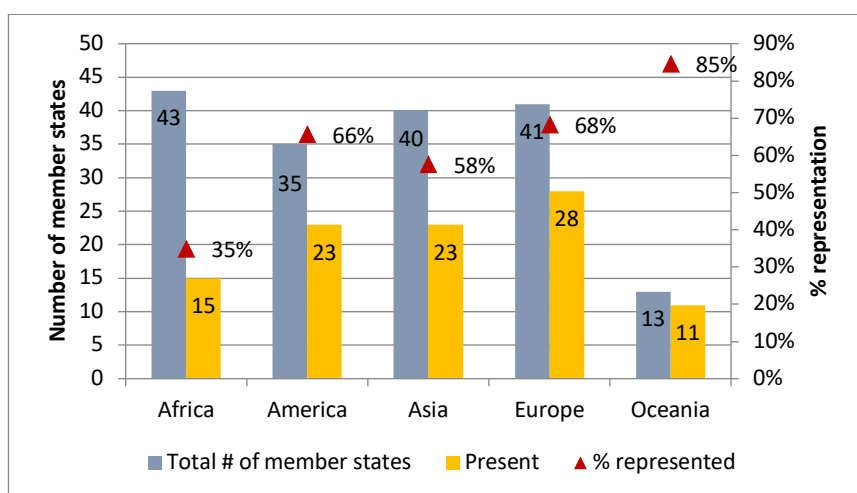
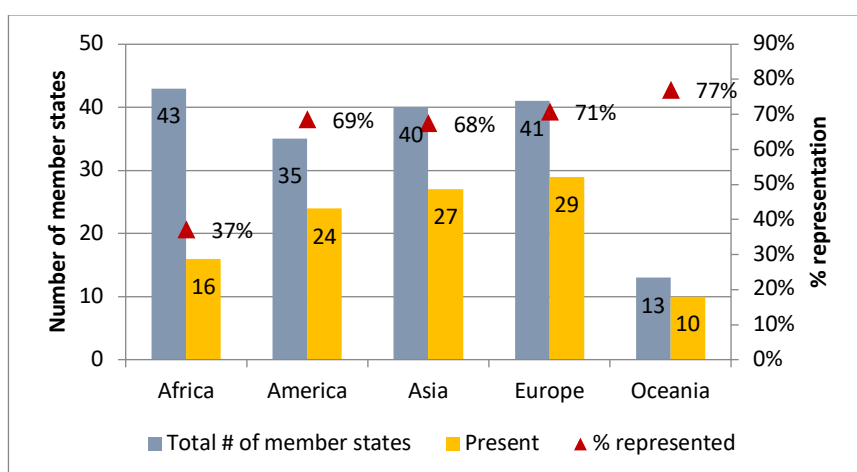


Figure 13: IMO member representation at MEPC 72 (April 2018), by region



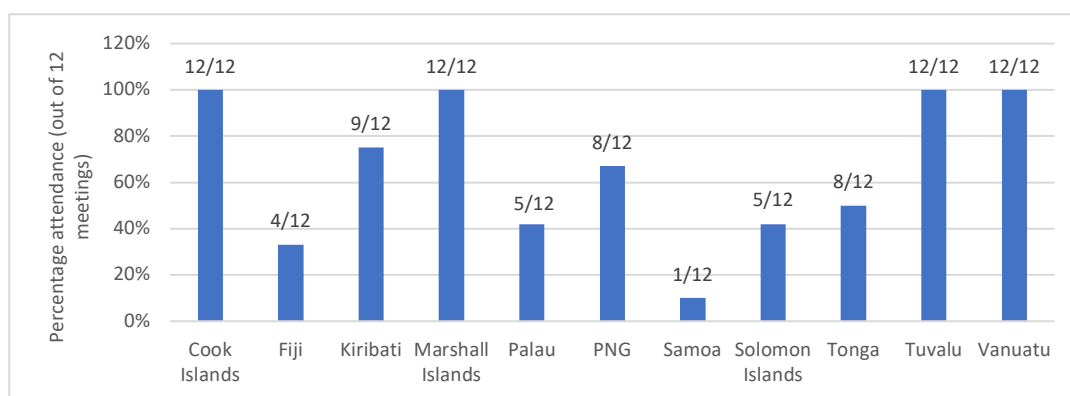
In order to show trends in the representation of 11 Pacific IMO member states at MEPC sessions over the years, attendance data for the period MEPC 61 to MEPC 72

(2011 to 2018) was analysed. Figure 14 shows the number of sessions attended by each Pacific state out of 12 MEPC sessions in total. Figures 15–25 show the attendance rate of individual Pacific states per MEPC session, while Figure 26 shows the collective attendance of Pacific states per MEPC session. The following general trends in representation are evident:

(i) Four out of eleven Pacific states (36%) attended all 12 MEPC sessions

The Cook Islands, the Marshall Islands, Tuvalu and Vanuatu are regular attendees at MEPC, having attended all 12 sessions from MEPC 61–72. The consistently high rate of attendance can be attributed to the operation of open registries by these four countries and the governments' authorisation of designated registry management companies or permanent representatives to represent them at IMO meetings.

Figure 14: Attendance of Pacific states at MEPC meetings (2011–2018) – MEPC 61 to MEPC 72



Kiribati is also well represented at MEPC, attending 9 out of 12 sessions, followed by PNG and Tonga attending 8 sessions each. Samoa has the lowest attendance rate, having participated in one meeting only in July 2011 (MEPC 62). Discussions with the national government have revealed issues with the maritime administration that need to be resolved, coupled with lack of awareness of the issue and lack of engagement at relevant regional level discussions on the matter. The Solomon Islands and Palau are also in the low attendance range, attending only 5 sessions each. Fiji also falls in the low attendance bracket participating in only 4 sessions. Countries with low attendance at MEPC sessions have identified funding as a limiting factor, as opposed to lack of interest in the negotiations.

**Figure 15: Attendance at MEPC meetings:
Cook Islands**

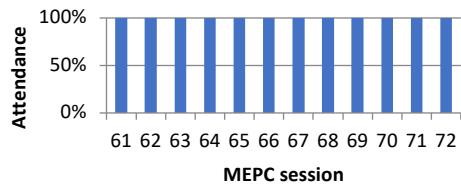


**Figure 16: Attendance at MEPC meetings:
Fiji**

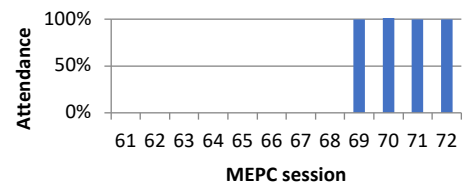


**Figure 17: Attendance at MEPC meetings:
Kiribati**

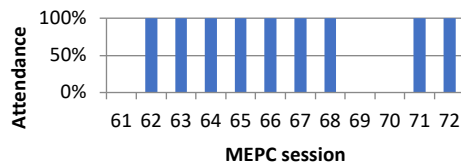


**Figure 18: Attendance at MEPC meetings:
Marshall Islands**

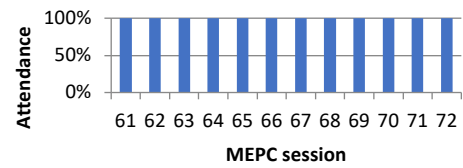


**Figure 19: Attendance at MEPC meetings:
Palau**

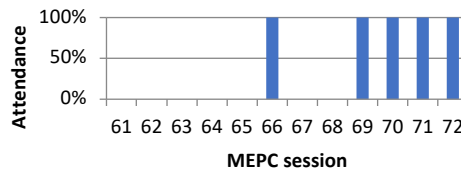


**Figure 20: Attendance at MEPC meetings:
Papua New Guinea**

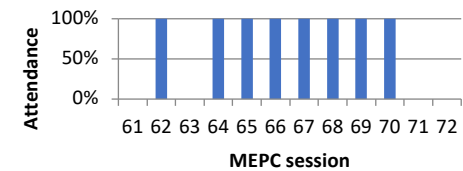


**Figure 21: Attendance at MEPC meetings:
Samoa**

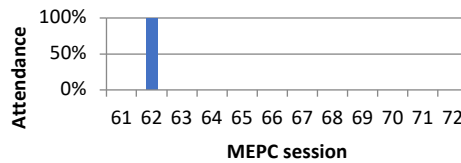


**Figure 22: Attendance at MEPC meetings:
Solomon Islands**

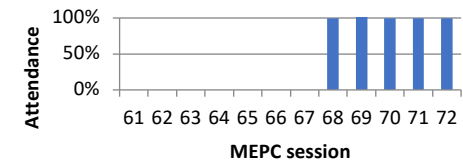


**Figure 23: Attendance at MEPC meetings:
Tonga**

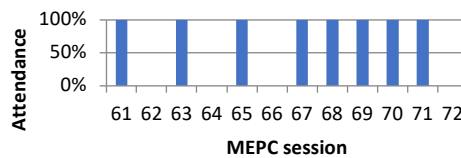


**Figure 24: Attendance at MEPC sessions:
Tuvalu**

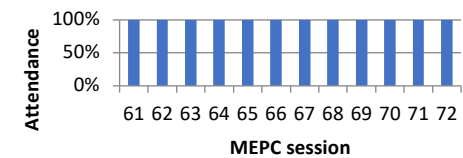
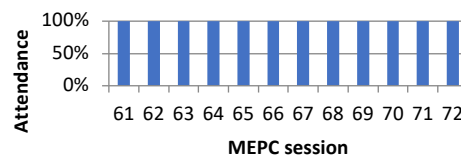


**Figure 25: Attendance at MEPC meetings:
Vanuatu**



(ii) Pacific states with open registries are generally better represented at MEPC sessions

Pacific IMO member states that operate open registries – the Cook Islands, Kiribati, the Marshall Islands, Palau, Tuvalu and Vanuatu – are better represented at MEPC sessions than other Pacific states, with the exception of Palau. Being the newest of the six registries³⁰, Palau has attended 5 out of 12 sessions, 4 of which were made possible by the appointment of an IMO Representative associated with the Palau registry in time for MEPC 69 (May 2016). It is noted that at MEPC 66 (April 2014) Palau was represented by its Consul office based in the UK. A contributing factor to open registries being well represented at MEPC meetings is the ability of the registry management company to fund participation of its representatives at the meetings.

Kiribati, though generally well represented by its registry management company designate, was absent during the two critical MEPC sessions (MEPC 69 and 70) when negotiations were taking place for developing the IMO GHG Roadmap. However, Kiribati was represented at MEPC 71 (July 2017), and for the first time through a national government representative. PNG and Tonga³¹ do not operate open registries but are reasonably well represented at the MEPC meetings through their diplomatic offices/high commissions based in London.

Fiji also has a high commission office in London, but only tapped this resource for representation since MEPC 69 (October 2016), together with maritime administration representation. The Solomon Islands and Samoa both have diplomatic offices based in Brussels. The Solomon Islands has utilised its diplomatic office in Brussels to raise its visibility at recent MEPC sessions. In contrast, Samoa has not adopted this approach and to date is the only Pacific state that remains disengaged from the entire GHG emissions debate at the IMO and at the regional level consultations.

Chapter 6 contains a detailed analysis of the open registry dynamics, the role of registry management companies and the nature of their relations with Pacific hosts.

³⁰ Palau's open registry was established in September 2012 while the Marshall Islands established its registry in 1988.

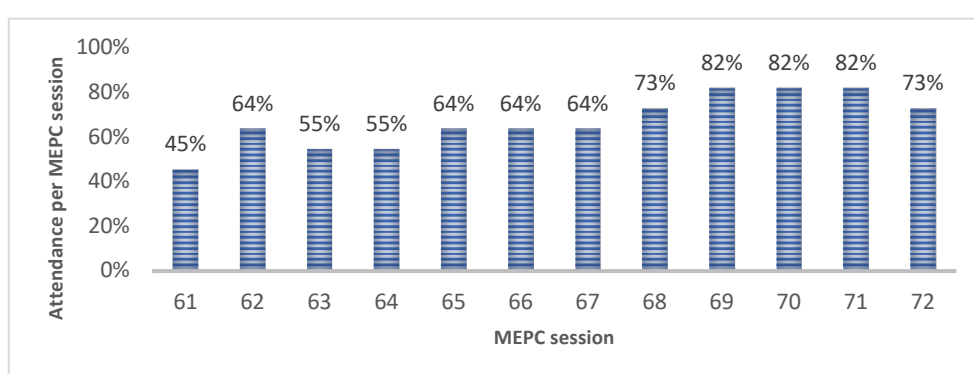
³¹ Tonga's open registry ceased operations in 2005.

(iii) An increase in the overall representation of Pacific states at MEPC sessions is evident in recent years

Records tracing back to the 1990s show that only the Marshall Islands and Vanuatu attended the earlier MEPC sessions (MEPC 42 to 46) when the initial discussions on addressing GHG emissions began. However, a gradual increase in the overall representation of Pacific states at MEPC sessions has been seen in recent years, with a particularly steady climb from MEPC 67 (2014) onwards (see Figure 26). From 45% attendance at MEPC 61, the overall representation of Pacific states jumped to 82% at MEPC 70. A slight decline in collective representation was seen in 2018, from 82% at MEPC 71 to 73% at MEPC 72.

The period of MEPC 68–71 is associated with two key initiatives that explain the Pacific’s increased participation at MEPC in recent years: (i) An individual submission by the Marshall Islands at MEPC 68 requesting IMO to begin work on establishing a GHG reduction target for international shipping. This submission was supported by a number of Pacific and some other member states; and (ii) Major lobbying in the Pacific region to increase participation of Pacific states in GHG emissions negotiations. Lobbying at the regional level was driven by PIDF, with technical backstopping from low carbon shipping experts at USP and the University College London (UCL).

Figure 26: Trends in overall attendance of Pacific states per MEPC session (MEPC 61–72)



A marked increase in representation of Pacific states is seen at MEPC 62 compared to MEPC 61. This is attributed to the high focus on GHG emissions (albeit mostly on energy efficiency/EEDI issues) following MEPC 61, where a total of 46 submissions (including secretariat and information papers) were made. This represents the highest

number of submissions ever presented at MEPC under the GHG emissions agenda item between 2011–2018.

5.6 Trends in Pacific submissions on shipping emissions

The GHG emissions negotiations at MEPC are based on submission of papers by IMO members (member states, intergovernmental organisations with observer status and NGOs with consultative status) under designated agenda items, which lead to decisions that are reached on consensus basis. The submission process is consistent with the general practice of all IMO committee meetings (see Annex 5 for details on the IMO structure). Submissions provide MEPC with a clear indication of the positions of member states on respective issues. This study undertook an analysis of submissions made by Pacific states on the GHG emissions matter during the period 2011–2018 (covering MEPC 61–72). The findings confirm that Pacific states have historically not been very active in submitting papers to MEPC on the issue of GHG emissions (see Table 8). Vanuatu submitted an individual paper in 2011 on the EEDI issue but has remained inactive since then. However, there has been a marked increase in the number of submissions from some other Pacific states since MEPC 68 (2015), specifically on the issue on IMO GHG policy and emission reduction target. From 2011–2018, six Pacific states – Kiribati, the Marshall Islands, the Solomon Islands, Tonga, Tuvalu and Vanuatu – have submitted papers to MEPC GHG sessions. The most active Pacific state is the Marshall Islands, making regular GHG submissions at every MEPC since 2015, both individually and jointly with other IMO member states.

During the early 2000s phase of GHG emissions negotiations at MEPC, heavy focus on energy efficiency, EEDI and SEEMP issues drew a large number of submissions from IMO member states under the ‘Reduction of GHG Emissions from Ships’ agenda item, particularly during MEPC 61 (46 submissions) and MEPC 62 (44 submissions). Prior to MEPC 68, Vanuatu was the only Pacific state that submitted a paper to one of the MEPC sessions which called for consideration of a principle for alternate calculation or exemption of EEDI in ships with special circumstances (paper MEPC 61/5/12). From 2015 onwards, the pressure on MEPC mounted to begin separate negotiations on reducing GHG emissions from international ships, going beyond EEDI and SEEMP to set an emission reduction target and develop, adopt and implement

measures to achieve that target. The matter gained substantial momentum, resulting in a marked increase in GHG submissions from IMO member states. The total number of GHG submissions (including secretariat and information papers) increased from three at MEPC 68 to 18 at MEPC 71. A slight drop in the total number of GHG submissions is seen at MEPC 72, from 18 at MEPC 71 to 13. The drop can be attributed to the large number of submissions at ISWG-GHG 2 in 2018, which were not re-tabled at MEPC 72 to avoid duplication. For example, the paper by ISWG-GHG 2/3 (by Kiribati et al.), which proposed zero emissions by 2035, was not tabled at MEPC 72 (MEPC 72, 2018). Instead, MEPC 72 was informed of the submissions and discussions at the intersessional meeting through the ISWG-GHG 2 report.

Table 8: Trends in MEPC submissions by Pacific states on GHG emissions from ships from 2011 to April 2018 (MEPC 61–72)

	MEPC session (2011–2018)											
	61	62	63	64	65	66	67	68	69	70	71	72
Pacific states that made submissions	Vanuatu	-	-	-	-	-	-	Marshall Is.	Marshall Is; Solomon Is	Marshall Is; Solomon Is; Tonga;	Kiribati; Marshall Is; Solomon Is; Tonga; Tuvalu	Marshall Is.
Number of Pacific states that made submissions (individual or joint)	1	-	-	-	-	-	-	1	2	3	5	1
Number of submissions involving Pacific states (individual or joint)	1	-	-	-	-	-	-	1	1	2	6	1
Number of individual submissions by Pacific states	1	-	-	-	-	-	-	1	-	-	-	-
Number of joint submissions by Pacific states only	-	-	-	-	-	-	-	-	-	-	1	-
Number of joint submissions involving Pacific states and other members	-	-	-	-	-	-	-	-	1	2	5	1
Total number of submissions on GHG emissions (excluding secretariat and information papers)	34	34	13	11	3	0	0	1	4	14	14	10
Total number of submissions on GHG emissions (including secretariat and information papers)	46	44	16	16	7	2	4	3	5	16	18	13

In essence, it wasn't until MEPC 68 that the Pacific's role in international shipping emissions negotiations began to take shape at the global level. Of the three papers presented under the GHG emissions agenda item at MEPC 68, one was an individual submission from the Marshall Islands (paper MEPC 68/5/1), another was from the IMO Secretariat (paper MEPC 68/5) and one was an information paper from South Korea (paper MEPC 68/INF.40). This session was dominated by a Pacific state submission, which requested MEPC to undertake the work necessary to establish a GHG emissions target for international shipping, consistent with keeping the global

temperature increase below 1.5°C. The paper set into motion further submissions from a number of Pacific states, EU states and other IMO member states, pressuring IMO to prioritise work on setting an emission-reduction target for international shipping. Of the five submissions made to MEPC 69, one was a joint submission involving the Marshall Islands and the Solomon Islands, three EU member states (Belgium, France, and Germany) and Morocco. The co-sponsors of the paper invited MEPC to develop a workplan for setting an emission reduction target for international shipping (see MEPC 69/7/2), reinforcing the Marshall Islands' call at MEPC 68 for a similar action.

This new partnership of Pacific states with a number of EU member states and other IMO members continued to strengthen in ensuing meetings, as the parties went on to co-sponsor joint submissions at MEPC 70, 71 and 72. Table 9 contains a list of all Pacific sponsored or co-sponsored GHG submissions from 2011 to 2018 (MEPC 61 to 72). Tonga began co-sponsoring GHG papers with the Marshall Islands and the Solomon Islands in 2016. In 2017, Tuvalu and Kiribati joined the Marshall Islands, the Solomon Islands and Tonga to co-sponsor GHG papers at MEPC 71, further improving the Pacific's submission rating. Pacific IMO member states that have not sponsored any MEPC papers on the shipping emissions matter from MEPC 68–72 include Cook Islands, Fiji, Palau, Papua New Guinea, Samoa and Vanuatu. The factors that may have contributed to the lack of submissions by these states are explained below and further discussed in Section 5.7 of this chapter.

The rationale for the low number of GHG submissions from Pacific states prior to MEPC 69 goes beyond the primary concerns of lack of funding and poor attendance rates at MEPC sessions. Instead, attention is drawn to a range of other challenges linked to regional coordination, national priorities, parliamentary processes and technical expertise.

Firstly, countries' national priorities and positions on the shipping emissions issue affect their decision to submit or co-sponsor papers. Co-sponsorship of papers generally involve countries that are rallying for a common cause. The Cook Islands was initially not supportive of IMO prioritising work to set an emission-reduction

target for international shipping, as evident during MEPC 69 and MEPC 70³² (Influence Map, 2018; IMO, 2016). This could explain why it has been difficult for other Pacific states to engage with the Cook Islands on submission matters. For Vanuatu, the underlying concern about the impact of transport costs³³ for Pacific SIDS has likely triggered the country's hesitation to co-sponsor papers at MEPC 69 and 70. On the other hand, Samoa has remained isolated and completely disengaged from the submission process as well as the overall negotiations.

Table 9: List of Pacific sponsored submissions on shipping emissions tabled at MEPC from 2011 to 2018 (MEPC 61–72). Source: Author's research

Submission	Title	Sponsors
MEPC 61/5/12 (2011)	Consideration of a principle for alternate calculation or exemption of EEDI in ships with special circumstances	Vanuatu
MEPC 68/5/1 (2015)	Setting a reduction target and agreeing associated measures for international shipping	Marshall Islands
MEPC 69/7/2 (April 2016)	International shipping's share in international efforts to limit the rise of global average temperature	Belgium, France, Germany, the Marshall Islands, Morocco and Solomon Islands
MEPC 70/7/6 (October 2016)	International shipping's share in international efforts to limit the rise of global average temperature – further clarifications	Antigua and Barbuda, Belgium, Côte d'Ivoire, Denmark, France, Germany, Marshall Islands, Monaco, Morocco, Solomon Islands and Tonga
MEPC 70/7/13 (October 2016)	International shipping's share in international efforts to limit the rise of global average temperature - comments on method and transport cost considerations	Antigua & Barbuda, Belgium, France, Germany, Marshall Islands, Monaco, Netherlands, Solomon Islands and Tonga
MEPC 71/INF.35 (Jun/July 2017)	A scientific study on possible reduction targets and their associated pathways	Belgium, Denmark, France, Germany, Marshall Islands, the Netherlands, Solomon Islands, Tonga, Tuvalu
MEPC 71/7/3 (Jun/July 2017)	The need for a high level of ambition within the comprehensive IMO strategy on reduction of GHG emissions from ships	Marshall Islands and Solomon Islands
MEPC 71/7/7 (Jun/July 2017)	Possible emissions scenarios and a method for quantifying an emissions pathway for shipping	Belgium, Denmark, France, Germany, Marshall Islands, Netherlands, Solomon Islands, Tonga, Tuvalu and ICHCA ³⁴
MEPC 71/7/8 (Jun/July 2017)	The level of ambition of the comprehensive IMO Strategy on reduction of GHG emissions from ships	Antigua and Barbuda, Belgium, Denmark, France, Germany, Kiribati, Marshall Islands, Solomon Islands, Sweden, Tonga, Tuvalu, IAPH and ICHCA
MEPC 71/7/9 (Jun/July 2017)	Impacts of GHG reduction measures on transport costs and on States	Belgium, France, Germany, Kiribati, Marshall Islands, the Netherlands, Solomon Islands, Tonga, Tuvalu and ICHCA
MEPC 71/7/13 (Jun/July 2017)	Comments on document MEPC 71/7 on a proposal on the development of the comprehensive IMO strategy on reduction of GHG emissions from ships	Belgium, Denmark, France, Netherlands, Solomon Islands and Sweden
MEPC 72/7/7 (April 2018)	The "Tony de Brum" Declaration on reduction of greenhouse gas emissions from ships	France and Marshall Islands

³² Detailed analysis in Section 5.6 (Chapter 5) of this thesis.

³³ See Chapter 3 for more details on impact of transport costs for Pacific SIDS

³⁴ International Cargo Handling Coordination Association

Secondly, the timeframe for seeking cabinet approval for submissions can be challenging for some countries. This was prevalent in Fiji's case. While Fiji has been very supportive of setting a cap on shipping emissions, engaging fully in the pre-MEPC consultations and attending recent MEPC sessions, the country has not submitted or co-sponsored any GHG emissions papers from 2011–2018. This is possibly because the Fiji maritime administration requires at least a month to obtain official approval from the cabinet for co-sponsorship of MEPC GHG emissions papers. In comparison, the official approval process in other Pacific states allows submissions to be endorsed within a week or two.

Thirdly, the process for coordinating GHG papers at the regional level did not accommodate all Pacific IMO member states. Since MEPC 69, PIDF has been coordinating such co-sponsorships, but not all Pacific IMO member states are members of PIDF, such as Cook Islands and Samoa. Therefore, these states have not been able to engage in the pre-MEPC consultation sessions or submission discussions held at the regional level.

Another factor affecting Pacific states' ability to submit individual submissions is the lack of technical expertise to draft policy papers of this nature. With the exception of one individual submission from the Marshall Islands at MEPC 68, the drafting of all other Pacific co-sponsored GHG submissions has been led by a team of international experts from academia and some European states. Even though some Pacific states are fully engaged in the submission consultations with other co-sponsors, the gap in technical writing and individual submissions between Pacific states and other IMO member states was evident.

Based on recent observations, Goulding (2016) claims that Pacific states are increasingly choosing to make individual submissions to the UNFCCC negotiation process as they face conflicting national interests with other UNFCCC member states in implementation matters. In the context of IMO GHG negotiations, Pacific states may or may not choose to venture into individual submissions in the implementation phase of the IMO GHG Strategy. It has been beneficial for Pacific states to submit joint proposals with other IMO member states, as it increased the collective lobbying power and helped drive the high ambition aspirations of small island nations. Once a

final IMO GHG strategy is adopted in 2023, the focus of submissions will shift from strategy development to implementation. Should Pacific states differ greatly in their views on certain implementation measures, and face any conflicting national interests with other IMO member states, they may increasingly choose to make individual submissions in future.

5.7 Response of Pacific states at IMO GHG negotiations

The year 2015 was a turning point for the Pacific in IMO shipping emissions negotiations, as it put into motion a new era of increased Pacific involvement in GHG submissions and interventions at IMO. It began with the Marshall Islands' proposal (paper MEPC 68/5/1) to establish a GHG emission reduction target for international shipping that reignited the previous unsuccessful debates MEPC has had on reduction targets, strategy, and market-based measures. The responses and positions of the Pacific states during MEPC 68–70 sessions have been analysed and presented in figures 26–28.

Of the eight Pacific states present at MEPC 68, five³⁵ (the Marshall Islands, Kiribati, the Solomon Islands, Tuvalu and Vanuatu) supported the motion sponsored by the Marshall Islands for IMO to start work on the necessary measures required to establish a GHG emission reduction target for international shipping (see Figure 26). Fiji, Palau and Samoa were not present at MEPC 68. The Cook Islands was not supportive of the motion and argued that IMO needed to implement the data collection system first before embarking on other GHG work. Papua New Guinea and Tonga chose not to make any interventions on the issue.

Although 62% of Pacific states present at MEPC 68 were in favour of IMO starting work to establish a GHG emission reduction target for international shipping, the motion did not find favour with the majority of IMO member states (IMO, 2015b), and as a result the proposal was not adopted by MEPC. The main arguments leading to the unfavourable outcome at MEPC 68 were: (i) IMO should prioritise work on developing a robust data collection system, which should be the first step, as opposed

³⁵ Also including Marshall Islands in the tally though it was the sponsor for the paper MEPC 68/5/1 and the response of member states at MEPC 68 was specifically to this paper.

to setting a target a first; (ii) it was premature to agree on a reduction target for international shipping prior to the conclusion of UNFCCC COP 21 in Paris, France in December 2015; and (iii) the focus should be on ongoing technical and operational measures to enhance the energy efficiency of international shipping (MEPC 68, 2015).

Figure 27: MEPC 69: Response of Pacific states to setting a GHG target for shipping

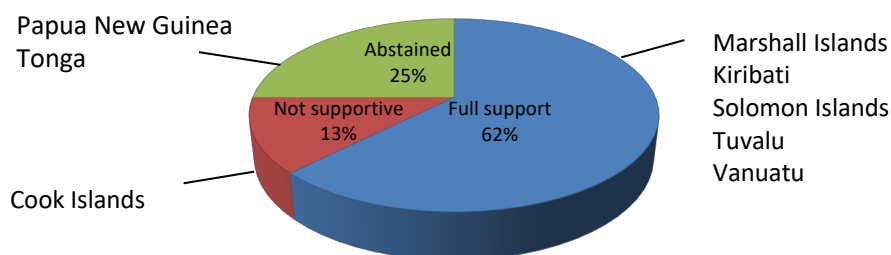


Figure 28: MEPC 69 (Agenda item 7): Response of Pacific states to adopting a workplan for progressing GHG work (Paper MEPC 69/7/2)

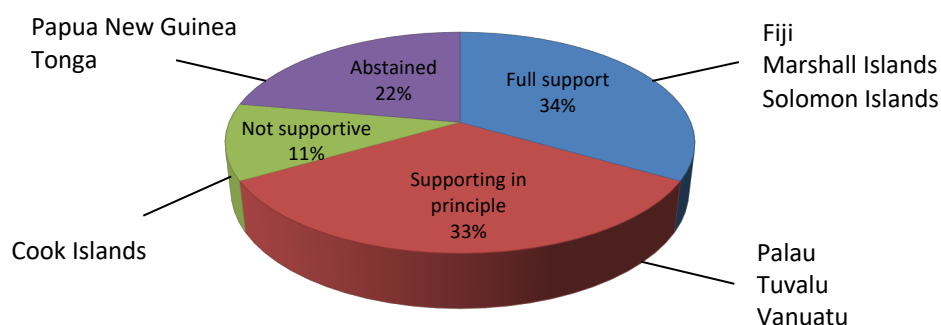
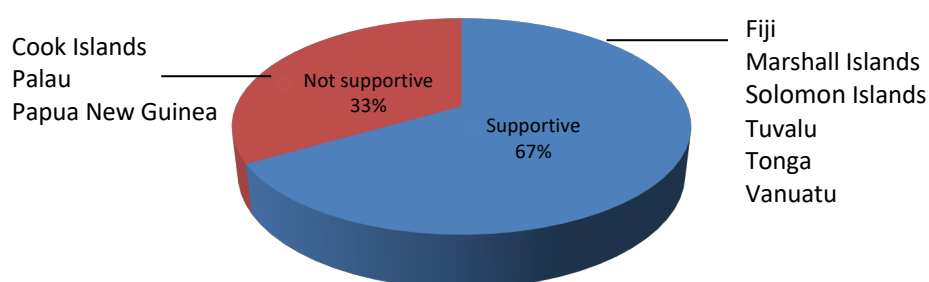


Figure 29: MEPC 70 (Agenda item 7): Response of Pacific states to progressing GHG work at IMO (Papers MEPC 70/7/6 and MEPC 70/7/13)



Following MEPC 68, the shipping emissions issue was channelled through the UNFCCC negotiation process at COP 21 in December 2015, but the outcome was unfavourable there as well. Majority of UNFCCC parties did not support addressing international shipping emissions through the Paris Agreement. Instead, the responsibility was passed back to IMO and this cleared all misconceptions about IMO's lead role in addressing the international shipping emissions issue. The GHG negotiations at IMO became intensive from MEPC 69 onwards.

Of the nine Pacific states present at MEPC 69, only three (Fiji, the Marshall Islands and the Solomon Islands) fully supported the motion to adopt a workplan to progress work on setting a target for reduction of GHG emissions from the international shipping sector (see Figure 27). The Marshall Islands and the Solomon Islands were co-sponsors of the paper MEPC 69/7/2, and only Fiji gave full support to the proposal. This reflected poorly on Pacific solidarity on the matter, which had deteriorated from MEPC 68, where five Pacific states had supported a similar motion. At MEPC 69, Tuvalu and Vanuatu chose to support the paper MEPC 69/7/2 in principle only, digressing from their initial position of being fully supportive of setting a GHG reduction target at MEPC 68. The Vanuatu's Minister responsible for Climate Change had also attended MEPC 68 to deliver a statement in support of the Marshall Islands' proposal. Palau was not represented at MEPC 68 but declared support in principle at MEPC 69, indicating its growing interest in the matter. At MEPC 68, PNG and Tonga chose not to comment on the issue, while the Cook Islands did not support the motion.

Despite reasonably good support for the Pacific co-sponsored paper MEPC 69/7/2, and considerable lobbying by a number of EU and Pacific states, the proposal for the IMO to establish necessary measures to develop a workplan for setting emission reduction objectives was not adopted by MEPC 69. But the negotiations did not reach a dead-end. Instead, a consensus-based decision was reached to establish a working group for more in-depth discussion on the topic at MEPC 70. Interested parties were invited to submit further proposals/papers for consideration.

Of the nine Pacific states that made interventions at MEPC 70 under the GHG emissions agenda, six (Fiji, the Marshall Islands, the Solomon Islands, Tuvalu, Tonga

and Vanuatu) supported the motion for IMO to progress work on setting a GHG emissions reduction target for international shipping (see Figure 28). Three Pacific states – the Marshall Islands, the Solomon Islands and Tonga – were co-sponsors of two papers, which found support from the floor from Fiji, Tuvalu and Vanuatu. Palau and PNG chose to align their positions with the Cook Islands, the only Pacific state that continued to be unsupportive of the motion at the MEPC sessions. The biggest change in country position since MEPC 68 was seen in Tonga. From making no interventions at MEPC 68 and 69, Tonga moved forward to co-sponsor two papers at MEPC 70 and maintained this position at MEPC 71 in 2017.

Based on the consensus of member states in the main plenary, MEPC 70 approved the *Roadmap for Developing a Comprehensive IMO Strategy on the Reduction of GHG emissions from Ships*. Furthermore, MEPC 72 went on to adopt the *Initial IMO Strategy on the Reduction of GHG emissions from Ships* in April 2018, with plans to adopt a revised IMO Strategy at MEPC 80 (2023). While PNG, Tonga and Samoa were absent at MEPC 72, none of the other eight Pacific states (the Cook Islands, Fiji, Kiribati, the Marshall Islands, Palau, the Solomon Islands, Tuvalu and Vanuatu) present at the session opposed the adoption of the *Initial IMO Strategy on the Reduction of GHG emissions from Ships*.

When analysing the rationale behind the varied responses of Pacific states at MEPC, it is clear that the negotiating power of individual countries is either driven by the government's national priorities, or interests of the individuals that are representing the governments. Fiji, the Marshall Islands, the Solomon Islands and Tonga were aligned in their views that the international shipping sector should be held accountable for its share of emissions, and that the IMO needs to prioritise work on setting a mandatory target. In this case, the governments' national interest was reflected in the MEPC negotiations.

Anecdotal information suggests that Pacific states that are represented at IMO by their open registry management companies are often influenced by the decisions of these companies, which may override the true national aspirations of the host Pacific states. In the case of the Marshall Islands, the government took charge of the issue from MEPC 68 onwards and maintained its position on the urgency of setting an emission-

reduction target for the international shipping sector. Though the Marshall Islands is usually represented by an expatriate permanent representative or other registry management company officials at IMO, this has not deterred the Marshall Islands' government from stepping in to reinforce its position on the matter. Even if the registry management company's views were in conflict with the Marshall Islands' government, the company has not been able to exert any negative influence on the GHG negotiations or the position of the Marshall Islands. The Marshall Islands government is the only Pacific state that has been consistent in submitting papers on high ambition from MEPC 68 to MEPC 72.

The lukewarm response of other Pacific open registry hosts at MEPC 69 and 70 negotiations – Kiribati, Palau and Tuvalu– could be attributed to lack of government interest in the area, or greater authority given to expatriate permanent representatives (as appointed by these four states) to make decisions on behalf of the respective governments. All three countries are represented by either the registry management company or an expatriate permanent representative. However, a radical change transpired in the case of Kiribati and Tuvalu, with the governments taking greater charge of the negotiations since MEPC 71. This can be attributed to the increased awareness of and support for the international shipping emissions issue at the regional level, including availability of funding for the head of the maritime administration to attend MEPC.

Vanuatu's case carries mixed connotations. The government was visibly present in the negotiations at MEPC 68 but took a step backwards at MEPC 69 and 70 by expressing support in principle only. The rationale for this digression was based on concerns about the potential impact on trade and economy, as shipping costs to Vanuatu were already very high and adoption of a GHG reduction policy at the IMO would likely cause further increases in downstream price of goods for consumers. The Cook Islands also shared similar views. However, this situation is not unique to Vanuatu and the Cook Islands. It affects all Pacific states and other remotely located SIDS around the world. The Solomon Islands and the Marshall Islands, in a joint submission to MEPC 71 (see paper MEPC 71/7/3), acknowledge this issue but argue that the risk of inaction outweighs the risk of hesitation when the very existence of some nations is at potential risk.

On the far end of the spectrum sits the Cook Islands, the only Pacific IMO member state that has consistently maintained an unsupportive position at MEPC 68, 69 and 70. The Cook Islands was of the view that member states needed to prioritise implementation of the IMO's data collection system. The Cook Islands' representatives at MEPC claimed that they were not against setting a target for reduction of GHG emissions from international ships but felt that adequate data had to be first collected before a decision could be taken on setting a target. The Cook Islands also expressed its hesitation to support any proposals related to market-based measures, as not enough discussions had been held on the matter.

5.8 Solidarity of Pacific states in shipping emissions negotiations

Given their geographical proximity, and shared characteristics as SIDS, Pacific states can find great strength in regional solidarity when facing challenges of common interest. More often than not, this strength has been used as a powerful negotiating weapon at various regional and global negotiation forums: "Arguably, the most successful international endeavour which the countries of the Pacific have ever undertaken together was the achievement of nearly all island state objectives in the near decade-long negotiation of the 1982 United Nations Convention on the Law of the Sea" (Powles, 2002). Pacific states have also proven to be tough negotiators at the WTO trade negotiations, and in regional trade agreements with EU, Australia and New Zealand (Morgan, 2016). The most recent success is seen with the Paris Agreement negotiations in 2015, where Pacific states, led by the Marshall Islands, broke a deadlock in climate change negotiations by initiating high level dialogue of leaders through HAC.

The same level of solidarity is not visible among Oceania members in IMO shipping emissions negotiations. The cracks in regional solidarity are evident in the submission of joint papers to MEPC, as well as in country positions. To some extent, the problem could be attributed to the process by which submissions were initially coordinated at the regional level (explored further in Chapter 7 of this thesis), whereby an appropriate consultation space was not created to bring all Oceania members into one forum. The Cook Islands' representatives expressed their views on this matter during the MEPC

68 negotiations, stating they would have welcomed the opportunity to have contributed to the submission from the Marshall Islands during the drafting process. On the other hand, Australia, one of the largest emitters of carbon dioxide per capita, assumed a passive stance, supporting motions from the floor at MEPC 69, 70 and 71 but not taking any major strides to engage more actively with its Oceania neighbours on submission matters. New Zealand's initial position mirrored that of Australia. But New Zealand went ahead to co-sponsor two papers (ISWG 3/2/4 and ISWG 3/2/9) with some Pacific and European states at ISWG-GHG 3 in 2018. This indicated changing priorities of the new government that came into power in October 2017.

Though the international shipping emissions issue falls within the periphery of the global climate change agenda, where Pacific states take a unified stand, it did not bind the Pacific IMO member states as a single voice in MEPC GHG negotiations during MEPC 68 to MEPC 71. With only around 45%³⁶ of Pacific IMO member states (5 out of 11 states) standing in support of setting an emissions reduction target for international shipping, the solidarity among Pacific states at MEPC negotiations appeared weak. This study identified the Cook Islands, Palau and PNG as the weakest links in regional solidarity, on the basis that they have not: submitted any papers in support of setting an emission-reduction target; or been fully supportive other Pacific states that have tabled papers calling for high ambition. The Cook Islands has been consistently vocal in rationalising its unsupportive position. PNG abstained from making any responses at MEPC 68 and 69 to aligning its position with the Cook Islands at MEPC 70. Palau shifted from a position of 'supporting in principle' at MEPC 69 to aligning its position with the Cook Islands at MEPC 70.

This study notes that none of the Pacific states that were present at MEPC 72 opposed the adoption of the initial IMO GHG strategy in April 2018. This marked a shift in the position of the Cook Islands that intervened in support of the motion. PNG, Samoa and Tonga did not attend MEPC 72. It is difficult to gauge what PNG's response would have been to the adoption of the strategy considering their lack of support in past

³⁶ Based on MEPC 70 position of Pacific states – five Pacific states assumed supportive positions (Fiji, Marshall Islands, Solomon Islands, Tuvalu, Tonga and Vanuatu). Cook Islands, Palau and PNG aligned positions with each other. Kiribati and Samoa were not represented.

sessions, but it is highly likely that Tonga would have fully supported the adoption. Samoa's continued obscurity from the negotiations is concerning, and perhaps demanding greater attention from regional agencies that are working to strengthen Pacific cohesiveness at MEPC GHG negotiations.

5.9 Support from other IMO member states

Pacific states that were lobbying for a cap on international shipping emissions found strong allies in the European region and support from few other IMO member states, such as Antigua and Barbuda, Cote d'Ivoire and Morocco. Support has been evident in various ways, either through joint submissions or support for motions from the floor or provision of technical and financial assistance (Udrea et al., 2017; See Table 9 on page 100). Perhaps the most overwhelming support for high ambition aspirations eventuated outside the IMO negotiations through the *Tony de Brum Declaration*, named after the late Foreign Affairs Minister of the Marshall Islands. The declaration was initiated by France and the Marshall Islands at the One Planet Summit in Paris in December 2017, and signed by 49 countries, as at December 2019 (paper MEPC 72/7/7; France Ministry of Ecological and Inclusive Transition, 2019).

Since 2017, some EU states have entered into bilateral arrangements with selected Pacific states to support the participation of these small nations at MEPC negotiations (Udrea et al., 2017). Formal arrangements are in place between the following countries: the Marshall Islands and Germany; the Solomon Islands and Belgium; Tonga and the Netherlands; and Fiji and France. Discussions were underway to consider similar arrangements for Kiribati and Tuvalu. It is evident that the technical and financial assistance arrangements benefit only those Pacific states that mirror the position of their bilateral partner. It can be viewed as a win-win situation for both parties where the Pacific states are able to participate in the negotiations and exert greater influence on the outcomes, while the bilateral development partners continue to strengthen their collective bargaining power at IMO. A major downside of these bilateral arrangements is that the Pacific states may get unduly influenced by the policies and positions of their bilateral partner and take decisions that may not be in the best interest of a small island nation. The differences will become more pronounced when implementation measures for the IMO GHG Strategy are finalised.

The growing collaboration between selected EU and Pacific states led to the formation of an informal multi-stakeholder group, the High Ambition Coalition for Shipping (SHAC), which provides a common discussion platform for countries that are seeking urgent action from IMO (Udrea et al., 2017; Englert, 2018). Since the group was formed in 2017, some countries from other regional groups have joined the consortium. The SHAC is modelled around HAC, which played a key negotiating role during the UNFCCC COP 21 in 2015. The key difference between the two forums is that SHAC does not engage directly with the world leaders. Instead, it facilitates dialogue among senior government officials responsible for maritime transport and low carbon shipping work. The SHAC has also extended its outreach to the wider Pacific group through participation at regional meetings. For example, some European representatives participated in the 2017 Pacific transport and energy ministers meeting in Tonga to stress the urgency of driving high ambition in the international shipping sector (SPC, 2017a).

The EU's progressive plans and actions to help reduce GHG emissions in the shipping sector are evident at national, regional and global levels. In April 2015, the EU adopted a regulation on monitoring, reporting and verification (MRV) of CO₂ emissions from large ships visiting EU ports (Wilensky, 2014). The EU members were also in discussion with US, Australia and Japan to develop a global MRV system. Furthermore, to support the IMO's global GHG initiatives, the European Commission (EC) contributed €10 million to an EC-IMO energy efficiency project that led to the establishment of MTCCs in five regions in 2017: Africa, Asia, the Caribbean, Latin America and the Pacific (European Commission, 2017). Against this backdrop, it is not surprising to find a high number of EU states playing a major role to support like-minded Pacific states and other IMO member states during the shipping emissions negotiations.

In terms of support at overall regional group level, the Asia, America, and Africa have offered the least support for the Pacific co-sponsored submissions. However, the overall support from these three regions increased since MEPC 68, and noticeably greater support is evident from the African states. For example, the paper MEPC 70/7/6 was co-sponsored by three Pacific states (the Marshall Islands, the Solomon

Islands and Tonga), five European states (Belgium, Denmark, France, Germany and Monaco), two African states (Cote d'Ivoire and Morocco) and one American state (Antigua and Barbuda).

It may be reasonable to assume that SIDS, as the most vulnerable group to the impacts of climate change, would be fully supportive of submissions that call for a cap on international shipping emissions. But analysis reveals otherwise. For example, only 4 out of 18 SIDS (22%) present at MEPC 69 showed full support for the submissions: three from the Oceania region (Fiji, the Marshall Islands and the Solomon Islands) and one from the American region (Bahamas). SIDS that were not supportive of the matter or abstained from responding were generally concerned about the potential impact on transportation costs and trade associated with the implementation of the IMO GHG Strategy.

During the negotiation period MEPC 69–71, the strongest opposition came from Brazil, Russia, India, China and South Africa (BRICS) and the Cook Islands, with concerns about the following: reconciling the principle of CBDR with IMO's principle of NMFT; transport cost impacts on remote and developing countries; completion of the three-phase data collection; implementation of energy efficiency measures being the right approach; and the difficulties associated with running two complex negotiations (data collection and GHG reduction) simultaneously at future sessions of MEPC. A number of members who supported the submissions, particularly those that supported in principle, such as Vanuatu, also raised concerns about the impact any new GHG reduction measures might have on trade, transport costs and economic growth.

Even though the Initial IMO Strategy on Reduction of GHG Emissions from Ships was adopted at MEPC 72 (in April 2018) with the support of majority of IMO member states, it did not have total agreement of all. Saudi Arabia and the US reserved their positions on the adoption of the strategy, while Brazil opposed the levels of ambition (IMO, 2018c). Saudi Arabia further raised its concerns at SBSTA 48, stating that it had not joined consensus on the Initial IMO GHG Strategy and that its position was not reflected in IMO's report to SBSTA 48 (IISD, 2018; IMO, 2018c). Saudi Arabia also stated that IMO should not be allowed to report to UNFCCC. The UNFCCC

secretariat clarified that the invitation for IMO to report to SBSTA dated back to COP 1 in 1995 and that this decision cannot be overruled by SBSTA conclusions (Moosemann, 2019).

The African Group and India supported Saudi Arabia's interventions at SBSTA 48, while Australia, EIG, Independent Alliance of the Latin America and the Caribbean (AILAC), Japan, the Marshall Islands and New Zealand spoke in support of IMO's report (Third World Network, 2018). The Parties therefore could not agree on the draft conclusion of SBSTA 48 with regards to the IMO and ICAO issues, and the matter was deferred to SBTA 49 (UNFCCC, 2018). The Parties could not agree on the draft conclusions at SBSTA 49 and SBSTA 50 either (UNFCCC, 2019b).

5.10 Support from the international shipping industry and open registries

The international shipping industry, which facilitates around 80% of global trade and is almost 100% dependent on fossil fuel, has been actively involved in the IMO GHG negotiations to seek appropriate pathways to a new era of renewable energy-powered vessels and zero fossil fuel dependency. This is evident from the submissions made by a number of shipping organisations from MEPC 69–72. The International Chamber of Shipping paper at MEPC 69 (MEPC 69/7/1) proposed that the IMO should develop an Intended IMO Determined Contribution for the international shipping sector as a whole, conceptually similar to the UNFCCC NDCs. This paper complemented a joint submission (MEPC 69/7/4) by the World Shipping Council (WSC), Cruise Lines International Association (CLIA), (International Association of Independent Tanker Owners (INTERTANKO) and the International Parcel Tankers Association (IPTA). The paper MEPC 69/7/4 proposed establishing a process for considering shipping's appropriate contribution to reducing CO₂ emissions.

The industry tabled a total of four submissions at MEPC 70. A joint submission (MEPC 70/7/8) by BIMCO, ICS, International Association of Dry Cargo Shipowners (INTERCARGO), INTERTANKO and WSC proposed that MEPC should develop a roadmap to determine a possible IMO fair share contribution. This was supported by a commenting paper (paper MEPC 70/7/9) from the International Association of Ports and Harbors (IAPH), an organisation that had initially abstained from supporting a cap

on shipping emissions. CLIA decided to submit an individual paper at MEPC 70 (paper MEPC 70/7/12), but complementary to the BIMCO et al. paper, likewise proposing development of a roadmap to determine a possible IMO fair share contribution.

Despite sharing similar long-term vision for the sector and their commitment to the IMO process, some industry representatives and Pacific states differed in their views on the level of ambition and timelines for implementation of reduction measures in relation to the IMO GHG Strategy. In November 2017, ICS specifically criticised the Marshall Islands for taking an ‘inflexible & unrealistic stance’ at the IMO meetings that in their view could impede consensus to address shipping's CO₂ emissions (Darby, 16 November 2017). ICS argued that a 100% cut in emissions by 2035 was unrealistic as proposed by the joint paper submitted by Kiribati, the Marshall Islands, the Solomon Islands and Tuvalu to ISWG-GHG 2 (paper ISWG-GHG 2/3) in November 2017 (Chambers, 8 November 2017). The ICS reinforced its vision of zero CO₂ emissions from shipping in the second half of the century, confident that it was achievable with alternative fuels and new propulsion technologies. ICS also expressed favour for Japan’s proposal to the ISWG-GHG 2, which outlined how a 50% total cut by 2060 could be achieved (MEPC 72; IMO, 2018c).

Is there some merit in the ICS-levelled accusation against the Marshall Islands and the proposal of zero emissions by 2035 put forward in the paper ISWG-GHG 2/3? According to shipping experts, “the 2°C target requires at least a halving of international shipping’s CO₂ emissions on 2012 levels by 2050, and to have zero carbon emissions by 2080; and a more stringent 1.5°C target requires a halving of emissions by 2035, and carbon neutrality by 2045” (Tristan et al., 2015). The ambition level stated in the Marshall Islands paper at ISWG-GHG 2 comes from a Danish Shipping study done in 2016, where the ‘zero year’ is not just a function of the temperature target, but the pathway on how to get there. In the Danish study, a scenario was used assuming that the Third IMO GHG Study grew out to 2025, followed by linear descent to zero, hence ending up with zero in 2035 (Tristan et al., 2016). An OECD/ITF study on decarbonisation of the shipping sector also shows that zero emissions is technically possible by 2035 (OECD/ITF, 2018).

There was no opposition from ICS to the paper MEPC 71/7/7, co-sponsored by Belgium, Denmark, France, Germany, the Marshall Islands, the Netherlands, the Solomon Islands, Tonga, Tuvalu and ICHCA at MEPC 71. Based on a study of emissions scenarios, the paper (MEPC 71/7/7) recommended that, to allow a gradual transition, “net emissions will need to peak in 2025, with absolute emission reductions amounting to approximately 400 million tonnes in net emissions by 2050”. Consistent with the Paris Agreement, emissions will then need to reduce to zero during the second half of the 21st century”. This was in line with the ICS’s vision on the level of ambition, hence no opposition was raised from the industry.

However, three months after MEPC 71, a number of Pacific states submitted a joint paper to ISWG-GHG 2 (ISWG-GHG 2/3) calling for complete decarbonisation of the shipping sector by 2035. The level of ambition had been raised substantially, in line with the recommendations of the 2016 Danish Shipping study. The paper ISWG-GHG 2/3 explained that the co-sponsors understood the wording proposed for the vision, “to decarbonize by the second half of the century”, to mean international shipping would need to reach zero emissions by 2050. But based on the best available science, the co-sponsors considered this to be an upper bound limit of what must be achieved (ISWG-GHG 2, 2017). The co-sponsors decided to propose a lower bound limit, hence their proposition for full decarbonisation of the international shipping sector by 2035. However, the ISWG-GHG 2/3 proposal did not find much support from other IMO member states. Instead the Pacific co-sponsors had to compromise on the target set at MEPC 72, striving to achieve full decarbonisation of the international shipping sector by the end of this century.

AT MEPC 72, the industry stated its commitment to reduce GHG emissions and called IMO to send a clear signal to foster investment into technological solutions for reducing GHG emissions, which were already available (IMO, 2018c). The world’s largest container shipping company, Maersk, pledged to cut net carbon emissions to zero by 2050 (Milne, 2018). Maersk proposed to achieve this target by abandoning fossils fuels and finding alternative ways to power the vessels or using a different type of fuel. By the end of 2017, Maersk had reached 41% reduction of its emissions through efficiency measures alone (David, 2019). Maersk is also a founding member of the Getting to Zero Coalition, formed in September 2019 at the United Nations

Climate Action Summit in New York. The coalition is described as “a crucial vehicle for decarbonising global shipping and energy value chains by 2050 as well as accelerating the deployment of zero emissions vessels by 2030” (David, 2019). Other global companies, such as Citibank, Shell, Cargill, Kuehne + Nigel, and Unilever are members of this newly formed coalition.

The major flag states and open registries have also shown support for setting a target to reduce international shipping emissions. At MEPC 69, eight of the ten largest flag states were either supportive or supportive in principle of the EU-Pacific submission MEPC 69/7/2, including the top three open registries in the world – Panama, the Marshall Islands and Liberia (see Table 10). This equates to over 70% of world’s total number of international cargo-carrying ships. Other top supportive registries include Bahamas, Cyprus, Greece, Malta and Singapore. This sends a positive signal to MEPC and the international community about the willingness of industry giants to tackle this contentious issue.

Table 10: Eight of the top ten flag states that supported the EU-Pacific paper (MEPC 69/7/2) at MEPC 69 in 2016 (Source: UNCTAD, 2015; Author’s research)

Flag state	Percentage of registered world fleet (dwt, 2015)	Support for paper MEPC 69/7/2 (2016)
Bahamas	4.332%	Full
Cyprus	1.925%	Full
Greece	4.501%	Full
Liberia	11.653%	Full
Malta	4.688%	Full
Marshall Islands ³⁷	10.024%	Full
Panama	20.134%	In principle
Singapore	6.576%	In principle

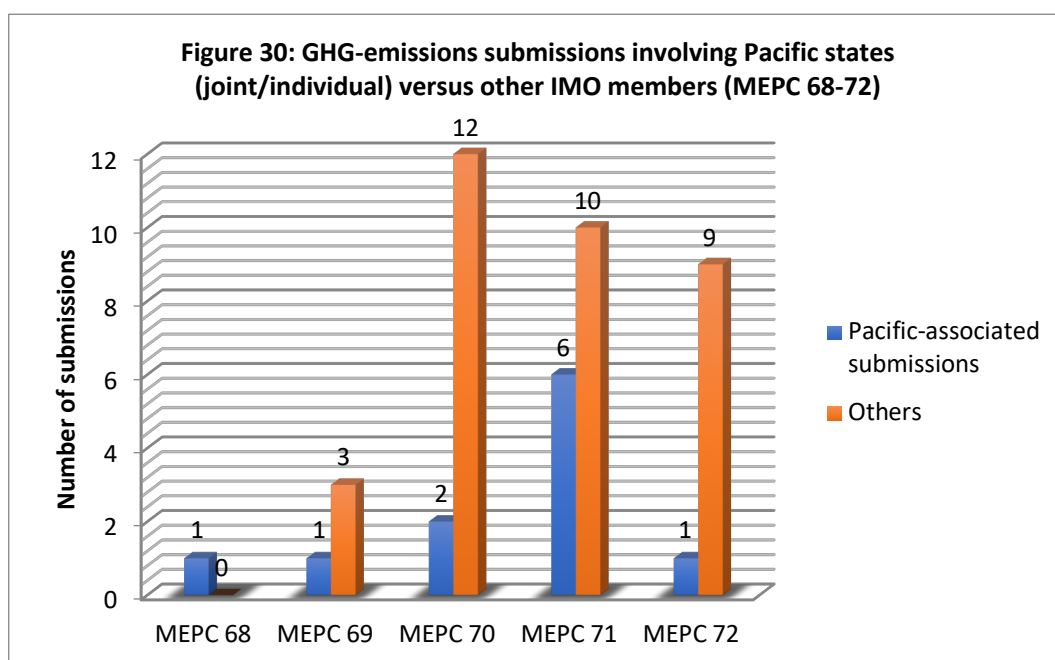
5.11 Impact of Pacific interventions on shipping emissions negotiations

The Pacific lost its most revered climate champion in August 2017 with the passing away of Tony deBrum, the former Foreign Affairs Minister of the Marshall Islands, whose actions during the Paris Agreement negotiations and MEPC 68 negotiations in

³⁷ Based on 2015 figures, Marshall Islands was the third largest registry. As at November 2017, Marshall Islands was the second largest open registry.

2015 placed a small Pacific nation on the world stage. Though the Marshall Islands' proposal at MEPC 68 was not approved, the presence of two Pacific ministers (Foreign Affairs minister of Marshall Islands and Climate Change minister of Vanuatu) injected political pressure into what has traditionally been a highly technical process. The Pacific's political interventions continued at MEPC 71 (July 2017) with the participation of transport ministers from the Marshall Islands, Kiribati and Tuvalu. While this did not result in any radical change to the country positions of major opposing parties, such as the BRICS, it demonstrated the pressure some Pacific states were capable of exerting on IMO, as well as on other IMO member states, to take the plight of small island nations seriously.

Judging from the submission trends involving GHG emissions papers from MEPC 68-72, it is apparent that the Marshall Islands' proposal at MEPC 68 (MEPC 86/5/1) was impactful in the sense that it set into motion a range of submissions from other IMO members at subsequent MEPC sessions. A marked increase is seen in the number of substantive GHG submissions from other IMO members, from zero³⁸ at MEPC 68 to 12 at MEPC 70 (see Figure 30), indicative of renewed drive from IMO member to progress the issue despite having conflicting views on the approach.



³⁸ Excluding secretariat and information papers.

The Pacific's intervention, through the Marshall Islands' proposal at MEPC 68, seems to have driven EU member states to take a substantially stronger position from MEPC 69 onwards. The Pacific may have found strong allies in the EU, or it could be vice-versa. There are three distinct groups in the MEPC negotiations – one group that strongly supports setting a cap on shipping emissions, a second group that does not support an emissions cap, and a third group that has no concrete position on the matter. The group that supports setting a cap on emissions is largely comprised of the Pacific-EU coalition countries (plus few other member states). It is a group that has demonstrated itself to be quite formidable to the opposition during shipping emissions negotiations, placing immense pressure to achieve their desired level of ambition. Without the combined power of this coalition, the GHG emissions agenda at MEPC may not have progressed as fast as it has since 2015.

At MEPC 68, one of arguments raised against the Marshall Islands' paper (MEPC 68/2/1) was that “a quantifiable and ambitious emission mitigation target needs the joint efforts of all the parties to work together to find a balanced and effective solution; however, the proposal by the Marshall Islands is not aligned with the current IMO discussions and may even hamper future work” (IMO, 2015b). The view of some IMO member states that the Marshall Islands' proposal may hamper future GHG work seemed short-sighted and was proven wrong three years later when IMO adopted the first GHG strategy and set a cap on international shipping emissions in 2018.

5.12 Factors affecting Pacific's negotiating role at MEPC

Pacific states that are fighting for an urgent reduction of international shipping emissions have a number of strengths and limitations going into MEPC negotiations. Awareness of both types of factors is equally important to further strengthen the role of Pacific states in the negotiations. This section provides a more detailed analysis of the limitations or factors that negatively affect the role of Pacific states at MEPC negotiations.

5.12.1 Key strengths

High state of climate vulnerability

In terms of strengths, Pacific states have particularly strong negotiating power as climate vulnerable small island states facing the impacts of a worrying global phenomenon that was not created through any fault of theirs. Pacific states that are geologically defined by low lying coral atolls, such as the Marshall Islands, Kiribati and Tuvalu, have even greater moral high ground as they face the threat of becoming totally uninhabitable if urgent actions are not taken. These are the realities Pacific states bring to the negotiating table.

Support of other IMO member states, flag states and academia

Pacific states have the backing of a large number of European countries, and together they form a formidable bloc against BRICS and those IMO members that have been trying to delay urgent and meaningful actions. The negotiating power of Pacific states is further boosted with the favourable response of major flag states, including the top three open registries – Panama, the Marshall Islands and Liberia. Moreover, certain regional and international universities, in particular UCL and USP, have been providing necessary technical backstopping to Pacific states during the negotiations and pre-meeting preparedness.

Open registries affording substantial weight at IMO

Open registries are believed to have substantial influence in the IMO policymaking process, as two thirds of the IMO's financial contributions come from the top ten registries (ITF, 2019). Members states' contribution to IMO is based on the size of their fleets, measured in deadweight tonnage. The top ten registries collectively have the "power to exert undue influence over the IMO because of structural weaknesses in the organisation's financing and policymaking processes that tip the scales in favour of states that have the most ships registered under their flags." (ITF, 2019). While this factor carries some negative connotation, it can work in the favour of setting high ambition targets and implementation goals to decarbonise the international shipping sector. Of the 37 known open registries in the world, seven are registered in the Pacific Islands region, of which six are members of IMO. With the Marshall Islands being the second largest registry (in terms of deadweight tonnage), the Pacific in general is well placed to pressure IMO and other member states to take urgent climate action.

5.12.2 Limitations

Small-sized delegations

Analysis of attendance trends from MEPC 61–72 show that, with the exception of the Marshall Islands, the delegation size of other Pacific states has not exceeded six individuals (see figures 31–41). Of all Pacific states, the Marshall Islands has been consistent in bringing a relatively large size delegation, ranging from 13–18 individuals. As one of the top three open registries in the world, the Marshall Islands is financially better placed than its other Pacific neighbours to fund a larger size delegation to IMO. During the period MEPC 61–70, the delegation size for seven out of 11 Pacific IMO member states (Fiji, Kiribati, Palau, Samoa, the Solomon Islands, Tonga and Tuvalu) comprised of one or three officials. A slight increase in the number of attendees was seen for Fiji, Kiribati, Solomon Islands and Tuvalu at MEPC 71 and MEPC 72. This can be attributed to greater involvement of the heads of maritime administrations and the increased drive of these Pacific states to pressure IMO to set an emission-reduction target.

An increase in the size of Vanuatu’s delegations from 1 at MEPC 69 to 4 at MEPC 70 was enabled through funding from its open registry. A sharp increase in the size of the PNG delegation is also seen from MEPC 68 (from 1 to 5), though it could be more closely linked to the PNG government’s efforts to push the Particularly Sensitive Sea Area (PSSA) agenda, rather than shipping emissions work. PNG ultimately obtained its first ever PSSA designation for Jomard Islands from IMO at MEPC 70 in 2016 (NMSA³⁹, 2017). PNG did attend MEPC 71 and MEPC 72.

Fiji, Kiribati, Palau, Samoa, Tonga and Tuvalu have not been represented by more than two officials during MEPC 61–70. Kiribati, Palau and Samoa have only been represented by one official. Samoa has an even larger overall attendance issue, having attended only one MEPC session during the same time period. The maritime administration attributes this to lack of funds to attend the meetings.

³⁹ National Maritime Safety Authority of PNG

FIGURE 31: NUMBER OF ATTENDEES AT MEPC SESSIONS: COOK ISLANDS

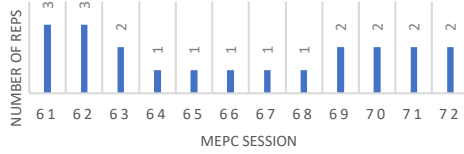


FIGURE 32: NUMBER OF ATTENDEES AT MEPC SESSIONS: FIJI

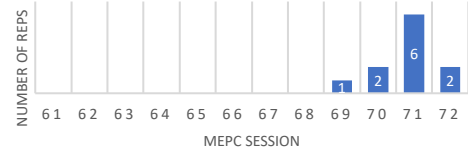


FIGURE 33: NUMBER OF ATTENDEES AT MEPC SESSIONS: KIRIBATI

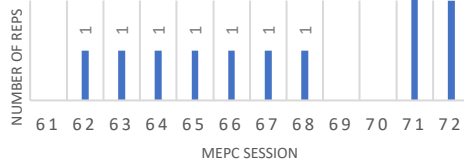


FIGURE 34: NUMBER OF ATTENDEES AT MEPC SESSIONS: MARSHALL ISLANDS

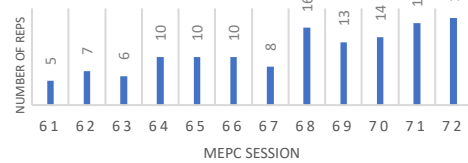


FIGURE 35: NUMBER OF ATTENDEES AT MEPC SESSIONS: PALAU

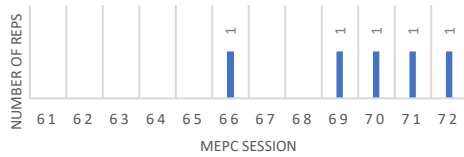


FIGURE 36: NUMBER OF ATTENDEES AT MEPC SESSIONS: PAPUA NEW GUINEA

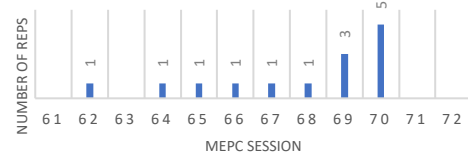


FIGURE 37: NUMBER OF ATTENDEES AT MEPC SESSIONS: SAMOA

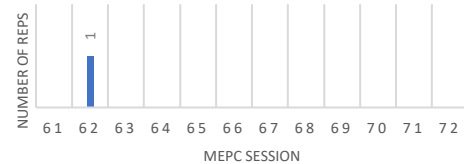


FIGURE 38: NUMBER OF ATTENDEES AT MEPC SESSIONS: SOLOMON ISLANDS

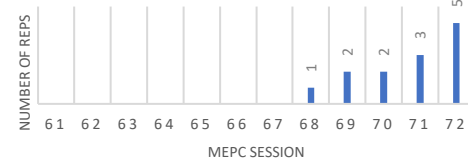


FIGURE 39: NUMBER OF ATTENDEES AT MEPC SESSIONS: TONGA

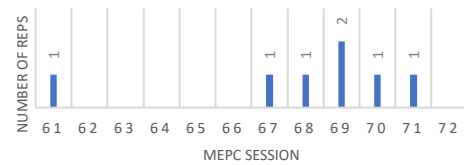


FIGURE 40: NUMBER OF ATTENDEES AT MEPC SESSIONS: TUVALU

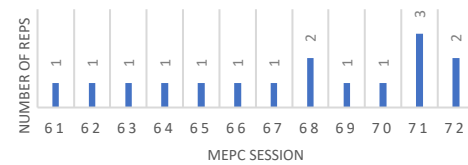
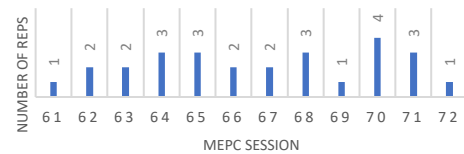


FIGURE 41: NUMBER OF ATTENDEES AT MEPC SESSIONS: VANUATU



Compared to most of its other Pacific neighbours, Fiji is relatively less resource-constrained and has demonstrated capability to self-fund at least one official at MEPC meetings. Fiji also has a diplomatic office in London that can be utilised for additional support (this started to happen from MEPC 70 onwards). The bilateral agreement reached between France and Fiji in 2017 provided further opportunities for Fiji to increase its delegation size at MEPC. Fiji's COP 23 presidency status in 2017 also lifted the nation's leadership role in climate change, placing Fiji in a stronger global position to make greater impact at the shipping emissions negotiations at IMO.

Similar to Fiji, the Solomon Islands has not been well represented in the past (zero attendance from MEPC 61–67) but has increased its delegation size from one to five since MEPC 68. The Solomon Islands has continued to maintain its strong position, but its participation is limited by the size of its delegation. Tonga is in a similar position to the Solomon Islands, in not being well represented in the past but assuming strong positions in recent times. Delegation size of Tonga has been 1–2 between MEPC 67–70, inclusive of representatives from the diplomatic office based in London. The maritime administration of Tonga began attending the negotiations from MEPC 71, but the delegation size has remained between 1–2. Tuvalu's attendance has been consistent from MEPC 61–70, with one-member delegation represented by its open registry designate. At MEPC 68, two officials attended to support the Marshall Islands' proposal. Increase in the delegation size of Tuvalu was seen at MEPC 71 (3 individuals), attributed to the attendance of the head of the maritime administration for the first time.

Limited representation affects effective contribution of Pacific states in the negotiations, particularly in the GHG working group and intersessional discussions, where the crux of negotiations is addressed. Only five Pacific states participated in the GHG emissions working group negotiations in 2016 prior to MEPC 70. One-member delegations are left with a choice of either attending the main plenary session or the working group discussions. These resourcing issues present a real challenge to effective participation of Pacific state governments in MEPC negotiations.

Poor participation of maritime administrations and nationals in negotiations

Analysis of data covering the period MEPC 61–70 shows poor participation of Pacific nationals and maritime administrations, in particular the heads of maritime administrations (see Table 11 and Figure 42). The maritime administrations of only two countries, Fiji and PNG, have sent national representatives⁴⁰ to the negotiations from their capital. Fiji's maritime administration has been represented in 50% of its total attendance rate (which is two out of ten to begin with) and PNG 13% (attendance rate eight out of ten). This is unfortunate, as such key advisors and regulators for maritime matters in government should directly represent their respective governments in MEPC negotiations. Instead, there is heavy reliance on overseas diplomatic missions (foreign affairs ministry) to represent Pacific states at MEPC negotiations, including heading delegations. This is particularly true in PNG, Samoa, the Solomon Islands and Tonga, and to a lesser degree in Fiji, Palau and the Marshall Islands.

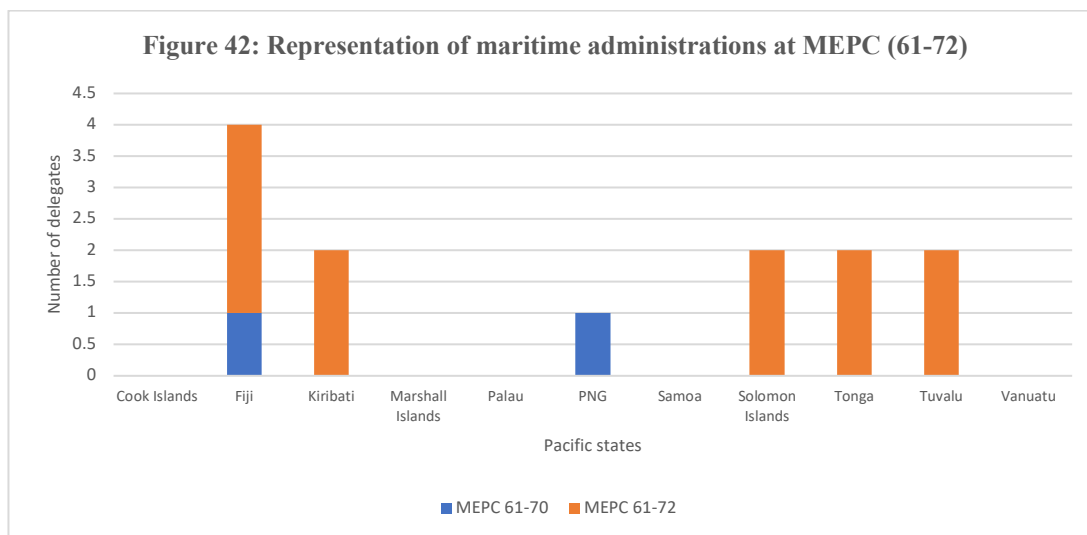
Table 11: Representation of Pacific states at MEPC (61–70) by category

	Maritime administration (local)	Foreign affairs ministry (local)	Foreign affairs ministry (overseas)	Open registry	Private sector/others	Expatriate IMO Permanent Representative
Cook Is	-	30%	-	30%	10%	100%
Fiji	50%	-	50%	-	50%	-
Kiribati	-	-	-	100%	-	-
Marshall Is	-	-	10%	100%	90%	100%
Palau	-	-	33%	-	-	67%
PNG	13%	-	100%	-	25%	-
Samoa	-	-	100%	-	-	-
Solomon Is	-	-	100%	-	33%	-
Tonga	-	-	100%	-	-	-
Tuvalu	-	-	-	100%	-	100%
Vanuatu	-	-	-	-	80%	90%

Pacific states that operate open registries either appoint an IMO representative directly from the registry management office (as in the case of Kiribati) or an expatriate permanent representative to IMO authorised by the government (as in the case of the Cook Islands, the Marshall Islands, Palau, Tuvalu and Vanuatu). Research findings

⁴⁰ Individuals who are based in respective Pacific nations. Does not include expatriates or open registry representatives who represent the government at IMO.

reveal that the heads of maritime administrations in these registry states have never participated in the MEPC negotiations until MEPC 70. Instead, the delegations are dominated by expatriates, overseas diplomatic offices and open registry designates.



It is apparent that registry management companies have greater control and influence over MEPC participation than the Pacific governments they represent. This may lead to interventions at MEPC that are not fully aligned with governments' true interests. Governments' attempts to regain power carries the risk of losing registry business and associated benefits, such as funding for IMO permanent representative positions that give a voice to Pacific states at IMO.

Lack of technical expertise

Utilising officials from Europe-based diplomatic offices to represent Pacific states in a highly technical meeting may help lessen the financial and resourcing burden for certain Pacific state governments (particular if two MEPC sessions need to be attended in one year), but it does not take care of the technical expertise needs. It has been observed that lack of understanding of low carbon shipping issues results in limited responses from most Pacific states, to a few general comments or a single sentence to support motions from other member states within the SHAC circle. Closing the technical expertise gaps is particularly important during the intersessional meetings, when the negotiations dig deep into the policy components.

Pacific states that are part of the EU-Pacific bloc enjoy certain advantages over others, as they have access to strong technical backstopping from USP and UCL shipping experts during the negotiations. However, continued support from these universities is not guaranteed, as these organisations depend on external funding to carry out their supportive role. Donor funding is therefore critical to securing long-term funding for these universities to continue their capacity building, advocacy and advisory functions, while aiming to further strengthen the role of Pacific states in MEPC negotiations.

5.13 Reflections

In an ideal scenario, the head of maritime administration would be the most appropriate official to lead country delegation at the IMO MEPC meetings. The maritime administrator is already assigned high decision-making power in national maritime regulatory affairs and has greater understanding of the IMO processes. For some Pacific IMO member states, the roadblock comes in the form of current arrangements that the governments have either with the registry management companies or the foreign affairs ministry. Governments should consider reassessing current arrangements with relevant parties and make efforts to increase budgetary allocations to maritime administrations in order to allow the most appropriate government official to lead MEPC GHG negotiations.

If briefed correctly, the ministry of foreign affairs could turn out to be effective lead negotiators, and this can be helpful in cases where the maritime administration may not have funding to attend the negotiations. However, this study is of the view that the government should not undermine the responsibility of the maritime administration by driving the agenda through the ministry of foreign affairs only. Since MEPC 71, a major shift is evident with increased attendance of Pacific maritime administrations in the shipping emissions negotiations, particularly for Kiribati, Solomon Islands, Tonga and Tuvalu. The gap that was evident from MEPC 61–70 is being closed by a number of Pacific states in recent years. However, the newly introduced maritime administrators are limited by technical knowledge and negotiations skills, thus rely heavily on experts from USP and UCL. There is a need to develop long-term sustainable capacity building initiatives at the regional level, which will require adequate funding channelled to regional agencies to facilitate implementation of these

initiatives. Regional level work is set to increase once the IMO GHG Strategy reaches full implementation phase. Maritime administrations that have only two or three staff managing full flag state responsibilities rely heavily on support from regional agencies to ease the pressure of fulfilling their international obligations. This dependency is likely to continue unless maritime administrations expand in size.

Renegotiation with registry management companies may or may not work for host Pacific states, depending on the level of communication and transparency that exists between the respective parties. It could be a formal, contractual agreement between a government and the registry that actually covers representation at IMO or it could be a case of government abdicating its role more informally. In any case, renegotiations should aim to shift the lead negotiator role to the head of the maritime administration and strike a balance in representation of Pacific nationals and registry designates at MEPC negotiations. This could involve reviewing and amending legislation that currently give authority to registry management companies to lead negotiations at IMO meetings on behalf of a government. Registry management companies bring to the table substantial experience in international shipping and open registry matters that is lacking in Pacific states. This expertise should complement governments' efforts in GHG negotiations.

In essence, the size of a delegation does not matter in MEPC negotiations when it comes to consensus matters, as it works on a one vote per country basis. But size does matter when a contentious issue such as GHG emissions is being debated, and the forum requires various experts (to cover legal, economic, policy and technical aspects) and advocates to drive the agenda forward. A minimum of two officials from Pacific states should attend MEPC sessions, in order to enable participation in both the plenary sessions and working group sessions. An increase in the size of a delegation would only be possible if the associated government prioritises GHG emissions negotiations and directs more funding towards participation of nationals or seeks external funding to overcome budget limitations. Some Pacific states are already benefiting from the bilateral arrangements they have with certain European states, but the Pacific needs greater uniformity to ensure that the same level of financial and technical support is provided to all states. In this context, a long-term financing strategy, developed at

bilateral or regional level, could provide a sustainable solution to help overcome existing resourcing challenges.

The international shipping emissions issue is not a new negotiating platform in global forums. It has been a part of the UNFCCC Kyoto Protocol negotiations and the GHG emissions negotiations at IMO MEPC since the 1990s. However, this study revealed a low level of awareness of the international shipping emissions issue among most Pacific states, in particular the maritime administrations. For some maritime administrations, the problem is apparent because they have not participated in these negotiations at all. Where the foreign affairs ministry, diplomatic office or the registry management company has taken lead in negotiations, there could be gaps in communication between relevant parties. In this case, the communication channels need to be improved and further reinforced in a number of ways, such as through national policies and establishment of a multi-stakeholder taskforce on shipping.

Not all Pacific states share the same passion for setting a cap on international shipping emissions, as observed during MEPC 68–70 negotiations. Being sovereign nations, Pacific states have free will to support or oppose a motion at MEPC based on their distinct circumstances. Getting all Pacific states to speak as one voice in global forums requires considerable advocacy and preparatory efforts at regional and national levels. This has not happened in the Pacific's case, mainly due to lack of funding and the *ad hoc* manner in which initial efforts were coordinated at the regional level. Research findings revealed that the 11 Pacific IMO member states have never been brought to the same table to deliberate on the shipping emissions issue. Another avenue for improving solidarity among all Pacific IMO member states can be pursued through SHAC, which is already undertaking considerable outreach work to unify like-minded IMO member states while seeking further commitment from unsupportive or unresponsive states.

The EU countries have proven to be the biggest ally of Pacific states in shipping emissions negotiations, providing funding and technical support for MEPC negotiations. However, the EU states don't share the same type of urgency that Pacific nations bring to the table at shipping emissions negotiations. In terms of ambition, EU countries are more moderate in approach, and it is likely that the Pacific states may be used as a

counterweight against those on the other side who are seeking to delay meaningful action. This may become even more of a question as specific implementation measures are negotiated, which may be much harder than the debate about a long-term level of ambition.

5.14 Chapter summary

Despite the initial conundrum over whether international shipping emissions fell under the IMO's or the UNFCCC's negotiating forum, global negotiations on shipping emissions at IMO meetings have clearly witnessed a revolution in recent years in terms of increased awareness, support and consideration by member states for the issue. Initial fractional responses from member states have started transforming into consistently firm though varied opinions on the matter. The adoption of the initial *IMO strategy on reduction of GHG emissions from ship* in April 2018 was historic, but it is noted that not all IMO member states were in consensus for adoption. Countries that had reservations justified their positions on the basis of the potential impact on trade and the need for IMO to prioritise the data collection system. Current negotiation trends show that the GHG emissions matter at IMO meetings has progressed more than it has in decades, and that there is increased support from member states to achieve the emissions reduction target set for the international shipping sector.

In terms of Pacific representation at MEPC GHG negotiations during 2011–2018 (covering MEPC 61–72 sessions), this study revealed that only four out of 11 Pacific states (the Cook Islands, the Marshall Islands, Tuvalu and Vanuatu) had attended all 12 MEPC sessions. Open registry states have been found to be better represented at MEPC sessions, presumably because they are financed by the registry companies. An increase in the overall representation of Pacific states at MEPC sessions has been evident in recent years, attributed to the strong proposal submission by the Marshall Islands at MEPC 68 and extensive lobbying at the regional level to improve participation of Pacific nations at MEPC negotiations. From 45% at MEPC 61, the overall representation of Pacific states increased to 82% at MEPC 71 and dropped slightly to 73% at MEPC 72.

Traditionally, Pacific states have not been very active in submitting papers to MEPC on the issue of shipping emissions, but an improvement is noted from MEPC 68 onwards. From 2011–2018, five Pacific states (the Marshall Islands, the Solomon Islands, Tonga, Tuvalu and Vanuatu) have submitted papers to MEPC sessions, both on an individual and joint capacity. Pacific states have also partnered with some like-minded EU member states and other countries to co-sponsor joint submissions from MEPC 69 onwards. The Marshall Islands has been most consistent in submitting papers from MEPC 68–72.

At MEPC 68, 62% of Pacific states present were in favour of the IMO starting work to establish a GHG emission reduction target for international shipping, but the motion did not find favour with the majority of IMO member states and, as a result, the Marshall Islands' proposal was not adopted by MEPC. At MEPC 69 and 70, 67% of Pacific states supported (including supporting in principle) the motion for the IMO to adopt a workplan and advance efforts to define international shipping's fair share of GHG emissions. Fiji, the Marshall Islands and the Solomon Islands have been found to be consistent in full support of these motions at all MEPC sessions, while the Cook Islands is the only Pacific state that has consistently opposed the same motion on the basis of its impact on trade and prioritization of the IMO's data collection system. It is clear that Pacific states do not stand in solidarity on this matter.

Research finds many Pacific states playing important roles in supporting the advancement of GHG emissions work at IMO through strong submissions, impactful interventions and successful partnerships with other like-minded IMO member states. Further strengthening of this role would require addressing limitations during negotiations, such as small delegation sizes, poor participation of heads of maritime administrations and Pacific nationals in negotiations, and lack of technical and negotiation expertise. In order to address these limitations, governments need to prioritise GHG emissions negotiations and direct more funding towards participation of nationals, particularly the heads of maritime administrations, or seek external funding for the same.

Other considerations for Pacific states include: development of a long-term financing strategy to sustain participation at the MEPC; improvement of communication

channels among relevant ministries and registry management companies to keep all parties updated on developments; renegotiations with registry companies to strike a balance in representation of Pacific nationals and registry designates at MEPC negotiations; long-term sustainable capacity building initiatives to address the technical gaps; and continued advocacy efforts at regional and national levels to improve awareness as well as strengthen solidarity of Pacific states at IMO meetings.

Chapter 6: Is the Pacific ready for transiting to a net-zero future in shipping?

6.1 Chapter introduction

In April 2018, international shipping emissions negotiations at IMO reached a breakthrough with the adoption of the *Initial IMO Strategy for Reduction of GHG Emissions from Ships*. The next five years are crucial for IMO member states as negotiations intensify on implementation matters related to the final IMO GHG strategy, pursuant to its adoption in 2023. The Pacific IMO member states have ratified numerous international maritime instruments (IMO, 2018b) but one of the long-standing challenges they continue to face is implementing and enforcing these global standards at the national level (Goundar, 2009). Low budget allocations for the maritime sector, low staff numbers in most maritime administrations and lack of appropriate technical expertise contribute to the slow pace of implementation (SPC, 2015). Because of these limitations, some Pacific states are able to implement only 10% of the international conventions that they have ratified (National Parliament of Solomon Islands, 2018).

Previous studies have indicated that the overall transition to a low carbon shipping environment (predominantly domestic sector) in the Pacific states is affected by lack of policy and financing (Nuttall, 2012; Prasad et al., 2013; Holland et al., 2014; Nuttall et al., 2014a; Newell et al., 2016). This situation is common among SIDS that have to deal with other competing development priorities, such as trade, energy and tourism. As such, the maritime transport sector is often construed as a ‘high hanging fruit’ (Goundar et al., 2017), and reportedly neglected in the development priorities of some Pacific states. Against this background, it would be challenging for Pacific governments to establish an appropriate pathway for transiting to a low carbon shipping environment and an overall net zero future by the year 2050.

Even though Pacific states are generally viewed as low emitters (IPCC, 2001), the involvement of open registries in the international shipping sector shifts the dynamics considerably and elevates the responsibilities of flag states. For example, the Marshall

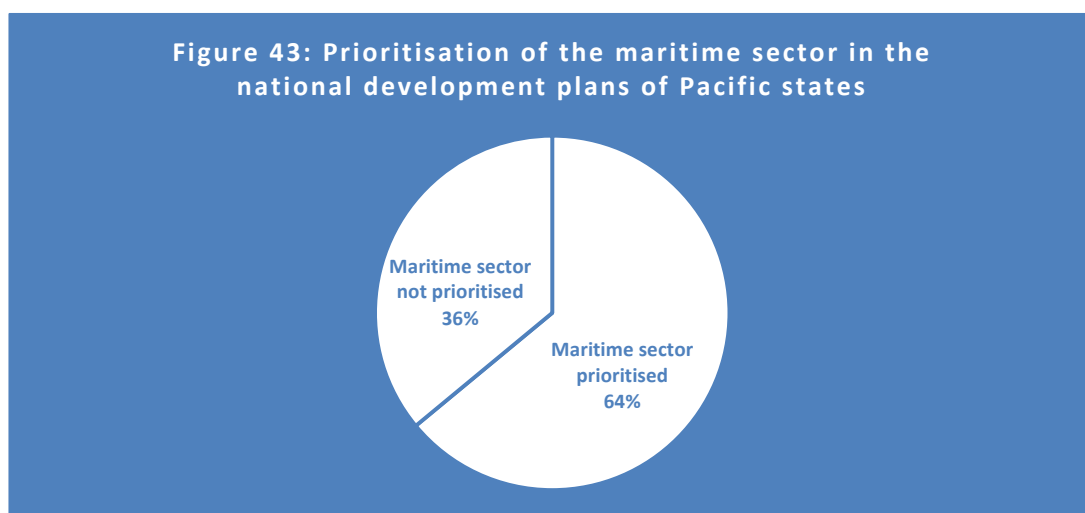
Islands open registry, ranked second largest in the world in terms of deadweight tonnage, is responsible for 7% of total GHG emissions emitted by 223 flag states (ICCT, 2017). Flag states have principal authority over ships in their open registries, including the power to regulate GHG emissions of their registered ships (Kutner & Wilensky (2014). In this regard, Pacific states that are operating open registries have increased responsibility to take action in line with the agreed IMO target for reducing international shipping emissions. It is important that this responsibility is reflected in the governments' development priorities and the national policy landscape.

This chapter assesses the readiness of the national policy landscape in supporting Pacific states to transit to a net zero future in shipping. A gap analysis was conducted of the national development plans and relevant sectoral policies (transport, maritime, energy and climate change) of 14 Pacific states to identify provisions for maritime sector goals and shipping emissions. The intention was to ascertain the extent to which low carbon shipping is prioritised in the development priorities of the Pacific states. The domestic shipping sector was included in the analysis for comparative purposes, and to gain a holistic view of the policy issues affecting the overall shipping sector. This chapter also examines the key factors that Pacific Island governments need to address or manage as IMO advances towards finalising a global policy on decarbonisation of the international shipping sector by the year 2023. The factors discussed include open registry dynamics, inter-agency cooperation and coordination, maritime legislation, resources constraints, impact on trade and fuel consumption data.

6.2 Development priorities in the maritime sector

A large number of Pacific states have prioritised the maritime sector in their national development plans. Analysis reveals that nine out of 14 Pacific states (64%) have directly referenced the maritime sector in the key goals or focus areas of their national development plan (see Figure 43). These include: Cook Islands, Fiji, Kiribati, Marshall Islands, Palau, Nauru, PNG, Solomon Islands and Tuvalu (see Table 12, Section 6.3 of this chapter). FSM has included the maritime sector in its Infrastructure Development Plan 2004–2023, which is a separate document complementing its National Strategic Plan 2004–2023, known as Volume 3. This study does not consider

FSM as prioritising the maritime sector based on the lack of provisions in the main strategic volumes of the plan.

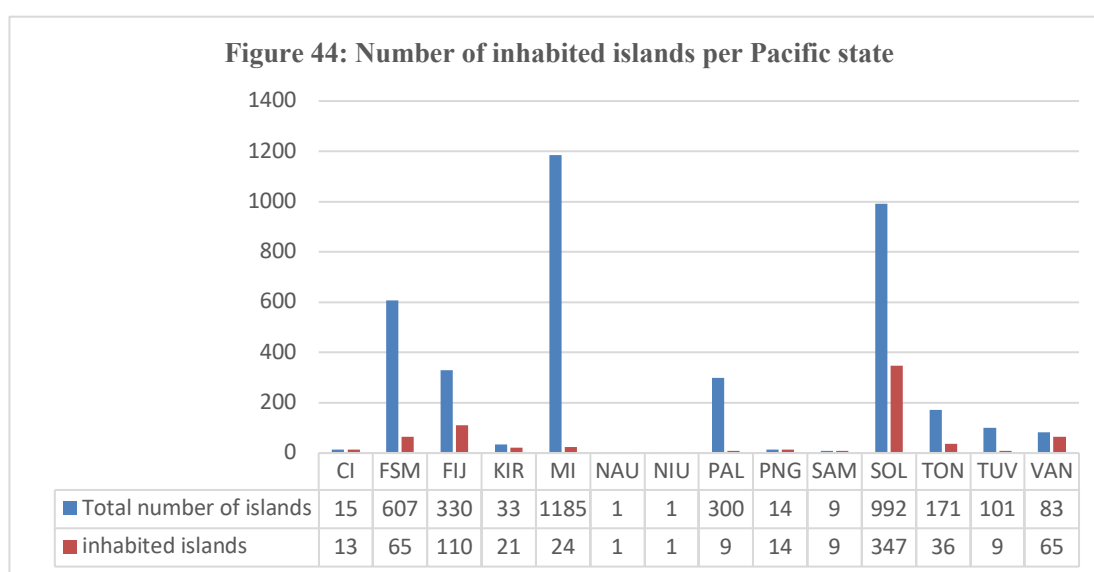


A feature that is common across most of the national development plans of Pacific states is the significant focus on improving port infrastructure and domestic shipping services. For some of the smaller Pacific states, such as FSM, Kiribati and Palau, the focus on port infrastructure is driven mainly by desired improvements in the tourism sector. The national development plans of PNG and Fiji are more robust. In addition to ports and domestic shipping services, their plans cover a wider range of areas, such as seafarer training, maritime safety, maritime security, search and rescue, environmental concerns, fuel efficiency and disaster-resilient infrastructure.

With the exception of Cook Islands, Tonga and Vanuatu, all other Pacific states have specifically prioritised port improvements in their national development plans. The international ports in Cook Islands, Tonga and Vanuatu are gateways for essential trade services and the cruise shipping industry, but lack visibility in the government's development priorities for the maritime sector. This does not align with the port development projects that are being actioned in these countries. For example, the JICA-funded Port Vila Lapetasi International Multi-Purpose Wharf Development Project (Moon, 2013) and the dedicated Vuna Wharf for docking of cruise ships within the Port of Nuku'alofa.

Domestic shipping network features strongly in the national development plans of most Pacific states because of its crucial role in inter-island connectivity, mobility and

trade. With the exception of Nauru and Niue, other Pacific states consist of a large number of islands, ranging from approximately nine to over 1000. Not all islands are inhabited. Figure 44 shows the approximate number of inhabited islands per Pacific state. The Solomon Islands contains the largest number of inhabited islands, 347 out of 992, followed by Fiji, 110 out of 330. With most of the islands spread across large EEZs, and located far from the mainland, domestic shipping is often the only means of transportation for the remote communities.



(Source: Compiled from UNOCHA data (<https://www.unocha.org/office-pacific-islands>); Kiribati Office of President (<http://www.climate.gov.ki/about-kiribati/>); RMI National Strategic Plan 2015–2017)

For single island nations, such as Nauru and Niue, international shipping is of far more significance than domestic shipping, and this is reflected in their national development plans. The shipping related strategies in Nauru’s National Sustainable Development Strategy 2005–2025 focus on improving port infrastructure and developing a regular and cost-effective sea freight service. Under the Central Pacific Shipping Commission (CPSC) agreement, two shipping liners have been servicing Nauru, Matson and Neptune Shipping. After Matson ceased its service to Nauru in 2015, the Nauru Government claims that Neptune, being the sole service provider, has been charging extremely high freight rates (Nauru government, 2015). As a possible solution, the Nauru government is exploring options to restart its own shipping venture. Neptune has denied the accusations, citing no breach of their CPSC agreement, which locks freight rates to protect against fluctuations (Ratucadra, 2015).

6.3 Development priorities for low carbon shipping

6.3.1 National development plans

Analysis reveals that none of the national development plans of Pacific states contain provisions for addressing international shipping emissions, with the exception of Fiji (see Table 12). Fiji's 5-year and 20-year National Development Plan 2017–2021 and 2017–2036 (Government of Fiji, 2017) presents a unique case with regards to how it plans to address international and domestic shipping emissions. The plan outlines explicit measures for reducing GHG emissions in the domestic shipping sector. But makes indirect reference to the international shipping sector through the implementation of the Green Growth Framework for Fiji (Government of Fiji, 2014). There are five key strategies for addressing overall shipping emissions in Fiji's national development plan: (i) implementation of the Green Growth Framework for Fiji; (ii) support for improved hull and propeller designs; (iii) purchase and trial of a vessel fuelled by renewable energy; (iv) assessment of 4-stroke outboard motors; and (v) study of incentives for low-carbon domestic shipping.

The Green Growth Framework of Fiji mentions a need for compliance with IMO regulations for shipping industry. The framework does recognise on the onset that international regulations from IMO aimed at reducing air pollutants from shipping will come into force within a decade and likely to increase compliance costs. The framework further acknowledges that renewable energy technologies, retrofitting of existing vessels and building new vessels are solutions to reducing fuel use, emissions and shipping costs. To ensure compliance with IMO regulations, the framework outlines two actions: (i) In the short term (up to 2 years), Fiji to be represented at IMO meetings and its membership to IMO Council promoted and secured; and (ii) in the medium term (3–5 years), investigate incentive mechanisms to address costs of compliance with IMO regulations for shipping. There is no mention of long-term aspirations for the international shipping sector beyond five years. But as a country that does not operate an open registry or emit large volumes of emissions, Fiji is clearly demonstrating its commitment to support global efforts in decarbonising the international shipping sector.

Table 12: Provisions for shipping emissions and prioritisation of the maritime sector in the national development plans of Pacific states

Country	Title	Maritime sector prioritised ⁴¹	Domestic shipping emissions	International shipping emissions
Cook Islands	National Sustainable Development Plan 2016–2020	√	X	X
Federated States of Micronesia	National Strategic Plan 2004–2023: Volumes I and II	X	X	X
	National Strategic Plan 2004–2023: Vol III Infrastructure Development Plan	√	X	X
Fiji	5-year and 20-year National Development Plan (2017–2021 and 2017–2036)	√	√	√
Kiribati	Kiribati Development Plan 2016–2019	√	X	X
Marshall Islands	National Strategic Plan 2015–2017	√	X	X
Nauru	National Sustainable Development Strategy 2005–2025	√	X	X
Niue	Niue National Strategic Plan 2016–2026	X	X	X
Palau	Palau 2020 National Master Development Plan	X	X	X
Papua New Guinea	PNG Development Strategic Plan 2010–2030	√	X	X
Samoa	Strategy for the Development of Samoa 2016/17–2019/20	X	X	X
Solomon Islands	National Development Strategy 2016–2035	√	X	X
Tonga	Tonga Strategy Development Framework 2015–2015	X	X	X
Tuvalu	National Strategy for Sustainable Development 2016–2020	√	X	X
Vanuatu	Vanuatu 2030: The People’s Plan (National Sustainable Development Plan 2016–2030)	X	X	X

Of all Pacific states, the Marshall Islands is arguably the strongest advocate for decarbonising the international shipping sector, evident through its strong submissions and interventions at IMO in recent years (MEPC 68, 2015; MEPC 69, 2016; MEPC 70, 2017). Even though the maritime sector is considered a key focus area in the Marshall Islands National Strategic Plan 2015–2017 (Government of the Marshall Islands, 2005), there is no provision for shipping emissions in particular. The Marshall Islands Strategic Development Plan Framework (2003–2018), a broad policy and planning framework, contains some provisions, looking at increasing fuel efficiency and gradually substituting to renewable biofuels and energies in the domestic shipping sector. According to the framework, the proposed transit is driven by the country’s vulnerability to external oil price rises and increasing energy independence. Climate change is not stated as a motivator behind this instigation.

The Solomon Islands is also a strong advocate of reducing GHG emissions from the international shipping sector (MEPC 69, 2016; MEPC 70, 2017). But its national development plan (Government of the Solomon Islands, 2016) does not reflect the

⁴¹ Indicates that maritime sector is directly referenced in the key goals or focus areas of the plan and included more than one area. For example, focus on port development only does not prioritise the maritime sector.

nation's commitment to global efforts in decarbonising the international shipping sector. The plan does not contain any provisions for transiting to a low carbon shipping environment.

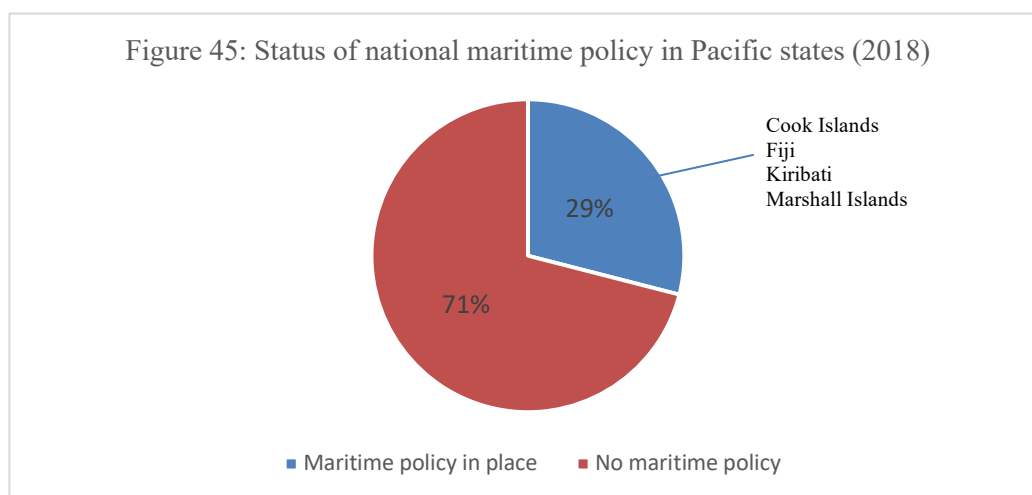
Low carbon shipping is a low priority area for Pacific governments in general, if judged purely on the basis of provisions contained in the national development plans. This can be attributed to the lack of a global emission-reduction policy for the international shipping sector (until April 2018). There was no real obligation on countries to adopt or implement measures to reduce GHG emissions from the international shipping sector. It is also noted that the national development plans of Pacific states were all updated prior to 2017. Therefore, inclusion of any new provisions may not be technically possible until the next amendment, which could take up to five years for some Pacific states. This timeframe is favourable to some extent as it allows countries sufficient time to prepare for the implementation of the final IMO GHG strategy once it is adopted in 2023.

6.3.2 National maritime policies

The development of national maritime policies in Pacific states was driven primarily by SPC in the mid-2000s (SPC, 2005). Even with the availability of regional expertise at disposal (SPC, 2014b), the uptake of this policy has been relatively slow for many Pacific states. As of December 2018, only four (Cook Islands, Fiji, Kiribati and Marshall Islands) out of 14 Pacific states had a national maritime policy in place (see Figure 45). The maritime policies of Niue, Palau, Solomon Islands and Vanuatu were in draft form, with SPC assisting in the process. The initiative has not progressed for FSM, Nauru, PNG, Samoa, Tonga and Tuvalu. The national transport plan remains the current sector policy guiding maritime developments in Niue, PNG, Samoa and Solomon Islands.

Analysis of the national maritime policies of the Cook Islands, Fiji, Kiribati and the Marshall Islands revealed that these documents do not contain provisions for addressing reduction of GHG emissions from the international shipping sector. Most Pacific states continue to maintain strong negotiating positions on this matter at IMO negotiations but their progressive actions at the global level are not reflected in their

national maritime policies. The Marshall Islands is an example of such a case. Some low carbon shipping projects have commenced in the Marshall Islands since 2017 (Johnson, 2017), and it seems that the latest developments will be guiding the national maritime policy on this issue rather than vice-versa.



There are two issues here that Pacific states need to consider addressing: (i) increase uptake of a national maritime policy; and (ii) update existing national maritime policies to reflect decarbonisation efforts. The slow pace of national maritime policy development in the Pacific is evident. With only 29% of Pacific states enacting national maritime policies, attention needs to be directed towards closing this gap in the first instance. For policies that are currently in draft stage or pending development, the timing is ideal for making necessary insertions pertaining to international shipping emissions. For policies that are already in place, this provision should be considered in the next round of amendments, depending on whether the issue is prioritised by government.

When considered from a broader perspective of low carbon shipping, Fiji's national maritime policy of 2015 is particularly strong on addressing emissions issues in the domestic sector. This aligns with the country's national development plan and reflects political will to address the issue of GHG emissions from ships. While provisions for addressing international shipping emissions is non-existent in the national maritime policy, the domestic scenario is fairly robust. The policy states that in order to lower the carbon intensity of domestic shipping in Fiji, the following actions will be explored:

- (i) Operational improvements, retrofitting and replacement in the domestic shipping fleet;
- (ii) Alternative models of inter-island shipping using smaller island-owned craft on more frequent services;
- (iii) Purchase by government/private sector of a renewable energy vessel as a catalyst demonstration project; and
- (iv) Reinvigorating the use of traditional small craft for coastal feeder transport to rural jetties.

Low carbon shipping is not featured in the national maritime transport policies of the Cook Islands, Kiribati and the Marshall Islands. The closest reference in the Cook Islands policy is the objective on ‘safe, sustainable and environmentally friendly maritime transport...’ but there is no further elaboration on the specific ‘environmentally friendly’ measures. The maritime policies of Kiribati and the Marshall Islands also make reference to protection of the marine environment but it is limited to issues such as dumping of wastes at sea by ships (particularly coastal waters), disposal of wrecks and oil spill clean-up programmes.

6.3.3 National transport sector plans

Some Pacific states have a national transport sector plan, which consolidates policies for land, air and sea transport sectors. Cook Islands, Fiji, Kiribati and the Marshall Islands have shifted towards developing sector specific policies, as evident from their existing national maritime policies. For countries such as Niue, PNG, Samoa and the Solomon Islands, the transport sector plan continues to be the key policy guiding maritime developments. It is noted that the current transport sector plans for Niue and Samoa are the first policy for the sector. Tonga was in the process of drafting its national transport policy. The transport plans for Niue, PNG, Samoa and Solomon Islands were analysed to identify provisions for shipping emissions reduction, both domestic and international. The findings are summarised in Table 13.

Reduction of international shipping emissions is not covered by the transport sector plans of Niue, PNG, Samoa and the Solomon Islands. With regards to domestic shipping emissions, PNG and Samoa make some considerations for domestic shipping

emissions. For Niue, a range of factors could be affecting its total lack of concentration on domestic and international shipping emissions. Being a single island eliminates the problems relating to inter-island domestic shipping services. Niue is serviced by a single international ship once a month, which brings cargo from Auckland. With an extremely small population base and limited economic opportunities, there is not much scope for expanding shore-based international shipping sector. Moreover, Niue is not a member of IMO, even though it has ratified some IMO conventions. This provides some flexibility to implementing mandatory regulations imposed on IMO member states. But because Niue operates an offshore open registry, it has flag state responsibilities towards decarbonisation of the international shipping sector. As such Niue should consider improving its national policy landscape to ensure that ships flying its flag prepare for compliance with the IMO GHG Strategy requirements.

Table 13: Provisions for addressing shipping emissions in the national transport sector plans of Niue, PNG, Samoa and Solomon Islands

National transport sector plan	Strategies/actions for shipping emissions reduction
Niue Transport Strategy and short-term Action Plan 2017–2026	• No provisions.
PNG National Transport Strategy 2013 (Volumes I, II and III)	• Progress the transport objectives of the PNG Climate Compatible Development Plan. • Encourage the introduction of fuel-efficient transport equipment. • Encourage sustainable substitution of fossil fuels with biofuels.
Samoa Transport Sector Plan 2014–2019	• Encourage the use of energy efficient transport modes in the sector. • Support inclusion of transport emissions including aviation and shipping emissions trading regime and the United Nations Framework Convention for Climate Change.
Solomon Islands National Transport Plan 2011–2030	• A broad provision exists to reduce carbon emissions, as part of the environmental targets set out in the Mid-Term Development Strategy. But no specific provisions on shipping emission reduction exists in the plan.

The PNG National Transport Strategy 2013 has provisions for moving towards low carbon shipping, but not explicitly for international (see Table 13). These provisions are covered under cross-cutting climate change strategies targeted at the transport sector, rather than core maritime development initiatives. The PNG transport sector plan also makes reference to the PNG Climate Compatible Development Plan, which is stated to contain transport objectives relating to reduction of carbon dioxide emissions. Analysis of climate change plans of Pacific states is covered in subsection 6.3.4 of this chapter.

The Transport Sector Plan 2014–2019 of Samoa recognises that the maritime sector in Samoa plays a key role in the national economy supporting tourism, commerce, international trade and inter-island travel for social, cultural, educational and medical reasons. One of the five key goals in the plan aims for an outcome of an ‘environmentally sustainable, energy efficient and socially responsible transport sector’. The plan does not have provisions for addressing international shipping emissions but covers domestic shipping emissions, as regulated under the UNFCCC regime. The government commits to gathering data and monitoring the results of transport emissions. Beyond this, there is no mention of any other actions to reduce shipping emissions.

One of the transport priorities outlined in the Solomon Islands National Transport Plan 2011–2030 includes reducing carbon emissions, as part of the established environmental targets in the Mid-Term Development Strategy. Beyond this, there is no mention of specific provisions on shipping emission reduction in the plan. It is noted that reporting of progress on reduction of carbon emissions has been aligned to the Millennium Development Goals.

6.3.4 Climate change policies⁴²

Climate change is a high priority area for Pacific governments, and more so following the adoption of the Paris Agreement in 2015. Due to the cross-cutting nature of climate change, an associated national policy is expected to contain provisions for addressing emission-reduction in all sectors. Analysis of the national climate change policies of Pacific states reveals that there is no reference to international shipping emissions in any of the policies. Only Vanuatu’s national climate change policy has specific provisions for domestic shipping emissions. The case of Fiji and the Marshall Islands varies greatly from other Pacific states. The national climate change policies of these two nations are not explicit on emission-reduction strategies for shipping. But Fiji and the Marshall Islands are currently the most progressive in the region in terms of developing a long-term strategy for achieving net zero emissions by 2050, inclusive of low carbon shipping.

⁴² All climate change policies analysed in this section were retrieved from the Pacific Climate Change Portal and referenced collectively as such (Pacific Climate Change Portal, 2018).

Table 14: Provisions for shipping emissions in the climate change policies of Pacific states

Climate change policy	Provision for shipping emissions
Cook Islands Climate & Disaster Compatible Development Policy 2013–2016	No provisions in the policy
Federated States of Micronesia Nationwide Climate Change Policy 2009	No specific provisions for addressing shipping emissions but identifies transport as one of the sectors required to integrate climate change goals into its sectoral action plan
Fiji National Climate Change Policy 2012	No specific provisions for addressing shipping emissions but a broad one on transport looks at utilisation of fuel-efficient equipment and vehicles to reduce greenhouse gas emissions
The Fiji Low Emission Development Strategy 2018–2050	- Mentions the IMO GHG Strategy adopted in 2018 and Fiji’s intention to address type of fuel being used in commercial vessels in Fiji - As an IMO member, the Fiji Government has supported adoption of “high ambition” targets for GHG emissions reduction from international shipping consistent with keeping open the possibility of achieving the 1.5oC temperature goal. A key effect of the IMO strategy will be to catalyse changes in fuels used by the shipping industry. - Recommendations for the domestic shipping sector: - A national action plan for decarbonisation of maritime transport; - Transition from 2- to 4-stroke engines; and - Revitalisation of traditional sailing culture and development of low carbon vessels.
Kiribati National Framework for Climate Change and Climate Change Adaptation 2013	No provisions
The Marshall Islands National Climate Change Policy Framework 2011	No provisions in the policy framework of 2011 but domestic and international shipping emissions scenario is covered in the 2050 Climate Strategy.
Marshall Islands Tile Til Eo 2050 CLIMATE STRATEGY “Lighting the way” 2018	- Considering RMI’s status as the second largest flag registry in the world, successful adoption of nascent low- or zero-carbon sea transport technologies at home could have ripple effects across the international shipping sector at large. <i>Key recommendations:</i> - Improve data collection to better illustrate what proportion of imported fossil fuels are used by domestic sea-based transport; - Explore options to reduce GHG emissions from domestic ocean-based transport, including by using the results of the GIZ/University of the South Pacific (USP) Low Carbon Sea Transport Transition Project (LCSTTP); and - Consider institutional reforms that will allow the Ministry of Transport and Communication (MTC) to exercise more effective regulatory control over the operational aspects of domestic sea transport in addition to managing the infrastructure. <i>Potential measures and steps forward:</i> - Examine both in-country fleet efficiency and equipment, and pass-through fleet efficiency and equipment. Examine potential standards and technical pathways for improvements (i.e. sails, engine efficiency improvement, etc.). Evaluate the economics and implications of various options (improved efficiency standards, lower carbon fuels, etc.) to find the best path forward.
Republic of Nauru Framework for Climate Change Adaptation and Disaster Risk Reduction 2015	No provisions
Niue National Climate Change Policy 2009	No specific provisions for shipping emissions but a broad one looks at mitigating actions and energy efficiency measures in sectors such as electricity, buildings, transportation, industry, agriculture, forestry
Palau Climate Change Policy 2015	No specific provisions for shipping emissions. Overall sea transport does not feature in the list of priority mitigation actions. Focus mainly on the land transport sector
Papua New Guinea National Climate Compatible Development Management Policy 2014	No specific provisions for shipping emissions or maritime sector. Broad provisions considered under transport in terms of promoting green economic growth and establishing low carbon fuel standards.
Samoa National Policy of Combating Climate Change 2007	No specific provisions for shipping emissions or maritime sector. Broad provisions considered under transport to promote mitigation actions and energy efficiency in the sector.
Solomon Islands National Climate Change Policy: 2012–2017	No specific provisions for shipping emissions or the maritime sector or the transport sector.
Tonga Climate Change Policy 2016	No specific provisions for shipping emissions or maritime sector. A target is set for the overall transport sector: A transport system that is not reliant on fossil fuels
Tuvalu Climate Change Policy 2012	No specific provisions for shipping emissions or the maritime sector or the overall transport sector.
Vanuatu Climate Change and Disaster Risk Reduction Policy 2016-2030	- Exploring the possibility of powering sea-going vessels and land-based vehicles with renewable energy; - ensuring improvements in the fuel efficiency for the transport sector (land, sea and air) by standardising engine fuel efficiency

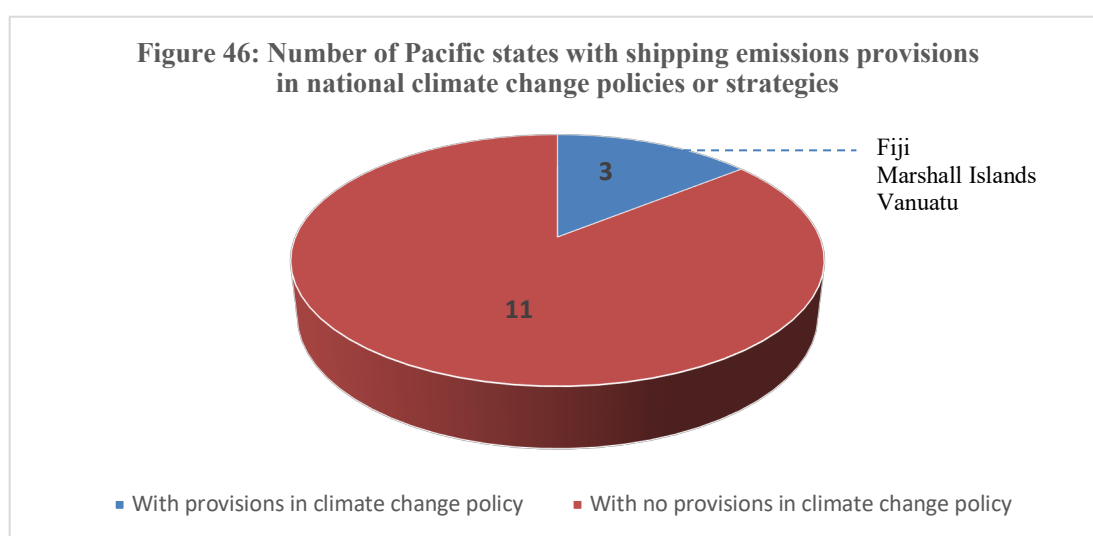
A substantial shift in the priorities of the Marshall Islands' government is evident with the adoption of the 2050 Climate Strategy in 2018. The domestic shipping sector is prioritised, with a large number of targeted actions outlined for emission-reduction. The strategy makes a sweeping statement about its open registry but has no specific provisions for addressing international shipping emissions: *“Considering RMI’s status as the second largest flag registry in the world, successful adoption of nascent low- or zero-carbon sea transport technologies at home could have ripple effects across the international shipping sector at large”* (The Government of the Marshall Islands, 2018). This could imply that the government is treating international shipping emissions issue separate to its national goal of transiting to a net zero future.

The Fiji National Climate Change Policy 2012 (The Government of Fiji, 2012) does not contain specific provisions for addressing shipping emissions but lists a broad action under transport for utilising fuel-efficient equipment and vehicles to reduce greenhouse gas emissions. Countries like Fiji that do not operate open registries, are not expected to address international shipping emissions in their national climate change policies and strategies. But Fiji has referenced the Initial IMO GHG Strategy in its Low Emission Development Strategy 2018–2050 (The Government of Fiji, 2018) and emphasised support for high ambition targets for GHG emissions reduction in the international shipping sector. This captures the government’s priority to support global efforts in decarbonising the international sector. The Fiji Low Emission Development Strategy 2018–2050 is also explicit on the provisions for reducing domestic shipping emissions. These include: A national action plan for decarbonisation of maritime transport; Transition from 2- to 4-stroke engines; and Revitalisation of traditional sailing culture and development of low carbon vessels.

The Fiji Government also recognises that the transition to a full decarbonisation pathway presents a significant challenge for Fiji and other Pacific states as there are few current market leaders. In order to achieve full decarbonisation, Fiji will have to focus on: creating a full enabling environment, including policies, regulations, and financial incentives; and undertaking a whole-of-sector approach to consultation and implementation (The Government of Fiji, 2018). The Strategy recommends that the government shipping assets and services (Government Shipping Services, Water Police, Navy, Fisheries, and Biosecurity) be used as pilot in the first instant to

demonstrate the potential for reducing emissions and increasing economic savings to the private sector. The government also acknowledges that such an enabling environment will rely on external investment in technology trials and long-term capacity development throughout the sector.

Almost all Pacific climate change policies call for supporting the implementation of other sectoral plans in the area of GHG emission reduction. In some countries, there is no provision for shipping emissions in the national climate change policy but the Joint National Action Plan (JNAP) for Climate Change may contain some considerations. The JNAP for Cook Islands, for example, mentions establishing mechanisms and parameters for offsetting transport and energy (e.g. aviation and shipping) related carbon emissions produced by the industry e.g. reforestation and green policies. An indicative cost of NZD 343.3 million is proposed for implementation of energy and transport actions.



The national climate change policies of Niue, PNG, Samoa and Tonga do not contain specific provisions for shipping emissions but have broad transport related strategies looking at actions such as utilising fuel efficient equipment, energy increasing efficiency, promoting green economic growth, establishing low carbon fuel standards and reducing reliance on fossil fuels. Transport is one of the target areas identified in the Tonga Climate Change Policy 2016.

Palau's Climate Change Policy 2015 recognises the transport sector as the second biggest consumer of imported fossil fuel, next to the power generation sector. Within the transport sector, the shipping sector (fishing vessels and state-owned ferries) is the largest consumer of fossil fuel. Exact consumption figures are not known for the transport sub sectors. Despite sea transport being a bigger consumer of fossil fuel than land transport, the government's list of priorities contains mitigation actions targeting mainly land transport. The only shipping-related activity mentioned in the climate change policy is the conversion of two-stroke marine engines to more efficient engines in the domestic shipping sector.

6.3.5 Nationally Determined Contributions

The NDCs of 14 Pacific states⁴³ (UNFCCC, 2017) were analysed to identify provisions for shipping emissions. The analysis concludes that the Pacific states' NDCs, as currently presented, are not adequately powered to drive transition to low carbon shipping in the Pacific region. Firstly, most Pacific states are basing their NDC targets on a sectoral basis, targeting reduction of GHG emissions in one or two key sectors only. The only exception is the Marshall Islands, which is looking at economy-wide reduction targets, inclusive of sea transport. The rationale for sector selection in NDCs appears to be linked to the sector that is emitting the highest level of GHG – in most cases argued as being electricity generation. Application of selective sectoral approaches to NDCs may not work in favour of low carbon shipping if the domestic shipping sector is assessed to be one of the lowest emitters of GHGs, which is the case for Pacific states that have specified shipping emissions in their NDCs.

Secondly, the NDCs reveal a major gap in terms of data on emissions contributed by domestic shipping or in some cases, the overall transport sector. In almost all cases there is a large question mark over the quality, validity and consistency of data used and consequent assumptions made. Where total transport emissions are reported, there is no data on the specific transport sub-sectors (land, air and sea). Some NDCs acknowledge this data gap. The BAU (business as usual) emission estimates for Nauru

⁴³ All NDCs analysed in this section are available from the UNFCCC website: <https://unfccc.int/nationally-determined-contributions-ndcs>

are deemed inaccurate due to substantial gaps in data. Paucity of sectoral data is also held responsible for PNG's decision to limit target setting to the electricity sub-sector. A fair assessment of GHG emissions per sector hinges on availability of accurate data. Until this critical gap is closed, it will penalise any drive for low carbon shipping development. The analysis of Pacific NDCs in this study revealed the following trends regarding sea transport and low carbon development:

(a) Sea transport features in the NDCs targets for one Pacific state only

Of 14 Pacific states, only the Marshall Islands has included sea transport (domestic shipping) in its NDC targets and specified a corresponding reduction action. The Marshall Islands estimates that in order to achieve its overall NDC target for 2030, emissions from its transport sector (including land and shipping emissions) have to decrease by 16% in 2025 and by 27% in 2030. The transport sector (land and sea combined) in the Marshall Islands is considered to contribute approximately 12% of GHG emissions, making it the third largest emitter, behind the electricity sector (54%) and waste (23%). The Marshall Islands' NDC however provides no breakdown of specific land, air and sea transport emissions, and so the contribution of sea transport emissions to overall GHG emissions is unknown. A more questionable inclusion is the single shipping-related reduction action listed in the NDC – the introduction of solar-charged electric lagoon transport. Further analysis is required to assess the feasibility of introducing this type of vessel in the Marshall Islands waters.

The Tuvalu NDC acknowledges growing emissions from its transport sector (from increased numbers of vehicles on land and vessels for sea transport) and states the need for these to be addressed through technological innovation. There is no elaboration or specific action outlined on the nature of these technological advancements, leaving this open to interpretation. The transport sector is stated as being responsible for 40% of GHG emissions but there is no breakdown by sub-sector. However, Tuvalu reported in 2012 that transport was its single largest imported fuel user and maritime transport used 64% of that.

The Cook Islands' NDC mentions embracing proven low carbon transport technologies and exploring the most effective incentives for promotion of transition towards clean energy transportation. 'Low carbon transport' is mentioned in the NDC

but it is not clear whether this includes domestic shipping. Given that road transport is considered the second largest emitter of emissions (33%) in Cook Islands, it is likely that efforts will be focussed on land.

(b) The domestic shipping sector's contribution is known for two PICs only

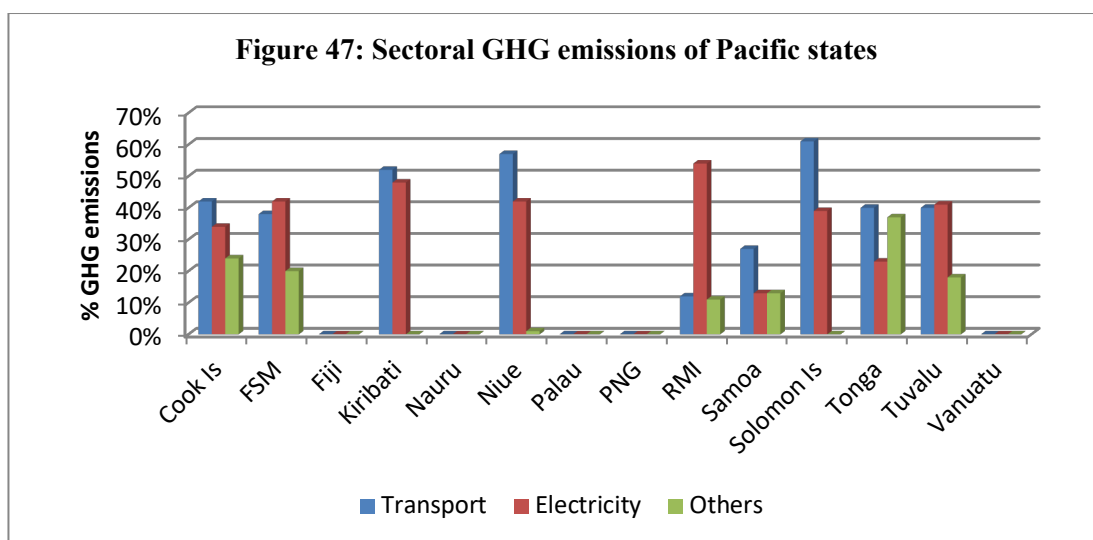
The Cook Islands' and FSM's NDCs provide an estimate of emissions from their domestic shipping. The figures for Cook Islands show the transport sector (land, air and sea) as the biggest emitter accounting for 42% of GHG emissions. Domestic shipping contributes 1% of emissions, making it the smallest emitter compared to all other sectors. In the case of the Cook Islands' identification of 1% of its national energy use on domestic maritime transport, it must be pointed out that this is a maritime country comprised of multiple scattered islands over 1.8 million sq. km and this estimate is highly questionable. In FSM, with a similar sized EEZ and proportion of population living on maritime islands to the Cook Islands, domestic shipping is considered to account for 10% of the transport sector emissions (38%), with land transport at 28%. It is difficult to verify the accuracy of these estimates but there is clearly an enormous data gap that needs to be addressed for all Pacific states.

(c) Overall transport sector emissions feature in the NDC targets of eight Pacific states

The overall transport sector is referenced in the NDC targets of eight Pacific states – FSM, Kiribati, Palau, Marshall Islands, Solomon Islands, Tonga, Tuvalu and Vanuatu – but only the Marshall Islands has specified an exact target for reduction of transport emissions. The Palau and Tonga reports in this regard are confusing. Both list transport as a sector for emission reduction but the actual targets cover only electricity generation. Palau lists three targets, which are all electricity related. Palau also mentions the intent to look at legislation needed to mandate the sale of higher energy efficiency four-stroke outboard motor engines but does not link this to any specific target. Cook Islands mentions looking at embracing proven low carbon transport technologies and exploring incentives for promotion of transition towards clean energy transportation, conditional on external financing. But no target has been set for any emission reduction from the transport sector.

(d) *The energy sector is the largest emitter*

The NDCs collectively consider the energy sector as the largest consumer of fossil fuel in Pacific states and the highest emitter of GHG emissions, and this is where most mitigation efforts are concentrated. In Cook Islands, for example, the energy sector contributed 79% of the total emissions in 2006, with 34% attributed to electricity generation. The energy sector in Tuvalu is reported to be the major emitter of CO₂ emissions (100%) and includes emissions from electricity generation (41%), transport (40%) and other sectors (18%).



According to the NDCs of Pacific states, energy has two main sub-sectors – electricity generation and transport. A comparative analysis of emissions accorded to these two sub-sectors shows that in six out of 14 Pacific states, the transport sector is a larger emitter than electricity. Figure 47 provides a comparison of sectoral GHG emissions of Pacific states, compiled from their respective NDC reports. No bars indicate no data in the NDC report. Considering that data is unavailable for five Pacific states, the fact that nearly half of the Pacific states have indicated transport as the bigger GHG emitter is sufficient to rationalise a larger portion of investment being channelled to this sub-sector. However, the Pacific states clearly prioritise the electricity sub-sector as this is where most unconditional commitments have been made and where greater external funding is being channelled.

6.3.6 National energy policies

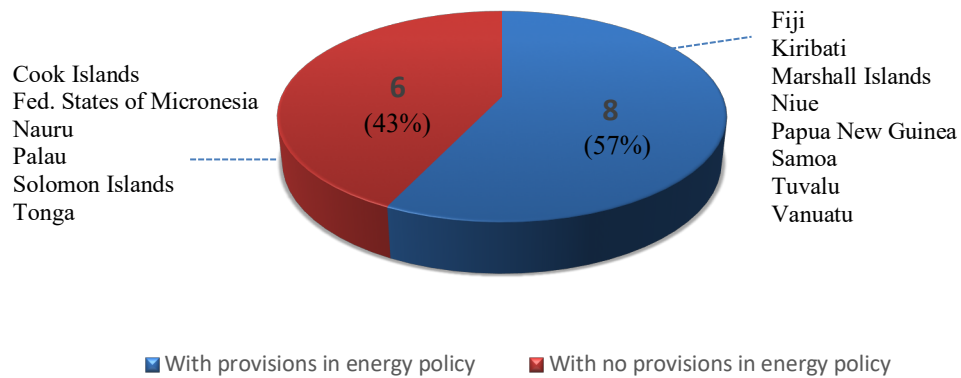
Pacific states depend heavily on imported fossil fuels to meet their energy demands, almost 100% in most cases. The transport sector (land, air and sea) consumes the largest proportion of imported fossil fuels, which can range from around 30–70% in Pacific states, as evident from the various national energy policies. One of the key intentions of national energy policies is to reduce reliance on fossil fuels and save on import bills. This is necessary for Pacific states, where fossil fuel is consistently recorded as one of the top imported commodities (SPC, 2016). Any policy that aims to reduce fossil fuel dependency, will by default contribute to decarbonisation efforts. In this context, the cross-cutting energy policies of Pacific states link closely to the overall global climate change regime and the efforts to reduce GHG emissions from the transport sector.

A review of the national energy policies of 14 Pacific states⁴⁴ (SPC, 2017c) revealed that only Fiji makes reference to international shipping, whereas eight Pacific states have incorporated provisions for domestic shipping emissions, at varying levels (see Figure 48). These eight countries are Fiji, Kiribati, Marshall Islands, Niue, PNG, Samoa, Tuvalu and Vanuatu. Table 15 contains information on the specific provisions for overall shipping emissions reduction in the energy policies of the Pacific states. The Cook Islands, FSM, Nauru, Palau, the Solomon Islands and Tonga lack provisions for sea transport in their national energy policies.

For Nauru, the emphasis is clearly greater on land transport issues than maritime. Kiribati, Niue, PNG and Tuvalu consider the transport sector, but the provisions for addressing sea transport are either very broad or vague. Samoa focuses on promoting fuel efficiency. The 2014 Solomon Islands National Energy Policy recognises that climate change is a risk to the development of the nation and aims to reduce the carbon footprint through the use of renewable energy technologies and energy efficient measures. But the policy does not have any provisions for sea transport, nor does it consider reduction of GHG emission from other transport sub sectors.

⁴⁴ All national energy policies analysed in this section are available from the Pacific Regional Data Repository (PRDR) <http://prdrse4all.spc.int>

Figure 48: Number of Pacific states with domestic shipping emission provisions in their national energy policies



Fiji's National Energy Policy 2013–2020 recognises transport as the main user of imported fuel, accounting for over 60% of consumption. Of this, maritime transport is estimated to consume around 22%. The nation's energy policy calls for an increase in emphasis on energy efficiency and researching potential renewable energy options for sea transportation. These provisions are primarily targeted at the domestic shipping sector. However, the policy also makes reference to international shipping but focusing on the energy efficiency aspects. The policy states that the 'potential for Fiji to increase efficiency in the international maritime sector is limited given that this industry is largely governed by international conventions'. There is no further elaboration on this statement.

The Marshall Islands National Energy Policy and Energy Action Plan 2016 has clear provisions for addressing shipping emissions but directed mainly at the domestic sector. One of the strategies, with a broader transport sector focus, aims to promote, increase awareness and create incentives in the private sector on efficient modes of transport, such as bicycles, sail boats and fuel-efficient taxis. A strategy that is specifically targeted to the sea transport sector aims to 'investigate the practicality of retrofits to reduce fuel use in sea transport (e.g. more efficient propellers, sail-assist technologies, and other alternate energy sources)'. The plan also identifies a gap with regards to limitations with institutional responsibilities. The Marshall Islands Ministry of Transport and Communication is mandated only to provide policies and standards

on safety in sea transport, including infrastructure development, but there is no mainstreaming of energy efficiency and conservation in sea transport.

Table 15: Provisions for shipping emissions in the energy policies of Pacific states

Energy policy	Provisions for shipping emission reduction
Cook Islands Renewable Electricity Chart 2012; Cook Island Renewable Energy Implementation Plan 2012	No provisions. Focus on electricity sector
The National Energy Policy of the Federated States of Micronesia 1999	No provisions. Focus on electricity sector
Fiji National Energy Policy 2013–2020	- Emphasis on energy efficiency and researching potential renewable energy options for sea transportation. - Potential for Fiji to increase efficiency in the international maritime sector is limited given that this industry is largely governed by international conventions.
Kiribati National Energy Policy 2009	Promotion of environmentally clean, energy efficient and cost-effective modes of sea transport.
Marshall Islands National Energy Policy and Energy Action Plan 2016	- A 20% efficiency improvement in transportation sector fuel use by 2020, to a 2009 baseline. - Promote, increase awareness and create incentives (in the private sector) on efficient mode of transport, e.g. bicycles, sail boats, fuel efficient taxis. - Investigate the practicality of retrofits to reduce fuel use in sea transport (e.g. more efficient propellers, sail-assist technologies, and other alternate energy sources).
Nauru Energy Roadmap 2014–2020	No provisions.
Niue National Energy Policy 2005	To minimise the detrimental impact of petroleum product consumption in the transport sector on the land, air and marine environment.
Palau National Energy Policy 2010	No provisions
Papua New Guinea National Energy Policy 2016–2020	- Support international action on reduction of greenhouse gases and ozone depleting substances from energy standpoint. - Promote policy and regulatory framework for greater use of appropriate, cost effective and energy efficient modes of transportation including public transport. - Supports the PNG National Transport Strategy for the use of sustainable energy through encouraging the operation and maintenance of equipment in a manner that minimizes consumption and emission of carbon dioxide emissions.
Samoa Energy Sector Plan 2017–2022	Promote fuel efficiency in land and sea transport and ensure systems are reliable, efficient and affordable.
Solomon Islands National Energy Policy 2014	No provisions.
Tonga Energy Road Map 2010–2020	No provisions.
Tuvalu National Energy Policy 2009	- Ensure that the sea and land transport sectors promote fuel conservation and efficiency measures. - Ensure that all modes of transportation specially land and sea that use fossil fuel have minimum detrimental impact on the environment.
Vanuatu National Energy Roadmap 2016–2030	- Explore options for promoting energy efficiency in the transport sector. - Support the Department of Agriculture to develop a policy for the coconut industry, which would cover coconut oil for electricity generation and coconut oil-based fuel for land and sea transport. - Carry out a scoping study for the use of coconut oil-based fuel in the land and sea transport sectors - Explore the potential for powering sea-going and land-based vehicles with renewable energy.

The Papua New Guinea National Energy Policy 2016–2020 is a comprehensive plan that reflects the importance of this sector to achieving the development goals of the nation. The PNG energy sector accounts for around 14% of national GDP. This figure is expected to increase in line with the growth of the PNG LNG mining industry, a

billion-dollar venture that began in April 2014 to supply gas to the Asian market. According to the energy policy, petroleum accounted for about 57% of the total primary energy consumed in PNG in 2014. The plan gives no indication of the proportion consumed by the transport sector, or a further breakdown of sea, air and land figures. PNG's energy policy has very clear strategies for reducing GHG emissions in the land transport sector. But with regards to shipping emissions, the plan makes broad statements, such as supporting international actions to reduce GHG emissions and utilising energy efficient measures where possible in the transport sector. There is no clear direction of the government's plans for reduction of GHG emissions in the sea transport sector, domestic or international.

According to figures in the Samoa Energy Sector Plan 2017–2022, the transport sector is the biggest user of fossil fuel, consuming around 68% of total fuel, followed by the electricity sector at 23%. The energy policy also provides a breakdown of fuel consumption per transport subsector. The maritime transport sector is the smallest user of the three subsectors, consuming about 10%, while land transport accounts for 68% and air transport 22%. Samoa's energy policy has a strategy that targets improvements in fuel efficiency in land and sea transport, and ensuring that systems are reliable, efficient and affordable. The corresponding indicator associated with this strategy is reduced fuel consumption for the mode of transport. The plan is not explicit on reduction of GHG emissions from the sea transport sector, but the strategy is broad enough to consider renewable energy options for shipping.

The transport sector in Tuvalu consumes more than 50% of petroleum imports, is therefore one of the key strategic areas in the Tuvalu National Energy Policy 2009. But the plan does not explicitly state any measures targeting reduction of GHG emissions from the shipping sector, despite this sector being the largest user of fossil fuels in Tuvalu. The stated policies are very broad, targeting fuel efficiency and reducing environmental impact.

The Vanuatu National Energy Roadmap 2016–2030 identifies transport efficiency improvements as a way to reduce the nation's reliance on imported fossil fuels. The transport (land, air and sea) sector in Vanuatu is the largest user of petroleum fuel, accounting for two-thirds of consumption, of which 50% is consumed by the land

transport sector. The energy policy of Vanuatu contains very specific actions to improve fuel efficiency in sea transport sector, through use of biofuels and renewable energy as alternatives. It is proposed that a scoping study be undertaken to explore the use of coconut oil based fuel in the land and sea transport sectors. In addition, the policy aims to explore the potential for powering sea-going vessels with renewable energy.

6.4 Managing open registry dynamics

The open registry system can be traced back to the 17th century, when flags of convenience were used by the British and US merchants and fishermen to avoid trade and fishing restrictions (Febin, 2007). Following World War II in the 1950s, the US used the open registry system to introduce a revenue-generating mechanism for developing countries in Africa, Latin America and Asia, while simultaneously aiming to provide the US maritime industry greater operating flexibility (Shorrock, 1998). Since then, this industry has been growing at an unprecedented rate. In 1950, open registry fleets constituted around 5% of world shipping tonnage (Hummels, 2007). This figure has risen dramatically to over 70% in recent years (UNCTAD, 2018a). The three largest registries, Panama, the Marshall Islands and Liberia collectively accounted for 42% share of the world tonnage in 2018.

More than three quarters of the world fleet are registered in developing countries (UNCTAD, 2018a). Seven Pacific states, namely, the Cook Islands, Kiribati, the Marshall Islands, Niue, Palau, Tuvalu and Vanuatu, also fall in this bracket. The political turmoil in Liberia in the early 1980s drove shipowners to seek more stable countries for hosting open registries, and many found suitable arrangements with a number of Pacific states (Fossen, 1992). Vanuatu became the first Pacific state to establish an open registry in 1981, followed by the Marshall Islands in 1988. With the exception of the Cook Islands, all other registries are managed by offshore management companies. Table 17 contains general information about the open registries in the Pacific region. The Tongan open registry, which was established in 2000, ceased operations in 2005 following several incidents of weapon smuggling and narcotics trafficking associated with its flagged vessels (SPC, 2009a; Fossen, 2012).

Table 17: Open registries in the Pacific region (status in 2017)

Open registry	Established	Registry management company/ headquarters	# of merchant vessels	Vessel share of world total (%)	Dead-weight tonnage (thousands of tons)
Cook Islands Registry	1995	Maritime Cook Islands (Rarotonga, Cook Islands)	222	0.14	2695
Kiribati Ship Registry	2006	Sovereign Ventures (Singapore)	124	0.02	446.7
The Marshall Islands Ship Registry	1988	International Registries, Inc. (Virginia, United States)	3169	11.62	216 419
Niue Ship Registry	2002	Niue Ship Registry Pte Ltd (Singapore)	43	<0.01	96.3
Palau International Ship Registry	2010	Palau International Ship Registry, Greece	156	0.05	995.2
Tuvalu Ship Registry	2004	Sovereign Ventures (Singapore)	238	0.10	1907.4
Vanuatu International Shipping Registry	1981	Vanuatu Maritime Services Limited (New York, US)	408	0.12	2281.3

(Source of fleet data: www.unctadstat.unctad.org)

As commercial entities, registry management companies are likely to be concerned about the potential impact of the IMO emission-reduction strategy and target on business and profitability margins. The current IMO negotiations on reduction of international shipping emissions would therefore be of great interest, and apprehension, to these registry companies. Registry management companies are authorised by the respective host governments to represent the flag state at MEPC sessions and negotiate on their behalf. This arrangement puts the companies in a highly influential position and carries the threat of overriding a Pacific state's genuine interests in accelerating decarbonisation efforts.

In addition, relevant legislation is in place in Pacific open registry countries that provides registry management companies full control of flag state matters. For example, under the Marshall Islands Maritime Administrations Act 1990, the IRI has sole control and management of the Marshall Islands Ship Registry, including administration of flag state duties, day-to-day operations and storage of all ship records at its headquarters in the United States (Manoni, 2012). Such legislative arrangements weaken the ability of Pacific governments to fully discharge their flag state duties.

This study also revealed that registry management companies in general were not completely transparent in their dealings with the Pacific governments. The problem is common to registries that are managed out of overseas locations. The study noted the

benefits of onshore arrangements, as evident between Maritime Cook Islands (the open registry) and the government of Cook Islands. The government has better oversight of registry operations and clear communication lines with the registry management company. There are other benefits, such as the government having easy access to registry databases and records, Maritime Cook Islands employing locals, and tax benefits (company, turnover, PAYE, VAT) for government.

Wilensky (2014) and Kutner & Wilensky (2014) claim that increasing regulatory measures on open registries could have an adverse impact on its operations. The governments are at a risk of losing an important revenue stream, which can be quite significant for some Pacific states, particularly those with low export opportunities. According to Fossen (1992), the Vanuatu government received around USD 2 million annually from its registry in the early 1990s. Wire Reports (1990) claims that the government received USD 1.5 million over 15 months. Recent figures, as revealed from this study, indicate that the Vanuatu government currently receives around USD 1 million. In December 2017, the government negotiated a new two-year contract with its registry management company, Vanuatu Maritime Services Limited, and secured increased revenue share and training for ni-Vanuatu personnel in the administration of the registry (Radio New Zealand, 29 December 2017). The new revenue figures have not been revealed.

The Marshall Islands government is reportedly paid 25% of the operating revenue of its registry (Holden & Holden, 2003). But according to Manoni (2012), until 2007, the registry's annual direct contribution to the Marshall Island government was fixed at USD 1 million. Manoni (2012) further reports that the registry also made voluntary contribution of USD 2 million for some years. In 2008, the agreement was amended to introduce a staggered annual contribution for the next ten years. Under this new arrangement, the Marshall Islands government received USD 2 million for fiscal years 2008 and 2009, USD 3 million in 2010, USD 3.75 million in 2011 and USD 4 million 2012. When compared to the Liberian registry, which ranked second largest until 2017, the Marshall Islands government receives a significantly lower revenue share from its registry. The government of Liberia receives an estimated revenue of USD 18 million annually from its registry, accounting for 25% of the national income (Schoen, 2013). Panama's open registry, ranked number one with 18.40% of total world fleet registered

under its flag in 2017 (UNCTAD, 2017), reportedly contributes USD 90 million to the country's annual budget (Climate Home News, 2017).

The Palau government receives 30% share of the revenue from its registry, around USD 103,600 per year (Island Times, 2014). The Cook Islands government receives a percentage of revenue each year based on the registered tonnage of ships (Cook Islands National Maritime Transport Plan, 2014). Exact figures for Niue, Kiribati and Tuvalu are not known but their revenue share is likely to be in the same range as other Pacific registries, ie. 25–30% of the total revenue. In addition to the direct contributions, some registries also take care of other expenses on behalf of the governments, such as IMO membership fees payments, financing for IMO permanent representative positions, funding participation of registry representatives to IMO conferences, IMSAS/STCW audits and casualty investigations.

Against this background, it is crucial that Pacific governments manage the open registry dynamics properly. The registry management companies bring to the table resources and expertise that are essential to the success of the open registry business. It is a reasonable deal for these officials to be a part of IMO GHG negotiations, but it is far more important for the heads of maritime administrations to lead respective country delegations. The final decision on all flag state matters should rest with the government, and this needs to be clearly reflected in the relevant legislation and the agreement between the two parties. The government can also consider negotiating additional support from the registries, such as funding for head of maritime administration to participate in MEPC sessions or increasing revenue share to finance decarbonisation efforts.

6.5 Inter-agency communication and cooperation

The national process for managing and coordinating international shipping emissions responsibilities is quite complex for Pacific states, as it involves different government ministries, and in some cases, the registry management companies. The two ministries that are directly involved in international shipping emissions work include those responsible for transport and foreign affairs. In some Pacific states, a government statutory body is also involved, such as the Maritime Safety Authority of Fiji (MSAF),

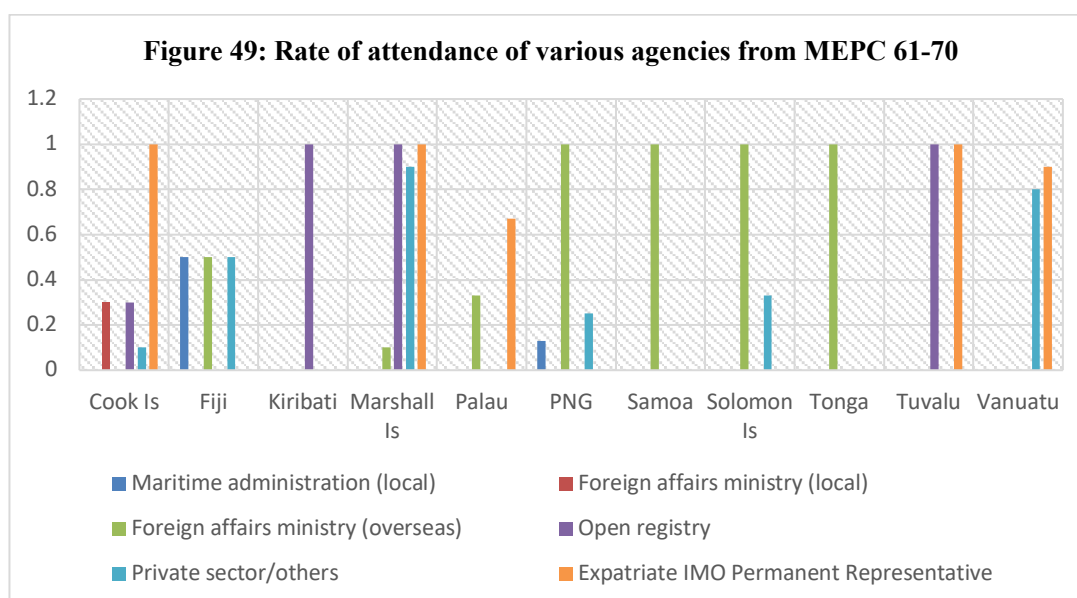
the PNG National Maritime Safety Authority and the Vanuatu Maritime Regulator (VMR). These agencies have functional links with the transport ministry but operate independently assuming full maritime administration responsibilities. Because shipping emissions fall under the global climate change agenda as well, the ministry or office responsible for climate change may have some level of indirect involvement. Table 5.7 contains a list of agencies currently involved in international shipping emissions work at the national level.

Table 5.7: Pacific Island government agencies and registry management companies involved in international shipping emissions work at national level

	Direct involvement	Indirect involvement
Cook Islands	Ministry of Transport; Ministry of Foreign Affairs; Maritime Cook Islands	Office of the Prime Minister (climate change division)
Federated States of Micronesia	Department of Transportation, Communications & Infrastructure	Department of Environment, Climate Change and Emergency Management
Fiji	Ministry of Infrastructure & Transport; Maritime Safety Authority of Fiji; Ministry of Transport; Ministry of Foreign Affairs	Ministry of Economy (climate change division); Ministry of Environment
Kiribati	Ministry of Transport; Ministry of Foreign Affairs; Kiribati Ship Registry/Sovereign Ventures (Singapore based)	Office of the Prime Minister (climate change division)
Marshall Islands	Ministry of Transport; Ministry of Foreign Affairs; Marshall Islands Maritime and Corporate Registries; The Trust Company of the Marshall Island (TCMI); International Registries Incorporation (based in Virginia, US)	Office of the Environmental Planning and Policy Coordination
Nauru	Ministry of Transport & Telecommunications; Ministry of Foreign Affairs	Department of Commerce, Industry & Environment
Niue	Ministry of Infrastructure; Ministry of Foreign Affairs; Niue Ship Registry/Niue Ship Registry Pte Ltd (Singapore based)	Niue Department of Meteorology and Climate Change
Palau	Ministry of Public Infrastructure, Industries & Commerce; Ministry of Foreign Affairs; Palau International Ship Registry (based in Piraeus, Greece/Texas, US)	Office of Environmental Response and Coordination, Office of President
Papua New Guinea	PNG National Maritime Safety Authority; Ministry of Foreign Affairs	Climate Change Development Authority
Samoa	Ministry of Works, Transport and Infrastructure; Ministry of Foreign Affairs	Ministry of Natural Resources and Environment
Solomon Islands	Ministry of Infrastructure Development; Ministry of Foreign Affairs	Ministry of Environment, Climate Change, Disaster Management & Meteorology
Tonga	Ministry of Infrastructure, Ministry of Foreign Affairs	Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication
Tuvalu	Ministry of Communication and Transport; Ministry of Foreign Affairs; Tuvalu International Ship Registry/Sovereign Ventures (Singapore based)	Climate Change Policy and Disaster Coordination Unit, Office of the Prime Minister
Vanuatu	Vanuatu Maritime Regulator; Ministry of Foreign Affairs; Investor's Trust Limited (ITL) ⁴⁵ ; Vanuatu Maritime Services Ltd (New York based)	Ministry of Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management

⁴⁵ The Government of Vanuatu has a contract with the Investor's Trust Limited to operate the registry. ITL subcontracts Vanuatu Maritime Services Ltd (an American corporation located in New York) to handle day-to-day operations.

During the 2015–2017 period of this study, it was found that the representatives of registry management company and the foreign affairs officials had better awareness of the international shipping emissions issue than the maritime administrations. This was mainly due to a higher rate of attendance of those agencies at MEPC negotiations (see Figure 49) and at the regional consultations on the matter. The maritime administrations have not been able to participate due to funding constraints (which eased considerable from 2017 onwards, as discussed in Chapter 5). In circumstances where the foreign affairs ministry or the registry management company steps into negotiations and consultations on behalf of the maritime administration, the participating agency is responsible for keeping the maritime administration up to date with the latest developments.



The PIDF, based in Suva, has been leading regional consultations on international shipping emissions and associated preparatory sessions for its Pacific member countries since 2016. At these sessions, Pacific states are mainly represented by their respective Suva-based diplomatic offices. In this case, the ministry of foreign affairs is taking lead in regional level consultations, even though the maritime administration is the key national authority on low carbon shipping. Involving the Suva-based diplomatic offices becomes the most cost-effective option for PIDF and the Pacific states when faced with funding constraints. At the same time, the responsibility of the diplomatic offices increases with regards to communicating and reporting back to relevant agencies in their respective countries.

In order to maintain clear lines of communication among the various national agencies, Pacific states can consider forming a national multi-agency taskforce that convenes on a regular basis to monitor progress and take collective decisions with regards to low carbon shipping initiatives. The taskforce should comprise of representatives from the Ministry of Transport, Ministry of Foreign Affairs and the registry management company. In addition to improving inter-agency communication, the taskforce representatives should be able to decide on a commonly acceptable position of the government at IMO negotiations, reflective of the nation's true climate aspirations.

Given the resource and technical expertise constraints faced by Pacific governments, the national taskforce could have an oversight role for driving decarbonisation efforts in the international as well as the domestic shipping sector. In such cases, the taskforce should expand to include representatives from other ministers, such as energy and climate change. It may also benefit from establishing links with relevant regional organisations. Regional expertise can be tapped into as need arises, and even invited to selected meetings of the taskforce.

6.6 Legislation

One of the prerequisites for creating an enabling environment for transiting to a net zero emissions future is ensuring that an appropriate legislative framework is in place. An assessment of specific legislative gaps in individual Pacific states is beyond the scope of this PhD study. However, some preliminary issues have been identified that could be useful in understanding the broad challenges in this area. The key point to note is that Pacific states that own international ships (such as Kiribati, Samoa and Tuvalu) or operate open registers will be most affected by the final IMO GHG Strategy and its implementation requirements. Therefore, the onus to enact appropriate legislation is far greater on these countries.

Pacific governments are in a better position to legislate measures for reduction of GHG emissions from the domestic shipping sector. A number of factors make the domestic aspects easier to manage, such as governments having a clear understanding of their international obligations towards implementation of NDCs, existence of relevant

national policies and execution of low carbon shipping initiatives in the Pacific. On the international front, IMO negotiations are still ongoing, and a firm global GHG policy for emission-reduction in the international shipping sector will not be available until 2023 to guide action in this area.

In general, Pacific states have a good track record of ratifying relevant IMO conventions and protocols. For example, all open registry countries (and few others) in the Pacific have ratified the MARPOL Convention, which contains requirements for managing ship-related pollution, and is the legal mandate for IMO to regulate international shipping emissions. Table 18 shows the status of ratification per Pacific states for membership to IMO and the various annexes to the MARPOL Convention.

Table 18: Status of MARPOL Convention ratification in Pacific states (as at 31 December 2018)

	IMO Convention 48	MARPOL 73/78 (Annex I/II)	MARPOL 73/78 (Annex III)	MARPOL 73/78 (Annex IV)	MARPOL 73/78 (Annex V)	MARPOL Protocol 97 (Annex VI)
Cook Islands	x	x				x
Federated States of Micronesia						
Fiji	x	x		x	x	
Kiribati	x	x	x	x	x	x
Marshall Islands	x	x	x	x	x	x
Nauru	x					
Niue		x	x	x	x	x
Palau	x	x	x	x	x	x
Papua New Guinea	x	x	x	x	x	
Samoa	x	x	x	x	x	x
Solomon Islands	x	x	x	x	x	
Tonga	x	x	x	x	x	x
Tuvalu	x	x	x	x	x	x
Vanuatu	x	x	x	x	x	x

*Source: Adapted from information on IMO status of conventions – ratification by state (www.imo.org).
Key: x – indicates ratification*

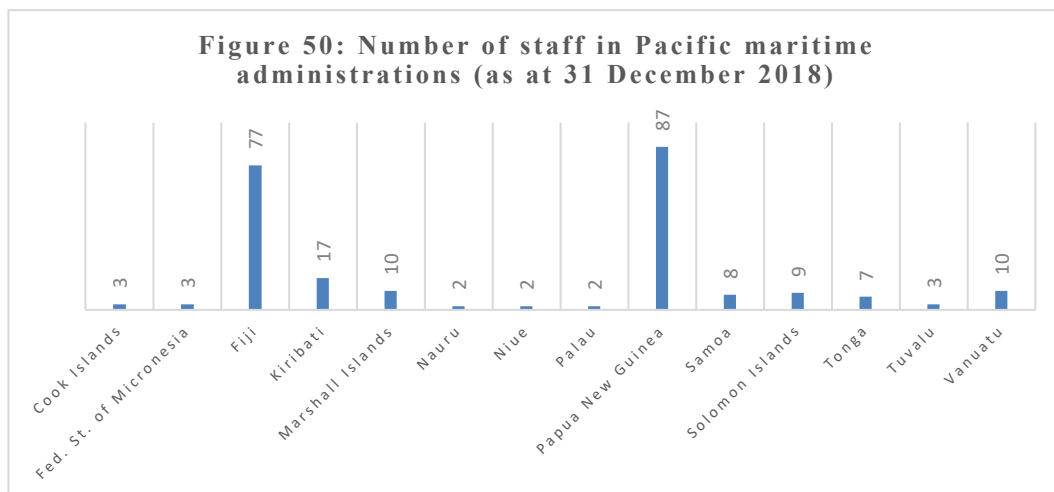
Annex VI of the MARPOL Protocol 97 has implications for reducing shipping emissions through energy efficiency pathways. Analysis reveals that nine out of 14 Pacific states have ratified Annex VI of the MARPOL Convention. FSM, Fiji, Nauru, PNG and Solomon Islands have not ratified this instrument yet. The FSM and Niue have ratified selected IMO conventions but not IMO Convention 48. FSM has ratified only two conventions, STCW Convention 78 and the SUA Convention 88. Niue on the other hand has ratified almost all major conventions, including MARPOL Annex VI, driven primarily by its open registry interests. Nauru became a member recently

on 14 May 2018, which explains the gaps in ratification of all instruments in Table 18. Fiji has not ratified MARPOL Annex VI due to concerns about the financial implications for domestic shipowners, but the maritime administration is considering ways to move this forward.

Another issue relates to the overlap in ministerial responsibilities and sectoral policies with regards to shipping emissions. This is more pronounced in the domestic shipping sector, as opposed to international. As evident from the analysis of relevant sector policies earlier in this chapter, provisions for shipping emissions provisions can be found in multiple documents, such as national maritime policies, transport sector policies and national energy policies. Countries that wish to enact legislation for addressing shipping emissions should examine all existing sector policies in order to identify these overlaps and clarify the position of the lead ministry in implementation matters. In Kiribati, for example, the Environment Act 1999 supports marine pollution work, but the environment ministry lacks clear legal powers and resources to deal with pollution from ships. This responsibility ideally falls under the maritime administration or transport ministry, as delegated under the Merchant Shipping Act 1983 in Kiribati.

6.7 Resource constraints

Creating an enabling environment to implement international maritime conventions and policies is an extremely challenging exercise for the maritime administrations in the Pacific. The staff numbers in some maritime administrations can be as low as two or three, as evident in the Cook Islands, FSM, Nauru, Niue, Palau and Tuvalu. Figure 50 shows the approximate number of staff in the maritime administrations per Pacific state. The Cook Islands identifies the resourcing constraints in its national maritime policy, and states that its Ministry of Transport is not adequately resourced to effectively administer the numerous international maritime obligations. The policy also identifies the need to undertake a review of the resources required for the maritime division to meet its responsibilities. For bigger Pacific states, such as Fiji and PNG, staff numbers may not be a problem for the maritime administration but technical expertise in the area of international shipping emissions is lacking.



It is noted that the LDCs faced technical and financial constraints during the preparation of their first NDCs and required assistance in building institutional capacity and improving country systems for formulating and implementing NDCs (Climate Analytics, 2017). When it comes to developing national policies and regulations for addressing international shipping emissions considerations, Pacific states are likely to face similar challenges, given the current state of resourcing and expertise levels. To a large extent, the regional and international organisations in the Pacific region have been supplementing the capacity of maritime administrations to fulfil their international obligations. The same trend is observed in the international shipping emissions negotiations phase. The transit to total decarbonisation of the shipping sector will require resource planning and budgeting. This is best done in consultation with regional organisations that have expertise in this area and can assist in developing proposals to seek required funding from donor agencies. The MTCC and MCST projects are good examples of how regional organisations, donor agencies and Pacific states are collaborating to support Pacific's transit to a low carbon shipping future.

Under the UNFCCC regime, developing countries are eligible for funding through the Green Climate Fund (GCF) for implementation of national climate mitigation and adaption programmes. This is in line with the Paris Agreement provisions for developed countries to allocate USD 100 billion annually from 2020 to help developing countries address their urgent needs (Paris Agreement, 2015). Because regulation of domestic shipping emission falls under the UNFCCC region, Pacific

states can bid for projects in the domestic sector only. Chapter 5 discusses how a long-term financing strategy may provide a consistent form of support for Pacific states when it comes to funding decarbonisation efforts in the international shipping sector.

6.8 Potential impact on trade

One of the biggest challenges facing the international shipping sector is transiting to a future of zero emission vessels with minimal impact on trade. It is widely agreed that implementation of GHG policies or regulations in the international shipping sector will have certain economic impacts on states and the industry (Belgium et al., 2017; Marshall Islands & Solomon Islands, 2017; World Bank, 2019). The cost of transporting goods by sea may increase and result in consumers paying a higher price for imported products. SIDS and LDS are likely to be most impacted, as they are: already paying high freight rates due to the long distances from trade markets; highly dependent on imports; and do not possess the ability to absorb the price hikes (Belgium et al., 2017).

According to World Bank (2019), introducing GHG mitigation measures, such as carbon prices applied to bunker fuels in the range of 10 to 50 USD/ton of carbon dioxide, may increase maritime transport costs by 0.4 to 16%. The impacts of a carbon price in the range of 10 to 90 USD/ton of carbon dioxide on national economies are expected to be modest (-0.02% to -1% of GDP), but negative impacts could be disproportionately higher for SIDS and LDCs. Some Pacific states have already expressed their concerns to IMO on the need to develop compensatory mechanisms for SIDS to mitigate the negative impacts of increased transport costs (Marshall Islands & Solomon Islands, 2017). Kachi (2019) recommends linking a climate levy with a compensation mechanism so that the levy can address disproportionate impacts on states. Such a compensation mechanism could take the form of a fund, similar to the IMO International Oil Pollution Funds. Matters relating to compensation for SIDS and LDCs are still under negotiation at IMO.

6.9 Fuel consumption data

Collecting and analysing international shipping emissions data is an important prerequisite to creating an enabling environment to implement the final IMO GHG Strategy. Pacific states are responsible for collecting data on domestic shipping emissions directly from the shipping companies that provide the local service. The case differs in the international shipping context. Countries rely on IMO as the international maritime regulatory body to guide them through the process and make available accurate data and analysis. But this has proved to be a problematic area for even IMO, as evident from records of past MEPC meetings (IMODOCS, 2018). It wasn't until October 2016 that IMO (at MEPC 70) adopted mandatory requirements for ships to record and report their fuel consumption data. The related amendments to MARPOL Annex VI entered into force on 1 March 2018, and the data collection commenced on 1 January 2019.

IMO member states that did not favour a cap on international shipping emissions have been using the gap in reliable fuel consumption data as one of the argument points in the negotiations. Opposing member states were of the view that the IMO should prioritise development of the data collection system first, and then make a decision on emission reduction based on analysis of data utilising the system. Some member states and organisations considered actual fuel consumption data as a prerequisite to progressing GHG work (Japan, 2016, see paper MEPC 70/7/3; Angola, et al., 2016, see paper MEPC 70/7/4; Turkey, 2016, see paper MEPC 70/7/7; BIMCO et al., 2016; MEPC 70/7/8; IAPH, 2017, see paper MEPC 70/7/9; CLIA, 2017, see MEPC 70/7/12)⁴⁶. On the other hand, some IMO member states (mostly those in favour of an immediate cap on shipping emissions) recognised the need for actual fuel consumption data, but believed that it could be initially substituted by GHG Study data (United States & Norway, 2016, see paper MEPC 70/7/5; Antigua & Barbuda, et al., 2016, see paper MEPC 70/7/6).

Ultimately, an emission-reduction target for the international shipping sector was set in 2018, taking into consideration the data that is currently available through the IMO GHG studies. For Pacific states, the GHG studies provide immediate reference to current and predicted levels of international shipping emissions. Once the IMO data

⁴⁶ All MEPC papers cited in this section are available on IMODOCS (via login): <http://www.imo.org/en/About/Pages/DocumentsResources.aspx>

collection system becomes fully functional, it is expected to further improve access to reliable emissions data for member states. This in turn will help in establishing baselines and monitoring progress towards emission-reduction. To support IMO in this data collection efforts, Pacific flag states need to ensure that the international ships on their registers are consistent in recording and reporting their fuel consumption data.

Lack of accurate data to support decision-making in the maritime transport sector has been a long-standing problem for Pacific states (ADB, 2007; Moon, 2013). The NDCs of Pacific states also demonstrate the extent of the problem in the domestic shipping sector, identifying major gaps in sectoral GHG emissions data (Goundar, 2017). The emissions data for the transport sector is unavailable for five out of 14 Pacific states, while the reliability of data from remaining countries is highly questionable. Some of the national sectoral plans of Pacific states (such as the 2050 Climate Strategy of the Marshall Islands, the Solomon Islands National Transport Policy 2011–2030, and the Samoa Energy Sector Plan 2017–2022) bring attention to two common emissions data gaps. One is the uncertainty as to what proportion of imported fossil fuels is used for domestic sea transport. Secondly, estimates are not available as to what proportion of the total national GHG emissions is contributed by the transport sector and its subsectors.

6.10 Reflections on the readiness of the national policy landscape

All 14 Pacific states under study have ratified the Paris Agreement, and 10 of those have supported the adoption of the initial IMO GHG Strategy in 2018 (see Chapter 5 for analysis). The next logical step would be to create a suitable enabling environment to implement provisions for shipping emissions in line with the two global policies. This study finds Fiji and the Marshall Islands leading the region in overall national policy development for decarbonisation. By developing long-term strategies for net zero emissions, the two countries are demonstrating leadership in climate change and responding at pace to decarbonise completely. The Marshall Islands is also one of two countries (second is Suriname) in the world that submitted an updated NDC, with increased ambitions, to UNFCCC by February 2020.

It is still early days for policy development at the national level with regards to international shipping emissions, but Fiji and Marshall Islands have already referenced international shipping emissions in their long-term decarbonisation strategy. Even though both strategies were adopted in 2018, only Fiji has mentioned the Initial IMO GHG Strategy and its support for high ambition targets to decarbonise the international shipping sector. In this regard, Fiji's national policy is more updated and in line with the international developments at IMO. Because Fiji does not operate an open registry or own any international-going ships, there is no major obligation to implement international requirements for emission-reduction. The situation might change should the final IMO GHG Strategy seek to monitor compliance through port state control as opposed to flag state responsibility. Under this scenario, any international ship that arrives at Fiji ports will be subject to port state inspection by Fiji authorities. This new responsibility would then have to be incorporated in the national policies and legislation. There is some consensus that port state control would be an ideal mechanism for monitoring compliance of international ships with the IMO GHG strategy (Kutner, 2014; Kachi, 2019). Flag state inspections may not be feasible for countries whose registered fleet never visit the flag state, which is highly prevalent in the Pacific's case.

Table 16: Number of Pacific states with shipping emissions provisions in relevant national policies and strategies (as at 31 December 2018)

	Number of countries with international shipping emissions provisions/direct references	Number of countries with domestic shipping emissions provisions/direct references
National development plan	0	1 (Fiji)
National transport/maritime policy	0	4 (Fiji, PNG, Samoa, Solomon Islands)
National energy policy	0	8 (Fiji, Kiribati, Marshall Islands, Niue, PNG, Samoa, Tuvalu and Vanuatu)
National climate change policy/strategy	2	3 (Fiji, Marshall Islands, Vanuatu)
Nationally Determined Contributions	0	1 (Marshall Islands)

Equally important is prioritisation of the overall maritime sector in the national development plan. Only nine Pacific states (64%) have directly referenced the maritime sector in the key goals or focus areas of their national development plan. For the rest, maritime sector development is not a high priority area. In these situations, it will be extremely challenging to mainstream the shipping emissions considerations in

national developments and sector policies. The gap in national development plans with regards to provisions for shipping emissions is also obvious. Only Fiji's national development plan contains provisions for domestic shipping emissions.

When emissions rates for the domestic shipping sector are low, as in the case of all Pacific states, there is no significant problem to address. Low emitters will find it difficult to justify funding for emission-reduction work. But with climate change as the driver and the visible impacts on vulnerable states, a number of projects, such as MTCC and MCST, have recently emerged in the Pacific region to support decarbonisation of the shipping sector. It is crucial that the national maritime policies reflect the importance of such initiatives.

The study also finds that domestic shipping emissions were better provisioned in the national energy policies of Pacific states than in other sectoral policies (see Table 16). Eight Pacific states had incorporated provisions for shipping emissions in their national energy policies, whereas only four had incorporated this element in their maritime or transport policy. Only three Pacific states have included domestic shipping emissions considerations in their climate change policy or strategy. The gap in alignment of shipping emissions provisions across the various sectoral policies is obvious for all Pacific states.

Government agencies need to consider undertaking a review of all sectoral policies to ensure that shipping emission provisions are rightfully aligned. In addition, it is crucial to identify the government agency responsible for overall coordination and implementation of shipping emissions work. At present, the overlaps in ministerial responsibilities are evident, with shipping emission considerations being spread across different sectoral policies. This further raises questions about how budgets have been allocated to the different ministries to undertake work in the same area. It is noted that the Vanuatu National Energy Road Map 2016–2030 mirrors the provisions for domestic shipping emissions listed in Vanuatu's Climate Change and Disaster Risk Reduction Policy 2016–2030. This is a good example of a cross-sector alignment of strategies, which should be visible in all Pacific cases.

6.11 Chapter summary

The maritime transport sector plays a key facilitative role in trade and mobility that is fundamental for development and economic growth in the Pacific. It is crucial that the development of this sector runs parallel to that of other economic sectors and be given appropriate consideration in national policies and planning processes. This study has identified that only 64% of Pacific states have prioritised the maritime sector in their national development plans. The study also revealed that international shipping emissions does not explicitly feature in the national development plan of any Pacific state, but it is referenced in the long-term climate strategy for Fiji and the Marshall Islands. These two countries have advanced considerably in terms of setting long-term goals to decarbonise their economies totally by the year 2050.

Four Pacific states (Fiji, PNG, Samoa and Solomon Islands) have incorporated provisions for domestic shipping emissions in their national maritime policy or transport sector plan. Three Pacific states (Fiji, the Marshall Islands and Vanuatu) have covered shipping emissions in their national climate change policy or strategy. Only the Marshall Islands has set a target in its NDC for reduction of emissions from the domestic shipping sector and submitted its updated NDC to UNFCCC in 2018. Eight Pacific states (Fiji, Kiribati, Marshall Islands, Niue, PNG, Samoa, Tuvalu and Vanuatu) have provisions for domestic shipping emissions in their national energy policy.

Government agencies need to consider undertaking a review of all relevant sectoral policies to ensure that provisions for shipping emission are correctly aligned across all documents. In addition, it is crucial to identify the government agency responsible for overall coordination and implementation of shipping emissions work. At present, the overlaps in ministerial responsibilities are evident, with shipping emission considerations spread across different sectoral policies, with the energy policy being the most robust in terms of provisions for domestic shipping emissions.

In addition to the review of national plans and policies, the study identified a number of other factors that need to be addressed or managed carefully by Pacific states while creating an enabling environment for decarbonising the shipping sector by the year

2050. These relate to open registry dynamics, inter-agency communication and cooperation, lack of legislation, resource constraints, impact on trade and fuel consumption data. The study finds that the relationship between the registry management company and the Pacific Island governments needs to be better managed. Better conditions need to be negotiated that allow the Pacific government to execute its flag state responsibilities effectively and remain in charge of decisions on decarbonisation of the international shipping sector.

The study also identified issues with communication and coordination of international shipping emissions work, compounded by the involvement of various government ministries and the registry management companies. The establishment of a multi-agency taskforce on low carbon shipping could help in improving communication among the various agencies. Legislation is another area of challenge for Pacific states that are moving towards decarbonisation of the shipping sector. Analysis reveals that only 9 out of 14 Pacific states have ratified Annex VI of the MARPOL Convention. FSM, Fiji, Nauru, PNG and the Solomon Islands have not ratified this instrument yet.

The study also finds that the maritime administrations in the Pacific are not adequately resourced to fulfil their international regulatory obligations. Some maritime administrations comprise of two or three staff only and are expected to execute full flag state duties. The lack of technical expertise within the maritime administration will also affect decarbonising efforts at the national level, the gaps of which are likely to be filled by external or regional assistance. The study brought attention to the potential impact of the IMO GHG Strategy on developing states, and the compensation concerns that have been tabled by Pacific states for consideration of IMO. The study also highlights the gaps in fuel consumption data in the international and domestic shipping sectors and the need for flag states to ensure that ships on their registers are compliant with the international requirements for data collection.

Chapter 7: International shipping emissions and the gaps in Pacific regional architecture

7.1 Chapter introduction

Regional organisations around the world play a multi-faceted role of supplementing and building capacity in various groupings of states, while strengthening regional integration, cooperation and solidarity among nations. A regional organisation is also viewed as an important entity that countries can utilise to exert greater influence in global negotiations (Faure et.al, 2003). The Pacific region is home to a number of regional organisations, which are supporting their member states, either collectively or individually, to transit to low carbon futures (Nunn, 2009; PIDF, 13 February 2018; SPREP, 10 November 2017; SPC, April 2018). This level of support is necessary in response to the climate change threats and the severity of impacts being experienced by the Pacific states in recent years. Efforts are also visible in decarbonisation of the international shipping sector (PIDF, 14 March 2018), but as this is relatively new ground for regional agencies and the Pacific states, the gaps in literature are obvious.

Regional organisations that are involved in shipping emissions work, either domestic or international, include SPC, PIDF, PIFS and SPREP. The role of the regional university, USP, is also considered in this study. With overlapping mandates in climate change, regional agencies often compete for similar streams of donor funding to implement their respective mitigation programmes in Pacific states. There is a need to understand if similar dynamics exist in the shipping emissions area, and how this affects decarbonisation efforts at the regional level.

This chapter analyses the role of regional organisations in supporting the efforts of Pacific states to decarbonise the international shipping sector. The chapter begins with an overview of the origins and significance of key regional organisations. This is followed by an assessment of the support provided by regional organisations to enable effective participation of Pacific states in international shipping emissions negotiations. The assessment helps to identify gaps in the regional coordination

process. In addition, a review is undertaken of relevant regional policies and communiques to assess provisions for advancing international shipping emissions work. The chapter also assesses the feasibility of developing a regional strategy for decarbonisation of the international shipping sector.

7.2 Regional organisations in the Pacific: Origins and significance

A number of regional inter-governmental organisations are active in the Pacific region, some focusing on a single sector while other delivery services to multiple sectors. This section looks at the origins and significance of key regional organisations. Table 19 outlines the key regional inter-governmental organisations in the Pacific. With the exception of PIDF, the rest of regional organisations (those mentioned in Table 19) are members of the Council of Regional Organisations in the Pacific (CROP). The CROP was formed by the PIF Leaders in 1988 as an overarching committee for the regional organisations in the Pacific. The council functions as a coordination mechanism between the heads of the regional organisations. It reviews the work undertaken by respective agencies to implement regional priorities and encourages inter-agency coordination in technical assistance and policy matters (Taylor, 24 August 2018). The PIFS, which manages the administrative functions of the PIF, is the permanent chair of CROP.

Table 19: Key regional inter-governmental organisations in the Pacific

Organisation	Established	Focus areas	Headquarters
Pacific Community (SPC)	1947	Multiple areas: Agriculture, fisheries, public health surveillance, geoscience, transport, energy, climate change, disaster risk management, food security, gender equality, human rights and youth employment	Noumea, New Caledonia
The University of the South Pacific (USP)	1968	Tertiary education and research	Suva, Fiji
Pacific Islands Forum Secretariat (PIFS)	1971	Multiple areas: political governance, economic cooperation, trade, climate change, fisheries, security, trade, ocean management and conservation	Suva, Fiji
Pacific Islands Forum Fisheries Agency (FFA)	1979	Tuna fisheries	Honiara, Solomon Islands
Pacific Islands Development Program (PIDP)*	1980	Multiple areas: development, governance, leadership development, regional news, dialogue and research	Honolulu, Hawaii
South Pacific Tourism Organisation (SPTO)	1983	Tourism	Suva, Fiji

Pacific Aviation Safety Office (PASO)	2005	Aviation	Port Vila, Vanuatu
Pacific Power Association (PPA)	1992	Energy/power	Suva, Fiji
Secretariat of the Pacific Regional Environment Programme (SPREP)	1993	Multiple areas: Climate change resilience, Environmental governance, Islands and Oceans ecosystems, Waste management and pollution control	Apia, Samoa
Pacific Islands Development Forum (PIDF)	2013	Multiple areas: green growth, climate change	Suva, Fiji

*With the exception of PIDF, the rest of the organisations listed in this table are members of CROP

The following section provides an overview of the origins and significance of those regional organisations that are involved in providing technical assistance or support to the maritime sector in the Pacific, in any form. These organisations are PIDF, PIFS, SPC, SPREP and USP, discussed below in order of their formation.

The Pacific Community

The year 1947 marked the rise of regional organisations in the Pacific Islands region with the establishment of the South Pacific Commission (presently known as the Pacific Community⁴⁷). The governments of Australia, France, the Netherlands, New Zealand, UK and the US signed an agreement in Canberra to give effect to SPC's formation. The intention was to form a regional advisory commission, which would assist in developing common international policies to advance social and economic development of the non-self-governing countries of the South Pacific (James, 1947). A high number of Pacific states were under the sovereignty of these six nations in the 1800s period, leading up to the early 1960s. Samoa became the first Pacific state to gain autonomy in 1962 from the influences of the UK, US, Germany and New Zealand (The Commonwealth, 2018a).

SPC has undergone major reforms since its inception days, leading to changes in membership and organisational structures. Of the six founding nations, only Australia, France, New Zealand and the United States remain as members, and they continue to fund various programmes of SPC. At present, SPC has 26 member countries, inclusive of the four founding nations and the 22 PICTs that benefit directly from SPC's

⁴⁷ Formerly known as the Secretariat of the Pacific Community, and initially as the South Pacific Commission but retains the acronym 'SPC' despite the recent name change to the 'Pacific Community'

assistance. Australia continues to be a major donor for SPC, injecting AUD 81.2 million for the period 2014–2017 (DFAT⁴⁸, 2018). SPC is the only regional organisation in the Pacific that has a dedicated unit for maritime affairs, housed under the Transport Programme of the Ocean & Islands Programme. This unit provides technical, legal and policy advice on maritime transport issues, assists PICTs to maintain compliance with international maritime obligations and builds capacity in the maritime sector. SPC is also recognised as the implementing body for IMO's Technical Cooperation Division activities (SPC, 2013b).

The University of the South Pacific

The USP was established in 1968 as a regional university with the main campus located in Suva, Fiji. The USP is also a member of CROP, even though its core functions differ to a large extent from other regional organisations. But as USP is jointly owned by the governments of 12 Pacific states, it is often placed in the same category as other regional inter-governmental agencies. The 12 member countries of USP are: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. As a regional university, USP has contributed significantly to closing the capacity gaps in areas such as, science, engineering, technology, accounting, economics, law, marine resources, agriculture, and education. Of interest to this study is USP's sustainable sea transport programme and its contribution to decarbonisation efforts at the regional level. This will be discussed in latter sections of this chapter.

Pacific Islands Forum Secretariat

Another prominent regional organisation emerged in 1971, the South Pacific Bureau for Economic Cooperation (SPEC)⁴⁹, presently known as the Pacific Islands Forum. Through PIF, the region obtained its first diplomacy-oriented regional entity, which provided an important dialogue platform for Pacific Island leaders while promoting cooperation on matters of common interest to the nations. The PIF also became instrumental in enabling Pacific states to enter global negotiations as a powerful bloc.

⁴⁸ Department of Foreign Affairs and Trade (Australia)

⁴⁹ SPEC was renamed South Pacific Forum in 1988. The name changed to PIF in 2000.

The results of successful negotiations are visible through international treaties on resource protection, environmental issues, tuna access, prohibition on drift-net fishing, the dumping of radioactive waste in Pacific waters, nuclear testing and trade (Fry & Tarte, 2016).

A less active period in global diplomacy was seen in the 1990s, linked to a shift in the focus of PIF's role. The factors held responsible for this shift were: greater influence of Australia and New Zealand into the work programmes of PIF; higher focus on security, transnational crime and terrorism; and more emphasis on regional integration than regional cooperation (Fry & Tarte, 2016). Australia is one of the major donors of PIFS, contributing up to AUD 21.6 million during the period 2014–2017 (DFAT, 2018). PIFS comprises of 18 members: Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

Secretariat of the Pacific Regional Environment Programme

The SPREP was officially established as an inter-governmental regional organisation in 1993 to focus on environmental and sustainable development issues. But its beginnings can be traced back to 1973, when it was formed as a joint initiative of SPC, SPEC, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Environment Programme (UNEP). It was housed within SPC in New Caledonia as a component of UNEP's Regional Seas Programme before shifting out to Samoa as an independent technical regional organisation. SPREP assumes the secretariat responsibilities for implementation of two regional conventions, the Noumea Convention and the Waigani Convention. SPREP has 26 members, inclusive of PICTs as well as Australia, New Zealand, US, France and UK. Australia and New Zealand are biggest donors of SPREP, providing core as well as project funding. Other donors include the EU, Japan and GEF. SPREP's mandate to address environmental pollution is derived from a number of policies, such as the SPREP Treaty, the Noumea Convention, SPREP Strategic Plan 2017-2026, the Integrated Waste and Pollution Management Strategy 2016-2015 (Cleaner Pacific 2025), and the PACPOL Strategy.

Pacific Islands Development Forum

The newest regional player, PIDF, was formed in 2013 through the endorsement of eight Pacific states – Fiji, FSM, Kiribati, Marshall Islands, Nauru, Solomon Islands, Tonga and Vanuatu. Fiji was the main driving force behind the formation of PIDF. Following Fiji's suspension from PIF in 2006, some Pacific states supported the formation of a new regional agency, intended to function like PIFS but devoid of interference from Australia and New Zealand (Fry & Tarte, 2016). International development partners and some Pacific states faced the dilemma of supporting PIDF and risk undermining the role of PIF as the key political body in the region (Tarte, 2016). This affected the membership uptake of PIDF.

To date, the Cook Islands, Niue, PNG and Samoa remain non-members, though Cook Islands and PNG have been represented at the PIDF summits (PIDF, 2015). The financing support for PIDF comes from China and some other new development partners, such as Kuwait, United Arab Emirates and Russia (Tarte, 2016). The current 14 PIDF members are: Fiji, FSM, Kiribati, Marshall Islands, Nauru, Palau, Solomon Islands, Timor Leste, Tonga, Tokelau, Tuvalu, Vanuatu, PIANGO and the Pacific Island Private Sector Organisation (PIPSO). PIDF has a strong drive to address climate change and sustainable development agendas, while supporting its members to implement related international obligations.

7.3 Regional efforts to decarbonise the international shipping sector

The PIDF is currently leading regional coordination work related to decarbonisation of the international shipping sector in the Pacific. For an organisation that emerged fairly recently in the regional arena, PIDF has been quick to take lead on this matter. However, it was SPREP that first brought attention to the matter in 2014, through a regional workshop on international shipping emissions (SPREP, 20 November 2014). On record, this is the first regional forum on international shipping emissions. Funded by the Government of Canada through Transport Canada, SPREP hosted the workshop in Apia, Samoa in partnership with IMO and the Australian Maritime Safety Authority.

The SPREP workshop targeted the maritime administrations of 15 Pacific countries: Cook Islands, Fiji, FSM, Kiribati, Marshall Islands, Niue, Nauru, Palau, PNG Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. The key issues under discussion included energy efficient ship design and technical energy efficiency measures, further measures to enhance the energy efficiency of ships, onshore power supply and green port initiatives. Countries were also encouraged to ratify MARPOL Annex VI to improve energy efficiency of ships. In 2015, SPREP hosted a regional preparatory meeting for CROP agencies, where a series of briefing papers were drafted, including one on international bunker and UNFCCC, to support Pacific negotiators in the Paris Agreement negotiations (SPREP, 2016).

Even though SPC has been leading technical assistance to the Pacific maritime sector, the regional mandate for addressing ship-related pollution matters has traditionally remained with SPREP. The SPREP has an MOU with IMO to assist Pacific states implement resolutions that emanate from IMO's MEPC meetings. In contrast, SPC's maritime programme has an MOU with IMO's Technical Cooperation Division and does not engage with MEPC directly. In this respect, SPREP has been better positioned in the region to take action on the shipping emissions issue but has not prioritised the matter to the extent of attracting the attention of Pacific leaders, development partners or donors. However, SPREP still takes the lead in the region in terms of preparing Pacific negotiators for the climate change conference at UNFCCC, and coordinating meetings of Pacific states during COP. SPREP also organises a regional climate change conference every year, targeting ministers and directors for climate change in the Pacific.

PIDF also has a mandate for climate change, approved by its members, to engage in all areas connected to reducing GHG emissions. As a new player in the region, PIDF has been challenged to find niche areas to take lead on, as its mandates overlapped with other regional organisations, and it had limited access to traditional donors in the region, such as Australia New Zealand. PIDF therefore was quick to capitalise on decarbonisation of the shipping sector (domestic and international) and close the gap on an issue that had not been accorded much importance in the past.

Unlike SPC and SPREP, PIDF has no record of engaging with the maritime sector in the Pacific. In addition, the organisational structure of PIDF has no specific provision for maritime transport sector developments in the Pacific, and as such the organisation lacks staff with maritime technical or low carbon shipping expertise. Faced with these limitations, how did PIDF take on board a major maritime sector related initiative? The answer lies with the regional university, USP, which has been providing required technical backstopping to PIDF since 2016 on low carbon shipping matters. Anecdotal information suggests that USP, through its Sustainable Sea Transport Research Programme, chose to collaborate with PIDF on the matter, over SPC and SPREP.

Established in 2013, coincidentally the same year as PIDF, the Sustainable Sea Transport Research Programme under the Pacific Centre for Environment and Sustainable Development of USP, began advocating strongly for Pacific states to transit to a low carbon shipping environment. Several papers have been published in recent years by USP researchers (Nuttall, 2012; Prasad et al., 2013; Holland et al., 2014; Nuttall et al., 2014; Newell et al., 2016; Goundar et al., 2017) to bring attention to the shipping emissions problem. In 2012, USP organised the first Sustainable Sea Transport Talanoa in Suva, Fiji, bringing in stakeholders from all relevant segments (USP, 2014). A number of organisations provided financial support towards the conferences, such as the Embassy of the United States Suva, the UNDP Pacific Office and the Fiji's Ministry of Environment. These conferences marked the beginning of USP's and the region's efforts to address low carbon shipping. The Sustainable Sea Transport Research Programme no longer exists, but PIDF's technical support from USP continues through MCST. The centre, established in 2017 in the Marshall Islands, is jointly funded by the Government of Marshall Islands and USP, with technical support from UCL and a number of other partners.⁵⁰

In January 2016, the PIDF set into motion a series of regional consultation sessions with Pacific states on international shipping emissions matters (PIDF, 1 February 2016). The sessions were also open to other interested regional and international organisations, as well as development partners. It was observed that Pacific states were represented by their foreign affairs ministry, through the diplomatic offices based in

⁵⁰ For complete list of partners, visit: <https://www.mcst-rmiusp.org/index.php/partners>

Suva. The only maritime administration involved in the consultation was Fiji, as it is conveniently located in Suva. Other maritime administrations in the region did not have the opportunity to participate in the initial series of consultations. PIDF and USP were not in a position to fund participation of maritime administrations to these consultations. The situation changed in 2018 when funding avenues opened up, allowing PIDF to host the first Pacific Maritime Technical Officers Workshop on Shipping Emissions in Suva in February 2018 (PIDF, 14 March 2018).

Pacific states involved in the PIDF-USP facilitated regional coordination process have been benefiting in a number of ways. Firstly, the regional consultations allow them to engage with other Pacific states and find common grounds for negotiations. The Pacific as a bloc has proven to be formidable in the UNFCCC climate change negotiations, particularly during the successful negotiation of the Paris Agreement (see Chapter 5 for details). The same was envisaged for the IMO shipping emissions negotiations. Some Pacific states were empowered to submit joint papers to MEPC sessions with the support they received through PIDF-USP to prepare the submissions. Secondly, the briefing papers that PIDF circulates enables Pacific states to remain updated with MEPC related developments, and take action based on the recommendations put forth for the consideration of governments.

Fourthly, through regional intervention, several Pacific states have entered into bilateral arrangements with some European countries to receive direct financial and technical support towards MEPC negotiations. This stream of funding has been used to increase the participation of maritime administrations in MEPC negotiations. Moreover, the funding has been useful in organising regional workshops for the heads of maritime administrations, strengthening their knowledge of subject matter and negotiation skills.

In addition, USP through its research network, secured further technical support from international universities to assist PIDF and the Pacific states in transitioning to low carbon futures in shipping. The UCL, in particular, has been playing a prominent role in preparing Pacific states for IMO shipping emissions negotiations. Technical support from UCL, mainly through virtual means, is evident during regional consultations and workshops. During MEPC negotiations in London, UCL and USP representatives are

on site to advise the Pacific states where necessary. The UCL is also the main coordinator for SHAC, which connects Pacific states to a wider network of many IMO member states. Countries in this group share similar interests in decarbonisation of the international shipping sector and have demonstrated solidarity during MEPC negotiations.

It is noted that PIDF and USP have not received any direct funding from donors for the work they carry out in relation to international shipping emissions. But they have been successful in securing funding support from PIFS, which enabled several heads of maritime administrations to participate in the MEPC 71 negotiations in 2017. For some Pacific states, such as Kiribati, Tuvalu, Tonga and Solomon Islands, it was the first time for the heads of maritime administrations to participate in the MEPC negotiations. Given the circumstances surrounding PIDF's establishment, the PIFS does not engage with PIDF on joint activities. But the international shipping emissions agenda, because of its link with climate change, has prompted PIFS to contribute financially in an area that is led by PIDF at the regional level. It demonstrates the willingness of yet another regional agency to support Pacific states in their decarbonisation efforts towards international shipping.

The SPC with its dedicated maritime unit and vast experience in shipping matters has no record of engaging with Pacific states to address the international shipping emissions issue. In part, this could be due to reluctance of donor agencies to fund such initiatives. This was evident in the case of PIDF too, but funding constraints did not prevent PIDF from taking immediate action on the matter. It is also worth understanding why USP chose PIDF over SPC to progress low carbon shipping in the region, when the latter had a clear mandate for maritime work in the region, was better resourced and had a wider membership coverage. When USP's Sustainable Sea Transport Research Programme was established, SPC was viewed as a valued regional partner supporting the new programme in various ways. During the Sustainable Sea Transport Talanoa at USP, SPC shared their maritime expertise through presentations to the forum. SPC has also supported postgraduate research work in low carbon shipping by funding two projects in 2014 (F.Vukikomoala, personal communications, 26 April, 2017).

Judging from SPC's initial support towards USP's Sustainable Sea Transport Research Programme, it may be incorrect to state that SPC lacked complete interest in the international shipping emissions agenda. While SPC may not have prioritised this matter in the past (SPC, 2013b), it had the mandate and resources to advance shipping emissions work to a higher number of countries, having a membership of 22 PICTs. USP's decision therefore to not select SPC as a partner of choice could be politically motivated or a case of personalities clashing over differences that could not be resolved at CROP level. It is likely that USP found a more accommodating partner, as opposed to more appropriate, in a non-CROP member. This raises further questions on the solidarity of CROP members and the inability of these agencies to work in collaboration with each other.

SPC however cannot be totally neglected from shipping emissions work in the region. It is mandated to organise a Pacific energy and transport ministers meeting every four years, where direction is set for work in the maritime sector of PICTs. In April 2017, driven by PIDF, USP, and a number of SHAC representatives from the European region, the international shipping emissions matter was brought to the attention of the Third Pacific Regional Energy and Transport Ministers Meeting in Tonga. A paper on shipping emissions was tabled for the consideration of the transport ministers, seeking political support for decarbonisation efforts (SPC, 2017a). The SHAC representatives also delivered presentations on low carbon shipping at a side event during the Tonga ministerial. This event marked the first collaborative effort between SPC, PIDF and USP on decarbonisation of the international shipping sector. The interaction of these agencies, with regards to international shipping emissions, remains limited to regional meetings and consultations.

As far as regional efforts in domestic shipping emissions are concerned, there is no straightforward agency leading coordination work. The PIDF, USP, SPREP and SPC are all involved in different projects, but with a similar goal of reducing GHG emissions in the Pacific domestic shipping sector. The EU funded the establishment of MCST in the Marshall Islands. The centre was established in 2018 by USP and operates out of USP's Marshall Islands Campus, with technical support from UCL and PIDF. The project is initially being trialled in the Marshall Islands, with plans to replicate to the other Pacific states once successfully implemented in the pilot country.

SPC and SPREP were awarded the MTCC project by IMO in 2017. It is a regional level project that extends technical assistance to all Pacific states, thus covering more countries than the MCST project. MTCC aims to reduce emissions from domestic vessels in the Pacific by improving energy efficiency. For example, through the MTCC pilot project, marine solar systems were installed on the domestic vessels in Vanuatu and Samoa in the 2018–2019 period. This improvement in energy efficiency is expected to reduce GHG emissions, and also save up to 32% per year on operational costs for a vessel, which can amount to AUD 48,000 for some domestic ships (MTCC Pacific, 2019). Chapter 3 provides a background to the MCST and MTCC projects.

7.4 Limitations and gaps in the regional coordination process

The major limitation associated with PIDF regional consultations and workshops is that it has not succeeded in bringing all 14 Pacific states under one forum. Perhaps the biggest drawback in this regard is the membership issue, as only ten Pacific states are members of PIDF (as per status during the study period). As such, PIDF did not provide a uniform regional platform for all Pacific states to engage effectively on international shipping emissions matters. Only seven Pacific states – Fiji, Kiribati, Marshall Islands, Tonga, Tuvalu, Solomon Islands and Vanuatu – benefited from the first Pacific Maritime Technical Officers Workshop held in February 2018 (PIDF, 14 March 2018). It is a fact that the PIDF-USP collaboration has achieved milestones in advancing overall efforts of the region in decarbonisation of the international shipping sector. But the same process has left some Pacific states, such as the Cook Islands, Palau, Samoa and Papua New Guinea, out of the regional dialogue on international shipping emissions negotiations.

With the exception of Samoa, the other three non-PIDF Pacific states have been active in the IMO shipping emissions negotiations (see Chapter 5 for analyses of country positions). But their initial response to proposals for setting a target for reducing international shipping emissions was not very favourable. For this reason, they were not part of SHAC either. Could the response of these three countries be any different if they were consulted and made part of regional discussions on emissions right from the beginning? The Pacific is known to speak as a single voice on climate matters

(Goulding, 2018; Carter, 2016). If the regional coordination process for international shipping emissions had adopted an all-exclusive approach, it may have reduced the initial frictions in Pacific solidarity during the 2015–2017 negotiations.

For PIDF, the situation is a complex one to navigate, given the regional politics at play. Pacific states that are loyal to PIFS, as well as to Australia and New Zealand, are not likely to seek PIDF membership. Even though PIDF has opened its membership to all Pacific countries, it is not in a position to impose any form of pressure on sovereign states on this matter. If a Pacific state chooses not to seek membership of PIDF at all, it is up to the country and PIDF to negotiate a common ground for engaging in decarbonisation work. More advocacy may be required on PIDF's part to extend its membership in the region.

Observations also revealed that the regional process for coordination of MEPC submissions involves too many players in the Pacific. The government focal point for PIDF is the ministry for foreign affairs. When PIDF circulates the submissions to the foreign affairs ministry, some Pacific diplomatic offices in Suva take lead in coordinating with their respective incountry foreign affairs counterparts and the maritime administrations. This mode of regional coordination created confusion as to which government ministry was accountable for MEPC submissions and cabinet approvals. Several maritime administrations reported that they were not aware of the submissions coordinated by the diplomatic offices.

There is recognition and acceptance among relevant government ministries of the maritime administration's role as the lead agency for coordinating national level work on shipping emissions. This was revealed during the semi-formal interviews with relevant government personnel in the study countries. Therefore, it is important that the communication lines among the regional coordination agency, the foreign affairs ministry, the diplomatic missions and the maritime administration are clear. The ministry of foreign affairs may remain engaged in the regional consultations, but the maritime administrations are ideally placed to lead the process.

From 2017 onwards, the maritime administrations were seen to take lead on the shipping emissions matters. This study is of the view that the initial misconceptions

(ie. during 2015–2016) about the lead role of foreign affairs in shipping emissions could be related to the unestablished links between PIDF and the maritime administrations in the Pacific states. Chapter 5 explains the rationale for maritime administrations taking lead in international shipping matters, and the transformations that took place from 2015–2018 in this regard.

7.5 Prioritisation in regional policy frameworks and communiques

The work of regional inter-governmental organisations in the Pacific is guided by the decisions of Pacific leaders, either directly or through a political body, such as PIFS. Three inter-governmental regional organisations – PIFS, PIDF and PIDP – host heads of government meetings at different intervals. PIDP hosts heads of government every three to five years, while PIFS and PIDF organise leaders’ meetings annually. The outcomes of these meetings are produced in the form of a communique or declaration. Technical organisations, such as SPC and SPREP, convene sector specific ministerial meetings, the outcomes of which determine the workplan for these agencies.

In addition, the work of regional organisations is guided by numerous regional policies or strategies. For example, the key policies that guide regional interventions in the Pacific maritime sector include: The *Framework for Action on Transport Services* (SPC, 2011a), *The Framework for Pacific Regionalism* (PIFS, 2014), and the *Framework for Resilient Development in the Pacific* (PIFS, 2016a). This section contains an analysis of the key policies frameworks and declarations/communiques to identify the extent to which international shipping emissions are prioritised in regional policies. The analysis involves examining relevant documents dating back to 2004 when the *Forum Principles on Regional Transport Services* (PIFS, 2004) was endorsed by the Pacific leaders.

7.5.1 Analysis of regional policy frameworks

The *Forum Principles on Regional Transport Services* (PIFS, 2004), endorsed by Pacific leaders in 2004 in Apia, was the first high level policy calling for specific regional action to improve shipping and aviation services in the Pacific. The policy recognised the importance of regular, reliable and competitive shipping services to the

Pacific people. It was built around six principles: good governance, sustainable commercial shipping, responsibility of government to establish and administer regulatory systems, seeking regional and sub-regional solutions to issues, compliance with international maritime security standards, and donor support for activities. The policy had no provisions for decarbonisation of the domestic or international shipping sector. This indicates that low carbon shipping was not a priority for Pacific states in the early to mid-2000s period. Table 20 contains a list of key regional policies and the status of shipping emissions considerations in the documents.

Table 20: Provisions for shipping emissions in key regional policy frameworks

Regional policies	Lead agency	Provisions for maritime transport and shipping emissions
Forum Principles on Regional Transport Services (2004)	PIFS	No provisions for shipping emissions but contains maritime transport considerations
The Pacific Plan (2005)	PIFS	No provisions for shipping emissions but contains maritime transport considerations
Framework for Action on Transport Services 2011–2020	SPC	- Provisions for maritime transport aspects - Contains provisions for shipping emissions. Key priorities include: enabling policies and legislation; compliance with international standards and emissions reduction measures; and efficient use green technology in ships and ports.
Pacific Islands Framework for Action on Climate Change 2006–2015 (2 nd edition)	SPREP	No direct provisions for shipping emissions.
The Framework for Pacific Regionalism (2014)	PIFS	No provisions for shipping emissions or maritime transport considerations
Framework for Resilient Development in the Pacific 2017–2030	PIFS	- No specific provisions for shipping emissions or maritime transport considerations but exists for overall transport sector. - Support PICTs to identify and utilize opportunities for the transport and industry sectors to reduce their greenhouse gas emissions, including assessing how PICTs might move to more energy-efficient modes of transport, and the associated costs and benefit.
Pacific Roadmap for Sustainable Development (2017)	PIFS	No provisions for shipping emissions or maritime transport considerations

In 2014, *The Framework for Pacific Regionalism* (PIFS, 2014) was adopted by Pacific Island Forum leaders, replacing the *Pacific Plan* (PIFS, 2005). Pacific leaders viewed *The Framework for Pacific Regionalism* as a crucial platform for driving the region’s policy agenda through collective actions of CROP agencies (PIFS, 2016). However, compared to the *Pacific Plan*, this new framework differs considerably in its approach to addressing regional priorities. It outlines the process through which regional priorities can be identified and implemented, rather than identifying areas of work. As

such, *The Framework for Pacific Regionalism* (PIFS, 2014) has no provisions for shipping emissions or any other sector priorities.

In contrast, *The Pacific Plan* (PIFS, 2005) was designed to strengthen regional cooperation and integration, in addition to identifying regional priorities. Maritime transport was covered under the *Pacific Plan*, with the following focus: implementation of the *Forum Principles on Regional Transport Services* (PIFS, 2004), franchising shipping services, development of ports, improving shipping services for SIS, and compliance with maritime safety and security standards. However, *The Pacific Plan* also did not contain any provisions for decarbonisation of the shipping sector.

The *Framework for Action on Transport Services 2011–2020* is an SPC-led regional policy, designed to address priority issues in the aviation and maritime sectors in the Pacific (SPC, 2011). The policy contains some provisions for addressing decarbonisation of the international and domestic shipping sectors. The related long-term objective focuses on reducing emissions through a combination of technological and operational improvements for all vessels that operate throughout the Pacific. The key priorities in this regard are: enabling national policies and legislations; compliance with international standards, policies and emission reduction measures; and efficient use of green technology in ports and ships, suitable for purpose, area of operation and port rotation. The MTCC project, which began in 2017, will enable SPC to progress work on reducing emissions in the domestic shipping sector, thus fulfilling some of the requirements of FATS in this regard. But prior to MTCC, there was no apparent action from SPC to lead or advance work in decarbonisation of the overall shipping sector.

The *Framework for Resilient Development in the Pacific* (PIFS, 2016), developed by PIFS in 2016, is a regional strategy which adopts an integrated approach to addressing climate change, disaster risk management and low carbon development. It links to global level agreements, such as the Paris Agreement, the Sendai Framework for Disaster Risk Reduction 2015-2030, the Small Islands Developing States Accelerated Modalities of Action (SAMOA) Pathway 2014, and the Sustainable Development Agenda 2015-2030. The framework recognises that the greatest opportunities for

reducing greenhouse gas emissions are in electricity generation, transport and industrial sectors. With regards to the transport sector, the framework mentions support for PICTs to identify and utilize opportunities for the transport and industrial sectors to reduce their greenhouse gas emissions, including assessing how PICTs might move to more energy efficient modes of transport. While this framework does not make any direct reference to the maritime sector, there is sufficient grounds for aligning shipping emissions related actions to the transport pillar.

The Pacific leaders endorsed the *Pacific Roadmap for Sustainable Development* (PIFS, 2017a) and 132 Pacific Sustainable Development Indicators (PSDI) at the 48th Pacific Islands Forum meeting in Samoa in 2017 (PIFS, 2017b). This roadmap is intended to guide regional responses towards implementation of the 2030 Agenda and the Sustainable Development Goals, and streamline reporting across the SDGs, the SAMOA Pathway and the *Framework for Pacific Regionalism*. The roadmap itself is not designed to cater for sector specific measures, therefore it does not contain any provisions for shipping emissions reduction. But progress can be measured through the PSDI.

7.5.2 Analysis of key regional communiques and declarations

In recent years, Pacific states have witnessed an explosion of high-level regional communiques and declarations that call for urgent action to combat climate change and reduce GHG emissions. Analysis reveals that only a handful of these documents bring attention to the need for Pacific states to address emission reduction in the domestic and international shipping sectors (see Table 21). These statements include: The *Suva Declaration on Climate Change* (PIDF, 2015), the *Smaller Island States Leaders' Port Moresby Declaration on Climate Change* (PIFS, 2015a), and the communique of the *Third Pacific Regional Energy and Transport Ministers' Meeting* (SPC, 2017). The Communique of the Inaugural Pacific Regional Meeting of Energy, ICT and Transport Ministers (SPC, 2011b) makes an indirect reference to shipping emissions by endorsing FATS, which contains related provisions.

The *Niue Declaration on Climate Change* 2008 (PIFS, 2008) is historic in the sense that it is the first regional declaration specific to climate change. The declaration also

confirms SPREP's mandated role as the lead regional agency in climate change coordination matters. The Pacific leaders directed SPREP to increase the capacity of Pacific states to manage their engagement in UNFCCC, and to secure new and additional financial and technical resources to do this work. In addition, SPREP was tasked to strengthen climate change adaptation and mitigation measures, as well as distribute information on climate change. While the *Niue Declaration on Climate Change* does not make any direct reference to transport or shipping emissions, it brings attention to renewable energy and cleaner fuels. Development partners were encouraged to increase investment in and support Pacific states efforts to move towards alternative and renewable energy sources, in order to reduce the emissions, improve energy efficiency, and address high fuel costs. The declaration further urged international partners to assist Pacific states by undertaking immediate and effective measures to reduce emissions, use cleaner fuels, and increase use of renewable energy source.

Table 21: Provisions for shipping emissions in key regional communiques and declarations

Regional communiques \ declarations	Lead regional agency	Provisions for shipping emissions
Niue Declaration on Climate Change 2008	PIFS	No direct provisions for shipping emissions but fuel-related directives exist
Maritime ministerial Communique 2009	SPC	No direct provisions for shipping emissions
Cairns Compact on Strengthening Development Coordination 2009	PIFS	No direct provisions for shipping emissions
Port Vila Declaration on Accelerating Progress on the Achievement of the Millennium Development Goals 2010	PIFS	No direct provisions for shipping emissions
Waiheke Declaration for Sustainable Economic Development 2011	PIFS	No direct provisions for shipping emissions
Communique of the Inaugural Pacific Regional Meeting of Energy, ICT and Transport Ministers (Tonga, 2011)	SPC	Endorsed FATS, which contains provisions for shipping emissions considerations. Climate change response mentioned but nothing on shipping emissions
Communique of the Second Pacific Regional Energy and Transport Ministers' Meeting (Nadi, 2013)	SPC	Recognises the need to reduce shipping emissions but does not contain any directive to take action in this area, apart from exploring the potential for the establishment of LNG storage within the Pacific region.
Majuro Declaration on Climate Leadership 2013	PIFS	No specific reference to shipping emissions. Greater focus on reduction of emissions from the electricity generation sector and overall cuts to national emission levels.
The Suva Declaration on Climate Change (September 2015)	PIDF	Calls for an integrated approach to transitioning Pacific countries to low carbon transport futures, in particular sea transport given its central role in providing connectivity for Pacific SIDS, including a regional strategy to advocate for and monitor implementation of sector targets.
Smaller Island States Leaders' Port Moresby Declaration on Climate Change (September 2015)	PIFS	Contains provisions for international shipping emission; states need to 'address all sources of

		greenhouse gas emissions including those from international transport'
Pacific Islands Forum Leaders Declaration on Climate Change Action 2015 (September 2015)	PIFS	No direct provisions for shipping emissions but mentions implementing commitments under the <i>Majuro Declaration on Climate Leadership</i> of 2013, to reduce emissions and reliance on fossil fuels, and promote low carbon development.
Forum Communiqué 2016	PIFS	No direct provisions for shipping emissions but the leaders called for Leaders called for ambitious climate change action in and across 'all sectors'
Communique of the Third Pacific Regional Energy and Transport Ministers' Meeting (Tonga, 2017)	SPC	- Urged IMO to accelerate its work on the accounting of GHG emissions from shipping. - Endorsed the leadership shown by Micronesian Sustainable Transport Centre (MSTC) and the IMO-EU Maritime Technology Cooperation Centre (MTCC) as leading examples of how to progress low carbon maritime transport in the Pacific Islands region.
Forum Communiqué 2017	PIFS	No direct provisions for shipping emissions but climate change and implementation of NDCs is prioritised
Forum Communiqué 2018; Boe Declaration	PIFS	No direct provisions for shipping emissions but climate change and implementation of NDCs is prioritised. The Boe Declaration contains a strong declaration made by Pacific leaders on climate change security.

The first high level regional communiqué/declaration that incorporated shipping emission considerations was the *Suva Declaration on Climate Change* (PIDF, 2015), driven by PIDF. The declaration called for an “*integrated approach to transitioning Pacific countries to low carbon transport futures, in particular sea transport given its central role in providing connectivity for Pacific SIDS, including a regional strategy to advocate for and monitor implementation of sector targets through relevant UN agencies commensurate with 1.5°C*”. The regional affirmation was timely for Pacific states that had just entered into an intense GHG emissions negotiation period at IMO, battling with top economic powers to set a cap on international shipping emissions.

In the series of maritime ministerial meetings that SPC organises every four years since 2008, the issue of shipping emissions had never been explicitly considered for action until the ministerial meeting of 2017. The Communique of the *Third Pacific Regional Energy and Transport Ministers' Meeting* (SPC, 2017b) provides the most comprehensive coverage of the shipping emissions issue, compared to all other statements listed in Table 21. The text insertion is largely credited to the SHAC representatives who delivered presentations at a side event and advocated for the international shipping emissions efforts to be reflected in the SPC-led communiqué.

It is evident that except for the *Smaller Island States Leaders' Port Moresby Declaration on Climate Change* (PIFS, 2015), none of the high level PIFS-led forum communiques have prioritised reduction of shipping emissions. They either make broad statements that are open to interpretation or leave a total gap in this regard. For example, the *Pacific Islands Forum Leaders Declaration on Climate Change Action 2015* states the Pacific leaders' intention to reduce greenhouse gas emissions and show leadership through ambitious submissions of NDCs to UNFCCC. The declaration mentions the intention of Pacific states to implement commitments under the *Majuro Declaration on Climate Leadership* (PIFS, 2013) in an attempt to reduce emissions and reliance on fossil fuels and promote low carbon development. This is a broad statement that is open to interpretation even though it does not make explicit reference to the maritime sector or shipping emissions reduction.

The 2018 Forum Communique, an outcome of the Forty-Ninth Pacific Islands Forum held in Nauru in September 2018, identified 10 regional priorities for the Pacific region (PIFS, 2018). This communique prioritises climate change and disaster resilience, and calls on countries, particularly large emitters, to fully implement their NDC mitigation targets, including through the development and transfer of renewable energy, in line with committed timeframes (PIFS, 2018). This holds implications for Pacific states that have included a target in their NDC for reducing domestic shipping emissions.

7.6 Feasibility of a regional policy framework for decarbonisation of the international shipping sector

Consistent with the primary interest of this PhD study, this section explores the feasibility of developing a regional strategy for decarbonising the international shipping sector in the Pacific. A number of factors need to be considered before a regional strategy is formulated in the Pacific context. These are discussed in the subsections that follow.

(i) Endorsement as a regional priority

The key question to consider is whether the issue of reducing GHG emissions from the international shipping sector has been identified as a regional priority by Pacific

leaders and any subsequent calls made to develop an associated strategy. As evident from the analysis in Section 7.5, and Table 21 in particular, only one high level meeting has referenced international transport. The *Smaller Island States Leaders' Port Moresby Declaration on Climate Change* states that the SIS in the Pacific need to 'address all sources of greenhouse gas emissions including those from international transport' (PIFS, 2015). This should provide sufficient grounds for developing a regional strategy towards decarbonising the international shipping sector. But an explicit endorsement by Pacific leaders in the main Forum Leaders meeting would have added more weight to this initiative.

In contrast, the *Suva Declaration on Climate Change* (PIDF, 2015) makes specific reference to the need for a regional strategy to advocate for and monitor implementation of emission reduction targets in the shipping sector. The text is not explicit on whether the strategy is intended for domestic, international or encompassing both. But it is highly likely aimed at the domestic shipping sector as countries set national emission reduction targets in their NDCs in the same year.

It is also important to note that two different regional agencies are extracting commitments from the Pacific leaders in low carbon shipping – PIFS through the *Smaller Island States Leaders' Port Moresby Declaration on Climate Change* and PIDF through the *Suva Declaration on Climate Change*. This has implications for the regional agency that would take lead in coordinating the regional strategy in the respective sectors (discussed further below in subsection iv).

(ii) Possibility of a consolidated regional strategy

A possibility exists to consider consolidating domestic and international shipping emissions regimes into a single regional strategy. But this study is of the view that a consolidated regional strategy for decarbonising the domestic and international shipping sector may not be feasible due to marked difference in the governance structure of both regimes. The key differences are outlined in Table 22.

A regional strategy for decarbonising the international shipping sector in the Pacific will be aligned to the *IMO Comprehensive Strategy for Reducing GHG Emissions in*

the International Shipping Sector. As such, the regional strategy will reflect measures to implement the target set by IMO and therefore be most applicable to Pacific states that are operating open registries and international-going ships. The regional strategy can, and should, also extend to non-registry states. For example, it can contain provisions that urge all Pacific states to continue participating in the IMO negotiations and demonstrate strength as a single Pacific voice at global forums, irrespective of their contribution to international shipping emissions.

Table 22: Differences in governance structure for domestic and international shipping emissions regimes in the Pacific. (Source: Author’s research)

	Domestic shipping emissions	International shipping emissions
International regulatory agency	UNFCCC	IMO
Regional organisations involved	SPC, SPREP, USP, PIDF	PIDF, PIFS, USP
National agencies involved	Transport ministry, Maritime administration	Foreign affairs ministry, Transport ministry, Maritime administration, Open registries
Who sets the emission reduction target	Countries	IMO
Key global policy that sets emission reduction targets	The Paris Agreement	IMO Comprehensive Strategy for Reducing GHG Emissions in the International Shipping Sector
National policy that sets emission reduction targets	Nationally Determined Contributions; long-term strategies (LTS) for decarbonisation	None
Pacific states required to implement the target	All Pacific states	Pacific states with open registries and international going ships

(iii) An effective regional policy framework

Regional policies play an important role in setting the workplans for regional organisations and help to advance implementation of international obligations through a regional process. These are particularly useful in situations that involve coordination of many players to achieve a desired goal at the national level. The development of a regional strategy for decarbonisation of the international shipping sector will be a challenging process, given the involvement of a high number of players and the complexity of dealing with open registry management companies. There is no record of registry management companies being represented at regional meetings in the Pacific, but in this case, their participation is necessary. The consultative process must

adopt an all-inclusive approach to avoid running into problems during the implementation phase.

The emission-reduction target contained in the *IMO Comprehensive Strategy for Reducing GHG Emissions in the International Shipping Sector* does not apply equally to all Pacific states. The regional strategy therefore has to take into account the different responsibilities of all players involved. For example, as one of the top three registries in the world, the Marshall Islands will be most impacted by the regional strategy compared to a non-registry state like Fiji.

The regional strategy should also take note of lessons learnt from policies frameworks that failed in terms of uptake by Pacific states and bringing desired improvements in the associated sectors. The *Pacific Plan*, for example, was criticised for its failure to address the real needs of Pacific People, and its apparent focus on ‘endorsing a neoliberal economic agenda that ran counter to Pacific’s people’s interests’ (Slatter, 2016). Goundar et al. (2017) brings attention to the internal review of FATS undertaken by SPC in late 2015 to identify major gaps in its implementation in the Pacific transport sector. The review noted that the FATS principles were not reflected in any of national transport sector policies in the Pacific region. Almost exclusively, the national transport policies appeared to have been developed in total isolation of FATS. There are valuable lessons to be learnt from such cases.

(iv) Appropriate lead implementation agency

This study does not support the idea of establishing a separate centre for developing and implementing the regional strategy for decarbonisation of the international shipping sector. Investing in a separate centre is a resource-intensive exercise and will further duplicate efforts of current regional organisations. The SPREP, SPC and PIDF are all in a position to lead the development and execution of the regional strategy but each one of them faces certain limitations relating to institutional arrangements, membership, resources and political support.

PIDF has certain advantages over other regional organisations, and these may work in its favour when trying to develop and implement a regional strategy in the shortest

timeframe possible. Since PIDF is not a member of CROP, it operates with a greater degree of flexibility, free from the influences of major development partners of the Pacific, such as Australia and New Zealand. As a relatively smaller organisation compared to SPC and SPREP, PIDF can leverage from being less bureaucratic and having faster decision-making mechanisms in place.

The factors that do not work in PIDF's favour include: a lower number of member countries compared to other regional organisations; no staff with maritime or low carbon shipping expertise; no direct links with maritime administrations in the Pacific, and no funding for maritime work. It may be challenging for PIDF to seek membership of some Pacific states, such as Samoa. The Samoan government was openly critical of establishing another regional organisation in the form of PIDF (Tarte, 2016). Samoa's non-membership status with PIDF indicates the government's continued reluctance to engage with PIDF at its annual summit. Cook Islands, Niue and PNG are also non-members but attend the PIDF summits. The chances of obtaining their support for a regional strategy are relatively higher. Discussion with Samoan transport/maritime authorities during the study revealed strong interest to engage in low carbon shipping discussions at the regional level. Traditionally, the government of Samoa has been very supportive of the maritime transport sector work undertaken by SPC and was the host country for the first Regional Meeting of Maritime Transport Ministers in 2009. Samoa is also an active member of PIFS and SPREP.

The MCST in the Marshall Islands is another latest centre in the Pacific, and the first with an exclusive low carbon shipping focus. Can MCST lead development of the regional strategy? MCST was initially formed as a sub-regional domestic shipping initiative, driven by the Marshall Islands government with support from USP. The centre has an ambitious long-term vision to transit regionally and extend its programme to other Micronesian countries and then to other Pacific states, following successful completion of its pilot project in the Marshall Islands (USP, 2015). Since 2019, the first year of its operation, the role of the MCST has evolved. In addition to its domestic pilot project, MCST is now managing international projects. Through the EU-Pacific IMO Support Project, MCST provides capacity building and support to Pacific delegations taking part in the IMO shipping emissions negotiations. The project provides financial support for delegates' travel to MEPC meeting during the

period 2019–2020 (MCST, 2020), while a team of experts from MCST, USP and UCL is providing technical support and training activities.

Even though the analysis of this PhD study is limited to events leading up to 2018, it is important to highlight the rapid changes that have been taking place at MCST since 2019 with regards to shipping projects. MCST is yet to achieve its primary goal of decarbonising the domestic shipping sector in the Marshall Islands and the Pacific region. But it seems to have won the confidence of donor agencies and the Pacific states to manage the IMO Support project. PIDF on the other hand never received any funding directly from donors towards preparing Pacific delegates for IMO negotiations. Unless PIDF finds a robust development partner, it will be challenging for the organisation to lead decarbonisation work in the international shipping sector of the Pacific. Without in-house technical and financial capacity, PIDF is likely to remain a collaborative partner in joint MCST-USP regional projects.

SPC and SPREP, are both well positioned to take lead on the development of the regional strategy given their wider membership base, vast experience of work in the maritime sector, established links with maritime administrations in the region and access to a wider range of development partners. SPREP has a stronger maritime pollution mandate than SPC (and MEPC links), while SPC has a stronger technical team of maritime experts. SPC also has the advantage of being recognised as the IMO's technical implementing agency in the region. If given an opportunity to lead the development of the regional strategy, SPC and SPREP are likely to take joint coordination roles, as evident in the MTCC project. The major drawback these two agencies face is not securing the regional coordination lead on the international shipping emissions agenda in the first place.

The EU's financial backing has further strengthened the position of MCST to lead the development of the regional strategy at present. Current analysis of the situation suggests that it is highly unlikely for USP, through MCST, and PIDF to relinquish this lead, despite the fact that they are not reaching out equally to all Pacific states. This study is of the view that the development of the regional strategy is best coordinated jointly by SPC and SPREP. But the politics, underlying personal agendas of regional

organisations and the failure of CROP to manage this matter properly, may prevent the shift from happening.

(v) Regional coordination and partnerships

A long-standing problem facing Pacific regional organisations is the lack of coordination in common work areas. A second corporate review of SPREP in 2014 found regional organisations to be competing for significance and funding, showing lack of understanding of their respective areas, and operating narrowly within the frameworks of their own data sources, networks, paradigms and training (Hay et al., 2014). The review further noted that despite the need for a crosscutting approach to environment work, the regional organisations appeared to not work well together on initiatives affecting the region's environment and natural resources.

In addressing the domestic shipping emissions issue, the region has already witnessed the involvement of four regional organisations, PIDF, SPREP, SPC and USP, and the apparent fractions. The SPREP and SPC have a history of close working relations, while USP has a preference for working with PIDF on the shipping emissions agenda. When it comes to development of the regional decarbonisation strategy for the international shipping sector, the lead agency has to ensure that all relevant regional organisations are part of the consultative process. With a high number of regional organisations overlapping in areas of climate change, and shipping emissions work in recent years, the emphasis on improving regional coordination and cooperation has grown stronger.

7.7 Chapter summary

It is evident that regional organisations in the Pacific are providing substantial support to Pacific states in decarbonisation of the overall shipping sector. The efforts are more pronounced in the domestic shipping sector with PIDF, SPC, SPREP and USP implementing various projects, such as the MTCC and MCST. On the international shipping side, the partnership between PIDF and USP has proven to be successful in strengthening the role of Pacific states in IMO emissions negotiations. The SPREP, as the region's key environmental body, initiated the first steps to address international

shipping emissions in 2014, but could not advance efforts at a faster pace. In 2016, the USP's Sustainable Sea Transport Research Programme, which was established in 2013, took lead in this area in partnership with PIDF and has shown considerable progress within a short period of time.

A number of regional policies and strategies guide the work of regional organisations in the Pacific. Of these, only two regional policies contain some provisions for addressing shipping emissions. These are the *Framework for Action on Transport Services 2011-2020* and the *Framework for Resilient Development in the Pacific 2017-2030*. The various Pacific leaders' forums and transport ministerial meetings also set direction for the work of regional agencies. Of the plethora of declarations and communiques resulting from regional high-level meetings since 2008, only three communiques make reference to shipping emissions. These include: The *Suva Declaration on Climate Change*, the *Smaller Island States Leaders' Port Moresby Declaration on Climate Change*, and the *communique of the Third Pacific Regional Energy and Transport Ministers' Meeting 2017*. But none of the declarations are explicit on what direction the region should take in terms of a long-term strategy decarbonising the international shipping sector and which regional organisation was best placed to take lead.

This chapter also discussed the feasibility of developing a regional strategy for supporting Pacific states' efforts to decarbonise the shipping sector. If such a strategy is to include both domestic and international shipping sectors, the dynamics vary substantially in terms of the overall governance structure, international regulatory mechanisms, emission reduction targets and the regional organisations involved. This study is of the view that a regional strategy for decarbonising the international shipping sector will bring some structure to the adhoc manner in which current regional efforts are being carried out. It is important that the strategy extends to all Pacific states and is led by an appropriate regional agency. The strategy will have increased chances of success if well-coordinated with all relevant regional organisations.

Chapter 8: Conclusion and recommendations

8.1 Overview

This study investigated the role of Pacific states in decarbonising the international shipping sector and explored options for strengthening their efforts in three main areas: International shipping emissions negotiations at IMO; Creating an enabling environment at the national level to support a transition to net-zero emissions future in shipping; and improving regional support mechanisms. The three substantive chapters of this thesis were structured around each of these focus areas. This final chapter consolidates the overall findings, conclusions, and recommendations derived from the three standalone chapters. This chapter also discusses the overall limitations of this study and considerations for future research in decarbonising the international shipping sector.

8.2 Testing findings against the research questions

Overall, the study was successful in achieving its objectives, and managed to close a major gap in the literature relating to the Pacific's role and efforts in decarbonisation of the international shipping sector. This section discusses the extent to which each of the research questions were addressed and also identifies the gaps that remain.

- (i) *What is the role of Pacific states in the international shipping emissions negotiations at IMO and UNFCCC, and the level of influence they have on the outcomes?*

Prior to this study, not much was known about the specific role of Pacific states in international shipping emissions negotiations at IMO and UNFCCC. A review of the literature, taken during the course of this study, further confirmed the gaps that existed in this body of knowledge. This study identified trends in participation, submissions, and positions at IMO shipping emissions negotiations that demonstrate how the Pacific's role has evolved considerably in recent years. Prior to 2015, the Pacific's role in international shipping emissions negotiations could be termed as insignificant.

There was no evidence of submissions made by Pacific states to MEPC in support of a cap on international shipping emissions. The attendance rates at MEPC sessions were very low for most Pacific states. The lack of advocacy and leadership on this issue was obvious.

A fundamental transformation took place following the Marshall Islands' submission at MEPC 68 (May 2015), which urged IMO to set a target for reducing GHG emissions from international ships. From a state of obscurity, the Pacific began exerting substantial pressure in a negotiation that had been dealing with an unresolved matter for many years at UNFCCC and IMO. As more Pacific states stepped up in favour of setting an emissions-reduction target, the role and influence of these developing nations magnified. In 2018, IMO adopted an initial IMO GHG Strategy for reducing emissions from international ships. The Pacific-led drive that began in 2015 delivered a strong outcome three years later, in collaboration with many other like-minded IMO member states. This demonstrated the highly influential role of Pacific states at the emissions negotiations at IMO. Coincidentally, this critical transformation of the Pacific's role took place during the timeframe of this study and was documented as accurately as possible using first-hand and evidence-based information.

The study would have benefited further from a thorough analysis of the UNFCCC bunker negotiations. Current analysis is limited to one bunker negotiation session, COP 21 in Paris, where an important decision was taken to resolve this set of negotiations to IMO. The issue of international shipping emissions is no longer a part of the UNFCCC mainstream negotiations. Time permitting, the researcher could have collected and analysed data for the last ten COP sessions, as carried out for the MEPC negotiations. Despite these limitations, the study had sufficient evidence to conclude that the Pacific states are far more influential at MEPC international shipping emissions negotiations than they were at the UNFCCC bunker sessions.

(ii) *What factors affect the negotiating power of Pacific states in IMO shipping emissions negotiations?*

The study identified the following factors that limit the response and negotiating power of Pacific states during the actual course of negotiations: Small-sized delegations, poor

participation of Pacific nationals and maritime administrations, lack of technical expertise, and lack of solidarity among Pacific states. These findings resulted from a balanced mixture of quantitative and qualitative analyses. Data from multiple sources, including written document, semi-formal interviews and direct observations, greatly increased the credibility of these findings. The researcher's participation in the MEPC shipping emissions negotiations, and first-hand experience of the processes under study, also added substantial value to this research. This study highly recommends this mode of data collection approach for future research that involves investigation of similar processes.

(iii) Is the national policy landscape in Pacific states adequate to support a transition to net zero emissions future in shipping?

With the exception of Fiji and the Marshall Islands, the national policy landscape of other Pacific states is not ready to support a transition to net zero emissions future in shipping. Fiji and the Marshall Islands are the only Pacific states that have developed long-term strategies with goals to fully decarbonise by the year 2050, inclusive of measures to reduce GHG emissions in the overall shipping sector. Fiji's national policies are more explicit with regards to international shipping emissions considerations than that of the Marshall Islands.

The lack of provisions for international shipping emissions in the national development plan and relevant sector policies of most Pacific states, indicates low priority for the matter. The study further identified that only 64% of Pacific states have prioritised the maritime sector in their national development plans. The analysis also revealed that domestic shipping emissions were better provisioned in the national energy policies of Pacific states than in other sectoral policies. Governments need to ensure that the provisions for international and domestic shipping emissions are incorporated and harmonised across all relevant sector policies.

Transiting to a net zero emissions future in shipping is a challenging exercise for Pacific states due to resource constraints, technical expertise limitations, potential impact on trade, inter-agency communication issues, open registry dynamics, and the

gaps in national and regional policy landscape. These areas need to be managed in parallel to the recommended review and update of national plans and policies.

In seeking answers to this research question, the researcher analysed the provisions contained in the national development plans and relevant sectoral plans of 14 Pacific states. The process was tedious due to the high number of policies chosen for review. The researcher chose to analyse provisions for international as well as domestic shipping emissions, in order to gain full understanding of the overall low carbon shipping priorities in the Pacific states. A mixed methods approach was used, which added substantial credibility to the findings. The investigation included document analysis, interview narratives, field research, and statistical analysis.

(iv) *What level of support is available from regional organisations to assist Pacific states in their efforts to decarbonise the international shipping sector?*

Regional organisations in the Pacific have been providing substantial support to Pacific states in decarbonisation of the international shipping sector. The study identified five regional organisations that are supporting Pacific states in this area, with varying levels of support. These organisations are: PIDF, USP, PIFS, SPREP and SPC. Since 2015, PIDF has taken the lead in supporting Pacific states in international shipping emissions negotiations. The nature of support includes: organising regional consultations, coordinating MEPC submissions, and preparing for MEPC negotiations. Technical backstopping is provided by USP (in collaboration with UCL). PIFS funded participation of some Pacific states to MEPC negotiations in 2017. The SPREP initiated the first steps to address international shipping emissions in 2014 but has not invested further. SPC plays a more active role in supporting Pacific states to reduce emissions in the domestic shipping sector. But the Pacific transport ministers meeting that SPC organises becomes an important forum for obtaining the region's recognition and endorsement of the international shipping emissions matter.

The study also revealed that only two regional policies contain some provisions for addressing shipping emissions. These are the *Framework for Action on Transport Services 2011-2020* (developed by SPC) and the *Framework for Resilient Development in the Pacific 2017-2030* (developed by PIFS). In addition, only three

regional communiques make reference to shipping emissions. These include: The Suva Declaration on Climate Change (led by PIDF in September 2015), the Smaller Island States Leaders' Port Moresby Declaration on Climate Change (led by PIFS in September 2015), and the communique of the Third Pacific Regional Energy and Transport Ministers' Meeting (led by SPC in Tonga, 2017).

(v) *What are the policy options that could assist in strengthening the role and efforts of Pacific states in decarbonising the international shipping sector?*

This study has identified a number of policy options for strengthening the efforts of Pacific states in decarbonisation of the international shipping sector. In an effort to avoid redundancy, the policy options identified in each of the three substantive chapters may be found under the recommendations portion, Section 8.5, of this chapter.

8.3 Limitations

Significant developments in the international shipping emissions negotiations have taken place since this study began in 2015. Initially, the rationale for the thesis was based on a premise that the international shipping sector did not have any mandatory global policy or target to address its share of GHG emissions. However, the pace of negotiations at IMO increased substantially from 2016 onwards, resulting in the adoption of the Initial IMO GHG Strategy in April 2018 and an emission-reduction target for the international shipping sector. In light of this development, the researcher amended the study's scope and rationale. Because the IMO negotiations are expected to continue until the initial IMO GHG Strategy is revised in the year 2023, analysing the current strategy does not provide lasting insight. Therefore, the focus of this study was adjusted to incorporate the key factors that Pacific states need to address, at international, regional and national levels, as they prepare to transit to a net zero emissions future in shipping. There was no major change to the originally planned structure of the three substantive chapters.

Another critique that the thesis originally made, based on the research findings, was the poor participation rates of maritime administrations in international shipping

emission negotiations as well as at related regional level consultations. From 2017 onwards, a major shift was seen. With availability of external funding, maritime administrations began sending representatives to IMO negotiations and regional workshops. Although trends and criticisms were amended where necessary, this study was time-constrained to fully analyse sessions beyond MEPC 70, which concluded in October 2016. The study has however attempted to extend the analysis to April 2018 where possible. This is an intrinsic but major limiting factor for such research work, where context or variables are at a risk of sudden change, with flow on effects on the study. Researchers involved in such studies must be fully aware of the risks involved and be prepared to adjust accordingly, or else risk wasting time and effort in trying to keep the study current.

The study also faced a number of limitations with regards to methodology. These are discussed in detail under Chapter 3, Research Methodology. A major funding-related methodological limitation was the ability to conduct field visits to only three study countries. The in-country field visits were beneficial, as they helped the researcher to understand the national level issues better based on face-to-face discussions with officials of relevant ministries and companies. In contrast, the researcher spent considerable time trying to arrange interviews with maritime administrations officials from other Pacific states on the sides of various international and regional meetings in Fiji, Tonga, and UK. Where this mode of communication failed, telephone interviews were conducted as a last resort. Furthermore, the researcher had to be mindful of the sensitivities involved with interviewing government officials. In such cases, it was not possible to record interviews using audiotape, which is a common strategy in qualitative research.

A major setback for the study was not being able to use the MEPC meeting transcripts, even though the researcher had access to the recordings being part of Pacific delegations at MEPC 69, 70 and 71. The IMO restricts use of information from the transcript recordings, in particular information on country positions of IMO member states while negotiations are in progress. To overcome this limitation, the researcher used information that was publicly available from the IMO website, such as reports of MEPC meetings, participants' lists and meeting papers. Information on country positions of Pacific states at the IMO negotiations was confirmed during semi-formal

interviews with the government officials and verified by personal observation during the negotiations. Other publicly available documents and papers have been used to ascertain positions and views of other IMO member states.

8.4 Future research

This study is the first to document the evolution of the Pacific's role in decarbonisation of the international shipping sector and brought attention to areas that need further strengthening. Going forward, future research studies should look at assessing the potential resource implications associated with implementing the final IMO GHG Strategy in Pacific states. Ideally, this potential study should be conducted before the final IMO GHG Strategy comes into force in the year 2023. It should include a comprehensive assessment of the financial implications, economic impacts, human resource requirements, and regulatory requirements. Resource constraints have been identified as a major limiting factor for many Pacific states. Therefore, it is important to identify the blocks to implementing a new global policy at the national level. The study could entail undertaking a comparative analysis of all IMO Pacific member states, or assessments of individual countries.

8.5 Recommendations

This study concludes that, in recent years, the role of Pacific states in decarbonising the international shipping sector has become increasingly visible, and highly influential. This is particularly evident in the shipping emissions negotiations at IMO. However, the study also found that the efforts of Pacific states to decarbonise the international shipping sector were limited by factors such as lack of resources, lack of political will or priority, open registry influences, and lack of a uniform dialogue platform at the regional level. In an attempt to address these limitations, and further strengthen the role of Pacific states in decarbonising the international shipping sector, this study recommends the following:

- (i) *The head of the maritime administration be appointed as the lead negotiator for respective Pacific state governments in IMO shipping emissions negotiations*

To enact this recommendation, a number of factors need to be considered. Firstly, governments need to review current arrangements for representation of Pacific states at IMO shipping emissions negotiations, and initiate dialogue with relevant parties to bring about the desired change. In addition, the government should consider increasing budget allocations to maritime administrations in order to allow the most appropriate government official to lead IMO negotiations. Pacific states that are represented at the IMO negotiations by registry management companies should consider renegotiating contracts with this party to shift the lead negotiator role to the head of the maritime administration. The registry management company could also consider funding the participation of maritime administration representatives to MEPC sessions. Furthermore, governments need to review and amend relevant maritime legislation in order to strengthen their respective maritime administration's lead role in MEPC negotiations. At present, registry management companies have full legal authority to represent the respective Pacific state governments at IMO meetings.

(ii) *A long-term sustainable financing mechanism needs to be developed to improve resourcing issues within maritime administrations*

A well-resourced maritime administration is better placed to meet the demands associated with implementation of international maritime policies. This study identified a number of factors that constrain the maritime administrations in the Pacific, such as low staff numbers, low budget allocations and lack of expertise. The study also finds that there is no long-term funding mechanism to advance efforts relating to decarbonisation of the international shipping sector. A sustainable source of funding will allow the Pacific state governments to increase the size of their delegations to IMO negotiations, improve technical expertise, and advance work relating to implementation of the IMO GHG Strategy.

The study noted that a number of funding streams became available to Pacific states in 2017, which increased financial and technical support towards participation at IMO negotiation. This included funding from PIFS and the bilateral agreements between some Pacific states and European countries. However, these were one-off or short-term funding streams, and did not benefit all Pacific states. For continued involvement

of all Pacific states in IMO negotiations, the study recommends that certain Pacific state governments develop a long-term financing strategy and consider increasing budget allocations to maritime administrations or seek long-term funding from donors and development partners. Open registry countries have an option of negotiating additional funds from the registry management companies.

(iii) Pacific states need to undertake a review of their respective national development plans and relevant sector plans in order to mainstream and harmonise provisions for shipping emissions across these policies.

With the exception of Fiji, none of the national development plans of Pacific states mention efforts to support decarbonisation of the international sector. Some Pacific states, such as the Marshall Islands and the Solomon Islands, are strong advocates of reducing emissions from the international shipping sector, and yet their national policies do not reflect the same effort. This is clearly an area that needs strengthening. The study also noted the need to harmonise provisions for domestic shipping emissions across all relevant national policies, as major disparities exist in various documents.

(iv) A regional strategy for decarbonisation of the international shipping sector should be developed and implemented in consultation with all Pacific member states

The Pacific states have never convened as a bloc to deliberate on the international shipping emissions issue at the regional level. The problem lies in the lack of a regional platform for dialogue on this particular issue. The PIDF is leading regional efforts to support Pacific states in the reduction of international shipping emissions. Because its membership does not extend to all Pacific states, PIDF has not succeeded in bringing these nations to the same regional forum. This study questions the suitability of various regional agencies to lead the development of a regional strategy for decarbonisation of the international shipping sector. There are pros and cons associated with how PIDF, SPC and SPREP have treated the matter in the past and the potential of each to advance efforts in the future. Regardless of which agency takes lead in developing the regional strategy, it is important that it proceeds in consultation with all Pacific states and relevant regional agencies. There are certain benefits of enacting a regional strategy

for decarbonising the international shipping sector. Firstly, it will send a clear signal to the international community that the international shipping emissions issue falls on the list of regional priorities in the Pacific. Secondly, the strategy will provide a sound rationale for organisations to seek long-term funding from donors, which is crucial for sustaining their efforts in decarbonising the international shipping sector.

Reference

- ADB. (2007). *Oceanic voyages: Shipping in the Pacific*. Manila, Philippines: Asian Development Bank.
- ADB. (2013). *The economics of climate change in the Pacific*. Retrieved from <https://www.adb.org/sites/default/files/publication/31136/economics-climate-change-pacific.pdf>
- ADB. (2014). *Renewable Energy Sector Project: Report and Recommendation of the President*. Retrieved from <https://www.adb.org/projects/documents/renewable-energy-sector-project-rrp>
- ADB. (2019). *Pacific Economic Monitor*. May 2019. Retrieved from <https://www.adb.org/sites/default/files/publication/498406/pem-may-2019.pdf>
- Åhman, M. (2008). Why international transport needs a sectoral approach. In C. Egenhofer (Ed.), *Beyond Bali strategic: Issues for the post-2012 climate change regime* (pp. 146–155).
- Albert, S., Leon, J. X., Grinham, A. R., Church, J. A., Gibbes, B. R., & Woodroffe, C.D. (2016). Interactions between sea-level rise and wave exposure on reef island dynamics in the Solomon Islands. Published 6 May 2016. *Environmental Research Letters*, 11(5). Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/11/5/054011>
- Anderson, K., & Bows, A. (2012). Executing a Scharnow turn: Reconciling shipping emissions with international commitments on climate change, *Carbon Management*, 3:6, 615–628. doi: 10.4155/cmt.12.63
- AusAID. (2011). *Climate Change in the Pacific: Scientific assessment and new research, Volume 2: country reports*. Retrieved from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwir5P7ywZLhAhUL4o8KHXg-BuIQFjAAegQIAhAC&url=https%3A%2F%2Fwww.pacificclimatechangescience.org%2Fwp-content%2Fuploads%2F2013%2F09%2FVolume-2-country-reports.pdf&usg=AOvVaw1ATKI98YjrMhFXYJDm78s7>
- Australia Industry Standards. (2018). Maritime Industry 2018: Key findings discussion paper. Retrieved from <http://www.australianindustrystandards.org.au/wp-content/uploads/2018/02/Maritime-Key-Findings-Paper2018V7Web.pdf>
- Beetz, A. (2017). Presentation at MTCC Regional Meeting. 12 December 2017, Suva, Fiji. Retrieved from <http://mtccpacific.spc.int/wp-content/uploads/2018/05/Annex-4-Presentations-min.pdf>
- Behnam, A. & Faust, P. (2003). Twilight of flag state control. In *Ocean Yearbook* 17:167 – 192. Chicago, United States: The University of Chicago.
- Belgium, France, Germany, Kiribati, the Marshall Islands, the Netherlands, Solomon Islands, Tonga, Tuvalu & ICHCA. (2017). *Impacts of GHG reduction measures on transport costs and on States*. Paper MEPC 71/7/8 presented to the Seventy-First session of the Marine Environment Protection Committee, June/July 2017, IMO, London, United Kingdom. Accessed from IMODOCS <http://docs.imo.org/>

- BIMCO. (2015). *Manpower Report*. The global supply and demand for seafarers in 2015. Retrieved from <http://www.ics-shipping.org/docs/default-source/resources/safety-security-and-operations/manpower-report-2015-executive-summary.pdf?sfvrsn=16>
- BIMCO. (2017). *Update of maritime greenhouse gas emission projections – full report*. Paper MEPC 71/INF.34. 28 April 2017. Available from www.imo.org/en/About/Pages/DocumentsResources.aspx
- Bloomberg, L. & Volpe, M. (2012). *Completing Your Qualitative Dissertation: A Roadmap From Beginning to End*, Second Edition. California, United States: Sage Publications.
- Bodansky, D. (2016). *Regulating greenhouse gas emissions from ships: the role of the International Maritime Organization*. Retrieved from <https://ssrn.com/abstract=2813785>.
- Bodansky, D. (1994). Prologue to the Climate Change Convention. In I. M. Mintzer & J. A. Leonard (Eds), *Negotiating Climate Change, the inside story of the Rio Convention* (pp. 45–74). London, England: Cambridge University Press. Available from https://books.google.com.fj/books/about/Negotiating_Climate_Change.html?id=RmcOplNX1ZgC&printsec=frontcover&source=kp_read_button&redir_esc=y#v=onepage&q&f=false
- Bows-Larkin, A. (2015). All adrift: aviation, shipping, and climate change policy. *Climate Policy*, 15(6), (pp. 681–702). doi: 10.1080/14693062.2014.965125
- Bows-Larkin, A., Anderson, K., Mander, S., & Traut, M. (2015). Shipping charts a high carbon course. *Nature Climate Change*, (5), (pp. 293–295). doi:10.1038/nclimate2532
- Bows-Larkin, A., Smith, T., & Wrobel P. (2016). Shipping in changing climates, *Marine Policy*. doi: <http://dx.doi.org/10.1016/j.marpol.2016.05.033i>.
- British Broadcasting Corporation. (5 August 2014). *Why so many shipowners find Panama's flag convenient*. Retrieved from <http://www.bbc.com/news/world-latin-america-28558480>
- Brun, A. (2016). Conference Diplomacy: The Making of the Paris Agreement. *Politics and Governance*, 4 (3), (pp.115-123). doi: 10.17645/pag.v4i3.649
- Brundtland, G. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. United Nations General Assembly document A/42/427. Retrieved from <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- Buhaug, Ø., Corbett, J.J., Endresen, Ø., Eyring, V., Faber, J., Hanayama, S., Lee, D.S., Lee, D., Lindstad, H., Markowska, A.Z., Mjelde, A., Nelissen, D., Nilsen, J., Pålsson, C., Winebrake, J.J., Wu, W., & Yoshida, K. (2009). *Second IMO GHG Study 2009*. International Maritime Organization (IMO) London, UK. Retrieved from <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/SecondIMOGHGStudy2009.pdf>
- Cames, M., Graichen, J., Siemons, A., & Cook, V. (2015). *Emission reduction targets for international aviation and shipping*. European Parliament. Retrieved from [http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU\(2015\)569964](http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2015)569964)

- Carter, G. (2016). Establishing a Pacific voice in climate change negotiations. In G. Fry & S. Tarte (Eds.), *The New Pacific Diplomacy* (pp. 205–220). ANU press and USP press: Canberra and Suva.
- Castro, F. G., Kellison, J. G., Boyd, S. J., & Kopak, A. (2010). A Methodology for Conducting Integrative Mixed Methods Research and Data Analyses. *Journal of mixed methods research*, 4(4), (pp. 342–360). Retrieved from <https://doi.org/10.1177/1558689810382916>
- CEBR. (2017). *The economic contribution of the UK maritime sector*. Report prepared for Maritime UK. Retrieved from <https://www.maritimeuk.org/value/maritime-sector-all/>
- CE Delft. (2017). *Update of maritime greenhouse gas emission projections*. Retrieved from <https://www.cedelft.eu/en/publications/2056/update-of-maritime-greenhouse-gas-emission-projections>
- Chambers, S. (8 November 2017). *ICS lashes out at unrealistic Marshall Islands emissions cut proposal*. Retrieved from <http://splash247.com/ics-lashes-unrealistic-marshall-islands-emission-cut-proposals/>
- Chen, H., Rauqueque, L., Singh, S. R., & Yang, Y. (2014). *Pacific Island Countries: In Search of a Trade Strategy*. IMG Working Paper WP/14/158. Retrieved from <https://www.imf.org/external/pubs/ft/wp/2014/wp14158.pdf>
- Chircop, A., Doelle, M., & Gauvin, R. (2018). *Shipping and Climate Change: International Law and Policy Considerations*. Special Report. Retrieved from https://www.cigionline.org/sites/default/files/documents/Shipping%27s%20contribution%20to%20climate%20change%202018web_0.pdf
- Chrysostomou, A., & Vågslid, E. (2012). Climate change: A challenge for IMO too. In R. Asariotis & H. Benamara (Eds.), *Maritime transport and the climate change challenge* (pp. 75–111). Geneva, Switzerland: United Nations.
- CIA. (2018). *CIA World Factbook and other sources*. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/>
- Clark, P. (2003). *Economic tracer study for Pacific Islands seafarers' expenditures*. Suva, Fiji: Secretariat of the Pacific Community.
- Climate Analytics. (2017). *Synthesis of the LDCs' NDCs Analysis*. Retrieved from https://climateanalytics.org/media/synthesis_of_the_ldcs_ndcs_analysis_impact_2017_10.04.pdf
- Climate Home News (2017). *The tax-free shipping company that took control of a country's UN mission*. Retrieved from <https://www.climatechangenews.com/2017/07/06/tax-free-shipping-company-took-control-countrys-un-mission/>
- Cook Islands Office of the Prime Minister. (2011). *The Cook Islands Renewable Electricity Chart April 2011*. Retrieved from http://www.mfem.gov.ck/images/MFEM_Documents/DCD_Docs/Renewable_Energy/Cook_Islands_Renewable_Electricity_Chart_-_Final_April_2012.pdf
- COP23. (2017). *Key Achievements from COP23*. 18 November 2017. Retrieved from <https://cop23.com.fj/key-achievements-cop23/>

- COP23. (2019). *How Fiji is Affected by Climate Change*. Retrieved from <https://cop23.com.fj/fiji-and-the-pacific/how-fiji-is-affected-by-climate-change/>
- Creswell, J. W. (1995). *Research design: Qualitative and quantitative approaches*. California, United States: Sage Publications.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. California, United States: Sage Publications.
- Creswell, J. W., & Clark, V. L. P. (2011). *Designing and Conducting Mixed Methods Research*. California, United States: Sage Publications.
- CSC. (2014). *IMO succumbs to pressure to delay ship NOx regulations*. Retrieved from <http://www.cleanshipping.org/?p=16>
- Darby, M. (16 November 2017). *Marshall Islands president says shipping registry supports climate action*. Retrieved from <http://www.climatechangenews.com/2017/11/16/marshall-islands-president-says-shipping-registry-supports-climate-action/>
- David, C. (2019). *Accelerating the energy transition in shipping and beyond*. Retrieved from <https://www.maersk.com/news/articles/2019/09/23/accelerating-the-energy-transition-in-shipping-and-beyond>
- Davidson, M., & Faber, J. (2012). *Market-based instruments to reduce greenhouse gas emissions from ships: Taxonomy and assessment*. Maritime transport and the climate change challenge. In R. Asariotis & H. Benamara (Eds.), *Maritime transport and the climate change challenge* (pp. 148–164). Geneva, Switzerland: United Nations.
- Davis, M. & Sugden, C. (2010). *Macroeconomics impact of energy prices in the Pacific*. Retrieved from https://www.pftac.org/content/dam/PFTAC/Documents/Useful%20Links/Regional%20Papers/PFTAC_Energy_Prices.pdf
- Department of Transport UK. (2019). *Maritime 2050*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/773178/maritime-2050.pdf
- DFAT. (2018). *Pacific Regional—Effective regional institutions*. Retrieved from <https://dfat.gov.au/geo/pacific/development-assistance/Pages/effective-governance-pacific-regional.aspx>
- Djoghla, A. (1994). The beginning of an international climate law. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating Climate Change, the inside story of the Rio Convention* (pp. 97–112). Cambridge, Great Britain: Cambridge University Press.
- Dornan, M., & Pryke, J. (2017). Foreign Aid to the Pacific: Trends and Developments in the Twenty-First Century. *Asia & the Pacific Policy Studies*, 4 (3), (pp. 386–404). doi: 10.1002/app5.185
- Endresen, Ø., Sørgård, E., Sundet, J. K., Dalsøren, S. B., Isaksen, I. S. A., Berglen, T. F., & Graver, G. (2003). Emission from international sea transportation and environmental impact. *Journal of Geophysical Research*, 108(D17), 4560. doi: 10.1029/2002JD002898.

- European Commission. (2017). *Reducing emissions from the shipping sector*. Retrieved from https://ec.europa.eu/clima/policies/transport/shipping_en
- Englert, D. (2018). *Charting a course for GHG emissions and the shipping sector*. Retrieved from <https://blogs.worldbank.org/climatechange/charting-course-ghg-emissions-and-shipping-sector>
- Faber, J., Markowska, A., Eyring, V., Cionni, I., & Selstad, E. (2010). *A Global Maritime Emissions Trading System: Design and Impacts on the Shipping Sector, Countries and Regions*. Berlin, Germany: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety).
- Faure, M., Gupta, J., & Andries, N (Eds.) (2003). Climate Change and the Kyoto Protocol: The Role of Institutions and Instruments to Control Global Change. *Ecological Economics*, 51(s 3–4), (pp. 297–298). doi: 10.1016/j.ecolecon.2004.07.002
- Febin, A. K. (2007). *Evolution of flags of convenience*. Shipping Law Notes blog post. Retrieved from <http://shippinglawtimes.blogspot.com/2007/12/evolution-of-flags-of-convenience.html>
- Fiji Sun. (3 October 2018). *Maritime sector contributes \$25 million to Economy: Hill*. Retrieved from <https://fijisun.com.fj/2018/10/03/maritime-sector-contributes-25m-to-economy-hill/>
- Fossen, A.B.V. (1992). *The International Political Economy of Pacific Islands Flags of Convenience*. Queensland, Australia: Griffith University.
- Fossen, A.B.V. (2012). *Tax havens and sovereignty in the Pacific Islands*. Retrieved from <https://books.google.com.fj/books?id=pOdvLS954qsC&pg=RA2-PA1987&lpg=RA2-PA1987&dq=when+was+the+Tonga+open+registry+established&source=bl&ots=IVhIutBwbN&sig=Iu07YFGGXiyN1sqQKZdBNP7nO8A&hl=en&sa=X&ved=2ahUKEwjV3IjkteLeAhVEK48KHcYxAKkQ6AEwCXoECAAAQ#v=onepage&q=when%20was%20the%20Tonga%20open%20registry%20established&f=false>
- France Ministry of Ecological and Inclusive Transition. (2019). *Tony deBrum Declaration: The necessary contribution of maritime transport to the fight against greenhouse gas (GHG) emissions*. Retrieved from <https://www.ecologique-solidaire.gouv.fr/declaration-tony-debrum-necessaire-contribution-du-transport-maritime-lutte-contre-emissions-gaz>
- Fry, G. & Tarte, S. (2016). The ‘New Pacific Diplomacy’: An introduction. In G. Fry & S. Tarte (Eds.), *The New Pacific Diplomacy* (pp. 3–20). Canberra, Australia and Suva, Fiji: ANU press and USP press.
- Gao, M. (2013). *China – the world’s largest shipbuilder after skyrocketing 3.2 growth*. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiLn7OU3LPjAhWJdd4KHV3IA2kQFjAAegQIARAC&url=http%3A%2F%2Fwww.cb-smartcomp.eu%2Fdownload.php%2Fdms%2Fsmartcomp%2Fresearch%2FSmartComp%2520Research%2520Report%25203%252C%2520October%25202013.pdf&usg=AOvVaw1xSYzU66HL1690_nL_sNdA

- Gibson, J., & Nero, K. (200X). *Are Pacific Island Economies Growth Failures? Geo-Political Assessments and Perspectives*. Christchurch, New Zealand: Macmillan Brown Centre for Pacific Studies.
- Goodwin, A. (2016). *The economic value of shipping and maritime activity in Europe*. Retrieved from https://www.oecd.org/sti/ind/Session%20_c%20-%20Andrew%20Goodwin%20-%20Presentation%20for%20Website.pdf
- Goldie, L.F.E. (1991). Environmental Catastrophes and Flags of Convenience - Does the Present Law Pose Special Liability Issues? *Pace International Law Review*, 3 (1). Retrieved from <http://digitalcommons.pace.edu/pilr/vol3/iss1/3>.
- Goundar, A., Rojon, R., Smith, T., & Nuttall, P. (2016). *Analysis and summary report*. Report based on the outcomes of the 69th Session of Marine Environment Protection Committee, International Maritime Organization, Agenda Item 7: Reduction of GHG Emissions from Ships. Restricted report.
- Goundar, A., Newell, A., Nuttall, P., Rojon, I., & Samuwai, J. (2017). King Canute Muses in the South Seas: Why aren't Pacific Islands transitioning to low carbon sea transport futures. *Marine Policy*, 81(July 2017), (pp. 80–90). Retrieved from <https://doi.org/10.1016/j.marpol.2017.02.012>
- Goundar, A. (2009). The International Maritime Regulatory Regime and its Implications for Pacific Island countries. Unpublished Master's Thesis. Suva, Fiji: The University of the South Pacific.
- Goulding, N. (2016). Marshalling a Pacific response to climate change. In G. Fry & S. Tarte (Eds.), *The New Pacific Diplomacy*, (pp. 191–204). Canberra, Australia and Suva, Fiji: ANU press and USP press:
- Cook Islands Government. (2016). *National Sustainable Development Plan 2016–2020*. Retrieved from http://www.mfem.gov.ck/images/documents/CEO_docs/Other%20Documents/National-Sustainable-Development-Plan_2016-2020.pdf
- Government of the Federated States of Micronesia (2004). *National Strategic Plan 2004–2023*. Retrieved from <http://prdrse4all.spc.int/content/fsm-strategic-development-plan-2004-2023>
- Government of Fiji. (2014). *The Green Growth Framework of Fiji*. Retrieved from <https://pafpnet.spc.int/pafpnet/attachments/article/475/GREEN%20GROWTH%20FRAMEWORK.PDF>
- Government of Fiji. (2017). *5-year and 20-year National Development Plan (2017–2021 and 2017–2036)*. Retrieved from <https://www.fiji.gov.fj/getattachment/15b0ba03-825e-47f7-bf69-094ad33004dd/5-Year-20-Year-NATIONAL-DEVELOPMENT-PLAN.aspx>
- Government of Kiribati. (2016). *Kiribati Development Plan 2016–2019*. Retrieved from <http://www.mfed.gov.ki/publications/kiribati-development-plan-2016-2019>
- Government of the Marshall Islands. (2014). *National Strategic Plan 2015–2017*. Retrieved from <https://rmi-data.sprep.org/dataset/rmi-national-strategic-plan/resource/785be152-545f-4506-9726-d7bab6918690>

- Government of Nauru. (2005). *National Sustainable Development Strategy 2005–2025*. Retrieved from <https://nauru-data.sprep.org/dataset/national-sustainable-development-strategy-2005---2025>
- Government of Niue. (2016). *Niue National Strategic Plan 2016–2026*. Retrieved from <https://pacific-data.sprep.org/dataset/niue-national-strategic-plan-2016-2026>
- Government of Palau. (2020). *Palau 2020 National Master Development Plan*. Retrieved from <https://www.pacificclimatechange.net/document/palau-202-national-master-development-plan>
- Government of PNG. (2010). *Papua New Guinea Development Strategic Plan, 2010-2030*. Retrieved from <https://www.pacificclimatechange.net/document/papua-new-guinea-development-strategic-plan-2010-2030>
- Government of Samoa. (2016). *Strategy for the Development of Samoa 2016/17–2019/20*. Retrieved from <https://www.pacificclimatechange.net/document/strategy-development-samoa-201617-201920>
- Government of Solomon Islands. (2016). *Solomon Islands National Development Strategy 2016-2035*. Retrieved from <https://www.pacificclimatechange.net/document/solomon-islands-national-development-strategy-2016-2035>
- Government of Tonga. (2015). *Tonga Strategic Development Framework (TSDF)*. Retrieved from <https://www.pacificclimatechange.net/document/tonga-strategic-development-framework-tsdf>
- Government of Tuvalu. (2016). *TE KAKEEGA III: National Strategy for Sustainable Development 2016 to 2020*. Retrieved from <https://www.adb.org/sites/default/files/linked-documents/cobp-tuv-2017-2019-ld-02.pdf>
- Government of Vanuatu. (2016). *Vanuatu 2030: The People's Plan (National Sustainable Development Plan 2016–2030)*. Retrieved from <https://www.gov.vu/en/publications/vanuatu-2030/26-national-sustainable-development-plan-2016-to-2030>
- Gregory, W.R. (2012). *Flags of Convenience: The Development of Open Registries in the Global Maritime Business and Implications for Modern Seafarers*. Master thesis, unpublished. Washington, United States: Georgetown University.
- Herman, L.L. (1978). Flags of Convenience – New Dimensions to an Old Problem. *McGill Law Journal*, 21 (No. 1). Montreal, Canada.
- Holland, E. A., Nuttall, P., and Newell, A., Prasad, B. C., Veitayaki, J., Bola, A., & Kaitu'u, J. (2014). Connecting the dots: policy connections between Pacific Island shipping and global CO₂ and pollutant emission reduction. *Carbon Management*, 5 (1), (pp. 93-105). ISSN 1758-3004. doi: 10.4155/cmt.13.78
- Hosanee, N. M. (2009). *A critical analysis of flag state duties as laid down under Article 94 of the 1982 United Nations Convention on the Law of the Sea Convention*. Retrieved from https://www.un.org/Depts/los/nippon/unnff_programme_home/fellows_pages/fellows_papers/hosanee_0910_mauritious.pdf
- Hossain, K.A., Zakaria, N.M.G., & Sarkar, M.A.R. (2017). *Swot analysis of China Ship Building Industry by Third Eyes*. doi:10.1016/j.proeng.2017.08.141

- Hinchliffe, P. (2012). International shipping and climate change. In R. Asariotis & H. Benamara (Eds.), *Maritime transport and the climate change challenge*, (pp. 209–213). Geneva, Switzerland: United Nations.
- Hummels, D. (2007). Transportation costs and international trade in the second era of globalization. *Journal of Economic Perspectives*, 21 (3), (pp. 131–154). Retrieved from <https://www.aeaweb.org/articles?id=10.1257/jep.21.3.131>
- ICCT. (2017). *Greenhouse gas emissions from global shipping, 2013–2015*. Retrieved from https://theicct.org/sites/default/files/publications/Global-shipping-GHG-emissions-2013-2015_ICCT-Report_17102017_vF.pdf
- ICS. (2015). *An inquiry into the increasing use of so-called flag of convenience shipping in Australia*. Available from www.ics-shipping.org
- IEA. (2019). *Global Energy and CO₂ Status Report*. Retrieved from <https://www.iea.org/geco/>
- IISD. (2018) Bonn Highlights. *Earth Negotiations Bulletin*, 12 (717). Retrieved from <https://enb.iisd.org/vol12/enb12717e.html>
- IMF. (2014). *Tuvalu: 2014 Article IV Consultation - Staff Report; Press Release; and Statement by the Executive Director for Tuvalu*. Retrieved from <https://books.google.com.fj/books?id=E2zRCQAAQBAJ&pg=PA27&lpg=PA27&dq=seafarer+remittance+Kiribati&source=bl&ots=iLdEYeQFFk&sig=ACfU3U1jcxfeu4cRZeQO0i41jDQxbaS59Q&hl=en&sa=X&ved=2ahUKEwj0-YDgquLoAhU8xIsBHXLEDo4Q6AEwB3oECAsQJg#v=onepage&q=seafarer%20remittance%20Kiribati&f=false>
- IMO. (1998). *Report of the Marine Environment Protection Committee on its Forty-Second Session*. Document MEPC 42/22 (November 1998). Available from IMODOCS <http://docs.imo.org/>
- IMO. (1999). *Report of the Marine Environment Protection Committee on its Forty-Third Session*. Document MEPC 43/21 (July 1999). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2000a). *Study of Greenhouse Gas Emissions from Ships*. London, Great Britain: International Maritime Organization.
- IMO. (2000b). *Report of the Marine Environment Protection Committee on its Forty-Fourth Session*. Document MEPC 44/20 (March 2000). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2001). *Report of the Marine Environment Protection Committee on its Forty-Sixth session*. Document MEPC 46/23 (May 2001). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2006a). *Report of the Marine Environment Protection Committee on its Fifty-Fifth Session*. Document MEPC 55/23 (October 2006). Available from IMODOCS <http://docs.imo.org/>

- IMO. (2008a). *Report of the Marine Environment Protection Committee on its Fifty-Seventh Session*. Document MEPC 57/21 (April 2008). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2008b). *Report of the Marine Environment Protection Committee on its Fifty-Eight Session*. Document MEPC 58/23 (October 2008). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2011). Main events in IMO's work on limitation and reduction of greenhouse gas emissions from international shipping. Retrieved from <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Main%20events%20IMO%20GHG%20work%20-%20October%202011%20final.pdf>
- IMO. (2014). *IMO Policies and Practices related to the Reduction of Greenhouse Gas Emissions from Ships*. London, Great Britain: International Maritime Organization.
- IMO. (2015). *IMO Secretary-General welcomes adoption of Sustainable Development Goals*. IMO Briefing: 41 27/09/2015. Retrieved from <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/41-SDGS.aspx>
- IMO. (2015b). *Report of the Marine Environment Protection Committee on its Sixty-Eighth session*. Document MEPC 68/21 (November 2015). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2016). *Report of the Marine Environment Protection Committee on its Sixty-Ninth session*. Document MEPC 69/21 (May 2016). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2017a). *The need for a high level of ambition within the comprehensive IMO strategy on reduction of GHG emissions from ships*. Paper MEPC 71/7/3 presented to the Seventy-First Session of the Marine Environment Protection Committee, July 2017, London. Available from IMODOCS <http://docs.imo.org/>
- IMO. (2017b). *Global climate rules vital for shipping*. Retrieved from <http://www.imo.org/en/MediaCentre/WhatsNew/Pages/default.aspx>
- IMO. (2017c). Historic background. IMO and UNFCCC policy framework. Retrieved from: <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Historic%20Background%20GHG.aspx>
- IMO. (2018a). *IMO GHG Strategy on the Reduction of GHG Emissions from Ships*. Retrieved from [http://www.imo.org/en/OurWork/Documents/Resolution%20MEPC.304\(72\)%20on%20Initial%20IMO%20Strategy%20on%20reduction%20of%20GHG%20emissions%20from%20ships.pdf](http://www.imo.org/en/OurWork/Documents/Resolution%20MEPC.304(72)%20on%20Initial%20IMO%20Strategy%20on%20reduction%20of%20GHG%20emissions%20from%20ships.pdf)
- IMO. (2018b). Status of conventions – ratifications by state. Available from <http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx>
- IMO. (2018c). *Report of the Marine Environment Protection Committee on its seventy second session*. Document MEPC 72/17 (May 2018). Available from IMODOCS <http://docs.imo.org/>

- IMO. (2019a). *Report of the Marine Environment Protection Committee on its seventy fourth session*. Document MEPC 74/18 (June 2019). Available from IMODOCS <http://docs.imo.org/>
- IMO. (2019b). FAQs (why does it sometimes take a long time for IMO measures to take effect. Retrieved from <http://www.imo.org/en/About/Pages/FAQs.aspx>
- IMO. (2019c). *Market-based measures*. Retrieved from <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Market-Based-Measures.aspx>
- IMODOCS. (2018). Reports of MEPC meetings. Available from (via login): <http://www.imo.org/en/About/Pages/DocumentsResources.aspx>
- Influence Map. (2018). *Decision time for the IMO on climate*. Retrieved from http://greenbusiness.solutions/wp-content/uploads/2018/07/IMO_Shipping_Report_2018.pdf
- IPPC. (2001). *IPCC Third Assessment Report. Working Group II: Impacts, Adaptation and Vulnerability*. Retrieved from <http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=637>
- IPPC. (2018). *Global Warming of 1.5°C*. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Summary for Policymakers. Retrieved from https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf
- ISWG-GHG 2. (2017). *Development of draft text for inclusion in the initial IMO GHG strategy*. Paper submitted by Kiribati, the Marshall Islands, Solomon Islands and Tuvalu to the second session of the Intersessional Meeting of the Working Group on Reduction of GHG Emissions from Ships (November 2017). Retrieved from <https://www.mcst-rmiusp.org/index.php/resources/reference-library/send/38-pacific-sponsored-submissions/412-iswg-ghg-2-3-kiribati-et-al>
- ITF. (2019). *Maritime Subsidies: Do They Provide Value for Money?* Retrieved from <https://www.itf-oecd.org/sites/default/files/docs/maritime-subsidies-value-for-money.pdf>
- Jaganathan, J. (2018). Australia grabs world's biggest LNG exporter crown from Qatar in Nov. Retrieved from <https://www.reuters.com/article/us-australia-qatar-lng/australia-grabs-worlds-biggest-lng-exporter-crown-from-qatar-in-nov-idUSKBN1O907N>
- James, R.E. (1947). The South Pacific Commission. *Pacific Affairs*, 20 (2), (pp. 193–198). Retrieved from <https://www.jstor.org/stable/2752322>
- Johnson, G. (2017). *New University of the South Pacific Marshall Islands Campus set to open*. Retrieved from <http://www.pireport.org/articles/2017/05/01/new-university-south-pacific-marshall-islands-campus-set-open>
- Jouttenus, A. (2013). *The Philippines – famous seafarer supplier updating its maritime education*. Retrieved from: <https://www.utu.fi/en/units/tse/units/PEI/research/Documents/SmartComp%20Research%20Report%20October%202013%20final.pdf>
- Kachi, A., Mooldijk, S., & Warnecke, C. (2019). *Matters relating to compensation for SIDS and LDCs are still under negotiation at IMO*. Retrieved from

<https://newclimate.org/wp-content/uploads/2019/04/Carbon-pricing-options-for-international-maritime-emissions.pdf>

- Keeling, C. D. (1960). *The concentration and isotopic abundances of carbon dioxide in the atmosphere*. Retrieved from http://scrippsco2.ucsd.edu/assets/publications/keeling_tellus_1960.pdf
- King, E. (2015). Tony de Brum: The emerging climate champion at COP21. *Climate Home*. Retrieved from <http://www.climatechangenews.com/2015/12/10/tony-de-brum-the-emerging-climate-champion-at-cop21/>
- Kopela, S. (2014). Climate Change, Regime Interaction, and the Principle of Common but Differentiated Responsibility: The Experience of the International Maritime Organization. *Yearbook of International Environmental Law*, 24 (1), (pp. 70–101). doi:10.1093/yiel/yvu064.
- Kutner, A., & Wilensky, M. (2014). *Flag state regulation of greenhouse gases; regulatory authority of flags of convenience and francised registries*. New York, United States: Columbia Law School.
- Lloyd's Register. (2016). *Low Carbon Pathways 2050*. Retrieved from <https://www.ucl.ac.uk/bartlett/energy/news/2016/oct/lloyd-register-and-shipping-changing-climates-release-low-carbon-pathways-2050-study>
- Lloyd's Register & UMAS. (2019). *Zero Emission Vessels: Transition Pathways*. Retrieved from <https://www.lr.org/en/insights/global-marine-trends-2030/zero-emission-vessels-transition-pathways/>
- OECD/ITF. (2018). *Decarbonising Maritime Transport. Pathways to zero-carbon shipping by 2035*. Retrieved from <https://www.itf-oecd.org/sites/default/files/docs/decarbonising-maritime-transport.pdf>
- Macrotrends. (2019). *Crude Oil Prices - 70 Year Historical Chart*. Retrieved from <https://www.macrotrends.net/1369/crude-oil-price-history-chart>
- Mäkinen, H. 2013. North America – two nations with a growing interest in the 4.7 Arctic. Retrieved from <https://www.utu.fi/en/units/tse/units/PEI/research/Documents/SmartComp%20Research%20Report%20October%202013%20final.pdf>
- Manoni, F.M. (2012). *Analysing the international legal framework for flag state duties: 'a Marshall Islands perspective'*. Doctor of Philosophy thesis, Faculty of Law, University of Wollongong, Australia. Retrieved from <http://ro.uoq.edu.au/theses/3617>
- MARAD. (2015). *The Economic Importance of the U.S. Shipbuilding and Repairing Industry*. Retrieved from https://www.marad.dot.gov/wp-content/uploads/pdf/MARAD_Econ_Study_Final_Report_2015.pdf
- Marshall Islands & Solomon Islands. (2017). *The need for a high level of ambition within the comprehensive IMO strategy on reduction of GHG emissions from ships*. Paper MEPC 71/7/3 presented to the Seventy-First Session of the Marine Environment Protection Committee, June/July 2017, IMO, London, United Kingdom. Available from IMODOCs <http://docs.imo.org/>

- MCST. (2020). *EU-Pacific IMO Support Project*. Retrieved from <https://www.mcst-rmiusp.org/index.php/projects/current-projects/eu-pacific-imo-support-project>
- Meyrick. (2007). *Regional: Pacific Regional Transport Analysis*. Retrieved from <https://www.adb.org/sites/default/files/project-document/66351/36661-reg-tacr.pdf>
- Milne, R. (2018). *Maersk pledges to cut carbon emissions to zero by 2050*. Retrieved from <https://www.ft.com/content/44b8ba50-f7cf-11e8-af46-2022a0b02a6c>
- Moon, J. R. (2013). *Strengthening Inter-island Shipping in Pacific Island Countries and Territories*: Background paper prepared for UNESCAP. Suva, Fiji: UNESCAP.
- Moosmann, L., Urrutia, C., Siemons, A., Cames, M., & Schneider, L. (2019). *International Climate Negotiations*. Retrieved from [https://www.europarl.europa.eu/RegData/etudes/STUD/2019/642344/IPOL_STU\(2019\)642344_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2019/642344/IPOL_STU(2019)642344_EN.pdf)
- MTCC Pacific. (2019). *MTCC-Pacific 2nd Regional Workshop* (16 –17 September 2019, Apia, Samoa). Retrieved from <https://gmn.imo.org/event/mtcc-pacific-2nd-regional-workshop-samoa/>
- Murtaugh, D. & Williams, P. (2017). *Papua New Guinea grasps at its own gas as LNG exports surge*. Retrieved from <https://www.worldoil.com/news/2017/3/6/papua-new-guinea-grasps-at-its-own-gas-as-lng-exports-surge>.
- National Parliament of Solomon Islands. (2018). *Report on the Solomon Islands Maritime Authority Bill 2018 (No.2 of 2018)*. Bill and Legislation Committee Report. Retrieved from: <http://www.parliament.gov.sb/files/committees/bills&legislationcommittee/2018/Report%20on%20the%20Solomon%20Islands%20Maritime%20Authority%20Bill%202018.pdf>
- Nauru Government (2015). *Nauru considers options to combat Neptune Shipping unfair freight costs*. Media release, 28 October 2015. Retrieved from <http://www.naurugov.nr/government-information-office/media-release/nauru-considers-options-to-combat-neptune-shipping-unfair-freight-costs.aspx>
- Newell, A., Nuttall, P., Prasad, B., & Veitayaki, J. (2016). Turning the Tide: the need for sustainable sea transport in the Pacific. *Marine Policy*. doi: 10.1016/j.marpol.2016.01.009
- NMSA. (2017). *PNG's Particularly Sensitive Sea Area (PSSA)*. Retrieved from <http://nmsa.gov.pg/environment/pngs-particularly-sensitive-sea-area-pssa/>
- Niue Ship Registry. (2018). *IMO Conventions*. Retrieved from <http://www.niueship.com/EN/Home/IMOConvention.aspx>
- Niue Statistics. (2018). *International merchandise and trade 2018*. Retrieved from <https://niue.prism.spc.int/economic/international-merchandise-and-trade/international-merchandise-and-trade-2018/>
- NOAA. (2019). *What is Ocean Acidification? National Ocean Service website*. Retrieved from <https://oceanservice.noaa.gov/facts/acidification.html>
- Nunn, P. D. (2009). Responding to the challenges of climate change in the Pacific Islands: management and technological imperatives. *Climate Research*, 40, (pp. 211–231). doi: 10.3354/cr00806

- Nuttall, P. (2012). Steering a course for the future with sticks, stones, grass and a little shark skin: the case for revitalisation of sail technology and sailing culture as a practical sea transport response to climate change and fossil fuel dependence/ supply issues in Fiji. *Journal of Pacific Studies* 2012, 32, (pp.163–75).
- Nuttall, P. (2013). *Sailing for sustainability: the potential of sail technology as an adaptation tool for Oceania. A voyage of inquiry and interrogation through the lens of a Fijian case study*. Unpublished PhD thesis. Retrieved from <https://core.ac.uk/download/pdf/41338183.pdf>
- Nuttall, P., Newell, A., Bola, A., et al. (2014a). Policy and financing – Why is sea transport currently invisible in the search for a low carbon future for Pacific Island Countries? *Front. Mar. Sci.*, 15 July 2014. doi: 10.3389/fmars.2014.00020
- Nuttall, P., Newell, A., Prasad, B., Veitayaki, J. & Holland, E. (2014b). A review of sustainable sea transport for Oceania: Providing context for renewable energy shipping for the Pacific. *Marine Policy*, 4, (pp. 283–287). doi: <http://dx.doi.org/10.1016/j.marpol.2013.06.009>
- OECD. (2001). *The Costs to users of substandard shipping*. Paris, France: Organisation for Economic Co-operation and Development.
- Okur, D. A. (2011). *The challenge of regulating greenhouse gas emissions from international shipping and the complicated principle of ‘common but differentiated responsibilities’*. Retrieved from <http://www.webb.deu.edu.tr/hukuk/dergiler/dergimiz13-1/2-deryaaydinokur.pdf>
- Oxfam. (2016). *After Paris: Climate finance in the Pacific islands*. Retrieved from <https://www.oxfam.org.au>.
- Pacific Climate Change Portal. (2018). Collection of climate change policies under countries. Retrieved from <https://www.pacificclimatechange.net/countries>
- Pacific Islands Report. (19 August 2014). *Palau International Shipping Registry includes 126 vessels*. Retrieved from <http://www.pireport.org/articles/2014/08/19/palau-international-shipping-registry-includes-126-vessels>
- PACNEWS. (2008). *Cook Islands new member of International Maritime Organisation*. Published on 05/09/2008. Retrieved from <http://www.pina.com.fj/print.php?print=news&o=5645039748c0bad607f7c6e1d3179c>.
- Palau Government. (2014). *Medium Term Development Strategy 2009-2014*. Retrieved from <http://prdrse4all.spc.int/node/4/content/palau-medium-term-development-strategy-2009-2014>
- PanamaShipRegistry.net. (2016). *Flags of Convenience – Definition*. Retrieved from <http://www.panamashipregistry.net/en/pages/flags-of-convenience-definition>
- Pashley, A. (2015). *Brazil backs ‘high ambition coalition’ to break Paris deadlock*. Retrieved from <https://www.climatechangenews.com/2015/12/11/brazil-backs-high-ambition-coalition-to-break-paris-deadlock/>
- PIDF. (2015). *Outcomes Document*. Third Summit of the Pacific Islands Development Forum (PIDF 3), Grand Pacific Hotel, Suva, Fiji, 2nd to 4th September 2015. Retrieved

from <http://pacificidf.org/wp-content/uploads/PACIFICISLANDSDEVELOPMENTFORUMTHIRDLADERSSUMMITOUTCOMEDOCUMENT.pdf>

PIDF. (1 February 2016). *The stance of the Pacific on shipping emissions*. Retrieved from <http://pacificidf.org/pidf-talanoa-the-stance-of-the-pacific-on-shipping-emissions/>

PIDF. (13 February 2018). *Fighting climate change with mclimate app*. Retrieved from <http://pacificidf.org/fighting-climate-change-with-mclimate-app-2/>.

PIDF. (14 March 2018). *Shipping emissions position paper*. Retrieved from <http://pacificidf.org/shipping-emissions-position-paper/>

PIFS. (2004). *Forum Principles on Regional Transport Services*. Retrieved from <http://www.forumsec.org/wp-content/uploads/Communiqué/2004%20Communiqué-Apia%205-7%20Aug.pdf>

PIFS. (2005). *The Pacific Plan*. Retrieved from <https://www.adb.org/sites/default/files/linked-documents/robp-pacific-2013-2015-pacific-plan.pdf>

PIFS. (2008). *Niue Declaration on Climate Change*. Retrieved from <https://www.forumsec.org/the-niue-declaration-on-climate-change/>

PIFS. (2009). *Cairns Compact on Strengthening Development Coordination in the Pacific*. Retrieved from <https://www.forumsec.org/cairns-compact-on-strengthening-development-coordination-in-the-pacific/>

PIFS. (2010). *Port Vila Declaration on Accelerating Progress on the Achievement of the Millennium Development Goals*. Retrieved from <https://www.forumsec.org/port-vila-declaration-on-accelerating-progress-on-the-achievement-of-the-millennium-development-goals/>

PIFS. (2011). *Waiheke Declaration for Sustainable Economic Development*. Pacific Islands Forum Secretariat: Suva.

PIFS. (2013). *Majuro Declaration on Climate Leadership*. Retrieved from <https://www.forumsec.org/wp-content/uploads/2017/11/2013-Majuro-Declaration-for-Climate-Leadership.pdf>

PIFS. (2014) *Framework for Pacific Regionalism*. Retrieved from <https://www.forumsec.org/wp-content/uploads/2017/09/Framework-for-Pacific-Regionalism.pdf>

PIFS. (2015a). *Smaller Island States Leaders' Port Moresby Declaration on Climate Change*. Retrieved from <https://www.forumsec.org/smaller-island-states-leaders-port-moresby-declaration-on-climate-change/>

PIFS. (2015b). *Pacific Islands Forum Leaders Declaration on Climate Change Action 2015*. Retrieved from <http://www.forumsec.org/wp-content/uploads/2017/11/2015-Pacific-Island-Forum-Leaders-Declaration-on-Climate-Change-Action.pdf>

PIFS. (2016a). *Framework for Resilient Development in the Pacific 2017–2030*. Retrieved from http://www.forumsec.org/wp-content/uploads/2016/09/2016-Forum-Communiqué_-Pohnpei_-FSM_-8-10-Sept.pdf

- PIFS. (2016b). *Forum Communiqué*. Forty-Seventh Pacific Islands Forum, Pohnpei, Federated States of Micronesia, 8–10 September 2016. Retrieved from http://www.forumsec.org/wp-content/uploads/2016/09/2016-Forum-Communique_-Pohnpei_-FSM_-8-10-Sept.pdf
- PIFS. (2017a). *The Pacific Roadmap for Sustainable Development*. Retrieved from <https://www.forumsec.org/wp-content/uploads/2018/10/The-Pacific-Roadmap-for-Sustainable-Development.pdf>
- PIFS. (2017b). *Forum Communiqué*. Forty-Eighth Pacific Islands Forum, Apia, Samoa, 5–8 September 2017. Retrieved from http://www.forumsec.org/wp-content/uploads/2018/02/Final_48-PIF-Communique_2017_14Sep17.pdf
- PIFS. (2018). *Forum Communiqué*. Forty-Ninth Pacific Islands Forum, Yaren, Nauru 3–6 September 2018. Retrieved from <https://www.forumsec.org/forty-ninth-pacific-islands-forum-nauru-3rd-6th-september-2018/>
- PNA (2013). PNA'S fisheries management triples revenue to its Pacific members. Retrieved from <http://www.pnatuna.com/node/38>.
- PNG LNG. (2018). Project overview. Retrieved from <https://www.pnglng.com/About/Project-overview>
- Poweles, M. (2002). Making waves in the big lagoon: The influence of Pacific Island Forum Countries in the United Nations. Retrieved from <https://www.wgtn.ac.nz/law/research/publications/about-nzaci/publications/special-issues/hors-serie-volume-ii,-2002/powles.pdf>
- Prasad, B., Veitayaki, J., Holland, E., Nuttall, Peter, N., Newell, A., Bola, A., & Kaitu'u, J. (2013). Sustainable Sea Transport Research Programme: Toward a Research-based Programme of Investigation for Oceania. *Journal of Pacific Studies* (33) 78–95. Available from https://www.researchgate.net/publication/261950305_Sustainable_Sea_Transport_Research_Programme_Toward_a_Research-based_Programme_of_Investigation_for_Oceania
- Rahim, M. M., Islam, M.T., & Kuruppu, S. (2016). Marine global shipping corporations' accountability for reducing greenhouse gas emissions in the seas. *Marine Policy* 69 (2016), (pp. 159–170). doi: <http://dx.doi.org/10.1016/j.marpol.2016.04.018>.
- Rahmstorf, S. (2012). Climate change: state of the science. In R. Asariotis & H. Benamara (Eds.), *Maritime transport and the climate change challenge* (pp. 3–11). Geneva, Switzerland: United Nations.
- Ratucadra, C. (2015). Neptune Pacific Line Rejects Nauru Claims. *Fiji Sun*. 4 November 2015. Retrieved from <https://fijisun.com.fj/2015/11/04/neptune-pacific-line-rejects-nauru-claims/>
- Roussanoglou, N. (2013). Contribution of shipping estimated at 7.3 pct of GDP. Retrieved from <http://www.ekathimerini.com/154608/article/ekathimerini/business/contribution-of-shipping-estimated-at-73-pct-of-gdp>
- Scripps. (2019). *The Early Keeling Curve*. Retrieved from http://scrippsco2.ucsd.edu/history_legacy/early_keeling_curve

- SBSTA 43. (2015). *Statement on behalf of the Group of 77 and China by Ambassador Nozipho Mxakato-Diseko from South Africa, at the Opening Plenary of 43rd Session of the Subsidiary Body for Scientific and Technological Advice (SBSTA43), Paris Climate Change Conference (Paris, France, 1 December 2015)*. Retrieved from <http://www.g77.org/statement/getstatement.php?id=151201e>
- SBSTA 48. (2018). *Adoption of the Initial IMO Strategy on Reduction of GHG Emissions from Ships*. Note by the International Maritime Organization to the forty-eighth session of the Subsidiary Body for Scientific and Technological Advice (SBSTA 48) Bonn, Germany, 30 April to 11 May 2018. Agenda item 10(c) Emissions from fuel used for international aviation and maritime transport. Retrieved from http://www4.unfccc.int/sites/SubmissionPortal/Documents/201804271056---IMO%20SBSTA%2048%20submission_final_200418.pdf
- Schoen, J. W. (11 August 2013). Liberian shipping draws scrutiny. Retrieved from <http://www.nbcnews.com/id/3072983/t/liberian-shipping-draws-scrutiny/#.XqdgoS1L2i4>
- Seidel, H. & Lal, P.N. (2010). *Economic value of the Pacific Ocean to the Pacific Island Countries and Territories*. Gland, Switzerland: IUCN 74pp. Retrieved from https://www.iucn.org/sites/dev/files/import/downloads/economic_value_of_the_pacific_ocean_to_the_pacific_island_countries_and_territories_p.pdf
- Shi, Y. (2014). Greenhouse Gas Emissions from International Shipping: The Response from China's Shipping Industry to the Regulatory Initiatives of the International Maritime Organization. *The International Journal of Marine and Coastal Law*, 29 (1), (pp. 77–115). doi: 10.1163/15718085-12341303
- Shi, Y. (2016). Reducing greenhouse gas emissions from international shipping: Is it time to consider market-based measures. *Marine Policy* 64 (2016), (pp. 123–134). Retrieved from <http://dx.doi.org/10.1016/j.marpol.2015.11.013>
- Ship&Bunker. (2018). MEPC 72: *Shipping Industry Agrees to Cut GHGs at least by 50% by 2050*. 13 April 2018. Retrieved from <https://shipandbunker.com/news/world/748778-mepc-72-shipping-industry-agrees-to-cut-ghgs-at-least-50-by-2050>
- Shorrocks, T. (1998). Lawsuit reawakens hostility. *Inter Press Service*. Retrieved from <https://www.globalpolicy.org/component/content/article/172/29939.html>
- Simon, A., Javier X.L., Alistair R. G., John A. C., Badin R, G., & Colin, D.W. (2016). Interactions between sea-level rise and wave exposure on reef island dynamics in the Solomon Islands. Published 6 May 2016. *Environmental Research Letters*, Volume 11, Number 5. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/11/5/054011>
- Slatter, C. (2016). The New Framework for Pacific Regionalism: Old kava in a new talanoa? In G. Fry & S. Tarte (Eds.), *The New Pacific Diplomacy*, (pp. 3–20). Canberra, Australia and Suva, Fiji: ANU press and USP press.
- Smith, R. (2013). Should they stay or should they go? A discourse analysis of factors influencing relocation decisions among the outer islands of Tuvalu and Kiribati. *Journal of New Zealand & Pacific Studies*, 1(1), (pp. 23–39). Retrieved from <http://irep.ntu.ac.uk/id/eprint/27118/>
- Smith, T. W. P., Jalkanen, J. P., Anderson, B. A., Corbett, J. J., Faber, J., Hanayama, S., O'Keefe, E., Parker, S.; Johansson, L., Aldous, L., Raucci, C., Traut, M., Ettinger, S.,

- Nelissen, D., Lee, D. S., Ng, S., Agrawal, A., Winebrake, J. J., Hoen, M., Chesworth, S., & Pandey, A. (2014). *Third IMO GHG Study 2014*. London, England: International Maritime Organization.
- Smith, T., Traut, M., Bows-Larkin, A., Anderson, K., McGlade, C., & Wrobel, P. (2015). CO₂ Targets, Trajectories and Trends for International Shipping. *Shipping in Changing Climates*. Retrieved from https://www.researchgate.net/publication/277889594_CO2_Targets_Trajectories_and_Trends_for_International_Shipping/download
- Smith, T., Raucci, C., Haji Hosseinloo, S., Rojon, I., Calleya, J., Suarez de la Fuente, S., Wu, P., and Palmer, K. (2016). *CO₂ emissions from international shipping: Possible reduction targets and their associated pathways*. London, Great Britain: UMAS.
- SPC. (2006). *Pacific islands region*. Retrieved from <http://www.spc.int/AC/region.htm>
- SPC. (2009a). *Study of Open Shipping Registries in the Pacific*. Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2009b). *Maritime Ministerial Communique 2009*. Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2011a). *Framework for Action on Transport Services 2011 to 2020: Improving the efficiency, effectiveness and sustainability of Pacific transport services*. Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2011b). *Communique – Inaugural Pacific Regional Meeting of Energy, ICT and Transport Ministers*. Retrieved from <https://edd.spc.int/document-download/finish/60-reports/623-inaugural-regional-meeting-of-ministers-for-energy-information-and-communication-technology-ict-and-transport-communique?lang=en>
- SPC. (2013a). *Communique – Second Pacific Regional Energy and Transport Ministers' Meeting*. Retrieved from http://prdrse4all.spc.int/system/files/14mr_second_regional_meeting_of_pacific_ministers_of_energy_and_transport_report_english.pdf
- SPC. (2013b). *SPC Economic Development Division Strategic Plan 2013–2015*. Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2014a). *The Central Pacific Shipping Commission: History, successes and lessons learnt*. Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2014b). *Guidance to Pacific Island countries and territories in the development of national maritime transport policy*. Retrieved from <http://edd.spc.int/en/document-download/finish/60-reports/1969-14pbguidance-development-national-maritime-policy-english>.
- SPC (2014c). *Sustainable maritime transport in the Pacific Islands region: Does alternative energy have a role?* Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2015). *Supporting Safe, Efficient and Sustainable Maritime Transport Systems in North Pacific Countries*. Suva, Fiji: Secretariat of the Pacific Community.
- SPC. (2016). *Pacific Islands Trade Report 2010-2014*. Retrieved from <http://www.spc.int/lrd/iact-publications>

- SPC. (2017a). *Communique – Third Pacific Regional Energy and Transport Ministers' Meeting*. Retrieved from http://prdrse4all.spc.int/sites/default/files/17_energytransport_ministers_communique_-_final_-_e.pdf
- SPC. (2017b). Presentation at MTCC Regional Meeting, 12 December 2017, Suva, Fiji. Retrieved from <http://mtccpacific.spc.int/wp-content/uploads/2018/05/Annex-4-Presentations-min.pdf>
- SPC. (2017c). Pacific Islands Data Repository. Available at <http://prdrse4all.spc.int>
- SPC. (2018). Pacific Fuel Price Monitor. Covering Quarter 2018 (January to March). Retrieved from http://prdrse4all.spc.int/sites/default/files/first_quarter_2018_pfpm.pdf
- SPC. (April 2018). *Why the Pacific is taking an integrated approach to climate change and NCDs*. Retrieved from <https://www.spc.int/updates/blog/2018/04/why-the-pacific-is-taking-an-integrated-approach-to-climate-change-and-ncds>
- SPEC. (1988). *Shipping and South Pacific Economies in the 1980's*. Suva, Fiji: Secretariat of the Pacific Community.
- SPREP. (2006). *Pacific Islands Framework for Action on Climate Change 2006-2015*. Retrieved from https://www.sprep.org/climate_change/PYCC/documents/PIFACC.pdf
- SPREP. (20 November 2014). *Pacific Regional Gathering to Reduce International Shipping Emissions*. Retrieved from <https://www.sprep.org/news/pacific-regional-gathering-reduce-international-shipping-emissions>
- SPREP. (2016). *SPREP Annual Report 2015*. Retrieved from https://www.sprep.org/attachments/Publications/Corporate_Documents/AnnRep2015.pdf
- SPREP. (10 November 2017). *Pacific region united for urgent climate action at UN climate conference*. Retrieved from <https://www.sprep.org/news/pacific-region-united-urgent-climate-action-un-climate-conference>.
- Stochniol, A. (2012). A rebate mechanism for an equitable maritime emission reduction scheme. In R. Asariotis & H. Benamara (Eds.), *Maritime transport and the climate change challenge*, (pp. 112–147). Geneva, Switzerland: United Nations.
- Strong, A. (2011). *Tackling Maritime Bunker Fuel Emissions: The Evolution of Global Climate Change Policy at the International Maritime Organization*. Unpublished Master of Arts thesis, Tufts University, Massachusetts, United States.
- Tarte, S. (2016). A New Pacific Regional Voice? The Pacific Islands Development Forum. In G. Fry & S. Tarte (Eds.), *The New Pacific Diplomacy* (pp. 79–88). Canberra, Australia and Suva, Fiji: ANU press and USP press.
- Tashakkori, A., & Teddlie, C. (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches* (Vol. 46). California, United States: Sage Publications.
- Taylor, M. (24 August 2018). *Council of Regional Organisations of the Pacific (CROP) Turns 30*. Retrieved from <https://www.forumsec.org/council-of-regional-organisations-in-the-pacific-turns-30/>

- The Commonwealth. (2018a). *Samoa: History*. Retrieved from <http://thecommonwealth.org/our-member-countries/samoa/history>
- The Commonwealth. (2018b). *Kiribati: Economy*. Retrieved from <http://thecommonwealth.org/our-member-countries/kiribati/economy>
- Third World Network. (2018). Lively exchange of views at closing of SBSTA. Retrieved from <https://twnetwork.org/climate-change/lively-exchange-views-closing-sbsta>
- Transparency International (2018). *Governance at the International Maritime Organisation: case for reform*. Retrieved from https://www.transparency.org/whatwedo/publication/governance_at_the_IMO_the_case_for_reform
- Udrea, N., Adam, B., & Jacobs, K. (2017). *Friend of High Ambition – EU/Pacific cooperation on IMO GHG emission reduction*. Presentation made to the Third Pacific Regional Energy and Transport Ministers Meeting, 24–28 April 2017, Tonga. Suva, Fiji: Secretariat of the Pacific Community.
- UN. (1998). *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. Retrieved from <https://unfccc.int/resource/docs/convkp/kpeng.pdf>
- UN. (2003). Contribution of the International Maritime Organization (IMO) to the Secretary-General's Report on Oceans and the Law of the Sea. Retrieved from https://www.un.org/Depts/los/general_assembly/contributions2004/IMO2004.pdf
- UNCTAD. (1986). *Convention on Conditions for the Registration of Ships 1986*. Article 2. Retrieved from unctad.org/en/PublicationsLibrary/tdrsconf23_en.pdf
- UNCTAD. (2015). *Review of Maritime Transport 2015*. Geneva, Switzerland: United Nations Conference of Trade and Development.
- UNCTAD. (2016). *Review of Maritime Transport 2016*. Geneva, Switzerland: United Nations Conference of Trade and Development.
- UNCTAD. (2017). *Review of Maritime Transport 2017*. Geneva, Switzerland: United Nations Conference of Trade and Development.
- UNCTAD. (2018a). *Review of Maritime Transport 2018*. Geneva, Switzerland: United Nations Conference of Trade and Development.
- UNCTAD. (2018b). UNCTAD Handbook of Statistics 2018. Retrieved from https://unctad.org/en/PublicationChapters/tdstat43_FS13_en.pdf
- UNCTAD. (2019). *Review of Maritime Transport 2019*. Geneva, Switzerland: United Nations Conference of Trade and Development.
- UNFCCC. (1999). *Report of the Subsidiary Body for Scientific and Technological Advice on its tenth session Bonn, 31 May – 11 June 1999*. Retrieved from <https://unfccc.int/documents/2248#beg>
- UNFCCC. (2015). *Paris Agreement*. Retrieved from https://unfccc.int/sites/default/files/english_paris_agreement.pdf

- UNFCCC. (2017). Nationally Determined Contributions (NDCs). Retrieved from <https://unfccc.int/nationally-determined-contributions-ndcs>
- UNFCCC. (2018). *Report of the Subsidiary Body for Scientific and Technological Advice on its forty-eight session*. Retrieved from <https://unfccc.int/process-and-meetings/conferences/bonn-climate-change-conference-april-2018/sessions/sbsta-48>
- UNFCCC. (2019a). *Chronological development under the SBSTA – archive*. Retrieved from <https://unfccc.int/sites/default/files/resource/Chronological%20development%20bunkers%20under%20the%20SBSTA.pdf>
- UNFCCC. (2019b). *Report of the Subsidiary Body for Scientific and Technological Advice on its fiftieth session*, held in Bonn from 17 to 27 June 2019. Retrieved from https://unfccc.int/sites/default/files/resource/sbsta2019_02E.pdf
- UNDP. (2017). *Financing the SDGs in the Pacific islands: Opportunities, Challenges and Ways Forward*. Retrieved from <file:///C:/Users/User/Documents/Thesis/new%20articles/Financing%20the%20SDGs%20in%20the%20Pacific%20Islands--Opportunities,%20Challenges%20and%20Ways%20Forward.pdf>
- UNEP. (2018). *Emissions Gap Report 2018*. Retrieved from http://wedocs.unep.org/bitstream/handle/20.500.11822/26895/EGR2018_FullReport_EN.pdf?sequence=1&isAllowed=y
- USP. (2014). *2nd International Sustainable Sea Transport in the Pacific Talanoa*. Conference held on 14 – 18 July 2014, USP. Suva, Fiji. Retrieved from <https://www.usp.ac.fj/index.php?id=14096>
- USP. (2015). *Micronesian Centre for Sustainable Transport. A catalyst for change*. Retrieved from https://www.mcst-rmiusp.org/images/documents/MCST_Framework.pdf
- Valentine, V. F; Benamara, H.; & Hoffman, J. (2013). Maritime transport and international seaborne trade. *Maritime Policy and Management*, 40 (3). doi: <https://doi.org/10.1080/03088839.2013.782964>
- Vladu, I., & Hackmann, B. (2012). International maritime transport under the UNFCCC process. In R. Asariotis & H. Benamara (Eds), *Maritime transport and the climate change challenge*, (pp. 61–74). Geneva, Switzerland: United Nations.
- Wilensky, M. (2014). *Authority of Pacific island states to regulate greenhouse gases from the international shipping sector*. White paper written by Columbia Law School, Sabin Centre for Climate Change. New York, United States: Columbia law School.
- World Bank. (2013). *Acting on Climate Change & Disaster Risk for the Pacific*. Retrieved from www.worldbank.org/.../Worldbank/.../Pacific%20Islands/climate-change-pacific.pdf
- World Bank. (2014). *Federated States of Micronesia Maritime Investment Project (P163922)*. Retrieved from <http://documents.worldbank.org/curated/en/633271518417232441/text/Concept-Project-Information-Document-Integrated-Safeguards-Data-Sheet.txt>
- World Bank. (2019a). *Trade summary for Papua New Guinea*. Retrieved from <https://wits.worldbank.org/countrysnapshot/en/PNG/textview>

- World Bank. (2019b). *Trade summary for Fiji*. Retrieved from <https://wits.worldbank.org/countrysnapshot/en/FJI/textview>
- World Bank. (2019c). *Trade summary for Solomon Islands*. Retrieved from <https://wits.worldbank.org/countrysnapshot/en/SLB/textview>
- World Bank Group. (2019). *Understanding the Economic Impacts of Greenhouse Gas Mitigation Policies on Shipping*. Retrieved from: <http://documents.worldbank.org/curated/en/215561546957017567/pdf/Understanding-the-Economic-Impacts-of-Greenhouse-Gas-Mitigation-Policies-on-Shipping-What-Is-the-State-of-the-Art-of-Current-Modeling-Approaches.pdf>
- Zetterberg, I. (2008). How to integrate international aviation and shipping into a global emissions trading system. In C. Egenhofer (Eds.), *Beyond Bali strategic: issues for the post-2012 climate change regime* (pp. 156).
- Zhang, H. (2016). Towards global green shipping: the development of international regulations on reduction of GHG emissions from ships. *International Environmental Agreements: Politics, Law and Economics*, 16 (4), (pp. 561–57). Retrieved from <https://link.springer.com/journal/10784/16/4/page/1>

Annex 1: List of individuals consulted during study

Name	Position/organisation	Date/place	Contact
Mr Ned Howard	Secretary, Ministry for Transport, Cook Islands	8 and 9 March 2017, Rarotonga, Cook Islands	Email: ned.howard@cookislands.gov.ck Tel: +682 28810
Mr Muraai Herman	Senior Environment and Ozone Officer, National Ozone Service, Cook Islands	8 March 2017, Rarotonga, Cook Islands	Email: muraai.herman@cookislands.gov.ck Tel: +682 21256
Mr Glen Armstrong	CEO, Maritime Cook Islands, Cook Islands	8 March 2017, Rarotonga, Cook Islands	Email: glenn@maritimcookislands.com Tel: +682 23848
Mr Joshua Mitchell	Director, United Nations and Treaties Division, Ministry of Foreign Affairs, Cook Islands	8 March 2017, Rarotonga, Cook Islands	Email: josh.mitchell@cookislands.gov.ck Tel: +682 29 347 / 76 273
Mr Willie	Climate Change Division, Office of the Prime Minister, Cook Islands	9 March 2017, Rarotonga, Cook Islands	Tel: +682 21256
Mr Nooroa (Bim) Tou	CEO, Cook Islands Ports Authority	9 March 2017, Rarotonga, Cook Islands	Email: nooroa.tou@cookislands.gov.ck Tel: +682 28810
Mr Loius Malfin	Technical Branch Manager, Department of Transportation, Communication and Infrastructure, FSM	7 November 2017 (phone call)	Email: tci@tci.gov.fm Tel: 691.320.2865 / 2381 / 5829
Mr John Tunidau	CEO, Maritime Safety Authority of Fiji, Fiji	4 January 2018, Suva, Fiji	Email: jtunidau@msaf.com.fj Tel: +679 331 5266
Capt. Ruokabuti Tioon	Director of Marine, Ministry of Information, Communication, Transport & Tourism Development, Kiribati	29 March 2017, Betio, Tarawa, Kiribati	Email: dom@mctd.gov.ki Tel: +686 26003, 26468
Mr Taulehia Pulefou	Senior Environment Officer (Chemical/Waste Management & Environment Outreach), Ministry of Environment, Kiribati	29 March 2017, Betio, Tarawa	Tel: +686 28425
Mr Albon Ishoda	Deputy Chief of Mission, Embassy of the Republic of the Marshall Islands, Fiji	22 March 2017, Suva, Fiji	Email: taishoda@gmail.com Tel: +679 703 0141
Mr Kemp Detenamo	Director of Maritime Affairs, Marine Department, Ministry of Transport & Telecommunication, Nauru	14 December 2017, Suva, Fiji	Email: kemp.detenamo@naurugov.nr Tel: +674 557 3116
Deve Talagi	Director, Public Works Department, Niue	10 November 2017 (phone interview)	Email: Deve.Talagi@mail.gov.nu Tel: +683 4297 / 4194
Mr Hayes Moses	Chief, Bureau of Commercial Development, Ministry of Public Infrastructure, Industries and Commerce, Palau	25 April 2017, Nuku'alofa, Tonga	Email: dot@palaunet.com Tel: +680 7674343 / 7755595
Mr Pawa Limu	Manager, PNG Marine Environment Protection, National Maritime Safety Authority, PNG	14 December 2017, Suva, Fiji	Email: plimu@nmsa.gov.pg Tel: +675 7233 5599 / 321 1244
Mr Su'a Pou Onesemo	CEO, Ministry of Works, Transport and Infrastructure, Samoa	27 April 2017, Suva, Fiji	Email: pou.onesemo@mwti.gov.ws Tel: 685 21161
Mr Fepuleai Faeniu Mark Alesana	Assistant CEO, Maritime Division, Samoa	14 December 2017, Suva, Fiji	Email: faleniu.alesana@mwti.gov.ws Tel: +685 21611 ext. 204 / 7719996
Mr Jimmy Nuake	Undersecretary Technical, Ministry of Infrastructure Development, Solomon Islands	29 June 2017, IMO, London	Email: JNuake@mid.gov.sb Tel: +677 21141 (ext 228) Mobile: +677 7521819
Ms Kelela Tonga	CEO, Ministry of Infrastructure, Tonga	30 June 2017, London	Tel: +676 22 555 / 28 022 Email: ktonga@infrastructure.gov.to
Mr Taasi Pitoti	Director, Marine & Port Services, Ministry of Communication & Transport, Tuvalu	27 April 2017, Nuku'alofa, Tonga	Email: taasi.pitoti@gmail.com Tel: +688 20 055
Mr Charles Maniel	Acting Regulator, Office of Maritime Regulator, Vanuatu	15 December 2017, Suva, Fiji	Email: cmaniel@vanuatu.gov.vu Tel: +678 35445
Mr Lloyd Fikiasi	Legal Officer, Office of Maritime Regulator, Vanuatu	15 December 2017, Suva, Fiji	Email: Ifikiasi@omr.vu Tel: +678 35445 / 7753473
Mr Mark Borg	Team Leader Programme Management, PIDF, Suva, Fiji	21 November 2017, PIDF, Suva, Fiji	Email: Mark.Borg@PIDF.int Tel: +679 331 1518 Mob: (679) 990 7633
Mr Anthony Talouli	SPREP, Pollution Adviser, Strategic Policy and Technical Programmes, SPREP, Apia, Samoa	27 April 2017, Nuku'alofa, Tonga	Email: anthony@sprep.org Tel: +685 21929
Mr Thierry Naverv	Deputy Director of the Pacific Community's (SPC) Geoscience, Energy and Maritime Division, SPC, Suva, Fiji	7 June 2017, Suva, Fiji	Email: thierry@spc.int Phone: +679 337 0733
Mr Frank Vukikomoala	Energy Database Officer, Energy Programme, Geoscience, Energy and Maritime Division, SPC, Suva, SPC	26 April 2017, Nuku'alofa, Tonga	Email: frankv@spc.int Phone: +679 337 0733

Annex 2: Guiding questions for discussions with Pacific states

National priorities and processes

1. What is your government's position on the current negotiations that are taking place at IMO on the issue of reduction of greenhouse emissions from international ships and setting a target for emission-reduction?; and what is the rationale for this stance?
2. What has been your government's position on the issue of international shipping emissions at UNFCCC's COP sessions; and the rationale for this stance?
3. In terms of the key challenges faced by your government in progressing work/negotiations related to international shipping emissions. Has your government managed to overcome these challenges? If yes, how? If no, what is needed to overcome these challenges?
4. Is the international shipping emissions issue covered in your transport sector/maritime/shipping policy or any other national development plans? If no, please state the reasons for non-exclusion. If yes, please name the policy or plan.
5. Which ministry/department has overall responsibility for handling issues relating to reduction of greenhouse gas emissions from the international shipping sector?
6. What other ministries/departments are involved in this area and what are their roles?
7. Which ministry/department authorises appointment of head of delegation and representatives to IMO MEPC meetings?
8. In MEPC sessions (MEPC 68–70), which ministry/department has been leading the negotiations on international shipping emissions?
9. In UNFCCC COP sessions, which ministry/department has been leading the negotiations on international shipping emissions?
10. What are some of the issues that affect inter-ministry collaboration on the matter?
11. Is your government satisfied with the level of representation and participation of your nationals in IMO policy negotiations on reduction of GHG emissions from ships? If no, what are the factors that affect/limit the participation of your nationals in the IMO policy negotiations on reduction of GHG emissions from ships?
12. In future, should IMO introduce mandatory measures to reduce greenhouse emissions from international shipping sector, including setting a target for

emissions-reduction, how big an impact would this be on your country's economy and trade?

Role of open registry

13. What is your view of open registries in general?
14. With regards to the role of open registries in international shipping emissions negotiations:
 - a. How important is the role of open registries in international shipping emissions negotiations at IMO? Please explain your response.
 - b. What is your view on the participation of a high number of registry management representatives as opposed to respective government nationals at IMO MEPC meetings?
15. Please respond to the following questions if your government operates an open registry:
 - a. When was the registry established; and what was the key motive behind its establishment?
 - b. What is the registry's contribution to national GDP?
 - c. Describe the trends in registry growth and earnings since the registry's establishment.
 - d. Describe the relationship between your government and the registry management company and any challenges faced, particularly with regards to ease of business, communication and flag state regulatory matters.
 - e. In addition to monetary gains, how else does the government benefit from its relationship with the registry management company?
 - f. What are some of the changes or improvements that the government would like to see in its current arrangement with the registry management company?
 - g. Describe the arrangements with the registry management company when it comes to representation at IMO international shipping emissions negotiations.
 - i. Is the government satisfied with these arrangements? Please explain your response.
 - ii. What improvements or changes can be made to these arrangements?

- h. Briefly describe the national legislation/regulations that govern operation of open registry in your country.
 - i. Which legislation authorises registry management company personnel to represent your government at IMO's MEPC meetings?
- 16. Should IMO impose mandatory measures in future to reduce greenhouse emissions from the international shipping sector, including setting a target:
 - a. What would be the expected impacts on your registry?
 - b. How does your government anticipate addressing or mitigating these impacts?

Regional commitments and support

- 17. Which regional organisations in the Pacific have been actively supporting your government in international shipping emissions negotiations and what is the nature of this support?
- 18. Which regional organisation has been most active in supporting your government in international shipping emissions negotiations and what is the specific nature of this support?
- 19. Which regional declarations/policies/frameworks provide direction to your government in the area of international shipping emissions and comment on its relevance.
- 20. In what ways can regional organisations better support your work in international shipping emissions negotiations and overall efforts to support decarbonisation of the international shipping sector?

Annex 3: Guiding questions for discussion with regional organisations

1. What drives your organisation's mandate to provide regional level support or technical assistance to Pacific states in the overall shipping area?
2. Describe the nature of support/technical assistance that your organisation is providing to Pacific states in the area of reduction of greenhouse gas emissions from the international shipping sector?
3. Describe your organisation's role in the development and implementation of relevant regional declarations/policy documents relating to shipping or those that incorporate certain provisions of shipping?
4. Has your organisation led the development of (or has been involved in) regional declarations/policy documents that provide guidance to Pacific states on international shipping emissions? If yes, please list and elaborate on the relevant provisions.
5. What are the key challenges faced by your organisation in progressing work related to international shipping emissions; and how does your organisation envisage overcoming these challenges?
6. Which Pacific Island government ministry/department is your focal point for international shipping emissions matters?
7. Regarding inter-agency collaboration on this matter:
 - a. Which regional organisations in the Pacific do you collaborate with in regards to international shipping emissions work?
 - b. What are some of the issues that affect inter-agency collaboration on the matter; and how can they be addressed?
8. In your view, how important is the role of open registries in international shipping emissions negotiations at IMO? Please explain your response.
9. Has your organisation undertaken any work/studies/analysis towards:
 - a. Reduction of greenhouse gas emissions from international shipping? Please list.
 - b. Open registries in the Pacific? Please list
 - c. Low carbon shipping in general? Please list.
10. In what ways can your organisation better support Pacific states in global negotiations concerning international shipping emissions as well as in the overall efforts towards decarbonisation of the international shipping sector?

Annex 4: List of IMO member states and date of membership (as at 31 December 2018)

Source: IMO website: <http://www.imo.org/en/About/Membership/Pages/MemberStates.aspx>

Albania	1993	Egypt	1958	Malaysia	1971	Serbia	2000
Algeria	1963	El Salvador	1981	Maldives	1967	Seychelles	1978
Angola	1977	Equatorial Guinea	1972	Malta	1966	Sierra Leone	1973
Antigua and Barbuda	1986	Eritrea	1993	Marshall Islands	1998	Singapore	1966
Argentina	1953	Estonia	1992	Mauritania	1961	Slovakia	1993
Armenia	2018	Ethiopia	1975	Mauritius	1978	Slovenia	1993
Australia	1952	Fiji	1983	Mexico	1954	Solomon Islands	1988
Austria	1975	Finland	1959	Monaco	1989	Somalia	1978
Azerbaijan	1995	France	1952	Mongolia	1996	South Africa	1995
Bahamas	1976	Gabon	1976	Montenegro	2006	Spain	1962
Bahrain	1976	Gambia	1979	Morocco	1962	Sri Lanka	1972
Bangladesh	1976	Georgia	1993	Mozambique	1979	Sudan	1974
Barbados	1970	Germany	1959	Myanmar	1951	Suriname	1976
Belarus (Republic of)	2016	Ghana	1959	Namibia	1994	Sweden	1959
Belgium	1951	Greece	1958	Nauru	2018	Switzerland	1955
Belize	1990	Grenada	1998	Nepal	1979	Syrian Arab Republic	1963
Benin	1980	Guatemala	1983	Netherlands	1949	Thailand	1973
Bolivia (Plurinational State of)	1987	Guinea	1975	New Zealand	1960	Timor-Leste	2005
Bosnia and Herzegovina	1993	Guinea-Bissau	1977	Nicaragua	1982	Togo	1983
Brazil	1963	Guyana	1980	Nigeria	1962	Tonga	2000
Brunei Darussalam	1984	Haiti	1953	North Macedonia	1993	Trinidad and Tobago	1965
Bulgaria	1960	Honduras	1954	Norway	1958	Tunisia	1963
Cabo Verde	1976	Hungary	1970	Oman	1974	Turkey	1958
Cambodia	1961	Iceland	1960	Pakistan	1958	Turkmenistan	1993
Cameroon	1961	India	1959	Palau	2011	Tuvalu	2004
Canada	1948	Indonesia	1961	Panama	1958	Uganda	2009
Chile	1972	Iran (Islamic Republic of)	1958	Papua New Guinea	1976	Ukraine	1994
China	1973	Iraq	1973	Paraguay	1993	United Arab Emirates	1980
Colombia	1974	Ireland	1951	Peru	1968	United Kingdom of Great Britain and Northern Ireland	1949
Comoros	2001	Israel	1952	Philippines	1964	United Republic of Tanzania	1974
Congo	1975	Italy	1957	Poland	1960	United States of America	1950
Cook Islands	2008	Jamaica	1976	Portugal	1976	Uruguay	1968
Costa Rica	1981	Japan	1958	Qatar	1977	Vanuatu	1986
Côte d'Ivoire	1960	Jordan	1973	Republic of Korea	1962	Venezuela (Bolivarian Republic of)	1975
Croatia	1992	Kazakhstan	1994	Republic of Moldova	2001	Viet Nam	1984
Cuba	1966	Kenya	1973	Romania	1965	Yemen	1979
Cyprus	1973	Kiribati	2003	Russian Federation	1958	Zambia	2014
Czechia	1993	Kuwait	1960	Saint Kitts and Nevis	2001	Zimbabwe	2005
Democratic People's Republic of Korea	1986	Latvia	1993	Saint Lucia	1980	Associate Members:	
Democratic Republic of the Congo	1973	Lebanon	1966	Saint Vincent and the Grenadines	1981	Faroes	2002
Denmark	1959	Liberia	1959	Samoa	1996	Hong Kong, China	1967
Djibouti	1979	Libya	1970	San Marino	2002	Macao, China	1990
Dominica	1979	Lithuania	1995	Sao Tome and Principe	1990		
Dominican Republic	1953	Luxembourg	1991	Saudi Arabia	1969		
Ecuador	1956	Madagascar	1961	Senegal	1960		
		Malawi	1989				

Annex 5: The structure of IMO

The International Maritime Organization consists of an Assembly, a Council and five main Committees, and a number of Sub-Committees support the work of the main technical committees. The Secretariat of IMO consists of the Secretary-General and around 300 international staff based at the headquarters in London.

Assembly

This is the highest Governing Body of the Organization. It consists of all Member States and it meets once every two years in regular sessions but may also meet in an extraordinary session if necessary. The Assembly is responsible for approving the work programme, voting the budget and determining the financial arrangements of the Organization. The Assembly also elects the Council.

Council

The Council, which has 40 members, is elected by the Assembly for two-year terms beginning after each regular session of the Assembly. The Council is the Executive Organ of IMO and is responsible, under the Assembly, for supervising the work of the Organization. Between sessions of the Assembly the Council performs all the functions of the Assembly, except the function of making recommendations to Governments on maritime safety and pollution prevention, which is reserved for the Assembly by Article 15(j) of the Convention. The main technical work of the Council is carried out by the Committees and the subcommittees.

Committees

The committees meet annually or biannually to progress work of IMO in the areas of maritime safety, environment, legal, technical cooperation and facilitation. The Committees submit their respective reports and proposals of the Council, which then submits the documents to the Assembly and Member States, with comments and recommendations as appropriate. In addition to establishing Subcommittees, some Committees may also form intersessional working groups assigned to certain agenda items that require significant discussions, and which cannot be completed within the time allocated for a Committee meeting.

The five Committees are the:

- Maritime Safety Committee;
- Marine Environment Protection Committee;
- Legal Committee;
- Technical Cooperation Committee; and
- Facilitation Committee

Subcommittees

The MSC and MEPC are assisted in their work by a number of sub-committees, which are also open to all Member States:

- Sub-Committee on Human Element, Training and Watchkeeping (HTW);
- Sub-Committee on Implementation of IMO Instruments (III);
- Sub-Committee on Navigation, Communications and Search and Rescue (NCSR);
- Sub-Committee on Pollution Prevention and Response (PPR);
- Sub-Committee on Ship Design and Construction (SDC);
- Sub-Committee on Ship Systems and Equipment (SSE); and
- Sub-Committee on Carriage of Cargoes and Containers (CCC).

Information sourced from: IMO website (<http://www.imo.org/en/About/Pages/Structure.aspx>)