ADB

Pacific Studies Series

OCEANIC VOYAGES

Shipping in the Pacific

Asian Development Bank

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Acronyms And Abbreviations

ADB		Asian Development Bank
APIMTIMA	—	Association of Pacific Island Maritime Training Institutions and Maritime Administrations
APP	—	Association of Pacific Ports
ASEAN	—	Association of Southeast Asian Nations
ANZ	—	Australia and New Zealand
BAF	—	bunker adjustment factor
break bulk	—	cargo generally referred to as the opposite of containerized cargo
CABAF	—	currency and bunker adjustment factor
CAF	—	currency adjustment factor
DMC	—	developing member country
EEZ	—	Exclusive Economic Zone
FIC	—	Forum Island Country
FIMSA	—	Fiji Islands Maritime Safety Administration
FPCL	—	Fiji Ports Corporation Limited
FSM	—	Federated States of Micronesia
GDP	—	gross domestic product
GPDLR	—	general purpose discharge, land, restow: a shift from one bay to another
GPMT	—	general purpose empty container
GPSOB	—	general purpose shift on board: a shift within the same bay
GRT	—	gross registered tonnage
GSS	—	Government Shipping Services (Fiji Islands)
GST	—	goods and services tax
GT	—	gross tonnage

ICCC	—	Independent Consumer and Competition Commission (Papua New Guinea
IMO	—	International Maritime Organization
ISPS	—	International Ship and Port Facility Security Code
LCL	—	less than container load
LOA	—	length overall
MOU	—	Memorandum of Understanding
MSC	—	Micronesian Shipping Commission
PacMA	—	Pacific Islands Maritime Association
PacWIMA	—	Pacific Women in Maritime Association
PDL	—	Pacific Direct Line
PFL	—	Pacific Forum Line
PIC	—	Pacific island country
PIMLA	—	Pacific International Maritime Law Association
PNG	—	Papua New Guinea
PSC	—	port service charges
PTL	—	Ports Terminals Limited (Fiji Islands)
RMP	—	Regional Maritime Programme (of the Secretariat of the Pacific Community)
ro-ro	—	roll on-roll off (vessel type)
SIPA	—	Solomon Islands Ports Authority
SPC	—	Secretariat of the Pacific Community
STCW	—	International Conventions on Standards of Training, Certification and Watchkeeping for Seafarers (1978) and (1995)
TEU	—	twenty-foot equivalent unit (container)
THC	—	terminal handling charges

NOTE
In this report, "$" refers to US dollars.

Preface

This report was prepared as part of the output of the Asian Development Bank (ADB) regional technical assistance project (TA 6166 REG): Pacific Regional Transport Analysis. The goal of the project is to enhance economic development in Pacific developing member countries (DMCs) of ADB by improving the efficiency and effectiveness of Pacific transport services. In order to achieve this, the report is expected to contribute to reform of public sector operations and policies in the transport sector, and to increased private sector participation in transport service provision. Such reform and participation will reduce the costs of trade and commerce and consumer goods, increase employment, and reduce poverty.

The report is published in three volumes. Volume 1 is the *Oceanic Voyages: Executive Summary*, which presents a summary of the findings and recommendations included in Volumes 2 and 3. Volume 2 presents *Oceanic Voyages: Aviation in the Pacific Region*, the full report of the results of detailed study and analysis of the Pacific aviation sector, including case studies of selected Pacific DMCs of ADB. Volume 3 presents *Oceanic Voyages: Shipping in the Pacific Region*, the full report of the results of detailed study and analysis of the Pacific shipping sector, including case studies of selected Pacific DMCs of ADB. Each sector volume examines international and regional trends, and regional characteristics and components, influencing sector development. Strategy and policy options available to Pacific island governments to facilitate change are assessed. Specific recommendations are provided for appropriate policies and strategies for improvement of sector efficiency and effectiveness.

Robert Guild directed the analyses and managed the regional technical assistance project on behalf of ADB. The Centre for Asia Pacific Aviation prepared the base reports for Volume 2. Meyrick and Associates prepared the base reports for Volume 3.

Foreword

Historically, the people of the Pacific islands were legendary voyagers. They had to be – living in archipelagic environments separated by vast expanses of ocean required them to be expert navigators and sailors to undertake trade, exploration, and social contacts. Long before modern charts, instruments, or vessels made long distance travel commonplace, Pacific people regularly traveled between thousands of islands and across millions of square kilometers of open water. From the margins of Asia to the coasts of South America their remarkable journeys defined a diverse Pacific region.

Oceanic voyages undertaken by international aviation and shipping services are even more important in the Pacific region today. The vast majority of trade is carried by international shipping with countries outside of the region. Some cargo is bound for Australia and New Zealand, and significant proportions are destined for Asia, Europe, and North America, while very little is between Pacific island countries themselves. Outbound access to international markets for agricultural and marine products opens up opportunities for rural producers to expand their businesses and provide local jobs.

In the other direction, improved inbound access provided by international aviation from every other region in the world to an increasing number of islands is opening new opportunities. Tourism contributes substantially to income and employment in many Pacific countries, usually in areas outside of the main urban centers, and enables air freight services for valuable but perishable commodities that would otherwise not be marketable.

Ensuring efficient transport services is therefore essential to the continued development of Pacific island countries. A region founded by voyagers is now more than ever dependent on international connectivity.

Some features of the Pacific region make provision of international services a challenge, however. Pacific island countries are typically small and isolated. Their economies are narrow in scope and thus reliant on a limited number of products and markets that are subject to wide seasonal variation.

Imports and exports are grossly imbalanced in many cases. Often the result is under-utilized capacity, low service frequencies, and high costs.

These challenges have sometimes led governments to intervene, with mixed results. Their interventions have generally taken two forms. Some have gone into direct service provision through investments in airlines and shipping companies, and some have attempted to manage market access to protect operators. The evidence is that neither approach has been very successful, but the experience gained has revealed other ways to facilitate services that do work.

Costly public-sector investments have been made in national flag carriers in a number of countries. A few have survived and evolved into successful commercial enterprises, but more often than not these investments have required large ongoing subsidies and even led to failures at considerable cost to fragile economies that can least afford them.

Governments also restrict access to routes in an effort to improve the sustainability of a limited number of operators, most often those owned by the government or its nationals. The result has been fewer services provided in a region that demands more of them, and weaker operators that are less able to compete effectively as services and markets are integrated.

There have also been some notable successes that offer key lessons for future development. Air Pacific and the Pacific Forum Line were founded as cooperative regional services in the 1970s as governments saw opportunities to pool resources and develop larger-scale operations. Both companies struggled initially, as narrow national interests clashed with market realities, before reforming along commercial lines and becoming market leaders. In Fiji and Vanuatu, more open access to air routes has led to dramatically increased services and decreased fares. In Samoa, an aviation joint venture has converted a loss making state-owned enterprise into a successful example of public-private partnership.

These successes, documented through detailed case studies, demonstrate the necessity and value of operating on commercial principles, attracting international and private-sector capital investment, assigning risk where it can best be managed, and liberalizing market access. In every case, the benefits have been clear.

Experience also suggests opportunities for national and regional action to improve transport services. An integrated regional market for transport services would improve the sustainability of operators. Regulatory environments with fewer restrictions based on national routes or ownership rules would facilitate a greater range of services at more competitive prices.

Where some routes are too thin to operate commercially, interventions can be designed to offer support for social services while maintaining private sector efficiency. Finally, sector development is most efficient when roles for policy, regulation, and provision are separated and assigned to the appropriate public and private sector actors.

Given the importance of international transport services to the region, and the large benefits derived when those services work well, such opportunities should be developed as fully and quickly as possible. Pacific island country governments have the ability to create effective operating environments. When they do so, experience shows that operators will respond with efficient service provision.

These volumes, which describe the experience of the past and offer recommendations for the future, give reason for confidence that the future of the Pacific region will remain intertwined with the efforts of its voyagers.

Philip C. Erquiaga
Director General
Pacific Department

Executive Summary

The small island nations and territories in the Pacific region have much in common. Most important in this regard are their essentially maritime character, the small size of their economies, and their remoteness from major markets. This report focuses, to a large extent, on their common characteristics and challenges, and on generally applicable strategies to alleviate the problems that arise from them.

Challenges in the Transport Sector

Several factors combine to make shipping services to Pacific island states relatively expensive. These factors, or challenges, have a significant effect on the logistics industry, raising the cost of goods generally and affecting the economic welfare of Pacific communities. The most important of these challenges are

- long distances between ports;
- small populations and far-flung communities;
- low trade volumes;
- imbalance in trade, with exports usually far outweighed by imports; and
- widely varying port facilities with generally inadequate funding for their operation and maintenance.

International Shipping Services

The bulk of general cargo imports and exports handled by shipping services in the Pacific are carried in containers. Consequently, this report concentrates

on international and interregional containerized shipping service linkages. The major shipping routes connecting Pacific island states can generally be categorized as

- Asia and around-the-world routes,
- North American routes,
- European routes, and
- Australia and New Zealand routes.

Other than the inevitable high costs resulting from the remoteness of many PICs, export bulk shipping is generally not problematic in the Pacific.

On most international routes to PICs, there is a high degree of concentration, with only one or two lines or consortia providing shipping services. However, because the market is reasonably contestable—i.e., there are no regulatory barriers to entry and the sunk costs involved in entering the trade are relatively modest—it is likely that any abuse of monopoly power would be transient.

Freight rates are relatively high by world standards. But economies of scale are important in shipping, and cargo volumes on the routes to, from, and within PICs are generally low. It is not apparent that freight rates are any higher than the long voyages and low cargo densities would lead one to expect.

Past direct intervention to encourage "improved" international services has taken two main forms, neither of which has been conspicuously successful: (i) direct government involvement in service provision and (ii) regulation of entry.

Direct Government Involvement in the Provision of Shipping Services

Direct government involvement in the provision of shipping services has, in general, been costly and failed to produce efficient and reliable services. The Pacific Forum Line (PFL) is a partial exception to this, and has been a reasonably successful initiative by regional governments. But success came only after some painful lessons during the first two decades of PFL's operation. In pursuit of improved service to island countries of the region, port coverage and service frequencies well in excess of that justified by commercial considerations were attempted, causing major financial problems. The later success of PFL has been due, in significant part, to the restructuring of its operations along more commercial lines, focusing on services it can operate profitably. PFL's services are now confined to a relatively small number of

PICs—mainly the larger ones. Services to the smaller and more remote locations (for example, Kiribati and Tuvalu) are provided by other carriers.

Regulation of Entry

Regulation of entry to limit competition and protect incumbent operators is another approach that has been utilized. The primary example of this approach is the Micronesian Shipping Commission (MSC). Although MSC continues to enjoy the support of participating governments—the Federated States of Micronesia, Palau, and Marshall Islands—and shipping lines, it is not apparent that the range, quality, efficiency, or stability of shipping services offered to Micronesian countries is greater than it would be in the absence of MSC. It is clear, however, that considerable effort is expended by lines and associated interests to secure the right to operate a service in Micronesia. This suggests untapped potential for service innovation.

Structural Changes to International Shipping Systems

Changes currently taking place in the way international shipping services to the Pacific are structured make reconsideration of regulatory arrangements particularly appropriate at this time. Signs of an increasing tendency for replacement of direct services by "hubbing"[1] through selected local transshipment centers are one such change. The most important hubs at present are Auckland (for the South Pacific) and Guam (for Micronesia). Changes, such as these, are poorly understood at present by many key decision makers and industry participants in the Pacific.

Recommendations

1. The present commercial focus of the Pacific Forum Line should be retained, allowing the Line to act as an important additional source of competition in the region without distorting regional markets.
2. Remaining regulatory impediments to entry into the provision of international shipping services in the Pacific (the most notable being the Entry Assurance system operated by the Micronesian Shipping Commission) should be progressively removed.

[1] A large port that attracts transshipment cargo to and from smaller ports is termed a "hub" port—because it effectively acts as a "hub." Hubbing refers to this process.

Domestic Shipping Services

In contrast to international shipping, domestic shipping operations in many PICs are in a parlous state. Ensuring the provision of adequate, efficient, and reliable domestic shipping services is one of the most difficult and perplexing challenges facing Pacific archipelagic countries. In many cases, services of the quality expected by residents of remote islands are not commercially viable. Nevertheless, delivery of these services is a political, social, and—arguably—an economic imperative.

Coastal and interisland shipping services are generally operated by government or by very small, independent shipping companies. Service schedules are frequently poorly maintained, and it is not uncommon for services to be suspended for many months. The ships employed are typically old, poorly maintained, in poor condition, and—frequently—unsuited for the purpose they are used.

Development partner nations have offered ships free or at greatly reduced cost to PICs. Such offers can constitute a very attractive proposition, but unless carefully managed, the deployment of such vessels can undermine the development of commercial shipping markets and, in the long run, have a negative impact on service provision.

Recommendations

1. Pacific island governments are encouraged to continue the recent trend of privatization of domestic services, including the development of service franchise schemes to secure access of remote communities to shipping services.
2. A forum for exchange of experiences in privatizing domestic shipping services should be established, and regional guidelines for chartering donated ships to private sector operators should be developed.
3. Options for improving finance for domestic ship operators should be explored.

National Transport Plans

Without a clear national transport plan, it is difficult to ensure that decisions made by PICs on maritime sector policies and priorities will be consistent

and coherent. At least two Pacific island states—the Fiji Islands and Solomon Islands—have already prepared such plans. Both of these plans recognize the importance of the maritime sector to the effective functioning of the national transport system.

Recommendations

1. Pacific island states are encouraged to develop and document national transport objectives and national transport sector plans detailing how these objectives will be pursued.
2. National transport sector plans should include a clear articulation of the role of the maritime sector.
3. National transport sector plans should include a committed, long-term funding plan for maritime sector initiatives.

Maritime Sector Subsidies

Whether abolition of maritime transport subsidies in PICs is desirable or not is of academic interest only. The reality is that their abolition would be politically untenable. The provision of subsidies to transport services in pursuit of broader political, social, and economic objectives is commonplace not only in the Pacific, but also in major development partner nations, including Australia, the European Union, Japan, and the United States. Given the broad importance of maritime transport services, it is most unlikely that PICs will abandon public support for them in the foreseeable future.

Recommendations

1. Any subsidies to transport sector activities should have clearly defined objectives and be justified within the framework of a comprehensive and coherent transport sector policy.
2. Subsidies should be transparent, their fiscal commitment clearly defined, and be subject to periodic review in the context of other demands on government resources.
3. Wherever practical, subsidies should be allocated to service providers on the basis of open and competitive tenders of limited duration.

Structuring the Maritime Sector

Creating a safe, efficient, and reliable maritime sector is difficult for most, perhaps all, PICs. The small scale of these countries makes it a constant challenge to maintain a competent maritime bureaucracy and retain skilled managers in commercialized government enterprises. With limited fiscal and skilled human resources, and the prevalence of intense rivalry between groups within these countries, the advantages of strong national control of the maritime sector are likely to far outweigh any risks.

In most PICs, a branch of the public service has historically undertaken all the functions of government within the maritime sector. With encouragement and support from ADB and other development partners, structural reforms have taken place over the last two decades that have seen port administration in many countries transferred to semiautonomous authorities or corporations, and the establishment of autonomous maritime safety administrations. In the smallest island countries, however, the establishment of a completely separate maritime safety administration may not be justified, illustrating that rigid application in the region of a standard model is unlikely to be the most productive way forward.

Recommendations

1. Where constitutional arrangements permit, policy, planning, and regulatory responsibility for maritime safety, international shipping, domestic shipping, and ports of national importance should be clearly allocated to national rather than provincial governments.
2. Wherever economically and technically feasible, government responsibility for (a) maritime sector policy, (b) regulation of maritime safety, and (c) commercial operations should be undertaken by legally distinct entities.
3. Organizations responsible for maritime safety and commercial operations, as far as possible, should be operated on a self-funding basis with revenues derived from user charges.

Ports

Each PIC has a range of ports. Typically, only one or two ports in a country are involved in international liner trades. Secondary ports cater

to domestic services. Ports range from basic wharves and hardstand, up to more sophisticated facilities with major cargo-handling capability. Although there are some privately-owned port facilities dedicated to specific bulk exports and imports, ownership of port infrastructure is generally in the hands of national or provincial governments. All but one PIC met the July 2004 deadline for compliance with the International Ship and Port Facility Security (ISPS) code.

Provision of stevedoring varies among ports, with a general movement toward private sector involvement and contestability. However, many government-owned ports offer stevedoring either directly or through subsidiaries or government corporations. Stevedoring charges vary substantially in Pacific island ports. In absolute terms, however, container stevedoring charges in the Pacific are generally low by international standards.

Port Administration

Although a number of port authorities in PICs are formally corporatized or operate under separate statutes that provide a high degree of independence, others remain essentially branches of the public service. The objectives for port organizations are not always clearly and appropriately defined. Nor are the indicators used to measure port performance always defined. When they are, measurement and reporting of performance against these indicators are not always adequate.

Port Infrastructure

There does not appear to be a general problem with the capacity of infrastructure in Pacific ports. There are problems, however, with the operational performance of port infrastructure. Many Pacific port facilities were neither designed nor equipped to meet present-day shipping needs.

Chronic difficulties with maintenance are a pervasive problem with Pacific port infrastructure that is widely acknowledged and frequently reported in previous studies. Consequently, the service quality of port infrastructure assets is often below design quality. Additionally, assets often do not reach their design lives before needing extensive rehabilitation or replacement.

Port asset maintenance was identified as one of seven key issues during the inception phase of the ADB project for the Pacific, *Improving the Delivery*

of Infrastructure Services. Practical ways of improving port asset maintenance practices are an expected outcome of the project. Specific recommendations on improvement of port asset management are expected as outputs of the ADB project.

Cargo Handling Performance

Cargo handling productivity in the Pacific is low by international standards. Raw comparisons of cargo handling rates are likely to do Pacific island ports an injustice, however, due to factors that can influence and distort comparisons. Vessels on Pacific island schedules call at many ports, often resulting in stowage that incurs many more double moves, shifts-on-board, and hatch lid movements than would be the case with vessels serving fewer ports and larger cargo volumes. This can result in very slow handling rates even if operations are efficient.

Recommendations

1. Clear financial and service objectives should be established for all port corporations.
2. A common set of Key Performance Indicators for port administration should be developed and adopted.
3. Prompt reporting requirements should be established and enforced.
4. Those port organizations that are still involved in cargo-handling operations should develop and implement plans for transferring these activities to the private sector.
5. Stevedoring licenses should be issued to all stevedoring firms having the requisite skills and knowledge to operate safely and competently within the port.
6. The issue of exclusive leases for critical port land should be avoided unless it is essential to the efficient operation of the port.
7. Port corporations should purchase heavy lifting equipment and make it available for hire to all stevedoring companies, if by doing so they can facilitate entry or reduce the risk of undercapitalization of cargo-handling operations.
8. The outcome of the work on asset maintenance practices currently being undertaken by the ADB project, Improving the Delivery of Infrastructure Services, should be used as the foundation for the development of specific programs to improve asset management in the maritime sector.

Human Resources

Seafarer Training

The training of seafarers to international standards is becoming increasingly sophisticated and expensive. However, the level of training available among the wide range of maritime training institutions in the Pacific remains fairly restricted. There appears, nevertheless, to be a hierarchy emerging, with marked differences in the highest level of certification available at each institution. Only the Papua New Guinea Maritime College has the equipment and qualified staff to provide training to the level required of a master or chief engineer on an international vessel. However, much work on harmonization and mutual recognition among these institutions has been accomplished through the Regional Maritime Programme (RMP), and by the Pacific Islands Maritime Association and its predecessor organization. The next step is to develop and formalize a regional plan for training development.

Port Management

The maritime sector in the Pacific region is characterized by a lack of expertise in business and financial management. This shortage is particularly acute in government trading enterprises. RMP could be the vehicle for remedying this deficiency.

Private Sector Training and Development

One of the important lessons learned from a decade of experimentation with service franchise schemes is that the supply side of the market for shipping services will require as much attention and development as the demand side. In most PICs, there are few private sector operators with the skills, experience, and financial capacity to provide shipping services of acceptable quality. In many, there are none.

Recommendations

1. A regional plan for the development of maritime training institutions should be prepared, possibly under the guidance of the Pacific Islands Maritime Association.
2. Regional assistance programs should be extended from their current coverage of shipping to cover both technical and commercial aspects of ports and maritime administration, possibly coordinated by the Regional Maritime Programme.
3. External support for implementation of the Forum Principles on Regional Transport Services should include development and implementation of training programs on commercial and operational aspects of shipping line management for private sector service providers in Pacific island countries.

Information Issues

During the conduct of the study for this report, the difficulty of obtaining even the most basic data on the maritime sector in PICs was striking. In part, this was because even fundamental information is sometimes not collected. It was also due to the comparatively little use of modern means of storing and sharing this information, such as websites. Improved data collection, storage, and sharing could make an important contribution to mutual learning in PICs. For each such country, the primary need is for information that relates to its own jurisdiction. But a regional approach to the collection and dissemination of data can enhance the utility of information from a number of perspectives.

Recommendation

A regional agreement on the collection and sharing of key maritime sector data should be negotiated and implemented.

Strengthening Regional Cooperation

The general framework of regional cooperation in the Pacific is currently under review. It, consequently, is an opportune time to reconsider the architecture for regional cooperation in maritime matters.

Few PICs individually have the financial and human resources required to meet the challenges of advances in technology in international shipping, the regulatory environment in which it operates, and the training needs of international seafarers. By pooling resources and expertise, PICs can greatly increase their ability to deal with an increasingly demanding environment. Regional cooperation will be essential to improving maritime transport services to, from, and within the Pacific islands. The need for cooperation is well recognized by the countries themselves and by the Pacific community at large.

There is widespread agreement that RMP, which is based at the Secretariat of the Pacific Community, is making an increasingly important contribution to regional cooperation. An effective program of regional cooperation in maritime matters can be built around RMP. However, the architecture of regional cooperation may need to be clarified with an effective mechanism for elucidating the maritime sector priorities of regional governments, and for using these priorities to guide and direct RMP activities.

Recommendations

1. The role of the Regional Maritime Programme as the key source of advice and technical support on maritime matters should be strengthened.
2. Existing mutually supportive relationships between the Regional Maritime Programme and other regional maritime bodies should be further developed.
3. In addition to these relationships, a new, high-level advisory group with a clearer mandate from participating governments to provide advice and guidance to the Regional Maritime Programme should be considered.

Introduction

This report presents the results of a comprehensive study and analysis of the maritime transport sector in the Pacific region, including assessment of maritime transport services in the individual Pacific island countries (PICs). Recommendations are offered on ways to improve the efficiency of Pacific maritime transport services that will lead to better pricing structures for exports and imports, improved conditions for private investment, greater employment generation, and poverty reduction. The report also provides the foundation for improvements in public sector operations, in private sector participation, and in regional cooperation in the maritime transport sector.

The primary emphasis of the report and recommendations is on the maritime logistics services that connect PICs to the global economic system. These are the services that facilitate the movement of international cargoes and include ocean shipping services, as well as ancillary services, such as inland transport services, cargo handling, pilotage, towage, and port services. Domestic shipping services—where these are part of the logistics chain in the transport of imports and exports—were also examined.

The report is presented in two parts, with important complementary information provided in the appendixes:

- The first part, the Pacific Region and its Maritime Services, provides an overview of the Pacific region, regional maritime institutions, international and domestic shipping services, ports, maritime security, and maritime training.
- Each of these elements of the region's maritime services is addressed in the second part of the report, Assessment and Recommendations.
- Case studies of the Fiji Islands, Federated States of Micronesia, and Solomon Islands are presented in Appendixes 1, 2, and 3, respectively.
- Other complementary information is available in Appendixes 4–10.

The Pacific Region and its Maritime Services

The island countries of the Pacific have much in common. Most striking in this regard are their essentially maritime character, their small economic scale, and their remoteness from major markets. This report will focus, to a large extent, on these common characteristics and on generally applicable strategies to alleviate the problems that arise from them.

While focusing on common attributes and shared problems, however, it is easy to lose sight of the diversity within this group of countries. Some conspicuous aspects of diversity and commonality among them are outlined briefly below. Appendix 4 provides additional information in this regard, focusing on aspects relevant to the provision of maritime transport.

Location

Many PICs are remote from both major population centers and maritime trade lanes. But this is not universally true. Papua New Guinea (PNG) lies adjacent to the major trade lanes connecting eastern Australia and New Zealand to Asia. Many vessels traversing this route typically navigate passages that are close to PNG's major ports, creating opportunities for the provision of maritime services through wayport[1] calls. The Fiji Islands enjoys similar, though more limited, opportunities to attract wayport calls from services between Australasia and North America.

Two Pacific island states—PNG and Timor-Leste—occupy parts of islands, the remainder of which form part of the major regional economy, Indonesia. However, there are very poor land transport connections and few

[1] A wayport is a port that is literally "on the way" between the port of origin and the primary port of destination, thus presenting a convenient opportunity for a port call.

economic complementarities between these two nations and the abutting regions of Indonesia. Cross-border trade by land does not provide an effective substitute for maritime services. However, the relative proximity of Timor-Leste to the main productive regions of Indonesia, as well as to Singapore and the rest of Southeast Asia, does mean that the problem of long, thin maritime routes—so critical an issue for many PICs—is not a central consideration for Timor-Leste.

Physical Size

There are vast differences between PICs in both land and sea area. At one end of the scale, Nauru and Tuvalu each has a total land area of less than 30 square kilometers (km^2). At the other end, PNG—with a land area of approximately 462,000 km^2—is larger than Japan. Although there are, of course, other mediating factors, these differences have obvious implications for the likely scale of long-term production from agricultural and extractive industries.

The archipelagic character of a number of PICs means that some countries with small land area have very extensive Exclusive Economic Zones (EEZs). Kiribati, with a land area of only 811 km^2, has an EEZ of 3.5 million km^2 of ocean—more than twice that of PNG. EEZ area serves as a rough proxy for the area of sea over which the population of each PIC is spread and, hence, the area that domestic shipping services must cover.

Population

While there is clearly a strong relationship between area and population, this relationship is obscured somewhat by the fact that some of the more remote PICs have some of the highest population densities in the world. Nauru and Tuvalu, for instance, both have population densities that are higher than that of the Netherlands, placing them in the most densely populated 10% of countries. On the other hand, several PICs with larger land areas—in particular PNG, Solomon Islands, and Vanuatu—have population densities similar to that of New Zealand, placing them in the bottom 25% of country rankings by population density. High population densities tend to assist in the achievement of effective shipping services.

Imports and Exports

For most PICs, imports far outweigh exports. In some cases, this imbalance is extreme, such as in Nauru, where the ratio (by value) of imports to exports is more than 600:1. More typically, the ratio lies in the range between 3:1 and 20:1. For a small number of PICs, however, this is not the case. In PNG, the value of physical exports outweighs the value of physical imports. The same is true, in stable times, for Solomon Islands. For both countries, the predominant exports require different shipping arrangements from those for major imports. Their imports are dominated by general cargo, often in containerized form, while their major exports are generally carried as bulk cargoes.

Trading Relationships

The pattern of trading relationships varies significantly between PICs. For many of the countries of the South Pacific, the most important trading relationships are with Australia and New Zealand. This is reflected in the pattern of shipping services to these countries. For the countries of the North Pacific, the predominant trading relationships are with the United States and the major economies of North and East Asia. For Timor-Leste and, to a lesser extent, PNG, Solomon Islands, Fiji Islands, and Vanuatu, the member countries of the Association of Southeast Asian Nations (ASEAN) are also important trading partners.

Income Levels

Income levels of PICs range from very low to the middle-income bracket. Per capita income in Timor-Leste and Solomon Islands is less than $1,000 per year (in purchasing power parity terms)—placing them among the very poorest in the Asia and Pacific region. At the other end of the scale, the Cook Islands, with annual per capita income approaching $10,000, ranks as a middle-income economy. From a maritime transport perspective, differences in income are important. Many essentials and virtually all luxury goods in PICs are imported—mainly by sea. The demand for imports increases more than proportionately with rising income.

Challenges in the Shipping Sector

This report identifies and quantifies challenges in the shipping sector, and how these manifest themselves as costs to the community through imposts on logistics costs. Some of these challenges are immutable, but others can be addressed by local or regional initiatives. Prominent challenges that are immediately evident but not easily addressed are

- long distances between ports;
- low trade volumes;
- low population and far-flung communities;
- imbalance in trade, with exports usually far outweighed by imports; and
- widely varying port facilities with generally inadequate funding for operation and maintenance.

These factors combine to make services relatively expensive. Because of long distances between ports and low trade volumes, PICs cannot take advantage of the economies of scale available to larger international ports. The imbalance in trade means costly container positioning. The variation in port facilities, with a general lack of major cargo-handling infrastructure, means ship operators are compelled to employ relatively expensive geared container vessels.

Maritime Institutions in the Pacific Region

The important maritime institutions in the region are described briefly below.

Regional Maritime Programme

The Regional Maritime Programme (RMP) is based in Suva, Fiji Islands, and operates under the auspices of the Secretariat of the Pacific Community (SPC) within its Marine Resources Division. The objective of RMP is "…to strengthen the capacity of Pacific islanders to manage, administer, regulate, control and gain employment in the maritime transport sector in a socially responsible manner" (SPC website: http://www.spc.org.nc/).

The two main components of the current program of RMP are to provide (i) legal advice on maritime policy and legislation, and (ii) training and human resources advice to regional maritime administrations, training institutions, and seafarers. The three main objectives for RMP for the period 2003–2005 were to

- strengthen the region's maritime institutions,
- strengthen the region's human resource capabilities, and
- improve the exchange of information and experience among member countries of the Pacific Islands Forum.

An independent review carried out by the New Zealand Maritime School in 2003 concluded that

> RMP has been extremely active during the review period, at least partially because of the programme's success in obtaining and deploying development partner funding. RMP activities have generally reflected the programme's planning and have been consistent with both the expressed needs of the region and SPC objectives. A high degree of satisfaction with programme services from stakeholders is evident (SPC 2005).

Although RMP continues to pursue its goals, there was some criticism among members in 2006 that progress had slowed on specific issues selected to drive the plan forward. There may be a need to encourage member nations to refocus on the above objectives, or to refine them, to ensure that more achievable, practical, and measurable goals are developed. The independent review mentioned above recommended that RMP should consider including port operations in program services. It also recommended that RMP must ensure that its further development of model legislation is contingent upon the introduction of effective supporting strategies to improve the rate of enactment.

Pacific Islands Maritime Association

In addition to providing a vital conduit for the trading activities of PICs, the maritime sector is an important source of employment and economic activity. This implies a substantial need for maritime training. The Pacific Islands Maritime Association (PacMA) provides the principal forum for discussion, harmonization, and development of coordinated education, training, and examination infrastructure for Pacific island seafarers.

PacMA is the successor to the Association of Pacific Islands Maritime Training Institutions and Maritime Administrations (APIMTIMA), which was founded in 1995 with assistance from RMP. Up until 2005, RMP acted as the secretariat for the Association, organizing meetings and funding support. SPC noted that

> APIMTIMA was perceived to have been of great benefit in ensuring cooperation between training institutions and maritime administrations…Both the formal activities, including information exchange, and informal networking associated with the meetings were believed by members to have been effective in promoting improved harmonisation of standards and initiatives in the region (PacMA Fact Sheet, SPC website: www.spc.int).

This was confirmed during the course of the present study. In particular, the work done by PacMA's predecessor in developing common standards and facilitating mutual recognition of seafarer qualifications was generally acknowledged to have been a significant benefit to the region.

The 2003 APIMTIMA meeting approved a proposal that the Association become the key regional advisory body for maritime issues, and that the membership be broadened to include ship and port operators to support this function. A new organization name (Pacific Islands Maritime Association) was adopted to signify the extension of the mandate of the Association, which was formerly focused strictly on training activities. There is, however, some concern that an overly rapid expansion of the responsibilities of PacMA may dilute its focus and diminish its effectiveness. The development of PacMA into a body capable of effectively shouldering broader responsibilities has, therefore, been seen as a staged process:

> In the shorter term, PacMA will take some time to effectively evolve to manage the increased decision-making and direction-setting role. In the longer term, an expanded role involving the provision of technical assistance, capacity supplementation and a number of trans-boundary functions would provide increased autonomy and greater ownership of initiatives in the maritime sector (PacMA Fact Sheet 2006).

Association of Pacific Ports

What is now known as the Association of Pacific Ports (APP) was originally established as the South Pacific Ports Association (SPPA) in 1978. The name

was changed in 1999 to reflect a broadening membership base. The objective of APP is to promote "…regional cooperation, friendship, and understanding between member ports and port users through mutual association, exchange of knowledge and the dissemination of information useful to port administrations" (APP Fact Sheet, SPC website: www.spc.int).

Regular membership in APP is restricted to port and marine authorities and port companies of PICs. Regular members include port organizations from American Samoa, Cook Islands, Fiji Islands, New Caledonia, Norfolk Island, PNG, Samoa, Solomon Islands, Tahiti, Tonga, Tuvalu, and Vanuatu. Associate membership is available to a much broader group, including any port user, organization, entity, or individual engaged or involved in port-related activities in the Pacific region. Honorary membership is conferred on individuals or organizations at the discretion of the executive of APP.

Like its predecessor, SPPA, APP has been active in developing training programs for its members. Training has been delivered through seminars on containerization, maritime legislation, handling of dangerous goods, Law of the Sea, and computerization, made possible with funding assistance from a range of international agencies and development partner governments, such as Australia, New Zealand, and France. In addition, APP arranged for a number of officials from island ports to be attached for training to Australia, New Zealand, and Fiji Islands ports. APP also promotes measures to increase port efficiency and safety, and facilitates harmonious development of ports in the region.

Although APP is not formally associated with other regional bodies, it works closely with such organizations, including SPC, the Secretariat of the Pacific Regional Environment Programme (SPREP), and the Pacific Islands Forum Secretariat (PIFS). APP has been collaborating with RMP on matters relating to ports and shipping in the region, specifically the implementation of the International Ship and Port Facility Security (ISPS) Code. Closer relationships are evolving. APP and RMP in June 2006 signed a Memorandum of Understanding defining their roles and responsibilities in the development of a more cooperative Pacific maritime sector. Additionally, the APP Secretariat is now based at SPC.

Pacific Women in Maritime Association

The Pacific Women in Maritime Association (PacWIMA) is a relatively new organization, established only in February 2005. Its goals are to

- Promote overall development of the maritime sector in the Pacific;
- Advocate gender equity in the Pacific maritime sector;
- Promote education, training, and career opportunities for Pacific women linked to the maritime sector;
- Increase the recognition of social responsibilities relating to Pacific women in the maritime sector;
- Promote cooperation, friendship, and understanding through the exchange of knowledge and the dissemination of information; and
- Promote safe, secure, and efficient shipping and cleaner oceans.

Regular membership of PacWIMA is open to women from a PIC or territory that is a member of SPC and who are employed in the maritime industry or who are maritime students. The Association also has provision for associate, corporate, and honorary membership. Although recently established, PacWIMA appears to be making its presence felt very rapidly and was regularly cited as an important regional institution during the course of the present study. RMP acts as the secretariat for PacWIMA.

Pacific International Maritime Law Association

The Pacific International Maritime Law Association (PIMLA) is also a rather new organization, officially launched in Port Vila, Vanuatu, in September 2005. PIMLA was established as a forum for

> …legal professionals in the Pacific Islands maritime sector to discuss and pursue legal maritime issues of concern to the region; advise international or regional entities and national governments and to enhance the uniformity and harmonisation of maritime practices; and promote legal maritime capacity building (PIMLA Fact Sheet, SPC website: www.spc.int).

Regular membership of the Association extends to International Maritime Law Institute graduates and maritime lawyers from the Pacific region. The Association also has provision for associate membership, which has much broader criteria and is effectively open to any person that PIMLA's Executive judges could contribute to the achievement of the goals of the Association.

RMP provides secretariat and treasury functions, in an ex-officio capacity, to the Association.

Pacific Islands Forum Secretariat

The Pacific Islands Forum comprises 14 PICs[2] and Australia and New Zealand. The main focus of the Pacific Islands Forum is to provide a place to discuss political and economic policy, as well as implementation and coordination assistance. The agenda is based on reports from the Pacific Islands Forum Secretariat (PIFS), and any other matter that member countries raise.

PIFS, the Forum's administrative arm, is located in Suva. It is funded by contributions by member states, with a budget of approximately $21.6 million in 2006. The Secretary General heads the PIFS, with the Forum Officials Committee—comprised of representatives from all member governments—as its governing body. The main roles of the PIFS include

- acting as the secretariat for Forum-related events,
- implementing decisions by the Leaders,
- facilitating the delivery of development assistance to member states, and
- undertaking the political and legal mandates of Forum meetings.

The Pacific Plan

The Pacific Plan is not an organization, but an attempt to promote regional cooperation and integration among PICs by identifying specific goals and targets. The aim is to identify and collectively address areas where countries will gain the most from sharing resources and aligning policies. By learning from past experience of PICs (both what works and what does not work), the Pacific Plan attempts to deliver four key goals—economic growth, sustainability, good governance, and security. The Pacific Plan incorporates a commitment to implement the Forum Principles on Regional Transport Services (Appendix 5). Responsibility for implementation of the Pacific Plan lies with PIFS.

[2] Cook Islands, Federated States of Micronesia, Fiji Islands, Kiribati, Marshall Islands, Nauru, Niue, Palau, PNG, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

Pacific Forum Line

Pacific Forum Line (PFL) was established in 1977 on the basis of a Memorandum of Understanding carried out in Suva. PFL began operating in 1978. The rationale for PFL was not only to operate a shipping company, but also to be an instrument for regional development.

PFL is a limited liability private company. Its 11 shareholders are the governments of the Cook Islands, Fiji Islands, Marshall Islands, Nauru, New Zealand, Niue, PNG, Samoa, Solomon Islands, Tonga, and Tuvalu. Kiribati was formerly a shareholder but withdrew. PFL operates eight vessels capable of carrying containerized and break bulk cargoes on a wide range of services linking Australia, New Zealand, and selected Pacific islands. Using direct call services, they also offer transshipment to other destinations through ships of other companies. Additional information about PFL and its evolution is provided in Appendix 6.

Shipping Services in the Pacific Region

Types of International Service

Most international import trade in the region is carried in containers, although there is significant movement of bulk (dry and liquid) and break bulk cargoes. As noted previously, export volumes for many PICs are very low. Where they are not, they typically consist largely of bulk cargoes.

Bulk trades. Bulk trade can be categorized as liquid bulk (including cargoes, such as petroleum-based products, chemicals, and edible oils) and dry bulk (including export commodities, such as sugar and forestry products, and imports, such as fertilizer and cement). Ownership of vessels used tends to be vested in overseas companies. However, a measure of control would be exercised by regional or local branches of the global companies involved, which may operate or have access to dedicated tonnage.

Other than the inevitable high costs resulting from the remoteness of many Pacific island ports, export bulk shipping is generally not problematic. Cargo shippers (or their customers)—often large multinational enterprises—charter vessels that sail at the times and to the ports determined by the cargo interests. Generally, liquid bulk is carried in vessels owned or time-chartered by the major cargo interests or by oil companies. Dry bulk is

carried predominantly in vessels chartered by cargo interests, shippers, or consignees, sometimes on a time-charter basis[3] but often on one-off voyage charters. Ships are usually readily available on an extremely open and competitive market.

Container trades. The majority of general cargo imports and exports to most PICs, as elsewhere in the world, are now carried in containerized form. The vast majority of containerized cargoes are carried on regulated scheduled services operating on (more or less) fixed routes.

Break bulk trade. Internationally sourced or destined break bulk generally covers cargo not suitable for carriage in containers. It may comprise over-dimensional cargo, such as machinery and structural steel; wheeled units, such as trucks and buses; and the occasional large, heavy lift items, such as industrial project cargo and cargo-handling equipment (such as cranes). Many of the vessels used to carry containers to and from Pacific island ports are, in fact, multipurpose vessels capable of carrying break bulk, as well as containerized cargoes. However, some scheduled services, notably the Indotrans and PAS/AAL services (discussed below), are primarily designed to carry non-containerized goods. Ultraheavy lift items (e.g., wharf cranes) can be moved on chartered heavy lift vessels.

Perishable cargoes. The main perishable cargo of concern to PICs is seafood processed and packed for export. Much of this cargo is now containerized. However, some is loaded into conventional refrigerated vessels at both common user and dedicated wharves, and by ship-to-ship transfer by fishing vessels operating in the region under license.

Scheduled International Services

Scheduled cargo operations, carrying container and/or break bulk cargoes, are more complex than bulk operations. Routes, vessel size, and service frequencies are decided by the shipping line, which will carry cargoes for a wide variety of customers. Services currently serving the region—including service characteristics, such as frequency and destinations served, and operational aspects, such as vessel size and configuration—are described below.

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[3] Time chartering refers to chartering a vessel for a stipulated period of time—for example, 3 months. In voyage chartering, as the name suggests, the vessel is hired for a single journey.

Ownership of most of the vessels involved in international trade lies with overseas companies. The services are represented by agents, often local companies that sometimes cover a range of ports in different countries. Ownership by island nations is usually limited to smaller vessels trading domestically. PFL, with its regional ownership, is the major exception.

The lack of influence on shipping matters, such as the setting of freight rates and surcharges, is a critical issue for PICs as it is for their larger neighbors in ASEAN.

Asian and around-the-world trades. The Asia-Pacific Islands trade is comprised of a number of major services calling weekly or monthly at key ports in the Pacific islands. A number of around-the-world services also operate through the Pacific Islands. However, PICs are sometimes bypassed if cargo volume is insufficient.

The vessels used on these routes are multipurpose or roll on–roll off (ro-ro) vessels that typically transport between 400 and 1,000 TEU.[4] The significant Asian port linkages to the Pacific Islands include Busan, Hong Kong, Jakarta, Kaohsiung, and Singapore. Table 1 outlines the major services between Asia and the Pacific Islands—the shipping line operators, the shipping route, and the vessels deployed on these routes. The shipping routes and port calls of these services may be seen in Appendix 7.

[4] A TEU, or twenty-foot equivalent unit, is a measure of containerized cargo capacity equal to one standard 20-foot (length) × 8-foot (width) × 8.5-foot (height) container.

Table 1: Major Services between Asia and the Pacific Islands

Service	Participants	Frequency	Vessel	Service Type/ Ship Size
Kaohsiung / Hong Kong / Busan / Kobe / Nagoya / Yokohama / Majuro Atoll / Tarawa / Port Vila / Noumea / Lautoka / Suva / Apia / Pago Pago / Papeete / Nuku'alofa / Santo / Honiara / Kaohsiung	Kyowa Shipping Co Ltd / Mitsui OSK Lines / NYK-Hinode Line Ltd (Greater Bali Hai)	Twice monthly	*Kyowa Cattleya Kyowa Hibiscus Coral Islander II Pacific Islander II MP*	Ro-ro: 400–900 TEU (plus car deck for 500 vehicles); 8,000–7,000 GT
Jeddah / Gizan / Mundra / Mumbai/ Singapore / Tanjung Priok / Kimbe / Lae/ Apia / Pago Pago / Papeete New Orleans/Houston / Camden/ St John	Indotrans	Once monthly	*Pacific Makassar, Pacific Flores, Pacific Celebes, Pacific Java*	Multipurpose: 1,200 TEU; 30,000 GT
Tanjung Perak / Tanjung Priok / Port Klang / Sriracha / Singapore (PSA) / Noumea /Suva / Auckland / Tauranga / Wellington / Taranaki	Tasman Orient Line	Every 15 days	*Tasman Challenger Tasman Commander Tasman Mariner*	Multipurpose: 1,250–1,350 TEU; approx. 18,000 GT
Keelung / Taichung / Kaohsiung / Hong Kong / Mawan / Ho Chi Minh / Sriracha / Singapore (PSA) / Noumea / Lautoka / Suva / Auckland / Taranaki / Wellington / Timaru / Bluff / Nelson / Tauranga / Auckland	Tasman Orient Line	Every 15 days	*Tasman Pathfinder, Tasman Provider, Tasman Trader, Tasman Endeavour*	Multipurpose: 950–1,250 TEU; Approx. 15,000 to 18,000 GT
Port Klang / Map Ta Phut / Sriracha / Singapore (PSA) / Tanjung Priok / Lae / Port Moresby / Brisbane / Newcastle / Melbourne / Port Kembla / Tanjung Priok / Singapore (PSA) / Port Klang	Austral Asia Line BV	Once monthly	*Cape Conway Cape Moreton Cape Preston Cape York*	Multipurpose: 740–840 TEU; approx. 17,000 GT
Port Klang / Pasir Gudang / Singapore (PSA) / Tanjung Priok / Port Moresby / Lae / Alotau / Oro Bay / Rabul / Kavieng / Port Klang	Austral Asia Line BV	Every 17 days	*Newpac Cirrus Newpac Cumulus Papuan Gulf*	Multipurpose: 650–973 TEU; 6,300–13,000 GT

Service	Participants	Frequency	Vessel	Service Type/ Ship Size
Busan / Kobe / Nagoya / Yokohama / Saipan / Apra / Yap / Koror / Truk / Ponape / Busan	Kyowa Shipping Co Ltd	Twice monthly	*Asian Hibiscus* *Kyowa Salvia*	Ro-ro: 236–300 TEU
Shanghai, Busan, Kobe, Yokohama, Saipan, Guam, Yap, Palau, Manila	Palau Shipping Company	Every 3 weeks	*Baffin Express*	Not known

approx. = approximately, GT = gross tonnage, ro-ro = roll on-roll off,
TEU = 20-foot equivalent unit.

Sources: CI-Online, www.ci-online.co.uk; New Zealand Shipping Gazette; Lloyds List DCN; Fiji Times; Solomon Star; schedules provided by ships agents.

Table 2: Services Between North America and the Pacific Islands

Service	Participants	Frequency	Vessel	Service Type/ Vessel Size
Melbourne/ Sydney/ Tauranga/ Suva/ Ensenada[a]/ Los Angeles	Hamburg Sud-FANZ-Hapag-Lloyd-Maersk	Weekly	*Cap Agulhas, Maersk Auckland, Maersk Hong Kong,Hansa Flensburg, Hansa Rensburg, Hansa Sonderburg*	Container: 1,700–1,750 TEU; 18,000 GT
Long Beach /Oakland / Papeete/ Apia / Pago Pago	Hamburg Sud/ Polynesia Line	Twice monthly	*Cap Matatula, Polynesia*	Container: 1,100–1,200 TEU; 12,000 GT

GT = gross tonnage, TEU = 20-foot equivalent unit.
[a] Every second voyage.

Sources: CI-Online, www.ci-online.co.uk; New Zealand Shipping Gazette; Lloyds List DCN; Fiji Times; Solomon Star; schedules provided by ships agents; shipping line websites.

North American trade. The Indotrans service carries cargo from the Pacific to the East Coast of the United States, as well as from Asia to the Pacific (see Table 1). Additionally, there are two other services that provide a direct connection between the Pacific Islands and North America. As Table 2 shows, each has very limited coverage of Pacific island ports, one calling only at Suva (Fiji Islands) and the other calling only at Apia (Samoa). The shipping routes and port calls of these two services may be seen in Appendix 8. There are several other services to North America that call at Pacific island ports, but mainly at Apra (Guam), Noumea (New Caledonia), and Papeete (Tahiti), and not at Forum Island Countries (FICs).

European trade. Apart from the Indotrans service, only one other regular service provides a direct connection between the Pacific Islands and Europe. This service, provided by Bank Line, has been a feature of Pacific island shipping for many years. It continues to follow a long and complex itinerary—an itinerary frequently made even more complex by inducement calls at ports, such as Honiara (Solomon Islands). Details of the regular ports on the service's itinerary are provided in Table 3. The shipping route and port calls of the services may be seen in Appendix 9.

Table 3: Services Between Europe and the Pacific Islands

Service	Participants	Frequency	Vessel	Service Type/ Ship Size
Algeciras / Hamburg / Hull / Antwerp / Dunkirk / Le Havre / Papeete / Auckland / Noumea / Suva / Lautoka / Port Vila / Santo / Lae / Madang / Kimbe / Rabaul / Jakarta / Singapore (PSA) / Algeciras	Bank Line	Once monthly	Boularibank Gazellebank Mahinabank Tikeibank	Multi-purpose: 700 TEU; 18,600 GT

GT = gross tonnage, TEU = 20-foot equivalent unit.

Sources: CI-Online, *www.ci-online.co.uk*; New Zealand Shipping Gazette; Lloyds List DCN; Fiji Times; Solomon Star; schedules provided by ships agents; shipping line websites.

Australia and New Zealand (ANZ) Trade. A significant proportion of the total seaborne trade into and out of the Pacific Islands originates in or is destined for Australia or New Zealand. There are numerous shipping services destined for specific PICs, as well as a few services that make wayport calls at key Pacific island ports. These services can be categorized into four broad groups:

- Services operating between ANZ and other non-PICs (in Asia, North America, or Europe) that make a call or calls to one or more Pacific island ports en route. These Pacific port calls may not be exclusively or even primarily concerned with trade between ANZ and the Pacific. Although these services do carry cargo between ANZ and PICs, they are not included in the list of services in the tables below. They are, instead, included in the above sections discussing services to the Pacific from Asia, Europe, and North America (depending on the main non-ANZ trades served by the particular service).
- Services between ANZ and the Western Pacific, of which PNG is the core market (although some of these services also call at Solomon Islands or Vanuatu).

Table 4: Major Services Between Australia and New Zealand and PNG

Service	Operator	Frequency	Vessel	Service Type/ Vessel Size
Brisbane / Port Moresby / Lae / Madang / Brisbane	ANL 'APX Service'	Fixed-day fortnightly	*ANL Kokoda*	Container: 500 TEU; 6,400 GT
Sydney / Melbourne / Brisbane / Port Moresby / Lae / Honiara / Tauranga / Napier / Nelson / Sydney	Chief Container Service (Swire)(1)	Fixed-day weekly	*Papuan Chief, Aotearoa Chief, Lihir Chief, Coral Chief*	Multipurpose: 981 TEU; 7,900 GT
Lyttleton / Napier/Tauranga / Auckland / Brisbane / Port Moresby / Lae / Rabaul / Lihir I / Honiara / Port Vila / Lyttleton	Sofrana Unilines	Every 18 days	*Sofrana Magellan, Sofrana Kermadec*	Multipurpose: 550–600 TEU
Townsville-POM-Alotau-Lae-Townsville	Consort Express Lines	Fixed-day weekly	*Niu Ailan Coast, Madang Coast, Bougainville Coast, Sepik Coast*	Semi Container: 85–165 TEU
Townsville / Port Moresby / Lae / Townsville	Coral Sea Shipping Lines Pty Ltd	Weekly?	*Bosavi*	Ro-ro: 79 TEU

GT = gross tonnage, PNG = Papua New Guinea, ro-ro = roll on-roll off, TEU = 20-foot equivalent unit.

Source: CI-Online, www.ci-online.co.uk; New Zealand Shipping Gazette; Lloyds List DCN; Fiji Times; Solomon Star; schedules provided by ships agents; shipping line websites.

- Services between ANZ and the Eastern Pacific, which include calls at the major central and eastern Pacific destinations of Fiji Islands, Samoa, and Tonga.
- Regional feeder services, which operate out of an ANZ port, but are not exclusively—or even necessarily primarily—devoted to the carriage of cargo between ANZ and PICs. They carry cargoes transshipped from Asia or North America over the hub port. In some of the smaller destinations (for instance, Tarawa), there is no alternative to these transshipment services for cargoes to and from more distant markets. In other cases—and this is a more recent phenomenon—a line has opted to use a transshipment alternative to compete with other lines providing a direct service. Maersk's Auckland-based service to the Central Pacific clearly fits in this category. These feeder services are dealt with in a separate section dedicated to intraregional services.

Services between ANZ and Western Pacific. Scheduled services between ANZ and PNG are shown in Table 4. Two of the three major dedicated services offer a similar style of operation. Chief Container Services and Sofrana (the former using an Australian base, the latter focusing largely on cargoes to and from New Zealand) operate fairly long itineraries covering a range of ports in the base country. ANL's APX service, a relatively new entrant in the trade, has a far more streamlined itinerary, making it possible to provide a competitive frequency of service while operating only one vessel.

Services between ANZ and Central and Eastern Pacific. Pacific Forum Line (PFL), Pacific Direct Line (PDL), Reef Shipping, and Neptune Shipping are the principal service providers in this segment. They collaborate in the provision of the main Australia-Central Pacific services, but PFL operates a separate service from New Zealand (see Table 5). There is, however, extensive slot chartering. PFL, for example, has space aboard PDL's Southern Moana from New Zealand to Vanuatu.

Table 5: Services Between Australia and New Zealand and Central and Eastern Pacific

Service	Operator	Frequency	Vessel	Service Type/ Ship Size
Brisbane / Sydney / Melbourne / Lautoka / Suva / Pago Pago / Apia / Nuku'alofa / Suva / Lautoka / Brisbane	Reef Shipping / Neptune Shipping Line PDL / PFL	Two sailings monthly	*Forum Samoa Capitaine Tasman*	Multipurpose: 600–650 TEU; 7,000–7,500 GT
Tauranga / Auckland / Lautoka./ Suva / Funafuti /Tauranga	Neptune/PDL	Fortnightly	*Capitaine Wallis*	Container: 520 TEU; 4,500 GT
Auckland-Nuku'alofa-Apia-Pago Pago-Auckland	Reef Shipping, PDL, Sofrana	Fortnightly	*Southern Cross*	Multipurpose: 512 TEU; 4,000 GT
Lyttleton/Napier/Auckland / Lautoka/Suva / Apia / Pago Pago /Nuku'alofa/Lyttleton	PFL	Fortnightly	*Forum Pacific, Forum Fiji III*	Multipurpose: 61–512 TEU; up to 7,600 GT
Lyttleton/ Whangarei/ Auckland/ Nuku'alofa/ Papeete	PDL	21 days	*Southern Pearl*	Container: 325 TEU; 4,366 GT

GT = gross tonnage, PDL = Pacific Direct Line, PFL = Pacific Forum Line, TEU = 20-foot equivalent unit.

Source: CI-Online, www.ci-online.co.uk; New Zealand Shipping Gazette; Lloyds List DCN; Fiji Times; Solomon Star; schedules provided by ships agents; shipping line websites.

Intraregional Feeder Services. In addition to the major services, several smaller services operate between ANZ and the smaller PICs. These services use the ANZ ports—particularly Auckland—as a mini-hub, with cargoes coming from Asia, United States, and Europe transshipped onto the service at the hub port. In addition, there are two more recently introduced services that are specifically designed to provide a transshipment alternative to direct services. These are Matson's Guam-centered transshipment service to the Federated States of Micronesia (FSM) and the Marshall Islands, and Maersk's Auckland-based transshipment service to the South Pacific. The main features of these services are shown in Table 6.

Table 6: Minor Services Between Australia and New Zealand and Pacific Islands

Service	Operator	Frequency	Vessel	Service Type/ Vessel Size
Suva / Lautoka / Tauranga / Auckland / Noumea / Suva	Maersk Line	Fortnightly	*Maersk Asia Decimo*	Container: 846 TEU
Guam / Ebeye / Kwajalein / Majuro / Kosrae / Pohnpei / Chu'uk.	Matson	Fortnightly	*MV Islander II*	Container: 648 TEU
Melbourne / Sydney / Brisbane / Noumea / Port Vila / Santo / Suva / Tarawa / Majuro / Santo Port Vila / Noumea / Melbourne	Chief Container Line (Swire)	Every 33 days	*Kiribati Chief*	Container: 876 TEU; 7,900 GT

Table 6: Minor Services Between Australia and New Zealand and Pacific Islands (continued)

Service	Operator	Frequency	Vessel	Service Type/ Vessel Size
Auckland / Noumea / Vila / Suva / Funafuti / Wallis / Futuna	PDL	Every 20–25 days	*Southern Moana (aka Moana Pasifika)*	Multipurpose: 512 TEU; 4,400 GT
Auckland / Rarotonga / Aitutaki / Alofi (Niue) Auckland	Express Cook Islands Line	Every 21 days	*Southern Express*	Container/ break bulk: 246 TEU; 2,800 GT
Auckland Suva Rarotonga Auckland	PFL	Every 21 days	*Matua*	Multipurpose: 125 TEU; 2,037 GT
Sydney / Brisbane / Nauru / Sydney	Neptune Shipping Line	35–42 days	*Capitain La Perouse*	Semi-container: 221 TEU

GT = gross tonnage, PDL = Pacific Direct Line, PFL = Pacific Forum Line, TEU = 20-foot equivalent unit.

Source: CI-Online, www.ci-online.co.uk; NZ Shipping Gazette; Lloyds List DCN; Fiji Times; Solomon Star; Schedules provided by ships agents; shipping line websites.

The shipping routes and port calls of the ANZ trade may be seen in Appendix 10.

Domestic Services

Domestic or coastal services are a key element in the mainly archipelagic nations of the region. These vary from relatively sophisticated roll on-roll off passenger/cargo services—where volumes are able to support them—to services by a variety of smaller vessels built or modified for the specialized role of serving small ports and beach landings. The vessels employed include many types of small craft, including wooden vessels and the ubiquitous "banana" (also called "fiber" or "long") boats. They offer mostly informal inter- and intra-island freight and passenger services, often acting as feeders to ports served by larger scheduled vessels. Many of these vessels operate outside normally accepted safety and security protocols. Small craft also provide some intra-island transport where terrain or lack of roads hampers land transport and encircling lagoons offer sheltered, if tidally constrained, waters.

Domestic services are important to the international trade of PICs because the bulk of inbound international cargo is shipped to one or two key ports in each country—such as Suva in Fiji Islands or Apia in Samoa. Typically, domestic cargo is then deconsolidated and distributed around the various islands using smaller domestic vessels berthing at local wharves. In some remote communities, the cargo is transferred either by beach landing or mid-water exchange.

Of general concern in a number of PICs is the lack of commercial viability of the domestic shipping sector. This essentially stems from two factors: the low volume of goods being transported, and the aging domestic shipping fleet in some countries. Domestic services carry break bulk—sometimes in unitized, ro-ro form—in locally developed racks and containers that do not conform to the standards of the International Organization for Standardization (ISO). Often, cargo is stowed in loose form, traditionally by cranes or manual labor. Construction materials make up a large part of this freight, and a significant amount of liquids is moved in drum form to service island needs for diesel (transport and power generation), motor gasoline, and two-stroke fuel for outboards. Other cargo carried in break bulk form is island exports, including bagged copra; produce, such as cassava, bales of pandanus (fiber used for woven products), and handicrafts.

Freight Costs

Freight rates in the region are relatively high. Costs are further affected by surcharges, such as "Port Service Charges," which are unilaterally applied by shipping lines in response to what are identified as the cost of poor productivity. The impost of surcharges delays vessels and adds additional costs—for example costs of maintaining a greater level of supervision than would be needed elsewhere. The following table illustrates not only the relatively high levels of freight costs overall, but also the variation in rates between countries in the region.

Table 7: Indicative Freight Rates per TEU to/from Pacific Islands Countries, 2003–2004

Route	Commodity	Base Rate ($)	Surcharges
Australia-Fiji Islands	General Cargo	1,185	
Australia-Nauru	General Cargo	3,081	CABAF = 27.59% of base freight rate
Australia-Samoa	General Cargo	2,212–2,370	CABAF = 26% of base freight rate
Australia-Kiribati (Tarawa)	Flour, Salt, Sugar, Rice	2,074	Export PSC = $0.60 + GST, Dock Fee = $23.70 per bill of lading
Australia-Kiribati (Tarawa)	Beverages, Beer	2,528	CAF = 7.16%, BAF = $235, Export PSC = $59.30, Doc Fee = $23.70 per bill of lading
Australia-Kiribati (Tarawa)	Reefer	3,555	CAF = 7.16%, Export PSC = $59.30, Doc Fee = $23.70 per bill of lading
Australia-PNG	General Cargo	1,738–2,133	BAF = $234.60, CAF = 7.16%
Australia-Tonga	General Cargo	1,975–2,212	CABAF = 26% of base rate
NZ-Samoa	General Cargo	1,750–1,820	CABAF = 34.15% of base rate
NZ-Tonga	General Cargo	1,750	CABAF = 34.15% of base rate

BAF = bunker adjustment factor, CAF = currency adjustment factor, CABAF = currency and bunker adjustment factor, GST = goods and services tax, NZ = New Zealand, PNG = Papua New Guinea, PSC = port service charges, TEU = 20-foot equivalent unit, THC = terminal handling charges.
Source: Study Team interviews, January–March 2004; Australian Agency for International Development (2004).

Ports in the Pacific Region

Each PIC has a range of ports. Typically, only one or two major ports are involved in international liner trades, owned and operated by the government or by government corporations. Secondary ports provide for domestic services and are generally owned by national or provincial governments, although there are moves toward private sector involvement in terminal operations, particularly for container facilities. A range of smaller port facilities would typically be owned and operated by provincial bodies or local communities, but with facilities and navigational, safety, and security aspects overseen by central government entities. There are already some privately-owned, dedicated facilities for bulk exports and imports.

Port infrastructure ranges from basic wharves and hardstand, up to more sophisticated facilities with major cargo-handling capability aiming for world-class standards in the larger economies. Ports in the various countries in the region vary from relatively modern, well-equipped container and dedicated bulk facilities to very basic wharves. The latter offer only the basic facility to tie up a vessel and work cargo, with ships effectively expected to provide all cargo handling, including required hardware, as well as personnel.

Sophisticated facilities with major cargo-handling capability are in the minority. Many ports in the region are well below international standards in terms of infrastructure and operations. The *Pacific Regional Transport Study*, prepared for the Pacific Islands Forum in 2004, found serious shortcomings at ports in the various FICs:

> Many of the port facilities visited by the Technical Team were built in the 1950s or 1960s, prior to containerisation and such ports pose serious operational problems. Cargo sheds designed to shelter break-bulk cargo from extreme weather conditions now pose obstacles to the efficient movement of containers between ships and stacking areas. Wharf surfaces are typically potholed, making it difficult to operate forklift trucks, thus raising the cost of stevedoring operations. Some wharves, unable to take the weight of a forklift plus heavy container, require double handling of containers. After being unloaded of ship equipment [sic], containers are initially placed on flat bed trucks, driven to the wharf stacking area, unloaded and positioned in their appropriate slot in the stack by forklift. A lack of maintenance was noticeable in many ports (Australian Agency for International Development [AusAID] 2004, 37).

There has been some progress in the region in the interim. The ports of Suva and Lautoka (Fiji Islands) have been significantly upgraded and new capital equipment acquired. However, many ports still face the problems described above. For Fiji Islands, FSM, and Solomon Islands, case studies may be seen in Appendixes 1, 2, and 3, respectively, for details about recent progress and continuing constraints to efficiency and productivity.

Despite some movement toward private sector involvement in ports, particularly in terminal operations, major ports and marine infrastructure are still largely provided by central governments, with provincial or local governments administering smaller facilities. Progress toward private sector involvement has been patchy. In PNG, for example, attempts to privatize the ports sector was effectively halted for several years by national political changes. In the Fiji Islands, progress on an ADB-funded port development project—conditional on the introduction of contestability in stevedoring for container terminal operations—has been delayed by the slow progress toward contestability.

In practical terms, however, contestability may be difficult to achieve. Cargo volumes are low and new entrants are faced with substantial capital requirements. Whereas in larger economies the leasing of cargo-handling equipment is likely to be relatively easy, no such availability is likely in the small ports and economies in the Pacific. Economic and financial constraints in PICs are such that only the public sector can find the means to offer the necessary services, unless the promise of larger-scale business can be used to attract international port operators or shipping lines to become involved through transshipment or other means.

Port Charges

Comparison of port charges is always difficult because the structure of these charges differs significantly from port to port. Typically, the cost of providing port infrastructure is recovered from an array of charges, each of which may have a different name in different ports. The most common charging elements are

- **Charge for entering the port**. This charge is customarily paid by the ship operator. Variously known as port dues, tonnage charge, ships dues, or navigation charge, charges are usually related to the size of the ship, most commonly on the basis of gross tonnage.

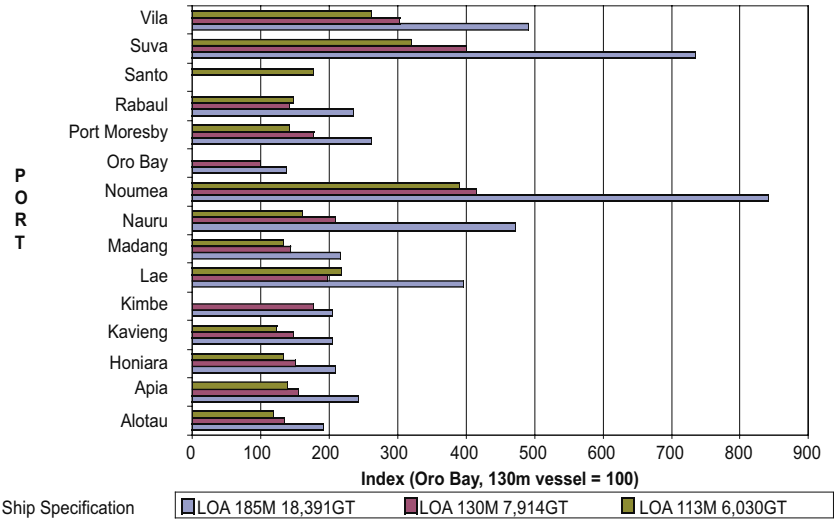
Charges may be levied per call or per elapsed time period (for example, once every 3 months).

- **Charge per unit of cargo loaded/unloaded**. Most commonly referred to as wharfage, this charge is normally charged to the cargo owner and, thus, is also known as cargo dues. This charge is generally regarded as a contribution toward the provision of berth infrastructure. It should not be confused with stevedoring or cargo-handling charges—also commonly charged per unit of cargo loaded/unloaded—which are charged to cover the cost of the handling operation.
- **Charge per time spent at the berth**. This charge is usually payable by the ship operator and is variously known as berthage dues or berth hire. It may be a flat rate per hour or may vary with the size of the vessel (measured either in gross tons or length overall [LOA]).

Comparison is further complicated by the fact that not all ports include all charging components in their tariffs, and some ports include additional elements. The best approach would be to compare charges in hypothetical port calls by a hypothetical vessel of a size and type typically used in the trades, loading/unloading cargo volumes that are also representative. Total port charges in each port call could then be calculated and compared. Fortunately, a comparison on this basis was prepared by the Vanuatu Ministry of Finance and Economic Management (MFEM) (Vanuatu MFEM 2003). The study examined the total charges incurred by three different "typical" ships. The charges included in the comparison are not entirely clear. However, they appear to include infrastructure charges (tonnage dues, wharfage, and berth hire), but exclude port services (towage, pilotage, and cargo handling).

Figure 1 presents a comparison of port charges in selected Pacific ports based on the results of the study. Comparative port charges are presented in index form, using the charges for a 130-meter LOA vessel using the port of Oro Bay (PNG)—which recorded the lowest total charges in the sample—as the basis for the index, and assigning this an index value of 100.

Figure 1: Comparative Port Tariff Charges, April 2003



GT = gross tons, LOA = length overall, M = meters.

Source: Based on data presented in AusAID (2004), attributed to Vanuatu Ministry of Finance and Economic Management (2003) 15.

Although there is some variation across ship sizes, in general, ports that are expensive for one size vessel are expensive for other sizes. Noumea (New Caledonia) stands out as the most expensive port in the region, with Suva not far behind. Charges in Port Vila (Vanuatu) are also relatively high. Nauru is relatively expensive for the largest vessels, but not for smaller ships. There is some variation among the PNG ports, with charges lower at the minor ports of Alotau, Kavieng, and Oro Bay, and relatively high at the major ports of Lae and Port Moresby. Apia (Samoa) and Honiara (Solomon Islands) are relatively low-cost ports.

The comparison does not show the inverse relationship between port charges and port size that might be expected, given the existence of substantial economies of scale in the provision of port facilities. Without more detailed analysis, it is not possible to be definitive about the reasons for this. It may be that economies of scale are offset by differences in operational and investment efficiency. Perhaps some of the larger ports are not managed as well as some of the smaller ports, causing the effects of economies of scale to not show up clearly.

There are at least three other contributing factors, however, that in combination provide a more persuasive explanation of the absence of the expected effects of scale on port charges.

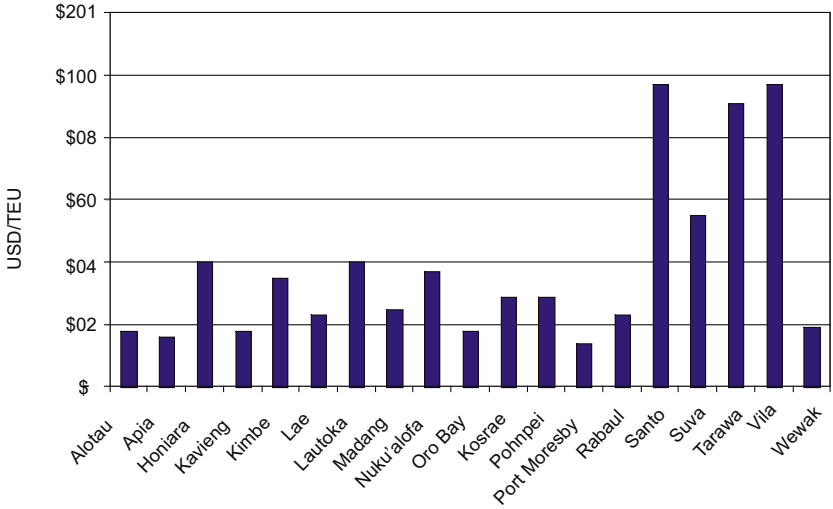
- **Differences in financial performance**. The comparison in Figure 1 shows the relationship between charges at various ports. This provides an indication of relative port costs only if all ports delivered equivalent financial performance. This is manifestly not the case. Some ports, particularly those that are established as port authorities or corporations, are required to be financially self-sustaining. Even within this group, however, the treatment of capital costs varies considerably. Other ports, typically those that operate within government departments, do not have independent accounts. Prices in these ports are set without much reference to costs. Because it is generally larger ports that are required to be self-sustaining, this factor is likely to systematically bias the comparison against larger ports.
- **Cross-subsidization**. Where a port authority is responsible for a number of ports, there is frequently cross-subsidization between ports. This has been explicitly acknowledged in the case of the PNG ports (ICCC 2006), and is likely to be the case in Fiji Islands. Because it is generally the larger ports where revenues are used to cross-subsidize the smaller ones, this practice once again will systematically bias the comparison against larger ports.
- **Infrastructure quality**. The quality of infrastructure (and hence, both capital and maintenance costs) varies markedly between Pacific island ports. In Nauru, for example, general cargo vessels must anchor offshore while cargo is discharged to lighters. In contrast, in Suva, a heavy-duty wharf (recently improved under an ADB-funded project) is available and capable of supporting heavy-duty lifting equipment. High-quality infrastructure increases the costs incurred by the port (and hence, all other things being equal, port charges). However, high-quality infrastructure is very likely to improve service quality and reduce costs incurred by ship operators and cargo owners. Importantly, it is easier to justify investment in high-quality infrastructure when port throughput is greater, so there is a general tendency for the quality of infrastructure to be better in larger ports. Unless some adjustment is made for infrastructure quality, this will also systematically bias the comparison against larger ports.

Stevedoring

The provision of stevedoring varies among ports. In general terms, the movement is toward contestability. However, many ports in government ownership provide stevedoring, either directly or through subsidiaries or government corporations.

Charges also vary substantially, as shown in Figure 2, which is based on the previously cited study undertaken by Vanuatu (Vanuatu MFEM 2003). It is most unlikely that relative prices have changed since that time. The ratio of charges at the most expensive port (Santo, Vanuatu) and the least expensive (Port Moresby) is a staggering 7:1.

Figure 2: Comparison of Stevedoring Charges in Pacific Island Countries



TEU = 20-foot equivalent unit, USD = United States dollar.

Source: Study estimates, based on data presented in AusAID (2004), attributed to Vanuatu Ministry of Finance and Economic Management (2003) p.15.

Once again, there is a need for caution in interpreting these data. The comparison in the figure is based on a single, basic terminal charge: the charge for lifting a loaded 20-foot container on or off a vessel. In reality, stevedoring tariffs are quite complex. Stevedores differ in the way they

set charges for 40-foot and 20-foot containers, for example. Some (as in Honiara) see a lift as a lift and, within reasonable limits, charge the same for moving all loaded general-purpose containers, irrespective of size. Others (as in Lautoka, Fiji Islands) take the view that since a 40-foot container is equivalent to two 20-foot units, the shipowner will get (more or less) twice the revenue from it and, thus, will be able to afford twice as much in container handling charges. They, therefore, charge twice as much for a 40-foot container. Still others (as in Kimbe, PNG) adopt an intermediate position and charge roughly 50% more for a 40-foot container. In some cases, such as in Pohnpei (FSM), their equipment is better suited to handling 20-foot units than 40-foot units. The resulting significant drop productivity is offset by charges for a 40-foot container that may be even more than twice that for a 20-foot unit.

The approach to pricing the loading and unloading of empty containers also differs among stevedores. Just as some stevedores do not discriminate between containers of different sizes, some take the view that whether the container if loaded or empty is not their concern—it still must be loaded on the ship. These operators charge a common rate for full and empty containers. This is done, for instance, in the PNG port of Lae. Others charge very much less for empty containers than for full containers. In Kimbe, the charge for loading/unloading empty containers is only 15% of the charge for full containers. This approach is usually justified on the grounds that empty containers are earning no revenue for the shipping line, whereas full containers are. A cost-based argument could also be mounted, in so far as the equipment needed to move empty containers is much cheaper than the equipment for moving full containers.

In order to better assess of the extent of variation in the structure of stevedoring charges, additional data from the Vanuatu port tariff study were analyzed. The results (presented in Table 8) illustrate differences in the structure of charges, not in their level. To make these structural features more evident, the charge in each port for a simple lift on or lift off operation for a general-purpose, 20-foot container is assigned an index value of 100. Other charges—for the same operation for a 40-foot container, for example—are expressed as an index relative to the base value. The effect of differences in the absolute level of stevedoring charges is, thus, removed, allowing differences in charging structure to be seen more clearly.

Table 8: Structure of Stevedoring Tariffs, Various Pacific Ports
(Index: lift on/lift off charge for a general-purpose, 20-foot container = 100 in each port)

Port	GP_L		GPMT		GPSOB		GPDLR		ODG	
	20 ft.	40 ft.	20 ft.	40 ft.	20 ft.	40 ft.	20 ft.	40 ft.	20 ft.	40 ft.
Alotau	100	200	53	106	100	200	200	400	–	–
Apia	100	–	50	–	75	–	–	–	–	–
Honiara	100	100	100	100	100	100	100	112	112	112
Kavieng	100	200	53	106	100	200	200	400	–	–
Kimbe	100	153	15	29	15	29	29	59	–	–
Lae	100	100	100	100	100	100	200	200	100	100
Lautoka	100	200	38	108	85	–	200	–	–	–
Madang	100	100	100	100	100	100	200	200	100	100
Nuku'alofa	100	200	36	71	36	71	71	143	74	149
Oro Bay	100	200	53	106	100	200	200	400	–	–
Kosrae	100	235	62	157	78	157	78	0	–	–
Pohnpei	100	235	62	157	78	157	–	–	–	–
Port Moresby	100	200	100	200	100	200	200	400	100	200
Rabaul	100	100	100	100	100	100	200	200	100	100
Santo	100	200	100	200	251	492	251	501	100	200
Suva	100	133	28	44	28	–	133	–	–	–
Tarawa	100	200	50	100	57	113	57	113	100	200
Vila	100	200	100	200	422	845	422	845	100	200
Wewak	100	200	50	100	100	200	200	400	–	–

–= not applicable or not available; ft. = feet; GP_L = general purpose loaded container–lift on/lift off; GPMT = general purpose empty container–lift on/lift off; GPSOB = general purpose shift on board; GPDLR = general purpose discharge, land, restow; ODG = out of gauge–lift on/lift off.
Source: Study estimates, based on Vanuatu Ministry of Finance and Economic Management (2003).

Other structural features of stevedoring tariffs not evident in Table 8 may significantly affect the relativities shown in Figure 2. In some tariffs, the charge that appears is an all-in charge—i.e., it covers all basic service elements required to move the container from on board ship to on board the truck that will carry it out of the terminal. This (or at least an approximation to it) is the normal practice in well-developed, dedicated container terminals. In other tariffs, various service elements of the charge figure separately. In Pohnpei, for instance, there are three separate charges—ship-to-shore ($25.50), ship's side to container stack ($10), and container stack to truck ($8). A comparison of the stevedoring tariff at Pohnpei (obtained during the course of this study) with the Vanuatu study data indicates that only the first of these was included in the Vanuatu tariff comparison.

As with comparison of port charges, an accurate comparison of stevedoring charges requires access to full details of each stevedoring tariff, an understanding of how that tariff is applied in practice (usually based on consultation with the stevedore), and details of the composition of the cargo-handling task, so that an appropriate weighting can be given to each component of the tariff. This is beyond the scope of the present study.

Notwithstanding these cautions, it is possible to draw some basic conclusions from Figure 2. The first is that, in absolute terms, container stevedoring charges in the Pacific are generally low by international standards. Few container ports globally can offer container stevedoring for less than $100/TEU, and rates of up to twice that level are common.

The issue for Pacific ports is consequently not the absolute level of charges, but whether they represent value for money, given the level of service and stevedoring productivity. Facilities at most Pacific ports are basic and require the deployment of relatively expensive, and increasingly rare, geared container vessels. The "Pacific standard" rate of 10–12 lifts per hour is roughly one third of that expected at a modern, well-equipped container terminal.

The second feature of Figure 2 is the enormous range in charges among Pacific ports. For the reasons outlined above, it is possible that the actual range is somewhat smaller, but it is difficult to conceive of structural differences or omissions that would fully explain the great disparities. More perplexing is the absence of obvious cost or institutional explanation for the patterns in the data—charges at the large and busy port of Lae are low, but no lower than at the minor PNG port of Wewak. Stevedoring charges levied by the private stevedore in Vila are even higher than those charged

by the government-owned stevedore in the larger port of Suva or the government-owned port operator in the much smaller port of Tarawa.

Landside Structures and Networks

Land transport in PICs varies in both scale and efficiency. Smaller islands may have little or no mechanized transport and little in the way of surfaced roads. At the other end of the scale, some larger islands have reasonable road networks and developed transport systems (e.g., the land-bridging of cargo under bond on the Suva/Lautoka corridor in the Fiji Islands). However, in relation to nations outside the region, vehicle fleets tend to be old, often purchased in used from countries in Asia, and generally not well maintained.

Public transport varies similarly, with well developed and maintained bus fleets usually only where there are significant tourism needs. Minibuses, trucks, and route taxis take up much of the slack in many countries, providing cheap, informal, and generally little regulated services for passengers and personal freight. As mentioned above, intervillage transport is often limited to small craft using encircling lagoons for shelter. All of these modes of transport carry some freight, much in '"parcel" form or as accompanied baggage. Other modes, such as rail, are nearly nonexistent, with the exception of some dedicated lines (e.g., rail for transporting sugarcane).

Logistics Arrangements

In general terms, there is little developed logistics infrastructure in the region compared to neighboring regions. Around major ports, a network of container depots and pack/unpack facilities can be seen. In larger countries with supporting population bases, some major warehousing and distribution centers have sprung up, but these are often dedicated to major commodities, such as powdered milk products. However, in most cases, these centers are quite rudimentary when compared with distribution centers elsewhere in Asia and Australasia.

Some progress is taking place, however, and shipping lines and forwarders are developing more sophisticated operations around empty container depots, where congestion of port facilities is driving storage off-wharf. Opportunities can be seen where major port developments

are planned, such as in the new port facilities proposed for Rokobili, Suva, which are expected to attract export processing, as well as logistics activities.

Maritime Security

International safety and security protocols are having a growing impact on the transport sector. Maritime security arrangements have been tightened in the wake of 9/11. Following this event, the United States unilaterally imposed new maritime security arrangements. The best known is the "24-hour manifest rule," which requires all shipping lines to advise US authorities of the contents of all containers destined for US ports 24 hours before loading the container on a vessel in a foreign port.

The international community reacted to the threat of terrorism by developing a maritime security regime, known as the International Ship and Port Facility Security Code (ISPS). Developed through the International Maritime Organization (IMO), the ISPS Code is embodied in a new chapter of, and amendments to, the International Convention for the Safety of Life at Sea, 1974 (SOLAS). The ISPS Code came into effect on 1 July 2004. The objectives of the ISPS Code include

- Establishment of an international framework involving cooperation between contracting governments, government agencies, local administrations, and shipping and port industries;
- Determination of the respective roles and responsibilities of the contracting governments, government agencies, local administrations, and shipping and port industries—at the national and international levels—in ensuring maritime security;
- Creation of the means to ensure the early and efficient collection and exchange of security-related information; and
- Provision of a methodology for undertaking security assessments.

The ISPS Code applies to ships engaged in international voyages and the port facilities handling such vessels. It applies to a variety of vessel types, including cargo ships of 500 gross tons and above, passenger ships—including high-speed craft, as well as to mobile offshore drilling units. The Code applies also to port facilities that handle these vessels, whether on a regular or an occasional basis.

For seaports and ships, the ISPS Code requires compliance with a raft of regulations. Each overseas trading vessel of 500 gross tons and above is required to develop an approved Ship Security Plan "designed to protect persons on board, cargo, cargo transport units, ship's stores, or the ship from the risks of a security incident." Further, each vessel is required to designate a crew member responsible for the security of the vessel, including implementation and maintenance of the ship security plan and liaison with the Company Security Officer and Port Facility Security Officers. Each relevant vessel is also to be fitted with an approved Ship Security Alert System. Fully compliant vessels are to be issued a Ship Security Certificate.

Every port that handles international shipping is required to nominate a Port Facility Security Officer. This officer will be held responsible for the development, implementation, revision, and maintenance of an approved Port Security Plan, as well as for liaison with Company Security Officers and Ship Security Officers. It should be noted that under the ISPS Code, the term "Port Facility" extends to the channels and waterways leading to the port. This is an area in which the Pacific region is benefiting from sharing experience and resources in developing compliance measures and cost-recovery regimes. Compliance brings additional costs that, in many cases, are not fully understood or recovered by the ports. In fact, there is much discussion globally about how these costs should be estimated and recovered, and charges levied vary widely.

All but one of the FICs met the July 2004 deadline for compliance with the ISPS Code. Beginning in early 2005, the Suva-based Regional Maritime Programme conducted 18 independent audits of the implementation of Code requirements in the Pacific. The results of these audits are not publicly available, but available information indicates that in each of the countries the audit resulted in useful suggestions for future improvement, but did not reveal major deficiencies.

Maritime Training

There is a wide range of maritime training institutions in PICs but, for the most part, the level of training is fairly restricted (see Table 9). Only the PNG Maritime College has the equipment and qualified staff to provide training to the level required of a master or chief engineer on an international vessel.

Table 9: Maritime Training Institutions in the Pacific Island Countries

Country	Town	Institution	Programme	Students	Lecturers
Fiji Islands	Suva	Fiji Institute of Technology, School of Maritime Studies	Fishermen's course Class 6 master/ engine Up to class 4	200	14
FSM	Yap	Fisheries & Maritime Institute	Ratings course	16	4
French Polynesia	Papeete	Maritme and Fisheries school	Fishermen's courses Class 6 and above	75 officers 55 rating	8
Kiribati	Tarawa	Marine Training Centre		100	8
Kiribati	Tarawa	Kiribati Fisheries	Engineers – (min. grade 5) Fishing/ Deck – minimum of Boatswain Japanese language	90	10
Marchall Islands	Majuro	Fisheries and Nautical Training Centre	Fishermen's	60	3
New Caledonia	Nouméa	Maritime and Fisheries School	Fishermen's course Class 6 and above	75 officers 55 rating	8
Papua New Guinea	Madang	PNG Maritime College		220	18
Papua New Guinea	Kavieng	PNG Fisheries School	Fishermen's courses	50	5

Table 9 continued

Country	Town	Institution	Programme	Students	Lecturers
Samoa	Apia	Samoa Polytechnic School of Maritime Training		60	9
Solomon Islands (current closed)		School of Marine & Fisheries Studies			
Tonga		Tonga Maritime Polytechnic Institute		60	9
Tuvalu	Funafuti	Tuvalu Maritime Training Institute		60	7
Vanuatu		Vanuatu Maritime College	Deck watch rating Master fishing Engineering fishing	70	9

International maritime conventions and codes require owners and operators to engage officers and crews who are suitably qualified, as determined by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW '78), as amended in 1995 (STCW '95). STCW '95 sets standards for ships sailing in international waters. Countries that are parties to STCW '95 must ensure that their ships sailing in international waters adhere to these standards. STCW '95 also stipulates standards for seafarers on foreign-going vessels. To enable its nationals to work on such vessels, a country must ensure that its training institutions meet required standards. To obtain what is known as "White List" status, a country must demonstrate compliance. Table 10 lists PICs that have attained the White List status.

Table 10: Pacific Island Countries with White List Status as of 20 May 2005

Country	White List Status	Country	White List Status
Cook Islands	Yes	Papua New Guinea	Yes
Fiji Islands	Yes	Samoa	Yes
Kiribati	Yes	Solomon Islands	Yes
Marshall Islands	Yes	Timor-Leste	No
Federated States of Micronesia	Yes	Tonga	Yes
Nauru	No	Tuvalu	Yes
Palau	No	Vanuatu	Yes

Source: International Maritime Organization (IMO) website: http://www.imo.org.

Assessment and Recommendations

International Shipping Services

Scheduled international shipping services are provided to all PICs, even those with very low volumes of cargo. There is a high degree of concentration on most of these international routes, with only one or two lines or consortia providing shipping services. This raises the specter of exploitation of monopoly positions by incumbent shipping lines. In most cases, however, there are no regulatory barriers to entry, and the sunk costs involved in entering the trade are relatively modest. As a consequence, the market is reasonably contestable. It, therefore, seems likely that any significant abuse of monopoly would be transient.

It is true that Pacific freight rates are relatively high by world standards. But economies of scale are important in shipping, and cargo volumes on the routes to, from, and within PICs are generally low. It is not apparent that freight rates are any higher than the long voyages and low cargo densities would lead one to expect.

Frequency of service and port coverage are other concerns raised from time to time. But again, it is not clear that frequency and coverage are anything other than a normal response to the low volumes of cargo on offer and the large deviations that would be necessary to add additional ports of call.

Past direct intervention to encourage "improved" international services has taken two main forms, neither of which has been conspicuously successful—direct government involvement in service provision and regulation of entry.

Direct Government Involvement in the Provision of Shipping Services

Direct government involvement in the provision of shipping services has, in general, been costly, and failed to produce efficient and reliable services. The Pacific Forum Line (PFL), formed and owned by 12 PICs, is a partial exception to this (see Appendix 6). But PLF's success came only after some painful lessons were learned during the first 2 decades of operation. The development of PFL was an attempt by regional governments to improve the level of service to countries of the region. The attempt to provide port coverage/service frequencies well in excess of that justified by commercial considerations, however, was one of the major causes of PFL's financial problems during its first 2 decades. Later success was due in significant part to the restructuring of operations along more commercial lines, with services focusing on routes it could operate profitably—like any commercial line. PFL's services are now confined to a relatively small number of PICs, mainly the larger ones. Services to the smaller and more remote countries—e.g., Kiribati and Tuvalu—are provided by other carriers.

Regulation of Entry

Regulation of entry to limit competition and protect incumbent operators is another approach that has been utilized. The primary example of this approach is the Micronesian Shipping Commission (MSC). Although the Commission continues to enjoy the support of participating governments and shipping lines, it is not apparent that the range, quality, efficiency, or stability of shipping services offered to Micronesian countries is greater than it would be in the absence of the Commission. (The operations of MSC and its impact are discussed in Appendix 2.) However, considerable effort is expended by lines and associated interests to secure the right from MSC to operate a service. This suggests untapped potential for service innovation.

International maritime services to and from the Pacific island states present a distinct contrast to international aviation services. Entry into the Pacific shipping sector is by and large free, not generally regulated by intergovernmental agreements (with the significant exception of MSC). Shipping is predominantly the province of the private sector, which has

proven quite entrepreneurial in its approach. Some form of international service is provided to even rather unpromising markets, such as Nauru, Timor-Leste, and Tuvalu.

While there may be some dissatisfaction with the price and frequency of these services, there is no real evidence of market failure. When remoteness and scale of markets are taken into account, freight rates do not appear excessive, and service frequencies are, in general, consistent with the cargo volumes available.This judgment is consistent with that of the *Pacific Regional Transport Study* (AusAID 2004), which found that the market for international shipping services functioned well and that the level of services provided was appropriate to the level of demand in individual PICs.

> In shipping, there is a general regional consensus that the provision of reliable and efficient shipping services has broadly been achieved. International services serving the region are generally considered to be adequate and efficient. Container shipping services to and from FICs are reliable; vessels adhere to published schedules and offer sufficient space for the needs of importers and exporters (AusAID 2004, 12).

Under these circumstances, it would be unwise to recommend further direct intervention in the operation of these markets by individual governments or at the regional level. On the contrary, the restrictions on competition that do exist should be carefully reconsidered. It is also important that governments refrain from undermining functioning but fragile markets by providing competing services on a noncommercial basis.

Structural Changes to International Shipping Systems

Changes currently taking place in the structure of international shipping services to the Pacific make reconsideration of regulatory arrangements particularly appropriate at this time. There are signs of an increasing tendency for direct services to be replaced by "hubbing"[5] over selected local transshipment centers. The most important hubs at present are Auckland (for the South Pacific) and Guam (for Micronesia). Changes, such

[5] A large port that attracts transshipment cargo to and from smaller ports is termed a "hub" port because it effectively acts as a "hub." Hubbing refers to this process.

as these, are poorly understood at present by many key decision makers and industry participants in the Pacific. This is not surprising. The forces driving these changes are complex and closely linked to developments in the global shipping environment.

While difficult to assess, these developments may have important implications for the way future Pacific maritime needs are met. They may, for example, have ramifications for the aspirations of regional ports—e.g., the development of a subregional hub in Suva—or for the size and type of vessel that may need to be accommodated in Pacific ports in the future.

Recommendations

1. The present commercial focus of the Pacific Forum Line should be retained, allowing the Line to act as an important additional source of competition in the region without distorting regional markets.
2. Remaining regulatory impediments to entry into the provision of international shipping services in the Pacific (the most notable of which is the Entry Assurance system operated by the Micronesian Shipping Commission) should be progressively removed.

While the extension of direct government intervention in the provision of international maritime services is not recommended, there are actions that governments could take that would indirectly facilitate improvement in maritime services. Many of these relate to improving the quality of services provided to shipping through improved port performance, better management of maritime safety, promotion of more efficient and reliable domestic shipping, and similar initiatives. Some of the mechanisms that might be used to achieve these improvements are discussed in the following sections.

National Transport Plans

A number of factors encourage direct political intervention in maritime activities, on an ad hoc basis, in PICs:

- Shipping services are vital to the economic and social life of these countries;

- Relatively small populations make for easy access to key decision makers by lobby groups; and
- Strong ties exist between key decision makers and particular geographic areas and kinship groups.

These factors mean that it will always be difficult to ensure that decisions made on maritime sector policies and priorities are consistent and coherent. Without a clear national transport plan, it will be extremely unlikely. The *Pacific Regional Transport Study* reported that "No country in the region has a clearly enunciated set of transport objectives that easily translates into a consistent and coherent transport policy" (AusAID 2004, Vol. 1, p. 12). The study suggested a number of possible reasons for this:

- Political instability impeding development of long-term economic strategy;
- Severe financial constraints impeding consistent and coherent policy making and, to an even greater extent, undermining the ability to implement policies consistently; and
- Real or apparent conflicts between the objectives of transport policy and those relating to tourism and domestic industry development.

There appears to have been some progress of late, however. Two countries have prepared national transport plans. The Fiji Islands has its National Transport Sector Plan, while Solomon Islands has its National Transport Plan. Both of these plans recognize the importance of the maritime sector to the effective functioning of the national transport system. This development is encouraging, and may serve as a useful model for other countries.

The planning process itself can yield real benefits, in that it focuses attention on issues that are often neglected, improves the quality of information available to decision makers, and encourages a systematic and structured approach to consideration of complex problems. But clearly, the major payoff comes from effective implementation of the plan. For this, clear costing of initiatives embodied in the plan and commitment to a long-term funding strategy are essential.

Recommendations

1. Pacific island countries are encouraged to develop and document national transport objectives and national transport sector plans detailing how these objectives will be pursued.
2. National transport sector plans should include a clear articulation of the role of the maritime sector.
3. National transport sector plans should include a committed long-term funding plan for maritime sector initiatives.

Maritime Sector Subsidies

The *Pacific Regional Transport Study* (AusAID 2004) discussed the widespread use of the Pacific transport system to deliver welfare objectives, particularly employment creation and poverty alleviation—by focusing transport policy on the inclusion of remote communities in national development. It noted that

> ...while it is usually possible to deliver these objectives, [transport policy] is usually an extremely inefficient means of delivery. In virtually all countries of the region where an attempt is made to deliver [welfare] objectives through the transport system, delivery is currently achieved through disguised subsidies.

While this conclusion is largely correct, the crucial issue is the manner in which government support is delivered, rather than the use of transport sector subsidies to achieve welfare goals. It could reasonably be argued that transport policy that insists that all transport services (particularly basic services to remote communities) will be provided on the basis of full cost recovery from users would be both economically undesirable and antagonistic to the achievement of the Millennium Development Goals.[6]

Ultimately, whether total abolition of subsidies in the maritime transport sector in PICs is desirable or not is of academic interest only.

[6] The eight Millennium Development Goals (MDGs) range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015. They form a blueprint agreed to by all the world's countries and all the world's leading development institutions. They have galvanized unprecedented efforts to meet the needs of the world's poorest.

The reality is that their abolition would be politically untenable. The provision of subsidies to transport services in pursuit of broader political, social, and economic objectives is commonplace not just in the Pacific, but also in more developed nations, including Australia, the European Union, Japan, and the United States. Given the broad importance of maritime transport services, it is most unlikely that PICs will abandon public support for them in the foreseeable future. Consequently, it is important to establish guidelines for the provision of transport sector subsidies, including subsidies to the maritime sector.

Recommendations

1. Any subsidies to transport sector activities should have clearly enunciated objectives and be justified within the framework of a comprehensive and coherent transport sector policy.
2. Subsidies should be transparent, the fiscal commitment clearly defined, and be subject to periodic review in the context of the other demands on government revenues.
3. Wherever practical, subsidies should be allocated to service providers on the basis of open and competitive tenders of limited duration.

Structuring the Maritime Sector

National Responsibility

There are many countries in which responsibilities for maritime sector administration are shared between different levels of government. In some instances, this is extremely successful. While this approach can work, and work well, it is unlikely to be the ideal model for PICs.

Creating a safe, efficient, and reliable maritime sector is difficult for most, perhaps all, Pacific island states. The small scale of these countries makes it a constant challenge to maintain a competent maritime bureaucracy and retain skilled managers in commercialized government enterprises. The regional market for provision of maritime services, both internal and external, is thin and vulnerable to disruption if policies are inconsistent or incoherent, or if well-intentioned but ill-informed interventions undermine the operation of the market. Finding the funds necessary to develop—perhaps more importantly, to maintain—maritime

infrastructure is difficult. Further, allocating scarce resources according to priorities set within a coherent vision of national development and assessed against consistent criteria inevitably means disappointing some sectoral interests.

These challenges are exacerbated where responsibility for some aspects of maritime development is fragmented between national and provincial (or state) governments. In some countries (e.g., Solomon Islands), some provincial governments assert the right to license shipping operators making calls in the province. In others (FSM and Marshall Islands), responsibility for the development and administration of ports of national significance is divided between various organizations.

The risks attendant on such fragmentation are clear: incoherent policy, inconsistent planning, duplication of resources, undercapitalization, and spreading too thinly the scarce resources of talented and experienced personnel. A centralized approach also has its risks, such as unwillingness to experiment with different approaches, insensitivity to local needs, and a bloated bureaucracy. The balance of risk varies with the environment. However, with limited fiscal and skilled human resources, and the prevalence of intense rivalry between groups within these countries, the advantages of strong national control of the maritime sector are likely to far outweigh any risks.

The Tripartite Model

In most PICs, a branch of the public service has historically undertaken all the functions of government within the maritime sector. With encouragement and support from ADB and other development partners, structural reforms over the last 2 decades have seen port administration in many of these countries transferred to semiautonomous authorities or corporations. Further structural reforms that have been implemented or recommended in a number of these countries (including Fiji Islands, PNG, and Solomon Islands) display some common features that point toward a tripartite Pacific model of maritime administration. This model separates the involvement of government in maritime affairs into three distinct clusters:

- Policy and planning, undertaken by a government ministry funded from general government revenues;
- Safety and maritime regulation, undertaken by a statutory authority

that is wholly or largely funded through mandatory levies on shipping; and
- Port administration, undertaken by a corporate entity charged with operating on a commercial basis, generating its own revenues from charges on port users.

Where governments retain an interest in the provision of freight and passenger services, this could add a fourth element to the model. Preferably, this fourth element would also take the form of a corporate entity.

This tripartite model has much to recommend it.

- It provides greater focus and clarity of objectives for each of the three branches of maritime administration.
- It eliminates conflicts of interest between safety and commercial objectives.
- It provides some protection from destructive political intervention in the day-to-day delivery of these functions by placing both safety and operational functions in the hands of organizations with their own legal existence.
- It enforces a greater degree of transparency in the financial affairs of the operating organizations through organizational separation.
- It reduces or eliminates the dependence of maritime safety and port management on annual allocations from the general government budget by financing these activities from clearly defined, dedicated revenue streams. This is important because the effective performance of these activities is critically dependent on long-term planning and predictable funding.
- It imposes a useful financial discipline on the service delivery organization by the adoption, where feasible, of a self-financing approach.

As always, the diversity of PICs must be acknowledged. Specific features of the legal framework or institutional history of a particular country may make adoption of the model difficult or inappropriate. In the smallest countries, the establishment of a completely separate maritime safety administration may not be justified. The rigid application of a standard model is, therefore, unlikely to be the most productive way forward.

Nevertheless, development and propagation of a conceptual model of national maritime administration, around which individual national variants

may be constructed, serves a useful purpose. It can promote consistency and coherence in sectoral reform the same way development of standard paradigms of port administration (see below) has facilitated and streamlined the process on port reform. The adoption throughout Pacific island states of a model with a common structure, or at least variants of that model, permits the development and adoption of template legislation. It also lays the foundation for progressive regionalization (or subregionalization) of key maritime institutions, and facilitates shared learning, both in the process of structural reform and in the subsequent operations of the various entities.

Recommendations

1. Where constitutional arrangements permit, policy, planning, and regulatory responsibility for maritime safety, international shipping, domestic shipping, and ports of national importance should be clearly allocated to national rather than provincial governments.
2. Wherever economically and technically feasible, government responsibility for (a) maritime sector policy, (b) regulation of maritime safety, and (c) commercial operations should be undertaken by legally distinct entities.
3. Organizations responsible for maritime safety and commercial operations should, as far as possible, be operated on a self-funding basis with revenues derived from user charges.

Port Administration

Perhaps the most important single contribution that Pacific island governments can make to improving both international and domestic shipping services is to ensure that ports serving international and domestic ships have adequate facilities and are operated efficiently.

Governance

Although a number of port authorities in these countries are formally corporatized (e.g., PNG) or operate under separate statutes that provide for a high degree of independence (e.g., Marshall Islands), others remain essentially branches of the public service (e.g., Timor-Leste). Even where

formal corporatization has been achieved, problems of day-to-day political intervention in port operations persist. They take the form of explicit directions from Ministers (or Ministries) or board appointees who act as proxies rather than independently.

Objectives for port organizations are not always clearly and appropriately defined (AusAID 2004, Vol.1, 38). Nor are the indicators to be used to measure port performance always defined. When they are, measurement and reporting of performance against these indicators are not always adequate. More generally, the preparation and presentation of annual reports by port authorities can be very tardy. Clearly, annual reports that are provided several years in arrears are of little value for the effective monitoring and control of port performance.

Recommendations

1. Clear financial and service objectives should be established for all port corporations.
2. A common set of Key Performance Indicators for port administration should be developed and adopted.
3. Prompt reporting requirements should be established and enforced.

Cargo Handling Performance

Cargo handling productivity in PICs is low by international standards. Raw comparisons of cargo handling rates are likely to do Pacific Island ports an injustice, however. For example, crane rates are usually regarded as a reflection of port efficiency in ship/shore activity and of the speed at which cargo can be moved from the wharf area. However, certain factors can influence crane rates and distort such comparisons. For example, vessels on Pacific island schedules call at many ports, often resulting in stowage that incurs many more double moves, shifts-on-board, and hatch lid movements than would be the case with vessels serving fewer ports and larger cargo volumes. This can result in very slow handling rates even if operations are efficient.

Moreover, no Pacific Island port is equipped with specialized container-handling cranes. Most rely on shipboard cranes, although a few use shore-based, general-purpose cranes. These handling techniques will inevitably provide cargo-handling rates well below those that can be achieved with container-handling equipment. Nevertheless, even when these factors are

taken into account, there is little doubt that cargo-handling productivity in many Pacific ports generally falls short of achievable levels.

There is a general presumption in economics that efficient service provision is most likely to be achieved where services are delivered in a competitive, or at least a contestable, environment. Separation of potentially competitive port services—stevedoring, towage, and mooring—from port infrastructure development and regulation activities is a prerequisite for development of an effective competitive environment for these services. This has been achieved in some countries, such as PNG. In other instances (e.g., Fiji Islands), some degree of separation has been achieved, but plans to make the provision of services fully contestable have stalled for a variety of reasons. In a number of PICs, the port authority remains the sole provider of port services.

Models of Port Administration

The arrangements that different governments have made for the administration of ports are quite diverse. There is no standard template for port administration in the region. But it has become customary to talk of four basic ownership and governance models. The four models and the ownership characteristics of each are summarized in Table 11.

Table 11: Classification of Ownership Models

Port Type	Basic Port Management Models			
	Infrastructure	Superstructure	Port Labor	Other Functions
Public Service Port	Public	Public	Public	Majority Public
Tool Port	Public	Public	Private	Public/ Private
Landlord Port	Public	Private	Private	Public/ Private
Private Service Port	Private	Private	Private	Majority Private

Note: Infrastructure refers to "below ground" fixed assets of the ports: breakwaters, channels, berths, etc. Superstructure refers to "above ground" equipment and facilities, such as cranes and other heavy lifting equipment, offices, sheds, and warehouses.

Source: World Bank Port Reform Toolkit, Module 3.

There are no fully privatized ports in the Pacific region. In this the region is not unusual. Very few countries have chosen to privatize their principal common user ports.[7] Plans to privatize PNG Harbours Ltd have been plagued by delays and reconsiderations, and are stalled at the present time. Given the low volumes and low growth rates that characterize most ports of the region, the level of interest of private infrastructure investors in these ports is likely to be low, with the possible exception of ports in the Fiji Islands and PNG. Realistic options available for most Pacific ports are likely to be the landlord, tool, or public service port options.

The conventional wisdom is that the landlord model is generally to be preferred, largely because it maximizes the opportunity for private sector participation in port operations. However, one of the more surprising results of this study is that the correlation between port productivity and structural model is much less clear-cut than might be expected. Productivity and customer satisfaction in Pohnpei, which operates as a classic landlord port with a medium-term concession allocated through a bidding process to a fully private stevedoring operator, are both low. Productivity and customer satisfaction in the Solomon Islands, where the port is administered as a public service port, are both high.

These observations suggest caution against generalizing too glibly about the structural conditions that will give rise to good port performance. However, it remains likely that the conditions most likely to foster the delivery of efficient port services are those where these services are provided by the private sector, and where maximum use is made of opportunities to introduce competition or the threat of competition.

The existence of competition in the ports of Nuku'alofa (Tonga) and Pago Pago (American Samoa) demonstrates that competition in the provision of stevedoring services—by far the most important component of port services from the perspective of efficiency of international shipping—can be achieved at rather low cargo volumes. At low cargo volumes, however, contestability will be significantly impeded if significant

[7] There has been a great deal of privatization of individual port facilities or terminals, and this is often loosely referred to as privatization of ports. But in the overwhelming majority of cases, what this has done is convert a public service port to a landlord port. Overall administration of the port and responsibility for port development remains in public hands. Exceptions are largely confined to the United Kingdom, Malaysia, Eastern Europe, and certain Australian states. New Zealand is often erroneously cited as an example of port privatization. Although they have adopted a public company structure, majority ownership of all major New Zealand ports remains in public hands.

capital investment is required. Even what might be regarded as quite small capital outlays can be a significant issue for Pacific stevedoring companies. The terminal operator in Pohnpei, for instance, who has the advantage of a medium-term, sole-user lease on the main cargo wharf, is finding it difficult to fund the acquisition of a single heavy-duty forklift, at a capital cost of $250,000.

This suggests that for many Pacific ports, the best model may be the tool port model. Adoption of this model requires the port organization to take the lead in the acquisition of heavy lifting equipment used in the handling of ship cargoes, and to make that equipment available, on equitable terms, to all stevedores working in the port. This significantly reduces capital barriers to entry for the stevedore. It also reduces the commercial risk and should, consequently, reduce the cost of capital. This is because the volume risk borne by the port organization relates only to fluctuations in the total volume of cargo passing through the port. The risk to the stevedore, on the other hand, relates to the total volume of cargo through the port, as well as the stevedore's ability to maintain a share of that volume.

Like all models, the tool port has its weaknesses The most important is the absence of the direct link between the operator and the owner that is most likely to achieve infrastructure and equipment changes to improve overall operation. However, there are examples of very successful port development using this model, such as the port of Tauranga in New Zealand.

Recommendations

1. Those port organizations that are still involved in cargo-handling operations should develop and implement plans for transferring these activities to the private sector.
2. Stevedoring licenses should be issued to all stevedoring firms having the skills and knowledge required to operate safely and competently within the port.
3. The issue of exclusive leases for critical port land should be avoided unless it is essential to the efficient operation of the port.
4. Port corporations should purchase heavy lifting equipment and make it available for hire to all stevedoring companies, if by doing so they can facilitate entry or reduce the risk of undercapitalization of cargo-handling operations.

Port Infrastructure

There does not appear to be a general problem with the capacity of infrastructure in Pacific ports. There are problems, however, with the appropriateness of port infrastructure. Many Pacific port facilities were neither designed nor equipped to meet present-day shipping needs. The quotation from the *Pacific Regional Transport Study* (AusAID 2004) in the first section of this report (Ports of the Pacific Region) provides a graphic description of the condition of many Pacific ports.

In some of the smaller PICs, the problem of appropriate facilities is more extreme. As noted previously, in some cases, infrastructure limitations mean that container vessels are unable to come alongside, and cargo must be discharged from ships at anchor. However, a proper assessment of the adequacy of port facilities—both capacity and quality—depends on a clear understanding of the possible future development scenarios for international shipping services to the Pacific. Shipping services are increasingly operating as an integrated system, whereas port planning is commonly done in isolation for a single country or a single port.

Maintenance

The chronic difficulties with port infrastructure maintenance in the Pacific are widely acknowledged and have been frequently reported in previous studies. The *Pacific Regional Transport Study* (AusAID 2004, 38) noted that "A lack of maintenance was noticeable in many ports. Our observations suggest that the maintenance backlog is likely to have worsened since the World Bank [1993] Report." The World Bank's most recent report on the Pacific Islands suggests that this continues to be an issue across many infrastructure sectors:

> Infrastructure is complex, capital intensive and lasts a long time. It is therefore important to plan for the long term, when embarking on infrastructure projects. However, in the Pacific, governments have often focused on building new infrastructure, rather than investing in operations and maintenance (World Bank 2006).

Poor maintenance is at least, in part, the result of financial constraints. External assistance often focuses on the transport sector, with development partners offering loans and grants for new investment and rehabilitation of infrastructure, while the nation's economic state is so fragile that it

is unable to cope with maintenance costs or even the repayment of the loans. The impact of poor maintenance is often the creation of other costs. These arise, for example, when excessive downtime for cargo-handling equipment contributes to low productivity on the wharf.

Poor maintenance results in infrastructure assets being run down operationally before their financial maturation. This may lead to borrowing more funds to replace an asset that careful management would have prolonged its useful life. Often, the port operator's response to this is to seek finance for major investment in capital equipment to improve ship/shore productivity. Industry, on the other hand, takes the view that better maintenance and less downtime in equipment for clearing cargo from the wharf would allow much better productivity.

Problems with asset maintenance are by no means confined to the maritime sector, but are common to all major infrastructure sectors. ADB's *Improving the Delivery of Infrastructure Services* regional technical assistance for the Pacific identified asset maintenance as one of seven key issues, noting that

> Infrastructure assets commonly do not perform as well as they should, i.e., service quality is below design quality. Assets often do not reach their design lives before needing extensive rehabilitation or replacement. There is, thus, a significant element of waste in the past use of infrastructure investment funds (GlobalWorks 2007).

A workshop undertaken as part of the ADB project identified a number of initiatives that could be taken to improve asset maintenance:

- Building capacity in service provider institutions (e.g., skills to identify maintenance needs);
- Implementing good maintenance practices, and organizing budgets to support maintenance;
- Purchasing, where applicable, standardized equipment, and adopting standardized procedures in order to reduce maintenance costs by reducing the cost of spare parts inventories, training requirements, etc.;
- Considering subregional or even regional bulk purchasing of some commodities;
- Pooling resources (including expertise) among countries to lower fixed costs; and
- Raising awareness of maintenance issues within utilities and external stakeholder organizations.

In the next phase of the same project, work will be undertaken to develop a framework for implementation of "best practice" maintenance routines supported by sufficient budgets. Additionally, measures will be undertaken to increase the awareness of managers of infrastructure service sectors and of senior government planning and budgeting authorities of the importance, value, and realistic cost of asset protection and maintenance, with the aim of maximizing the performance and life cycle of existing and future infrastructure assets (GlobalWorks 2007).

The early work of the project makes it clear that asset maintenance problems are generic issues and will, to a large extent, be amenable to generic solutions. The recommendations of the ADB project for improving asset maintenance will clearly be relevant to the maritime sector. Moreover, as many of the key actors (in particular, planning and budgeting authorities) have responsibilities across a number of infrastructure sectors, there are clear advantages in ensuring that the approach taken to improve asset maintenance in the maritime sector is consistent with that adopted in other infrastructure sectors.

While the ADB project is still in its early stages, a substantial commitment will be made to devising practical ways of improving asset maintenance practices. This will include extensive consultations that have not been possible within the scope of this study. Practical ways of improving port asset maintenance practices are an expected outcome of the project. Specific recommendations on improvement of port asset management are expected as outputs of the ADB project.

Recommendation
The outcomes of the work on asset maintenance practices currently being undertaken by the ADB project, Improving the Delivery of Infrastructure Services, should be used as the foundation for the development of specific programs to improve asset management in the maritime sector.

Domestic Shipping Services

In contrast to international shipping, domestic shipping operations in many Pacific island nations are in a parlous state. Ensuring the provision of adequate, efficient, and reliable domestic shipping services is one of the

most difficult and perplexing challenges facing archipelagic countries. In many cases, services of the quality expected by residents of remote islands are not commercially viable. Nevertheless, delivery of these services is a political, social, and economic imperative.

Coastal and interisland shipping services are generally operated by government or by very small independent shipping companies. Service schedules are frequently poorly maintained, and it is not uncommon for services to be suspended for many months. The ships employed are typically old, poorly maintained, in poor condition, and—frequently—unsuited for the purpose for which they are used. Many vessels in interisland shipping fleets fall below recognized safety standards, and some country studies have gone so far as to recommend that they should be banned from operating public services (TecnEcon, 1995). However, the political cost of detaining on safety grounds a ship that provides essential services to remote communities is high, and safety authorities often turn a blind eye to manifest defects.

Financial constraints have a severe impact on the quality of domestic shipping services. Small-scale coastal shipping operators have problems in accessing finance for repair and replacement. Commercial banks do not find the coastal shipping sector attractive for lending because of the high risk and lack of adequate loan collateral. The Solomon Islands Shipping Sector Study noted that "Under the present circumstances the shipping sector is locked into a situation where old vessels are replaced by other old vessels and there are no prospects of reducing the high average age of the fleet…" (European Development Fund 1999, ES-3).

Government Provision of Services

The historical approach of delivering domestic shipping services is through a government shipping arm, either as a stand-alone enterprise or as part of the responsibilities of a government department. Experience has shown this approach to be fraught with peril. Several cases (e.g., in the Fiji Islands and Marshall Islands) have proved both immensely costly and incapable of delivering an adequate level of services. Government shipping operations in the Pacific generally have a very poor record of performance, for reasons extensively documented in a host of earlier studies and widely acknowledged in the Pacific community. Importantly, competition from government services tends to inhibit the development of private sector

alternatives. Despite all this, government-owned lines continue to be a common feature of the shipping scene in the Pacific.

Service Franchises

Over the last decade, there has been considerable experimentation with service franchising schemes. With this approach, private operators are contracted by government to deliver services of a predetermined quality to specified populations. These experiments have been only partly successful. A range of problems has been encountered, including

- Shortage of private sector operators willing to bid for and operate the services;
- Unsuitability of vessels deployed to deliver franchised services;
- Erratic performance of obligations by contracted service providers;
- Unwillingness or inability of governments to enforce sanctions for nonperformance;
- Unwillingness of governments to commit the funds required to make subsidy payments for the full period of the franchise contract;
- Communities not meeting the original criteria for inclusion in the scheme applying pressure on governments for later inclusion; and
- Lack of implementation of contract bidding requirements by the responsible governments.

Despite these problems, service-contracting schemes remain the most promising approach to improving the efficiency and effectiveness of domestic shipping operations. Lessons learned from early experiments are being used to shape future schemes. The establishment of an organization dedicated to the management of the contract scheme in the Fiji Islands appears to be bearing fruit (Ledua 2006). Recent initiatives, such as the sharing of Fijian experience with Solomon Islands officials as part of an ADB project, have also made a valuable contribution.

Donated Vessels

Development partner nations have offered ships free or at greatly reduced cost to Pacific island states. Such offers can constitute a very attractive proposition, but unless carefully managed the deployment of such vessels

can undermine the development of commercial shipping markets and, in the long run, have a negative impact on service provision. One possible solution to this problem is to make vessels donated to governments available to private operators on a charter basis. To ensure that access to a vessel on favorable terms does not provide a competitive advantage to a particular operator, the development of guidelines on how this would best be achieved would be useful.

Recommendations

1. Pacific Island governments are encouraged to continue the recent trend toward privatization of domestic shipping services, including the development of service franchise schemes to secure the access of remote communities to these services.
2. A forum for exchange of experiences in privatizing domestic shipping services should be established, and regional guidelines for chartering donated ships to private sector operators should be developed.
3. Options for improving finance for domestic ship operators should be explored.

Human Resources

Seafarer Training

The training of seafarers to international standards is becoming increasingly sophisticated and expensive. Table 9 shows evidence of an emerging hierarchy of training institutions in the region with marked differences in the highest level of certification that can be completed at each institution. So far, this evolution has been unguided by any policy.

As the Pacific Plan advances regional cooperation on a number of fronts, including education and training, it may be appropriate to develop a more structured regional approach to seafarer training. It is unlikely the region could support more than one institution capable of delivering training to the level of Master Class 1. However, it is possible through regional cooperation to ensure that one institution of the region is of world class, and that citizens of all FICs have equal access to it. Much of the foundational work required to do this has already been accomplished through the harmonization and mutual recognition initiatives supported

by RMP, and by PacMA and its predecessor organization. The next step is to develop and formalize a regional plan for training development.

Recommendation

A regional plan for the development of maritime training institutions should be prepared, possibly under the guidance of the Pacific Islands Maritime Association.

Port Management

The maritime sector in PICs is characterized by a lack of expertise in business and financial management. This shortage is particularly acute in government trading enterprises:

> In general, there is a serious lack of appropriately qualified and experienced local financial professionals in the region. The problem is magnified in the local context because qualified professionals, where available, tend to join private industry rather than government institutions, which pay less (PTF 2004a, 2).

Lack of suitably skilled staff compounds the impact of governance deficiencies discussed earlier. RMP may be the vehicle for remedying this deficiency. RMP's strategic plan reports widespread support for the extension of its activities into new areas:

> There is strong support for RMP to broaden its services to include harbour and port operations. Often the boundary between the maritime and port sectors is blurred and a significant number of personnel can legitimately claim involvement in both sectors…The operational efficiency and safety of the maritime and port sectors impact significantly on each other, and increasing the scope of RMP to include port operations would be consistent with the safety and economic component of the Programme's mission (SPC website: http://www.spc.int/maritime).

Recommendation

Regional assistance programs should be extended from their current coverage of shipping to cover both technical and commercial aspects of ports and maritime administration, possibly coordinated by the Regional Maritime Programme.

Private Sector Training and Development

One of the important lessons learned from a decade of experimentation with service franchise schemes is that the supply side of the market for shipping services will require as much attention and development as the demand side. In most PICs, there are few private sector operators with the skills, experience, and financial capacity to provide shipping services of an acceptable quality. In many, there are none.

The easy and obvious solution to this problem—opening the market to international bidders—is largely delusory. In most instances, the markets are small, growth prospects are poor, and prevailing rates are prohibitive. When this is combined with the risk of nonpayment and possible antagonism of parties that are important to the service's success, it would be very difficult for international operators to justify the effort of entry. Attempts to actively encourage bids from international operators for franchises in the Marshall Islands met with no success at all.

Systematic efforts to develop the commercial and operational capacity of local shipping operators is, therefore, likely to be critical to the long-term success of endeavors to privatize domestic shipping services. Training activities undertaken as part of a recent ADB project in Solomon Islands provided a useful start on the development of an appropriate approach to this task.

Recommendation

External support for implementation of the Forum Principles on Regional Transport Services should include development and implementation of training programs on commercial and operational aspects of shipping line management for private sector service providers in Pacific island countries.

Information Issues

During the conduct of the current study, the difficulty of obtaining even the most basic data for the maritime sector in PICs was striking. In part, this is because comparatively little use is made of modern means of storing and sharing this information, such as websites. In part it is because even fundamental information is sometimes not collected. Improved

data collection, storage, and sharing practices could make an important contribution to mutual learning among PICs.

Accurate, timely, and reliable information is the foundation of sound planning and policy development. Monitoring enterprise performance is also essential. For each country, the primary need is for information that relates to its own jurisdiction. But a regional approach to the collection and dissemination of data can enhance the utility of information from a number of perspectives. It facilitates, for example, the establishment of performance benchmarks and, consequently,

- assists in the detection of problem areas in need of policy attention, and
- supports the establishment of realistic targets for government enterprises.

It also allows governments to check whether trends and developments observed in data from their own jurisdiction are manifested elsewhere in the region, helping to establish underlying causes.

Many attempts to improve data collection fail because they are excessively ambitious. Success is more likely if initial aspirations are modest, and data collection improved and widened progressively once initial systems are operating smoothly. This approach also provides the opportunity to prove the worth of improved data to users and to build a constituency that will support the funding necessary to expand the system. In line with this approach, attempts to build a Pacific region maritime database may best be confined initially to a handful of core elements, such as

- port cargo throughput;
- port tariffs;
- basic infrastructure characteristics (for example, berth lengths and maximum draft in approach channels);
- international shipping services, including their routes and vessels deployed; and
- port productivity.

All except for the last of these are available on the public websites of many ports outside of the region. There are many strategies for sharing collected information and, in the Pacific context, the simpler are likely to be the more effective. Perhaps the simplest is an agreement for each PIC to publish a common set of statistics on a suitable website. An alternative

would be to establish a single, central Web registry, similar to that which has been established on the ADB website for the exchange of information related to the Pacific Infrastructure Task Force (ADB website: www.adb.org/projects/improving-delivery-infrastructure/team.asp).

Recommendation

A regional agreement on the collection and sharing of key maritime sector data should be negotiated and implemented.

Regional Cooperation

The general framework of regional cooperation in the Pacific is currently under review. It, therefore, seems opportune to reconsider the architecture for regional cooperation in maritime matters.

The technology of international shipping, the regulatory environment in which it operates, and the training needs of international seafarers are increasing in complexity. In addition, intensifying international competition in trade means that the penalties for failing to meet these challenges are increasing. Few Pacific island states individually have the financial and human resources required to meet the challenges associated with this growing complexity. By pooling resources and expertise, PICs can greatly amplify their ability to deal with an increasingly demanding environment. Regional cooperation will consequently be essential to improve maritime transport services to, from, and within PICs. Fortunately, the need for cooperation between these countries is well recognized by the countries themselves and by the South Pacific community at large, as evidenced by the Pacific Plan:

> In light of "the serious challenges facing countries of the region," Leaders agreed that serious consideration be given to "the pooling of scarce regional resources to strengthen national capacities." They asked for a Pacific Plan to be developed by a Task Force to "give effect to" their new vision through the promotion of 'deeper and broader regional cooperation' (Pacific Plan Action Committee 2005, 1).

The maritime sector is one area in which the benefits of regional cooperation are regarded as apparent. The Forum Principles on Regional

Transport Services (Appendix 5) include a requirement that "Increased efforts should be made to implement regional or subregional[8] solutions to problems in the transport sector" (SPC 2004). The background paper on maritime transport prepared for the Pacific Plan argues that "The advantages of regional cooperation are transparent. It makes good economic sense for small countries and territories to pool and share resources and experience through regional collaboration" (Pacific Plan Action Committee 2005, 63).

Existing Cooperative Vehicles

Regional cooperation in the maritime sector in the last few years has been enhanced significantly by RMP and, to a lesser extent—at the policy level—by the Pacific Islands Forum Secretariat (PIFS).

There is broad agreement in the region that RMP has made an important contribution that has grown strongly in recent years. It has been aided by its transparent manner of operation, with an independent audit of its program in 2004, a detailed assessment of its performance against its objectives over the 2003–2005 period publicly available, and an independent assessment of its operations against the Australian Business Excellence Framework also publicly available.

RMP has been establishing increasingly strong links with other regional groups, particularly with PacMA, APP, PacWIMA, and PIMLA. RMP now provides secretariat services and administrative support to these organizations, and collaborates with them less formally in other ways. RMP, thus, appears to be a strong, established kernel around which an effective program of regional cooperation in maritime matters can be built. To make full use of this opportunity, however, the architecture of regional cooperation may need to be clarified. There does not, at present, appear to be an effective mechanism for clarifying the maritime sector priorities of regional governments, and using these priorities to guide and direct the activities of RMP.

PacMA appears to be the organization closest to filling this gap. Originally a grouping of maritime training institutions, its membership has broadened to include a wider spectrum of interests. PacMA also appears

[8] Regional solutions are aimed at covering all member countries, whereas subregional solutions might be targeted at specific sections of the Pacific region.

to be evolving informally into a peak advisory group. However, it remains essentially an association of industry interests, with a strong slant toward training institutions. If RMP widens its activities to include those that may be more controversial and less obviously in the perceived interest of all governments—e.g., such areas as port governance, or the relaxation of cabotage restrictions—a clearer and somewhat more formal source of advice on the priorities and perspectives of regional governments is likely to be needed. PacMA may continue to evolve to fill this need.

A Possible Model

A great deal more consultation with Pacific island governments and engagement with RMP will be necessary before developing firm recommendations on the architecture of regional cooperation in the maritime sector. But given the promise shown by existing regional institutions in recent years, it is clear that the best approach will be to build on and adapt current structures. This would suggest that further evolution of PacMA to a peak advisory body with a more explicit mandate from regional governments may be the most effective approach. If this occurs, however, it may be necessary to form a new body to represent specifically the views and perspectives of training institutions.

Recommendations

1. The role of the Regional Maritime Programme as the key source of advice and technical support on maritime matters should be strengthened.
2. Existing mutually supportive relationships between the Regional Maritime Programme and other regional maritime bodies should be further developed.
3. In addition to these relationships, it would be advantageous to establish a new high-level advisory group, with a clearer mandate from participating governments, to provide advice and guidance to the Regional Maritime Programme.

Appendix 1: Fiji Islands Case Study[9]

The Fiji Islands archipelago consists of some 332 islands, one third of which are inhabited by a population of 840,000 (2006). Per capita gross domestic product (GDP) is approximately $5,900. The political crisis of 2000 saw the country's economy contract by almost 3%, accompanied by substantial job losses and out-migration of skilled and professional workers. Since 2000, business confidence and private investment have picked up, but not sufficiently to fuel sustained growth. The resurgent tourist industry stimulated reasonable growth in the economy during 2001–2004. Politically, Fiji Islands continues to display some instability, affecting tourism, investor confidence, and the orderly progress of critical national reform initiatives.

Sugar—the mainstay of the economy for most of the 20th century—remains the major export crop despite the industry's steady decline in recent years. Production and exports have diversified to products such as copra, ginger, tropical fruits, fish, and seaweed. Manufacturing has not fully recovered from its substantial 2000 decline due to the significant drop in production, exports, and employment in the important garment industry.

Tourism is the primary foreign exchange earner and an important basis of the economy, contributing about 20% of GDP. Tourism recovered well after a massive decline in 2000, with 395,000 arrivals in 2002—a 14% increase over 2001 and only 4% below 1999's record level. Australia has, historically, been the main source of tourists for the Fiji Islands, followed by New Zealand, United States, and Japan. Remittances from Fiji Islanders

[9] This case study was prepared prior to the overthrow of the government in December 2006. Projections are, therefore, uncertain.

living in other countries have quadrupled since 1994 to become the country's fourth largest source of foreign exchange.

Fiji's principal export markets in 2005 were the United States (19%), Australia (17%), and the United Kingdom (12%). The principal sources of imports in 2005 were Singapore (27%), Australia (24%), and New Zealand (19%) (Australia Department of Foreign Affairs and Trade 2006).

Maritime Administration

The Ministry of Transport and Tourism has overall responsibility for maritime administration and maritime policy. Two departments of the Ministry are accountable for the delivery of regulatory and operational functions in the maritime sector. However, restructuring of the port and maritime structure has been proceeding for over a decade, and a number of the operational functions are now delegated to specialized government agencies.

The Fiji Islands Maritime Safety Administration (FIMSA) regulates the shipping industry, covering surveys, inspections, classification and certification of vessels, port state control, monitoring of shipping within national waters, and regulation of interisland shipping. In March 2006, FIMSA was reorganized as a result of reform of Fiji Islands ports and to ensure port compliance with the requirements of the International Ship and Port Facility Security (ISPS) Code. FIMSA, consequently, took over the regulatory activities of the Maritime and Ports Authority of Fiji Islands. This process is expected to result in the establishment of a statutory body responsible for regulation of maritime safety and related matters, operating under its own legislation.

The Government Shipping Services (GSS) (formerly the Shipping Operations Section of the Marine Department) has, as its mandate, to act as in-house carrier for the government. Utilizing vessels from 28 to 237 tons in size, most between 20 and 30 years old, GSS carries government consignments (e.g., building materials and heavy equipment for public works), as well as government personnel. GSS does not charge for services to government departments. Instead, its operational costs are included in its operational budget. According to GSS, it does not compete with commercial shipping operators.

The Fiji Shipping Corporation Limited (FSCL) was set up in April 2004 to act as a "virtual" shipping line, responsible for administering the shipping franchises for the non-commercial routes to the outer islands of the country.

The Fiji Ports Corporation Limited (FPCL), a government-owned corporation operating semiautonomously under the Ministry of Transport and Tourism, is responsible for administration of the "major" ports—declared as Suva, Lautoka, Labasa/Malau, and Levuka. Other ports remain under the Ministry's control, with FIMSA continuing to provide navigational and safety overview. Ports Terminals Limited (PTL) carries out stevedoring at all major ports. Previously a 100% government-owned operation, PTL is now a 100% subsidiary of FPCL and is managed and operated by FPCL.

Shipping Services

International Shipping Services

Fiji Islands is well served by international shipping lines. Direct services operate to Australia/New Zealand, the United States, Southeast and North Asia, and Europe. Lines calling in Fiji Islands include major operators, such as Swire Shipping, Tasman Orient, Pacific Direct Line, Chief Container Line, Hamburg Sud, Greater Bali Hai, and Neptune Shipping. The latter associates with Maersk, providing services within the region, to Asia and, by transshipment, to the United States and Europe. Pacific Forum Lines also offers a range of destinations within its sphere of operation.

Export and import shipping services cater for general cargo—carried mostly in containers, but also break bulk—as well as bulk cargo. Liner container services generally call at Suva, and some at Lautoka, while break bulk is handled at both Suva and Lautoka, mainly as imports. Bulk and liquid bulk cargoes are also handled at Suva and Lautoka, but the major volume is handled at the Vuda terminal near Nadi. Import bulk cargoes are mainly petroleum products, cement, and fertilizer. Export bulk and break bulk cargo is handled at Labasa/Malau and at Levuka. This mainly comprises high-volume dedicated cargo, including sugar and forestry products (wood chips) and, in the case of Levuka, seafood landed and processed at the port for export in dedicated refrigerated vessels.

Freight Rates

The scale of Fiji Islands' import and export trades attracts lines and competition into the trade. Competition from vessels employed on the Australia–North America trade has driven down rates to levels that are much lower than rates to and from nearby Pacific island countries (PICs), such as Tonga and Samoa. For dry containers, commercial rates per TEU[10] from the Fiji Islands to Australia are about $900, $1,200–$1,500 to other PICs, $1,800–$2,000 to Japan and the United States, and $2,200–$2,500 to Asia and Europe. A shipper moving a sizeable quantity of containers is likely to receive a discount from these rates.

Domestic Shipping Services

Domestic shipping comprises passenger and freight vessels ranging from pure passenger ferries, to combined passenger and roll on-roll off (ro-ro) vessels, to small steel and even wooden vessels serving outer islands and smaller ports. The standard of these vessels is much lower than those in the international trades.

For scheduled services, vessels on well-frequented routes are mainly of ro-ro configuration with sizeable passenger accommodation. On routes with major tourism support, fast aluminum catamarans are employed, but costs preclude their widespread use. On outer island routes— where the main freight task is transporting island residents and small volumes of cargo, construction materials, and consumables—vessels vary in configuration. They are usually small, displacement hull ships of steel construction, some converted from deep sea fishing vessels but some purpose built.

Domestic shipping services on some routes are operated on a purely commercial basis, and routes between the islands of Viti Levu (main island) and Vanua Levu are subject to fierce competition. Several operators specialize in transport to and from resort islands. Commercial coastal and interisland shipping services are provided by a number of private sector operators.

However, many interisland routes are not commercially viable and, in the past, services have been provided by the government. Services to outer islands with significant resident populations are an essential part of

[10] Twenty-foot equivalent unit (container).

the transport infrastructure in the Fiji Islands. Often, these islands have no air services, or air service is infrequent. Regular and reliable transport of both passengers and cargo is essential to the well-being of remote communities.

Wishing to withdraw from direct involvement, the Government of the Fiji Islands developed a "franchise" shipping system, where services are provided by private sector operators under competitive tender. The government contributes subsidies to offset the losses operators would incur as a result of providing service at non-commercial, set frequencies to outer islands. Franchise shipping services to the outer islands, thus, provide essential links for domestic freight and passengers. They also transport small export cargos (e.g., beche-de-mer) and a small but significant and growing tourist trade, particularly to the western island groups of the Mamanucas and Yasawas.

The present franchise shipping services system is managed by FSCL, established in 2004. Its aim is to transfer the delivery of shipping services to the private sector while retaining a degree of contestability in interisland services. Contestability is ensured by a competitive tendering system. Services to remote areas are subsidized by the government through the scheme. The subsidy, or franchise rate, is derived from the calculated operational cost of a vessel on any particular route. At present, FSCL subsidizes 42% of shipping companies' operational costs. In November 2006, there were nine subsidized routes serviced by five shipping operators. Passenger and cargo movements by shipping franchise vessels in 2005 showed that the Northern Lau, Upper Southern Lau, and Rotuma routes were the most heavily trafficked. These routes show signs they could eventually become financially viable without the aid of franchise subsidies.

It is still too early to determine whether better management of the scheme will result in increased traffic to and from the outer islands. Early indications are positive, however, with a general trend of higher volumes of both passengers and cargo in 2006. FSCL reported that since April 2005, there has been a 62% increase in passengers using the services and an 80% increase in cargo (W. Ledua, CEO of FSCL, personal communication, 2006). To further encourage the development of trade to and from the outer islands, FSCL recently appointed a Trade Development Officer to work with island communities and franchise operators to identify export opportunities and to manage and coordinate interisland trade.

Ports Sector

The ports network in Fiji Islands comprises two major ports with international connectivity, several second-tier ports with specialized functions, and a large number of smaller ports. The ports of commercial significance are on three separate islands. Suva, Lautoka, and Vuda are on the main island of Viti Levu. Suva is on the southeast of the island and Lautoka is on the west. These are the main ports involved in a broad range of international trade, with Suva handling the best part of export and import cargo. Vuda, which is near Nadi International Airport, specializes in liquid bulk cargo—particularly oil products—but also handles gas imports. Labasa and Malau, specializing in exports of sugar and forestry products, are on the north coast of Vanua Levu Island, and Savusavu—a major hub for interisland services from Suva—is on its south coast. Levuka specializes in fisheries exports and is on the island of Ovalau, immediately to the east of Viti Levu. The minor ports provide only basic services for coastal traffic and are often weather and tide constrained.

Although restructuring of the ports sector has been painfully slow and is still incomplete, the model is appropriate and, in some respects, significant progress has been made. Port administration at Suva, Lautoka, Labasa/Malau, and Levuka—the "major" ports—is handled by FPCL. Other ports remain under the control of the Ministry of Transport and Tourism, with FIMSA providing navigational and safety overview. Ports Terminals Limited (PTL), the 100% subsidiary of FPCL managed and operated by FPCL, presently carries out stevedoring at all major ports. The low productivity of stevedoring, particularly at Suva, has been an issue for some time. Under the terms of a recent Asian Development Bank (ADB) loan to FPCL for upgrading and extending port facilities at Suva and Lautoka, PTL will be privatized, at which time stevedoring would become contestable. Other marine services comprising towage, launches, and lines work are tendered on a 3-year basis, and pilotage is offered by both FPCL and a private operator.

Container throughput in the major ports increased significantly during the 2000–2004 period. Exports of full container load (FCL) containers rose to 46%. Imports of FCL containers grew by 21%. Twenty-foot containers accounted for 91% of exports and 87% of imports. The balance, in both cases, was 40-foot containers.

Port charges in Suva are high compared with charges in a representative sample of Pacific ports. Only Noumea (New Caledonia) has higher port

charges than Suva. FPCL sets the tariffs for all the major ports. Its subsidiary, PTL, currently negotiates and sets stevedoring rates with port users. *Port Authority dues* must be paid by any vessel entering a Fiji Islands port. Overseas vessels pay $0.27 for each 100 gross registered tons (GRTs) or part thereof of the vessel for each entry into port. An *environment charge* of $2.40 per 100 GRTs (or part thereof) is also charged all international vessels. Domestic ships pay $2.40 per GRT per year. *Anchorage charges* are levied at the rate of $2.70 per 100 GRTs or part thereof for each period of 30 days a vessel remains in port. *Dockage dues* are paid by overseas vessels berthing at a wharf owned by FPCL at the rate of $1.08 per 100 GRT per hour. *Wharfage charge* is paid by the vessel owner (65%) and the shipper or consignee (35%) based on the tonnage of goods loaded or discharged. Charges range from $6 for an empty container to $30/TEU (see Footnote 1) for a full container. *Towage charges* range from $180 to $900, depending on the vessel's GRT. All vessels entering or leaving an FCPL port must use a pilot. The ports offer pilotage services, but a private company offers competing services at Suva.

FPCL plans to build a major new container and multipurpose port facility at Rokobili—within Suva Bay but outside the present port limits—once operational space at Kings Wharf becomes restrictive, estimated to be within 10–12 years.

Inland Transport

Fiji Islands is one of the few PICs with a land transport system of any scale. Traffic between cities comprises trucks for freight, buses, minibuses, route taxis, and private vehicles. The most heavily trafficked route is the corridor linking the two main ports, Suva and Lautoka. Haulage of containers between the ports and transport of sugarcane are important contributors to traffic problems. Traffic levels outside of Suva and Lautoka are at most times moderately low, but density increases dramatically near the cities of Lautoka and Suva. Traffic near the ports, general road conditions, and heavy vehicle mass limit laws are the principle problems facing inland transport of containers. A large proportion of trucks, particularly those hauling containers, are in contravention of mass limit laws.

Kings Wharf is located near the center of Suva's central business district, and a large market and bus terminal is adjacent to the port facility. Traffic congestion in and around the Kings Wharf is, thus, surprisingly severe for an urban center the size of Suva. Trucks carrying containers to

and from Kings Wharf must pass through the center of Suva at a very slow pace. At Lautoka Port, the major landside constraint is very slow-moving trucks carrying sugarcane to a sugar plant opposite the main wharf.

Increasing peak loadings are occurring from the land bridging of containers between Suva and Lautoka ports. Some ship operators find it more economical to make a single call, usually at Suva, and land bridge Lautoka cargo under bond. This entails both exports and imports, and as many as 200 containers may be involved in any one ship call. Customer preferences on delivery time and limits on free storage time in the ports drive operators to move all the containers in a short period, thus increasing the load carried by road and causing peak loadings.

There are divergent views on whether the future will see the relative importance of Lautoka as a general cargo port decline and cargoes increasingly concentrated at Suva. If this occurs, efficient road transport of export and import cargoes between the West Coast of Viti Levu and Suva will be critically important. On the other hand, the present inefficiencies associated with congestion, combined with the lack of space for expansion, support the case for relocation of the main port facilities at Suva in the longer term.

Maritime Safety and Security

Fiji Islands was able to meet the July 2004 ISPS deadline with financial support from Australia, New Zealand, and United States, coupled with training instituted by the Regional Maritime Programme of the Secretariat of the Pacific Community. The country was fully compliant for all the major ports—Suva, Lautoka, Levuka, and Malau—by the deadline of July 2004 (Ministry of Finance and National Planning 2007, 60). Suva and Lautoka were successfully audited in July 2006, and additional audits of smaller secondary ports in the Fiji Islands were also carried out that year.

Maritime Training

Formalized maritime training in the Fiji Islands began in the1970s with the establishment of the School of Maritime Studies in Suva. The highest

maritime qualification currently attainable at the School is Class 3 (Officer of the Watch).

In 1977, an advisory committee of the South Pacific Regional Shipping Council was set up to develop uniform maritime standards in the Pacific region. The committee's deliberations led to the South Pacific Maritime Code (1986), embracing the resolutions contained in the International Conventions on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW) '78. Fiji acceded to STCW '78 in 1991 and STCW '95 in the late 1990s.

Appendix 2: Federated States Of Micronesia Case Study

Four states—Chu'uk, Kosrae, Pohnpei, and Yap—form the Federated States of Micronesia (FSM). Formerly under United States (US) Trusteeship, FSM now is an independent country that has entered into a Compact of Free Association with the United States. Under the Compact, FSM has control over all aspects of domestic and foreign policy, with the exception of defense and security issues, for which the United States is responsible. The Compact also provides direct US financial assistance to FSM to help foster economic development.

FSM comprises more than 20 islands of volcanic origin lying within lagoons surrounded by reefs and over 40 smaller, low-lying islands. The nation depends on maritime transport to link the islands and states into a single national economy. With a population of 108,004 in 2006, gross domestic product per capita is about US$2,300.

The US Trusteeship and the subsequent 1986 Compact of Free Association are dominant elements in the FSM economy, and have contributed to the creation of a government-led economy largely reliant on external grants (Australia Department of Foreign Affairs and Trade 2006, 1). A second Compact, which came into force in 2004, provides funding of $1.8 billion over 20 years. That amount includes contributions to a trust fund that will replace direct financial assistance in 2024. The Compact grants FSM citizens access to US federal programs and favorable provisions for traveling to and working in the United States.

In common with other Pacific island countries (PICs), FSM is highly dependent on imports. More than 40% of FSM imports come from the United States. Other major sources include Australia (20%) and Japan

(13%). FSM has few exports, with marine products—mainly reexports of fish to Japan—accounting for almost 85% of export revenue. Shipping services to and from FSM suffer as a result of the trade imbalance.

Shipping Services

International Shipping Services

The range of international shipping services operating to and from FSM is limited by the market size and by restrictions on entry imposed by the Micronesian Shipping Commission through the Entry Assurance system (discussed below).

U.S. West Coast services are provided by Matson—a long-standing operator in the trades to Micronesia, and Horizon Line/FSM Line, with a service similar in structure to that of Matson. Both use Palau Shipping Company to deliver certain services, while Horizon also uses Western Pacific Shipping. Asia services are provided by FSM Line/Western Pacific Shipping and Palau Shipping. South Pacific services are provided by Chief Container Service and FSM Line. The latter, through its relationship with Kyowa, offers service from Australia and New Zealand by transshipment over Busan.

There are, in fact, only three scheduled shipping services making calls in FSM. The companies that operate the ships providing these services are Matson, Kyowa, and Palau Shipping. All of these services manage to serve cargo in several trades using transshipment, principally over Guam. Commercially, the main carriers can be grouped into two loose alliances, each of which is able to provide comprehensive coverage of FSM ports (and Palau) and cover several trade lanes: (i) Matson/Palau Shipping/Eurasia Line Alliance, and (ii) Horizon/Kyowa/FSM Line/Western Shipping Alliance.

The Micronesian Shipping Commission

Entry into the market for the provision of international shipping services to and from FSM (as well as Palau and Marshall Islands) is controlled by the Micronesian Shipping Commission (MSC). MSC was established by these three countries in 1988, culminating an evolution of arrangements initiated

during the Trust Territory period aimed at encouraging the provision of stable shipping services but allowing a degree of competition. The "…main objective [of MSC is] to encourage and promote an economical, reliable, safe and coordinated system that meets the demand for international commercial shipping throughout the three Micronesian island nations" (MSC 2006). The Commission continued the earlier-established practice of controlling entry into the Micronesian shipping trades through the Entry Assurance System.

Applications for Entrance Assurance may be lodged by carriers at any time. However, approval requires a meeting of the Commission, which is generally held annually. If approved, Entry Assurance is valid for a period of up to 5 years, but assurances covering shorter periods may be issued by the Commission. It is possible for carriers to operate without Entry Assurance, but they must apply for permission to do so. This may not be granted; but if granted, an "ad hoc" permission attracts a tariff of $5,000 per call. Current policy of MSC has apparently been to maintain two authorized carriers on each trade route.

Participating governments and lines appear to remain strong supporters of the MSC concept. However, there is considerable disaffection with recent Commission decisions, and the Commission's unwillingness to enforce the commitments given by lines as conditions of being granted Entry Assurance. It seems clear, however, that MSC has not had the capacity to assess applications for Entry Assurance under any consistent and transparent criteria.

The number and frequency of international shipping services calling at FSM appear adequate to meet the needs of the country's trade, and to this extent it could be said that the Commission is indeed achieving its primary objective. However, the extent to which this outcome is dependent on the activities of the Commission is not clear. FSM does not appear to be served by any more frequent or more reliable services than the other Pacific Island nations. Until quite recently, a case could perhaps be made for the Commission's activities supporting stability in the provision of shipping services. However, the past few years have seen a fairly comprehensive transformation of international services to and from FSM.

Freight Rates

Industry contacts indicate that freight rates from US West Coast to FSM are typically about $2,700 for a dry 20-foot container and $3,900 for a

40-foot container. The rate for a 40-foot reefer is $7,600. These are ocean freight rates only. In addition, there are terminal handling charges (THCs) in Guam of about $65/TEU[11] and the bunker adjustment factor (BAF) which, in the US trades, is about 19.5%. Rates from Asia are reported to be similar, while rates charged from Australia are reported to be about $2,000/TEU. The Asian and Australian rates also include BAF and THCs, as well as a currency adjustment factor.

Domestic Shipping Services

FSM depends on maritime transport to link its many islands into a national economy. Yet, the "…inter-island transport system is poorly developed and is on the brink of unravelling..." (FSM 2003a, 1). More importantly, the interisland transportation system is comprised of five very old cargo vessels that are no longer safe or economical to operate, and one overworked new vessel.

Domestic shipping services within FSM are provided almost entirely by the public sector. The Federal Government fulfills its constitutional responsibility to maintain shipping operations between the states with a vessel operated by the Marine Department of the Department of Transport Communications and Infrastructure (DTCI). This vessel typically operates between the main port of one state and remote locations in another. Cargo carried between the main ports in two states is usually carried by international services that call at both ports. Three of the four states (Yap, Chu'uk, and Pohnpei) operate shipping services that connect the main island of each state to the more remote islands. Kosrae, which does not have outer islands, does not operate a domestic shipping service.

None of the domestic services operates to a regular, reliable schedule. Services are generally demand-driven. As elsewhere in the Pacific, seasonality and random peaks in passenger demand (e.g., when churches have conventions at one island or another) are a major problem. Rates and charges are not formally regulated by any party, but in practice, Ministerial approval of fare changes is considered essential. All domestic shipping services lose money. Although details of the current financial performance of individual services are not readily available, the Marine Department estimates that the Federal Government's operation recovers

[11] Twenty-foot equivalent unit, a standard measurement of container capacity.

only about 20% of its operating costs (excluding the capital cost of the vessel) through customer charges.

Ports Sector

Port administration in FSM is the responsibility of the individual state governments. In Chu'uk, Kosrae, and Yap, while ports are nominally managed by a department of the state government, the power to make commercial, operational, and planning decisions concerning ports is dispersed among different state agencies or departments, causing ports in those states to suffer operationally (FSM 2003a).

In contrast, the Pohnpei Port Authority (PPA) controls the largest and most commercially important of FSM's ports, as well as Pohnpei International Airport. PPA is an enterprise of the State Government, responsible for the development, management, (profitable) operation, and maintenance of Pohnpei ports. PPA is expected to be self-supporting and acts essentially as a landlord of the port. The main port cargo-handling terminal is leased to a private operator, while PPA focuses on the development and maintenance of infrastructure and regulation of port activities. PPA reported an operating surplus in 2005, up substantially from the previous year with further rapid increases expected, driven mainly by continued expansion of the fishing industry. Even if revenue forecasts are realized, however, PPA will not able to independently fund required infrastructure expansion. Limitations in cargo-handling equipment are also already a problem in effectively working cargo, and productivity is low, even by "Pacific standards." Additionally, storage area in the terminal is limited and becoming a constraint.

In general, facilities at the main international ports—Weno Port (Chu'uk), Okat Port (Kosrae), Pohnpei, and Yap—are capable of handling the relatively limited container traffic at an acceptable level of efficiency. Maintenance, however, seems to be a problem, with relatively new, expensive cargo-handling equipment found derelict and beyond repair at some ports. Proper maintenance programs could significantly reduce capital outlays and operating costs. Outside of the major ports, infrastructure is extremely limited. In general, the 30 inhabited outer islands lack even the most primitive port facilities, even wharves or quays that vessels can moor alongside or discharge onto directly.

The cargo base of the four international ports is largely imports. Volumes are modest, with total FSM imports in 2005 amounting to 56,092 revenue tons. The majority of this cargo consisted of containerized commodities (1,613 TEU) and imported used motor vehicles (578 TEU). This represented an increase of just 1% on cargo volumes recorded in 2004. In 2005, calls by container vessels declined markedly—from 46 calls to 35 calls—due largely to the demise of the PM&O Line service. Aside from fish transferred to mother ships in Pohnpei, exports through the port are negligible.

The principal port charges levied by PPA are *Entry Fee*, at $25 for vessels under 1,000 gross registered tons (GRT), $50 for vessels between 1,000 and 2,000 GRT, and for vessels over 2,000 GRT, $50 plus $25 for every 2,000 GRT (or part thereof) in excess of 2,000 GRT; *Dockage Fee*, at $0.06 per GRT per day; *Wharfage*, at $1.25 per revenue ton for inbound cargo and $0.25 per revenue ton for outbound cargo (concessional rates are provided for fuel imports and bunkers); and *Navigational Aids Fee*, at $10 per call. These charges do not appear to have been adjusted for over a decade, and approval for their increase was being sought from PPA.

Stevedoring services throughout FSM are provided by the private sector, with a single stevedoring contractor at each of the four international ports. At Pohnpei, separate charges are levied for stevedoring (movement from ship to shore, charged to the ship) and for terminal services (storage in the terminal and out-loading to trucks, charged to the cargo owner). In the case of container cargoes, a separate charge (to the ship) is also made for transfer from the ship's side to the container yard.

Inland Transport

Inland transport is not a major concern in FSM, as the vast majority of imports are carried only a short distance from ports to neighboring towns (e.g., to Kolonia from Pohnpei). Landside access to the ports is reasonable, and roads are not congested. Inland haulage costs are about $50/TEU for a one-way trip for boxes moved from Pohnpei to Kolonia.

Maritime Safety and Security

Primary responsibility for general maritime safety lies with DTCI. However, institutional arrangements for the management of maritime safety

in FSM are not ideal. Functions exercised directly by DTCI are, in fact, rather limited. These include maintaining the national register of ships (with a very limited fleet), and acting as the Coordinating Authority for Search and Rescue. Additionally, DTCI acts as certifying authority for the International Ship and Port Facility Security (ISPS) Code. As "Contracting Government" of the ISPS Code, the Government of FSM was required to nominate a "Designated Authority" to supervise maritime security and ensure ISPS compliance, as well as determine the Security Level appropriate for a facility in question. These responsibilities are exercised by DTCI. With US assistance, the main ports of each state have been certified as compliant with the ISPS Code. A recent audit of maritime security completed though the Regional Maritime Programme of the Secretariat of the Pacific Community found some deficiencies, but none considered major by DTCI, and rectification measures were undertaken.

There does not appear to be any clear assignment of responsibility and accountability for the provision of navigational aids and the general management of maritime safety outside port limits. DTCI does not fund the provision of navigational aids nor does it supervise the location, quality, or adequacy of navigational aid provision. All existing navigational aids lie in or close to ports, and responsibility for their maintenance lies with the relevant port administration.

Kosrae, Pohnpei, and Yap have serious approach channel problems that hinder port operations and greatly limit their growth potential. Channels at Okat (Kosrae) and Pohnpei are less than 100 meters wide, limiting the size of vessels that can enter the port safely. Difficulties are exacerbated by the lack of navigational aids. Funding proposals and some appropriations to install new navigational aids or upgrade existing ones have not resulted in improvement. When navigational aids have been installed, they are sometimes vandalized (FSM 2003a). Navigational aids are virtually nonexistent in the outer islands, making it very difficult and dangerous to enter some narrow lagoon channels. On some islands, passengers must embark or disembarked outside the reef—an inherently slow and dangerous process.

FSM is not a member of the International Maritime Organization (IMO) and has yet to ratify many of the major international maritime conventions. This is cause for some concern. While FSM has taken the position that it is unwilling to commit to conventions it does not have the capacity to enforce, breaches of some of the Conventions to which FSM is not a signatory—such as the International Convention for the Prevention of Pollution from Ships (1973) and (1978)—may have serious cross-border consequences.

Maritime Training

Maritime training available in FSM is very limited. Some training is available at the College of Micronesia campus in Yap, but certification is available to only Class 5. For higher-level training, seafarers generally attend colleges in the Philippines or in the United States.

Appendix 3: Solomon Islands Case Study

Solomon Islands is an archipelagic nation made up of 992 islands, 347 of which are inhabited. Six main islands account for 80% of the total land area and population. The population is estimated to be about 495,000. About 50,000 live in Honiara, the capital, located on the island of Guadalcanal, which is roughly in the center of the country. The population growth rate is estimated to be about 2.8% per year, one of the highest in the Pacific region.

The economy experienced a severe contraction when the country was torn apart by ethnic strife in 1999–2001. Although recovery began in 2003, the country was close to bankruptcy and almost totally dependent on foreign aid. The recovery was due partly to the arrival of the Regional Assistance Mission to Solomon Islands, and partly to an increase in the price of logs and other commodities.

Gross domestic product (current prices) is estimated at approximately $322 million in 2006. The economy is estimated to have contracted by 14.3% in 2000, 9% in 2001, and a further 2.4% in 2002—primarily a result of the closure of most major industries after June 2000. The Central Bank of Solomon Islands estimated in its 2004 Annual Report that the economy grew by 3.6% in 2003 and by 4.5% in 2004—the fastest rates of growth since the logging boom of the early 1990s. Given favorable political conditions, higher growth rates were expected for 2005 and 2006.

Solomon Islands' primary natural resources are timber and fish. Export of logs is, by far, the largest foreign exchange earner, but the industry is not sustainable at the present rate of exploitation. Other important exports include copra, cocoa, and palm oil. There are economic deposits of bauxite, phosphates, gold, silver, copper, manganese, and nickel, although none are being mined at present.

The principal markets for Solomon Islands' exports are the People's Republic of China (40%), Republic of Korea (15%), and Thailand (7%). Imports come mainly from Australia (26%), Singapore (25%), and New Zealand (6%). The balance of trade in the 1990s showed either a small surplus or a small deficit. The current account balance has been negative in recent years.

Maritime Administration

Maritime sector responsibilities in the Solomon Islands are shared between the Marine Division of the Ministry of Infrastructure and Development, the Solomon Islands Port Authority, and provincial governments.

The Marine Division has important regulatory, policy-setting, and sector leadership roles. Its regulatory responsibilities include (i) provision and maintenance of navigational aids, (ii) vessel safety and certification, (iii) vessel registration, (iv) officer and crew registration, and (v) organization of search and rescue operations. The findings of inadequate leadership of the maritime sector by the Marine Division by a 1999 European Commission study of the Solomon Islands shipping and marine sector (European Development Fund, 1999) are generally applicable today. Inadequate financial and human resources, and a lack of sector vision and policy dynamism compounded by inadequate industry and provincial monitoring and a wholly inadequate information base, were then and are now serious constraints. It is regrettable—but perhaps understandable in light of the turbulent recent history of Solomon Islands—that strengthening maritime administration does not appear to be a high priority for the government.

Solomon Islands is a signatory to a limited range of international maritime conventions: "...important IMO [International Maritime Organization] conventions have not been signed. Solomon Islands in fact has acceded to only 6 of 55 IMO conventions" (Tuomi 2005). Moreover, there are concerns about the extent to which Solomon Islands has fulfilled its obligations under those conventions to which it has acceded. The regulations required to support many conventions have not been passed, and obligations to maintain navigational aids and accurate charts have not been fulfilled (Tuomi, et al., 2006).

The Marine Division has argued that it is experiencing difficulties in providing a leadership role and/or implementing the conventions because of the lack of experience of its officers. Many staff members have attained, or are approaching, retirement age and the Division does not have suitably trained replacements.

Some provincial governments play a multiple role in the domestic shipping sector. Some provinces continue to operate interisland shipping services, but this appears to be decreasing as more and more vessels become inoperable and are not replaced. Some provinces provide jetties and landings used by interisland vessels. Additionally, some provincial governments apply "license fees" to operators providing services to the province (Solomon Islands Ministry of Infrastructure and Development 2006, 6).

The Solomon Islands Port Authority (SIPA) is a state-owned enterprise under the Ministry of Commerce, Industries, and Employment. SIPA operates the two international ports (Honiara and Noro) in Solomon Islands. SIPA's main functions are to (i) design and construct appropriate port infrastructure, including wharves, jetties, container hardstand, warehouses, and amenities; (ii) regulate port use through efficient and safe service; (iii) provide pilotage and navigational aids; and (iv) facilitate government regulated services (Customs, Quarantine, and Immigration) (Solomon Islands Port Authority 2006).

Shipping Services

International Shipping Services

The limited cargo volumes into and out of Solomon Islands have affected the viability of international shipping services. Yet the range of services currently offered is, in fact, somewhat better than might reasonably be expected. Solomon Islands appears to be benefiting from the ease of combining calls at Honiara (and, less commonly, Noro) with calls at the larger Papua New Guinea (PNG) ports. Solomon Islands is currently served by Sofrana Unilines, Chief Container Service (Swire), Greater Bali Hai Service (Swire), and Bank Line (Swire). The export of logs is handled by logging companies through their logging wharves. Sawn timber is exported through Honiara in containers.

Freight Costs

Indicative freight costs per container (including surcharges) for imports to the Solomon Islands are $2,350 from Australia, $2,600–$2,700 from Southeast Asia, and $2,370–$2,750 from Japan and the Republic of Korea. Indicative freight costs per container (including surcharges) for exports from the Solomon Islands to Asia are $1,400 and $1,600 worldwide. These rates are likely to be cheaper for shippers moving a significant quantity of containers.

Domestic Shipping Services

A population scattered across more than 300 islands makes provision of an economically viable transport network difficult. Limited, irregular, and costly shipping; poor air services; and a sparse road network offer little incentive to rural producers.

Following the sale of the government-owned National Shipping Services Ltd in the mid-1990s, interisland shipping services were operated by the private sector and by some provincial governments. However, the role of the private sector has progressively expanded and private operators are now dominant. Shipping services to the inner islands generally are operated commercially. However, some routes are unlikely to provide a commercial return, such as those to Santa Cruz Outer Islands, Rennel and Bellona, and Makira Outer Islands (Tuomi 2005). These routes serve islands with small populations, economic activities small in scale, long sailing distances and, hence, high shipping costs.

Solomon Islands, in common with the majority of Pacific island countries, practices cabotage—i.e., coastal and interisland cargo is reserved for vessels flying the national flag except where a requirement for a particular type of vessel creates the need to employ a foreign flag vessel. Opening up coastal trades to international competition by abolishing or modifying such cabotage rules has the potential to lower domestic transport costs and encourage innovation in the domestic shipping market.

Solomon Islands' recently published *National Transport Plan* provides a succinct and persuasive diagnosis of the problems in the domestic shipping sector, as well as a blueprint for addressing them. These have relevance beyond the Solomon Islands and are, thus, shown below.

- Retain the system of the provision of shipping services by private operators.
- Establish a system for providing financial assistance to private sector shipowners to operate regular, frequent, and safe services to outer islands where services are not commercially viable.
- Establish special funding to assist private operators finance ship acquisition.
- Seek development partner assistance to provide training suitable [for] small business management, planning, and finance for shipping operators.
- Encourage improvements in the condition of vessels by amending relevant legislation, and more rigorously enforce regulations relating to ship seaworthiness.
- Initiate a broadly based consultative process to persuade provincial authorities to abandon the unnecessary and restrictive regulations and licensing arrangements (Solomon Islands Ministry for Infrastructure and Development 2006).

Ports Sector

Port Ownership and Administration

SIPA owns and is responsible for the operation and maintenance of the two international ports of Honiara and Noro. SIPA has a broad range of responsibilities. In addition to being responsible for the provision of basic port infrastructure and the regulation of port activity, SIPA is the sole provider of stevedore services, pilotage services, under-bond storage for import cargoes, and other storage and warehousing facilities in both Noro and Honiara ports.

SIPA is required by law to operate commercially, be financially self-supporting, generate a net operating surplus, and achieve a return on fixed assets. However, these objectives have rarely, if ever, been achieved. During the last 10 years, SIPA has been marginally profitable for 5 years and incurred losses in 5 years. Even in good years, profits have not been sufficient to cover the true cost of capital, and accumulated losses over the decade were in excess of $1.5 million. To some extent, recent poor financial performance can be attributed to the fall in port revenue due to the drop in trade resulting from

ethnic tension. Even before the decline in cargo volumes, however, profits generated by the port were very small and unlikely to represent an adequate return on capital invested. Despite a significant recovery in volumes, SIPA posted a financial loss in the last reported financial year (2005).

Port Infrastructure

Solomon Islands has three international ports—Honiara, Noro, and Yandina. At present, Yandina is not used for international trade. Honiara has a deepwater international berth 120 meters (m) long, with a maximum depth of 9.2 m alongside. Vessels up to 200 m long can be handled. In addition, SIPA operates an 85-m wharf, with a depth of 3.4 m alongside, as well as a barge ramp. Noro, on New Georgia Island, is the copra buying and export center for the Western Solomons and the location of a fish cannery. The deepwater berth, which attracts calls from international vessels, is 62 m in length, with 14-m depth alongside the wharf.

Approximately 86 small wharves and jetties and 26 anchorages are located across the country (Solomon Islands Ministry for Infrastructure and Development 2006). Most are said to be in poor condition due to age and neglect of maintenance.

Port Throughput

The international ports of Honiara and Noro account for more than 80% of total port throughput (excluding logs) in the Solomon Islands, with Honiara alone accounting for more than two thirds of the total. Throughput at Honiara and Noro grew by more than 15% per annum in the mid-1990s, necessitating continual expansion of the port area and development of facilities and cargo handling and storage practices to maintain service levels. However, volumes at both ports slumped dramatically during the disturbances of 2000–2002.

At Honiara, import/export throughput in 2006 (288,235 gross revenue tons) had almost returned to the levels of the previous peak in 1998. There is a severe imbalance in imported and exported containers, with the ratio of imported to exported containers almost 9:1. The largest container export from Honiara is empty boxes.

At Noro, there has been a gradual decline in import and export volumes since 1999. In 2006, export volumes (10,182 gross revenue tons)

were approximately half that of the 1996 level. Import volumes dropped more sharply, with 2006 (8,594 gross revenue tons) only one fifth of the 1996 volume.

Port Performance

Operational performance indicators suggest that the number of ship arrivals in Honiara declined over the period 1999–2003. This is, in part, due to the ethnic tension. However, the average tonnage handled per vessel has increased over the last 5 years, suggesting that the decline in ship numbers is partly due to increased consolidation of services and the use of larger vessels.

Port statistics suggest reasonably high levels of cargo-handling productivity at Honiara. Interviews during field research confirmed cargo-handling performance in Honiara is generally good by Pacific standards.

Port Charges

Rates and dues are levied by SIPA on every ship entering or leaving Honiara and Noro ports. *Ports dues* ($0.71 per meter of vessel length overall), *pilotage* ($1.20 per meter of length overall), *berthage* ($0.24 per meter/hour), and *tonnage dues* ($0.64 per ton for incoming cargo and $0.32 per ton for outgoing cargo) are payable for international vessels by the master of the vessel. *Wharfage* ($0.80 per ton for cargo in 20-foot units, and $1.04 per ton for cargo in 40-foot units) is payable by the cargo owner. In comparison to other ports in the region, port charges at Honiara are relatively low.

SIPA provides all port, stevedoring, and overseas cargo-handling services at Honiara and Noro. Casual laborers are recruited as needed to help load and unload vessels, sort and stack cargo in sheds, and stuff and unstuff containers. The charge for loading/unloading a container—both 20-foot and 40-foot, and either full or empty—from a ship is $25.20. The charge covers only the movement of container from the ship to the wharf. A separate charge is levied to cover the subsequent landside handling of the cargo. For full container load cargo, the charge is $1.75 per revenue ton for cargo in 20-foot containers, and $2.10 for incoming cargo and $1.99 for outgoing cargo in 40-foot containers.

Port Development Plans

Under the European Development Fund's *Marine Infrastructure Project*, the government is constructing and/or rehabilitating 14 wharves and jetties located throughout Solomon Islands. The construction phase of the project began in 2004 with work on Gizo Wharf. At present, seven projects have been completed and the remaining seven are under way.

Based on passenger and cargo volumes and existing wharf condition, the Solomon Islands National Transport Plan 2007–2026 has placed 23 locations in eight provinces as highest priority for the initial 10 years of wharf rehabilitation and construction.

Ship Maintenance and Repair

Solomon Islands has four slipways for vessel repair and maintenance: (i) Sasape Marina at Tulagi, (ii) The Church of Melanesia's facility at Taraoniara, (iii) Markworth Shipping's facility at Ave, and (iv) Liapari in Western Province. Only Sasape Marina is government owned. It is in urgent need of repair and requires significant upgrading.

The above facilities can accommodate only vessels of up to 300 gross registered tons (GRTs). Vessels above that tonnage must be maintained and/or repaired in overseas facilities. Shipping operators are likely to use vessels larger than 300 GRTs to service interisland, domestic shipping routes due to the weather conditions. ADB reported in 2006 that

> There are several 300–500 GRT ships out of service and anchored at Honiara for the reason that there is no haul out facility in country for them to meet their regulatory obligations. Their safety certificates are cancelled and the anchored vessels continue to deteriorate…This situation [is] one of the most significant causes of the failure of the Solomon Islands shipping sector to provide the level of service needed. This is a most critical issue for advancement of the Solomon Islands shipping industry (ADB 2006, 26).

Maritime Safety and Security

The Ministry of Infrastructure and Development's Marine Division is responsible for (i) provision and maintenance of navigational aids, (ii) vessel safety and certification, and (iii) organization of search and rescue operations. A European Commission study of the Solomon Islands shipping and marine sector found that the Marine Division had failed to promote higher standards of safety and service in the shipping sector, and had not given high enough priority to training (European Development Fund 1999).

As "Contracting Government," the Government of Solomon Islands was required to nominate a "Designated Authority" to supervise maritime security and ensure compliance with the International Ship and Port Facility Security (ISPS) Code, as well as determine the Security Level appropriate for a port facility in question. The Marine Division is the designated responsible authority under the ISPS Code.

Financial aid from Australia, New Zealand, and United States, coupled with a training program instituted by the Regional Maritime Programme (RMP) of the Secretariat of the Pacific Community, enabled Solomon Islands to meet the July 2004 ISPS deadline. Audits in 2006 by RMP of Honiara and Noro found only minor defects.

Maritime Training

The Solomon Islands College of Higher Education provides engine room training through the College of Industrial Development. It also provides deck training through the School of Marine and Fishery Studies. While there is strong demand for instruction, the College is currently operating at about 50% of capacity. This is due primarily to the inability of prospective students to afford course fees. An 18-week course costs $650.

Appendix 4: Profile of Pacific Island Countries

Country	Population (2006)	Land Area (sq. km)	Populated Islands / Number of Islands	Maritime Area / EEZ (million sq. km)	GDP per capita ($)	2005 Imports ($ million)	2005 Exports ($ million)	Main Trading Partners	Main Ports
Cook Islands	21,388	237	15	2.00	9,100	81	5	Australia, New Zealand, Fiji Islands, United States, Japan	Avatiu
Fiji Islands	840,000	18,300	100/332	1.30	5,900	1462 (cif)	720 (fob)	Singapore, United States, Australia, United Kingdom, New Zealand, Samoa	Labasa, Lautoka, Levuka, Savusavu Bay, Suva
Kiribati	105.432	811	23/33	3.50	1,900 (2004)	62 (cif)	17 (fob)	Australia; Fiji Islands; Japan; New Zealand; United States; Belgium; Samoa; Malaysia; Taipei,China; Denmark	Betio
Marshall Islands	60,422	181	21/1,152	2.00	2,900	55 (fob – 2000)	9 (fob - 2000)	United States, Japan, Australia, New Zealand, Singapore, Fiji Islands, PRC, Philippines	Majuro Atoll

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Country	Population (2006)	Land Area (sq. km)	Populated Islands / Number of Islands	Maritime Area / EEZ (million sq. km)	GDP per capita ($)	2005 Imports ($ million)	2005 Exports ($ million)	Main Trading Partners	Main Ports
FSM	108,004	702	? /607	2.60	2,300	133 (fob – 2004)	14 (fob - 2004)	United States, Japan, Guam, Hong Kong	Chu'uk, Pohnpei, Yap
Nauru	13,287	21	1/1	0.32	5,000	20 (cif)	0.06 (fob)	Republic of Korea, Australia, United States, Germany, South Africa, Canada	Nauru
Palau	20,579	458	9/300	0.63	7,600	108 (fob – 2004)	6 (fob - 2004)	United States, Singapore, Japan, Republic of Korea	Koror
Papua New Guinea		462,243	–/600	1.60	2,600	1651 (fob)	2833 (fob)	Australia, Japan, Singapore, PRC, Malaysia	Alotau, Kavieng, Kieta, Kimbe, Lae, Lorengau, Madang, Oro Bay, Port Moresby, Rabaul, Wewak
Samoa	180,900	2,820	10/10	0.10	1,832	285 (fob – 2004)	94 (fob - 2004)	Australia, New Zealand, United States, Japan, Fiji Islands, PRC, American Samoa	Apia

table continued on next page

Country	Population (2006)	Land Area (sq. km)	Populated Islands / Number of Islands	Maritime Area / EEZ (million sq. km)	GDP per capita ($)	2005 Imports ($ million)	2005 Exports ($ million)	Main Trading Partners	Main Ports
Solomon Islands	520,000	27,556	347/ 992	1.30	600	159 (fob – 2004)	171 (fob - 2004)	PRC, Republic of Korea, Thailand, Australia, Singapore, Fiji Islands, Papua New Guinea	Aola Bay, Dakolae Anchorage, Gizo, Honiara, Noro, Tulagi, Viru Harbour, Yandina
Timor-Leste		15,007	2/2	—	800	202 (2004)	10	Indonesia, Australia, Singapore, Japan	Dili
Tonga	101800	600	—	0.68	2,200	122 (fob – 2004)	34 (fob - 2004)	New Zealand, Fiji Islands, Australia, Japan, United States	Nukualofa
Tuvalu	11,810	26	—	0.90	1,600 (2002)	9 million (cif - 2004)	1 (fob - 2004)	Fiji Islands, Japan, PRC, Australia, New Zealand, Germany, Italy	Funafuti
Vanuatu	213,300	12,200	65 / 83	0.68	1,530 (2005)	117 (cif - 2004)	34 (fob - 2004)	Australia, Japan, Singapore, Poland, New Zealand, Fiji Islands, Thailand, India, Turkey	Port Vila, Santo

—= data unavailable, cif = cost, insurance, and freight, EEZ = Exclusive Economic Zone, fob = freight on board, FSM = Federated States of Micronesia, GDP = gross domestic product, PRC = People's Republic of China, sq. km = square kilometers.
Source: Asian Development Bank (2004); ADB website, http://www.adb.org, Lloyd's List Ports of the World, CIA World Fact Book online, https://www.cia.gov/cia/publications/factbook/

Appendix 5: Pacific Island Forum Principles on Regional Transport Services

The transport principles agreed upon by Ministers of the Forum Island Countries (FICs) in Apia, Samoa in 2004 are provided below. These principles recognize that:

- The provision and maintenance of regular, reliable, and competitive air and shipping services are crucial to FICs.
- Changes in the transport sector, including an increasingly competitive market and new international safety and security requirements, have significant implications for aviation and shipping in the Pacific.
- FICs have limited technical capacity.

Pacific Islands Forum Leaders declare the following principles as central to improving the efficiency, effectiveness, and sustainability of air and shipping services.

1. Adherence to principles of good governance is crucial to the viability and sustainability of transport services. This includes, but is not limited to:
    a. Accountability and transparency in financial management, strategic planning, investment decisions, awarding contracts, and board appointments;
    b. Clear lines of responsibility for shareholders, boards, and management; and
    c. Accessing and acting upon professional advice, including in relation to decisions on infrastructure.

2. Transport services should, wherever possible, be run on a sustainable commercial basis.
   a. Where appropriate, this should include corporatization and/or privatization of government-owned services.
   b. Where transport entities remain in government ownership and are required to perform commercial activities, such entities should be adequately capitalized.
   c. Service levels should reflect demand and price should reflect the cost of delivery.
   d. Where subsidies are judged to be necessary to fulfill declared social obligations, these should be open and transparent.
   e. Where appropriate, legislated monopolies should be removed with a view to increasing competition.
3. A central responsibility of government in the transport sector should be in establishing and administering regulatory systems.
4. Increased efforts should be made to implement regional or subregional solutions to problems in the transport sector through, for example:
   a. Strategic alliances;
   b. Liberalization of the economic regulatory environment;
   c. Agreement by FICs to regional cabotage, where FICs could benefit from more services and greater competition;
   d. Coordinated approaches to safety and security issues;
   e. Better coordinated airline schedules; and
   f. Training and capacity building.
5. Forum member countries need to comply with internationally accepted standards on aviation and maritime security.
6. Development partner support should be provided to FICs to assist the implementation of transport sector reforms, conditional on a demonstrated commitment to good governance and economically sustainable solutions.

Appendix 6: The Pacific Forum Line

The Pacific Forum Line (PFL) is probably the best known and most frequently cited example of regional initiatives in transport. It has been held up as a model of how a regional approach to transport can succeed, in contrast to some notable failures in shipping, as well as air transport.

Established in 1977 after the formation of the South Pacific Forum,[12] PFL began operating in 1978. Its rationale was to be not only a shipping company, but also an instrument for regional development. It was born out of the concern by Forum member countries that containerization would soon impact on the largely tramp shipping services prevalent at the time in the region, leaving the Pacific island nations marginalized and without influence on the shipping that was their lifeblood. This concern underlies the responsibilities set out in PFL's charter. PFL was to

- Ensure regular shipping services.
- Offer a modern shipping service to encourage the economic development of the South Pacific region.
- Contain freight rates.
- Operate a viable shipping service.

The Memorandum of Understanding (MOU) on establishment of PFL was carried out in Suva, Fiji Islands, in June 1977 and entered into force in August 1978. Seven of the 16 countries of the Forum ratified and acceded to the MOU: Cook Islands, Fiji Islands, Kiribati (subsequently

[12] The South Pacific Forum was founded in 1971 as an intergovernmental organization with the objectives of enhancing cooperation between the independent countries of the Pacific Ocean and representing their interests. The name was changed to Pacific Islands Forum in 2000.

negotiated withdrawal), New Zealand, Papua New Guinea (PNG), Samoa, and Tonga. The original MOU was amended in December 1996.

Initial operations commenced with a number of vessels on short-term charters. These charters tended to follow the normal trend of ship provision in the region—less-than-suitable vessels obtained more from expediency than to satisfy the requirements of the trade. However, by the early 1980s, these had been replaced with three-geared container vessels on long-term charters, two built specifically for the trade. By 1990, PFL owned its vessels. The container fleet was also initially fully leased but, by 1983, two-thirds was owned, a pattern that continues.

The Line's early financial history was not impressive, with a succession of losses incurred mainly through undercapitalization. Lease and charter costs were fixed in foreign currency, much in United States (US) dollars, and the drain on the Line was nearly terminal. Recapitalization and strong support from, particularly, the Government of New Zealand, saw PFL start to make progress, announcing its first profit in 1985.

One aspect of the Line's services was the inability of the new dedicated container vessels to serve all ports. While resulting in some criticism, PFL's focus on higher-volume routes underpinned PFL's ability to return profits and avoid the need for funding from its shareholders.

Company Structure

PFL is a limited liability private company. Its 12 shareholders are the governments of the Cook Islands, Fiji Islands, Marshall Islands, Nauru, New Zealand, Niue, PNG, Solomon Islands, Tonga, Tuvalu, and Samoa. Each shareholder has a varying financial stake in the share capital. Only "A" shares carry voting rights, with these being held in equal numbers by all shareholders. The company is registered in Apia, Samoa, but has its operating arm, Pacific Forum Line (NZ) Limited in Auckland. It has several associated and subsidiary companies, joint ventures, and operating divisions.

Pacific Forum Line Fleet

Today, PFL operates eight vessels capable of carrying containerized and break bulk cargoes on a wide range of services.

Table A5.1: Pacific Forum Line Fleet as of November 2006

Vessel	Description	Capacity (TEU)	Gross Tons
Forum Fiji II	Geared container ship	516	5,025
Capitaine Tasman II	Geared container ship	660	7,091
Forum Samoa II	Geared container ship	660	7,091
Forum Rarotonga	Geared container/general cargo vessel	135	2,657
Kokopo Chief	Geared combination container ship	726	7,914
Coral Chief	Geared combination container ship	726	7,914
Papuan Chief	Geared combination container ship	726	7,914
Melanesian Chief	Geared combination container ship	424	7,091

TEU = twenty-foot equivalent unit, a measure of containerized cargo capacity equal to one standard 20-foot (length) x 8-foot (width) x 8.5-foot (height) container.

Note: The four "Chief" vessels are owned by Swire Group's Chief Container Services, with which PFL has an agreement that gives the Line exclusive marketing rights, PFL providing all related services and controlling rates.

Source: PFL website, www.pflnz.co.nz

Scheduled Services of Pacific Forum Line

PFL offers services linking Australia, New Zealand, the Pacific Islands, and PNG. Container services are offered, both full container load (FCL) and less than container load (LCL), and vessels will carry break bulk cargo. Using the direct call services, they also offer transshipment to other destinations through ships of other companies.

Table A5.2: Pacific Forum Line Services as of November 2006

Service	Ports	Vessels	Frequency
Australia–Pacific Islands	Brisbane, Sydney, Melbourne, Lautoka, Suva, Apia, Pago Pago, Nuku'alofa	*Capitaine Tasman II; Forum Samoa II*	14 days

table A5.2 continued

Service	Ports	Vessels	Frequency
New Zealand–Pacific Islands	Lyttleton, Napier, Auckland, Lautoka, Suva, Pago Pago, Nuku'alofa	*Forum Fiji*	21 days
	Auckland, Nuku'alofa, Pago Pago, Rarotonga	*Forum Rarotonga*	21 days
New Zealand–Papua New Guinea	Tauranga, Napier, Nelson, (Auckland cargo centralized to Tauranga, South Island cargo to Nelson at PFL cost), Australia, Port Moresby, Lae, Madang, Kimbe, Lihir, Rabaul	*Kokopo Chief, Coral Chief, Papuan Chief, Melanesian Chief.*	Weekly (fixed day)
Interisland	Fiji Islands, Samoa, American Samoa, Tonga, Rarotonga	*Capitaine Tasman II; Forum Samoa II, Forum Fiji, Forum Rarotonga*	Varying

Lessons Learned on the Stormy Passage to Success

PFL grew out of Pacific leaders' dissatisfaction with shipping services in the region during a time of challenging economic and maritime trading conditions. Services in the region at the time were minimal, and poorly structured and maintained. The sector was dominated by a few major operators that used their significant presence to act as cartels. Their equipment and service levels were very similar, and conditions and service were set with little apparent concern for the Pacific nations or their traders.

During the 1960s, shipping in the region had become a high-risk and high-cost venture, with shipping companies counteracting falling revenue with increasing freight rates and decreasing service. The situation was exacerbated by industrial intransigence and union domination in the sector in the major economies of Australasia. This environment saw an awakening play of political forces in the newly independent states of the region, and the birth of the South Pacific Forum in 1971.

Some countries in the region, such as Tonga, Nauru, and PNG, established their own national shipping companies, but these fell by the wayside. The idea of establishing a regional line based on these fleets was proved infeasible by conclusive studies. The geographic spread of the island nations and the small population and freight base made services problematic financially. Some governments, however, continued to serve the smaller islands, or subsidize services at a time when most of the world was moving away from public sector involvement.

In this environment, and despite the capital-intensive nature of the business, PFL was launched in 1977. It faced torrid times early on, with inexperience and ignorance of market realities combining with undercapitalization to bring it close to extinction. The situation was further aggravated by internecine conflict at board level and resulting negative publicity. A combination of Pacific diplomacy and a solid commitment by New Zealand, in particular, saw order restored and funds injected from both New Zealand and Australia. However, a study by Touche Ross found major weaknesses, such as undercapitalization, and nonviable and complex routing and scheduling. PFL was trying to be all things to all its stakeholders, and sinking as a result.

Restructuring financially and focusing on a few key, viable routes, combined with the hardheaded business approach by its executive—led by George Fulcher and, subsequently, by John McLennan—saw the Line consolidate its position, develop niche markets, and begin to trade out of difficulty. This recovery owed much to the efforts of a few visionary, committed, and commercially oriented individuals. Their ability to learn lessons quickly, avoiding sentimental or politically driven directions, were critical elements in PFL's recovery and subsequent success.

PFL's 28 years of operation demonstrated a flexibility that has enabled it to undergo major change to remain viable. Lessons to be learned from the success of PFL were summarized in the Pacific Islands Forum Secretariat 2004 Issues paper, *Lessons from the Pacific Forum Line* (PFL).

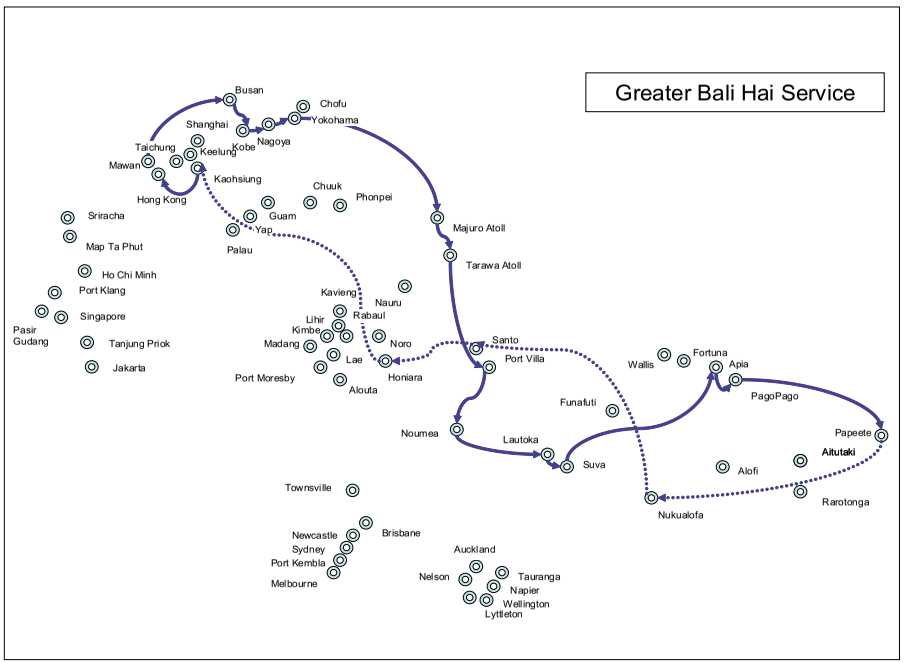
- **Meeting regional service needs**. PFL was a solution designed to meet regional needs. It adapted by restructuring its ownership of hardware and focusing on key, viable routes, even if this meant not serving some shareholder nations (Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, and Tuvalu).
- **Setting clear objectives**. PFL's original MOU included contradictory objectives. Not being able to serve all shareholder

nations—be all things to all people—was immensely unpopular but inevitable.

- **Embracing commercial principles**. Focusing on routes that would pay, despite the political and internecine pressures, was one example of the need to operate on commercial principles in order to face competition on an even footing.
- **Appropriate capitalization and financing**. The transport industry is an expensive one to enter and PFL proved this—almost the hard way. Without timely injection of funds from the major regional economies and fast financial restructuring, PFL would be an example of failure, not success.
- **Suitable hardware**. A core fleet of suitable vessels must be maintained, and individual agendas must not be allowed to compromise this principle.
- **Develop strategic alliances**. Where competition can be replaced by operating synergies, make alliances. An example is PFL/Swire Shipping, an alliance of two companies with clear commitment to the region.

Appendix 7: Shipping Routes and Port Calls of Asian and Around-the-world Trades

Figure A7.1: The Greater Bali Hai Service

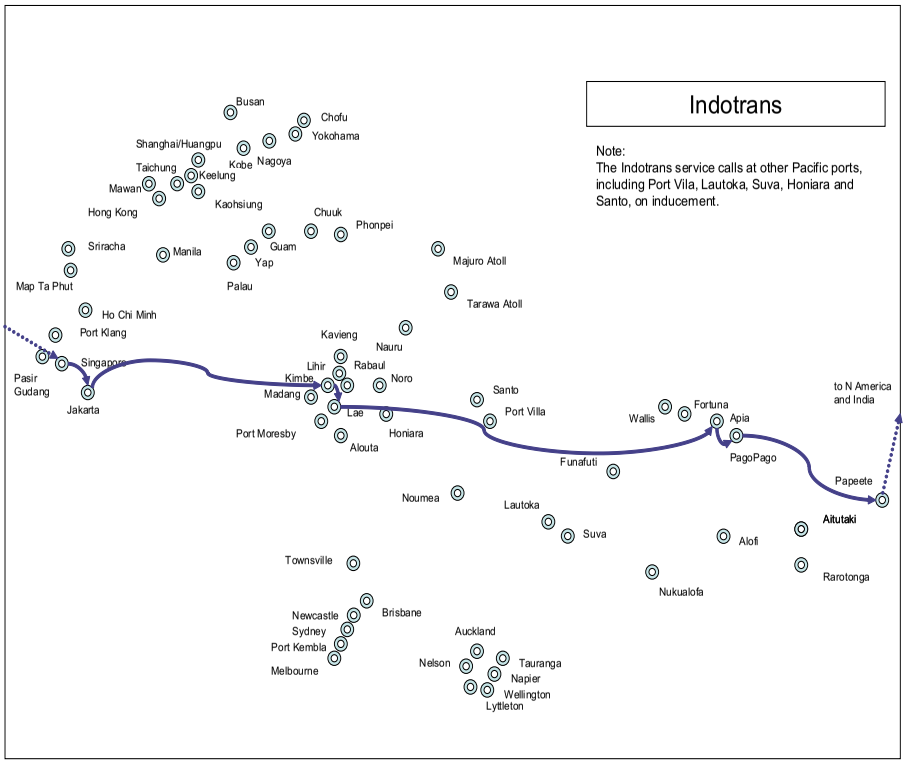


The Greater Bali Hai Service

The Greater Bali Hai service links Japan and Republic of Korea to the South Pacific Islands. Four multipurpose vessels operate on this route to create a service that calls twice each month at the major ports.

Port Calls:	
Kaohsiung	Hong Kong
Busan	Kobe
Nagoya	Yokohama
Majuro Atoll	Tarawa
Port Vila	Noumea
Lautoka	Suva
Apia	Pago Pago
Papeete	Nuku'alofa
Santo	Honiara
Kaohsiung	

Figure A7.2: Indotrans (Swire) Service



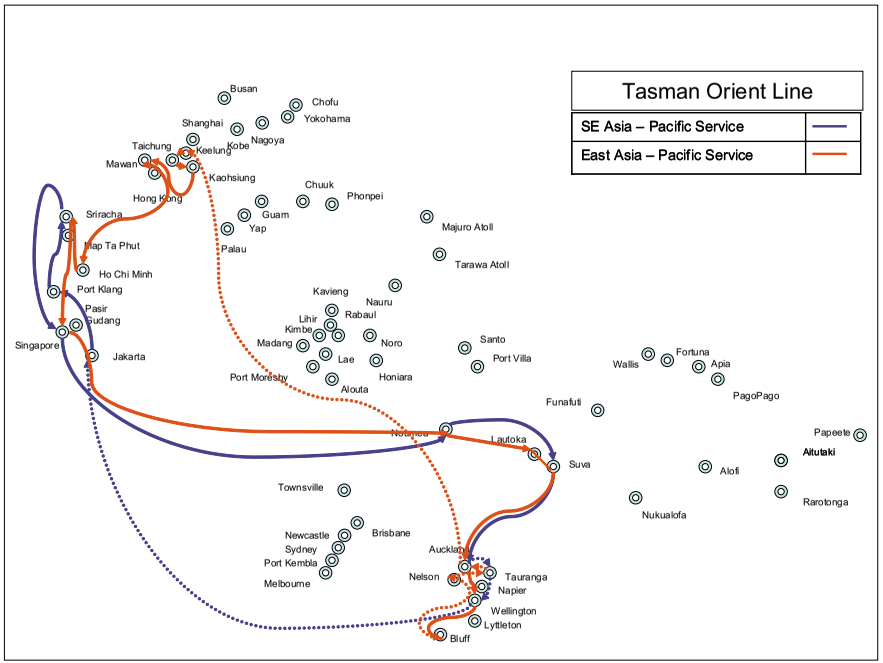
Indotrans (Swire)

Indotrans operates four multipurpose vessels with a nominal capacity of 1,300 TEU to provide a monthly service form India and Saudi Arabia to North America via Southeast Asia and the Pacific. Of the Pacific island nations, only Papua New Guinea and Samoa are fixed calls on the schedule, but inducement calls are made in Fiji Islands, Vanuatu, and Solomon Islands.

Port Calls:	
Jeddah	Pago Pago
Gizan	Apia
Mundra	Papeete
Mumbai	New Orleans
Singapore	Houston
Jakarta	Camden
	St. John
Kimbe	
Lae	

TEU = twenty-foot equivalent unit.

Figure A7.3: Tasman Orient Line Services



Tasman Orient Line

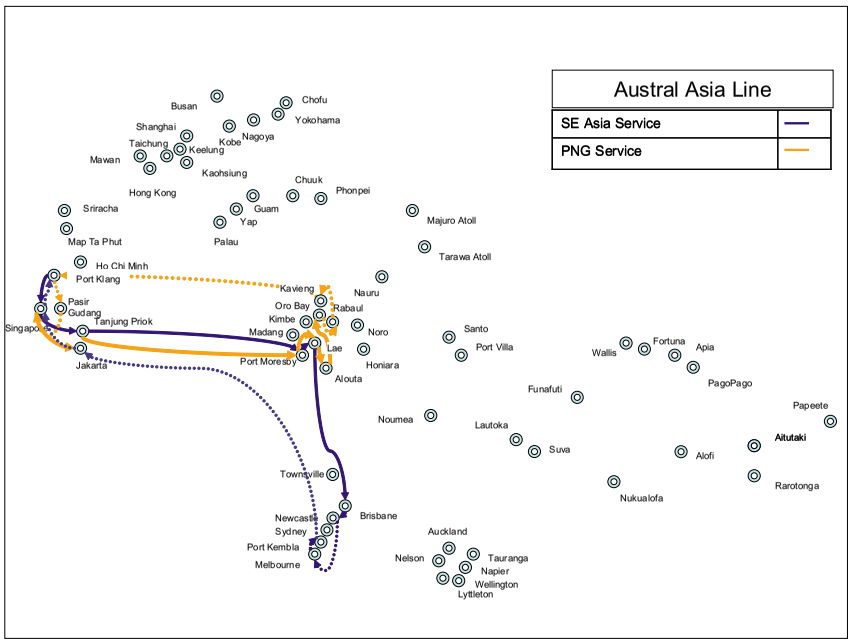
Tasman Orient Line operates two overlapping services from Asia to Noumea and Fiji Islands, using multipurpose vessels of 1,000–1,300 TEU capacity. One service focuses primarily on Southeast Asia, the other on East Asia, but both include calls to the key Southeast Asian hub of Singapore. Each service offers two sailings per month, and proceeds to New Zealand after the Pacific calls.

Port Calls:

East Asia Service	Southeast Asia Service
Keelung	Tanjung Priok
Taichung	Port Klang
Kaohsiung	Sri Racha
Mawan	Singapore
Hong Kong	Noumea
Ho Chi Minh	Suva
Sri Racha	New Zealand Ports
Singapore	
Noumea	
Lautoka	
Suva	
New Zealand Ports	

TEU = twenty-equivalent unit

Figure A7.4: Austral Asia Line Services



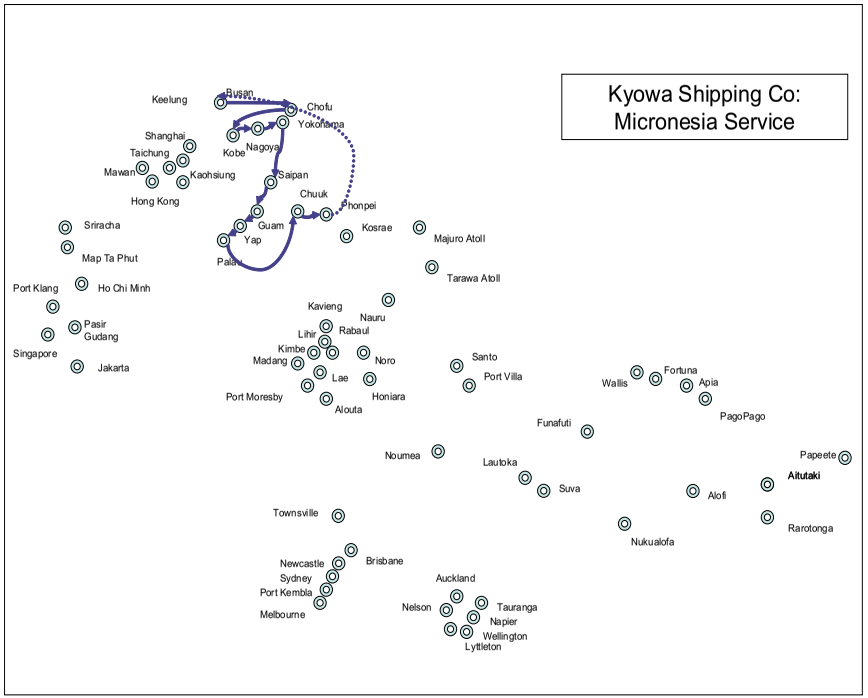
Austral Asia Line

The Austral Asia Line operates two services: the PNG Express Service and Southeast Asia that call at the Papua New Guinea ports of Lae and Port Moresby. The multipurpose vessels that operate on these routes hold between 650 and 973 TEU.

Port Calls:	
Southeast Asia Service	
Port Klang	Singapore (PSA)
Tanjung Priok	Port Moresby
Lae	
Newcastle	Brisbane
Port Kembla	Melbourne
Singapore (PSA)	Tanjung Priok
	Port Klang
PNG Service	
Pasir Gudang	Singapore
Jakarta	Port Moresby
Lae	Alotau
Oro Bay	Rabaul
Kavieng	Port Klang

TEU = twenty-foot equivalent unit.

Figure A7.5: Kyowa Shipping Company Service



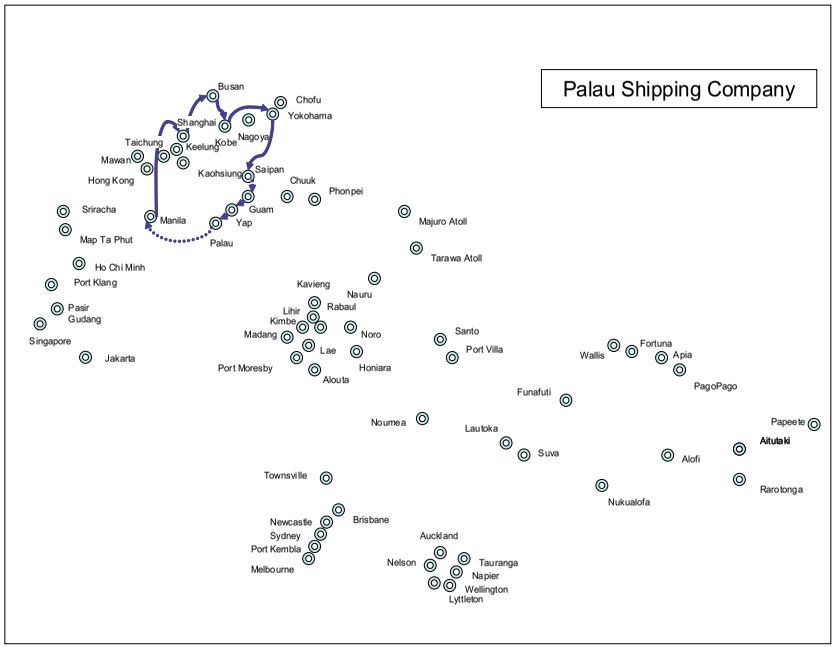
Kyowa Micronesia

Kyowa Shipping Corporation operates a fortnightly service from North Asia to Federated States of Micronesia and Palau using two roll on-roll off vessels of approximately 250 TEU nominal capacity.

Port Calls:
Busan
Kobe
Nagoya
Yokohama
Saipan
Apra (Guam)
Yap
Koror (Palau)
Chu'uk
Pohnpei

TEU = twenty-foot equivalent\ unit.

Figure A7.6: Palau Shipping Company Service



Palau Shipping

Palau Shipping uses vessels chartered from Mariana Express Lines to provide a service for North Asia to Palau, western Federated States of Micronesia, and the Philippines.

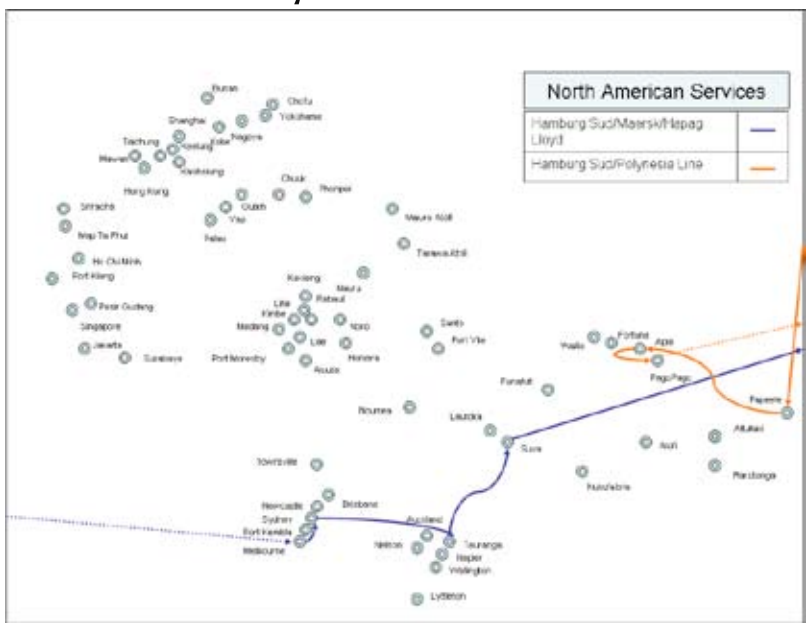
The service operates every 3 weeks using a multipurpose vessel.

Port Calls:

Shanghai
Busan
Kobe
Yokohama
Saipan
Apra (Guam)
Yap
Koror (Palau)
Manila

Appendix 8: Shipping Routes and Port Calls of the North American Trade

Hamburg Sud/Maersk/Hapag Lloyd and Hamburg Sud/ Polynesia Line Services



Hamburg Sud / Maersk / Hapag Llod

Hamburg Sud, along with Maersk Group and Hapag Lloyd operate weekly service calling at Australia, New Zealand, Fiji Islands, and North America using 1,700–1,750 TEU vessels.

Hamburg Sud / Polynesia Line

Hamburg Sud and Polynesia Line operate a bi-weekly service calling at North America, French Polynesia, Fortuna, Samoa, and American Samoa using 1,100–1,200 TEU vessels

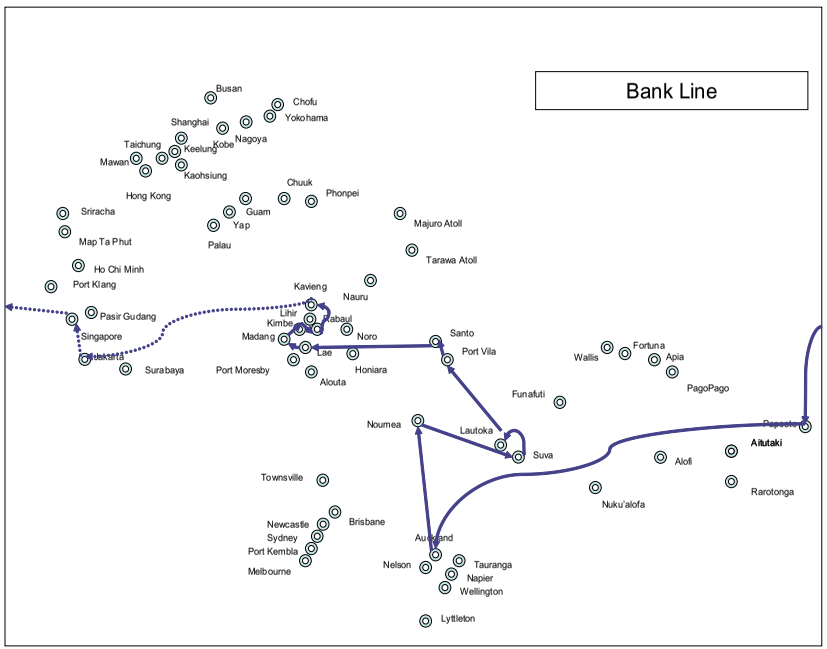
Port Calls:

Australia-New Zealand–Fiji Islands Service	Eastern Pacific Service
Melbourne Sydney	Long Beach
Tauranga	Oakland
Suva	Papeete
Ensenada	Apia
Los Angeles	Pago Pago

TEU = twenty-foot equivalent unit

Appendix 9: Shipping Route and Port Calls of the European Trade

Bank Line Service



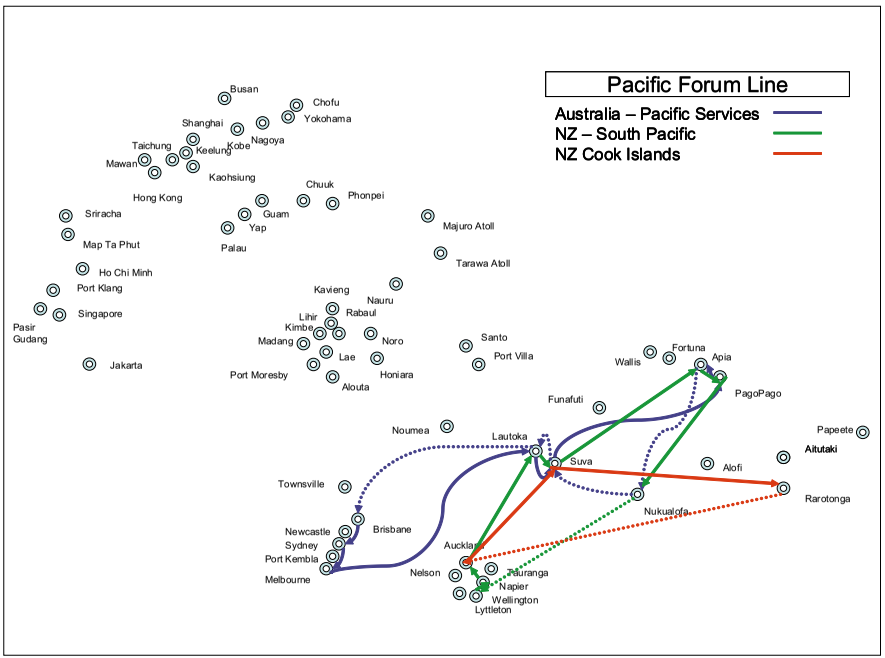
Bank Line

The Bank Line is an around-the-world service calling at Northern Europe, Southeast Asia, and the South Pacific Islands. The complete journey takes approximately 128 days. A number of the smaller ports in the South Pacific are serviced only when there is a sufficient volume of cargo to be uplifted.

Port Calls:	
Algeciras	Hamburg
Hull	Antwerp
Dunkirk	Le Havre
Papeete	Auckland
Noumea	Suva
Lautoka	Port Vila
Santo	Lae
Madang	Kimbe
Rabaul	Jakarta
Singapore (PSA)	Algeciras

Appendix 10: Shipping Routes and Port Calls of Australia and New Zealand Trade

Figure A10.1: Pacific Forum Line Services



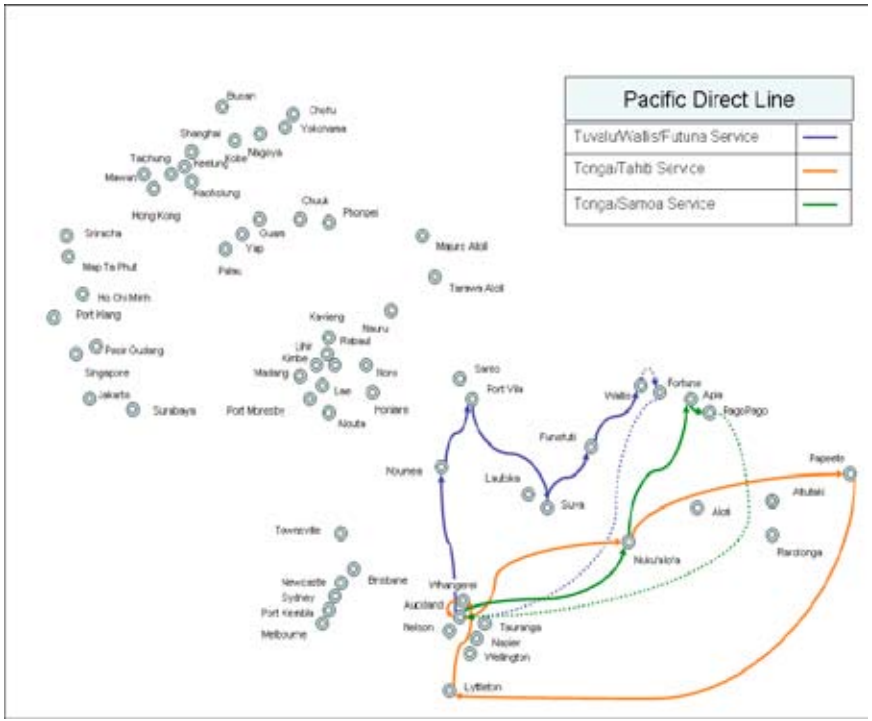
Pacific Forum Line

The regionally owned Pacific Forum Line remains a major provider of shipping services to Pacific island countries. The Line operates as a vessel-operating carrier in three trades linking Australia and New Zealand to southern and eastern Pacific. In addition, it participates as a slot charterer in the trade between Australia and New Zealand and Papua New Guinea and carries cargo from Asia to Pacific Island countries through connecting carrier agreements.

Port Calls:

Wallis/Futuna Service	
Auckland	Noumea
Port Vila	Suva
Funafuti	Wallis
Fortuna	Auckland
Tonga and Tahiti Service	
Lyttleton	Whangarei
Auckland	Nuku'alofa
Papeete	Lyttleton
Tonga and Samoa Service	
Auckland	Nuku'alofa
Apia	Pago Pago
Auckland	

Figure A10.2: Pacific Direct Line Services

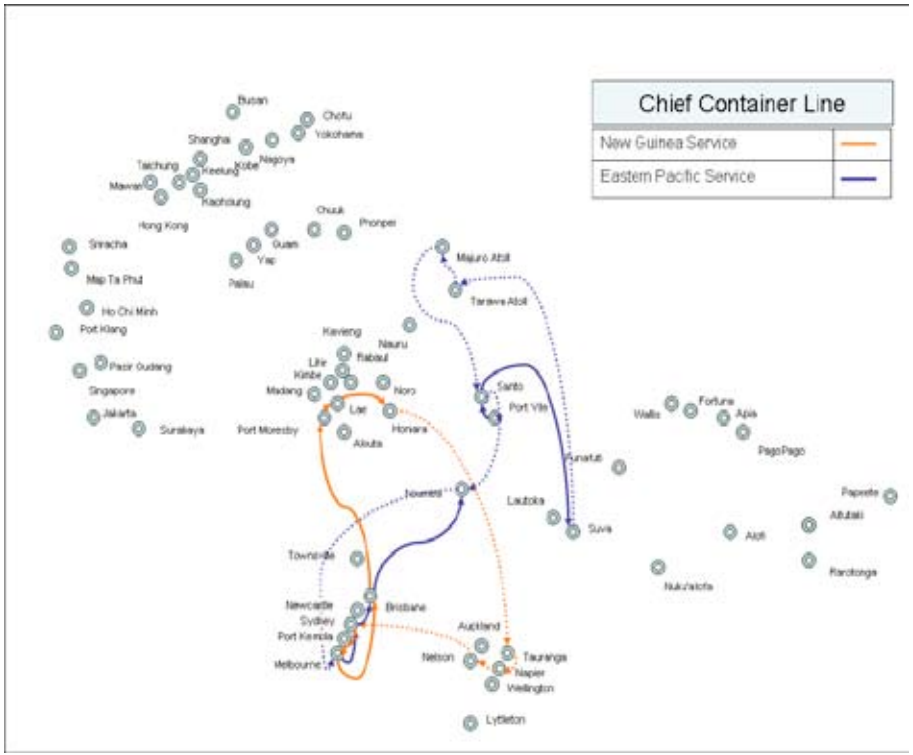


Pacific Direct Line

Pacific Direct Line operates three services between New Zealand and (i) Tuvalu, Wallis and Futuna; (ii) Tonga and Tahiti; and (iii) Tonga and Samoa. These services operate once every 3–4 weeks.

Wallis/Futuna Service	
Auckland	Noumea
Port Vila	Suva
Funafuti	Wallis
Fortuna	Auckland
Tonga and Tahiti Service	
Lyttleton	Whangarei
Auckland	Nuku'alofa
Papeete	Lyttleton
Tonga and Samoa Service	
Auckland	Nuku'alofa
Apia	Pago Pago
Aukland	

Figure A10.3: Chief Container Line Services



Chief Container Line

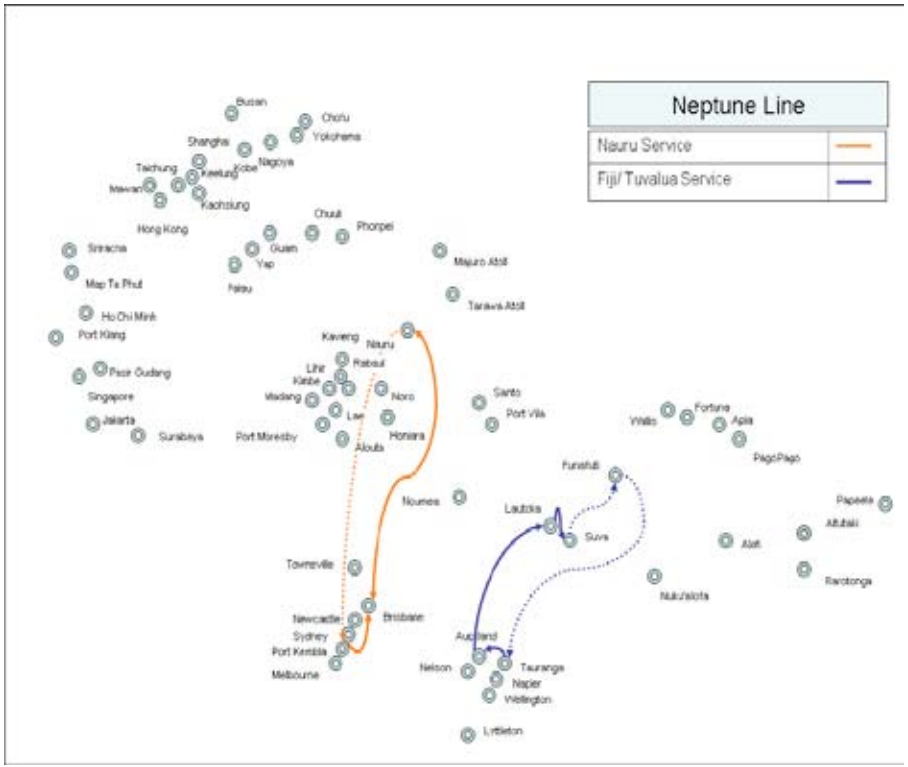
Chief Container Line operates two services between Australia, New Zealand, and (i) Papua New Guinea, and (ii) the Eastern Pacific.

The PNG service operates every week, whereas the East-Pacific service operates every 33 days.

Port Calls:

East-Pacific Service	
Melbourne	Sydney
Brisbane	Noumea
Port Vila	Santo
Suva	Tarawa
Majuro Atoll	Santo
Port Vila	Noumea
PNG Service	
Sydney	Melbourne
Brisbane Law	Port Moresby
Tauranga	Honiara
Nelson	Napier

Figure A10.4: Neptune Line Services

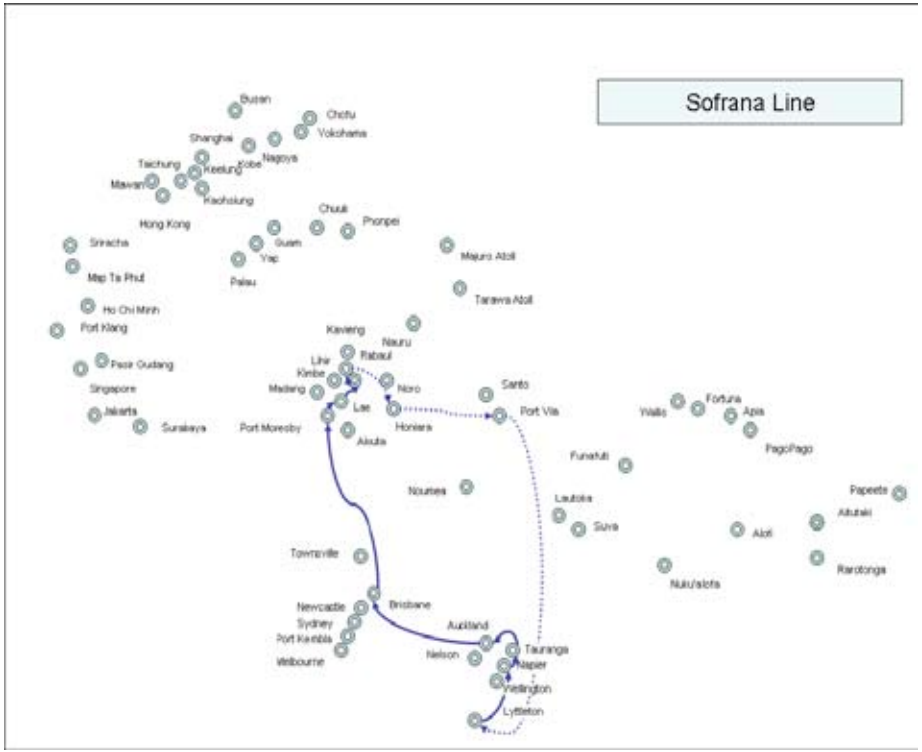


Neptune Line

Neptune Line operates two services: (i) between Australia and Nauru, and (ii) between New Zealand, Fiji Islands, and Tuvalu. These services operate every 2 weeks.

Port Calls:	
Nauru Service	
Sydney	Brisbane
Nauru	Sydney
Fiji Islands/Tuvalu Service	
Tauranga	Auckland
Lautoka	Suva
Funafuti	Tauranga

Figure A10.5: Sofrana Line Service

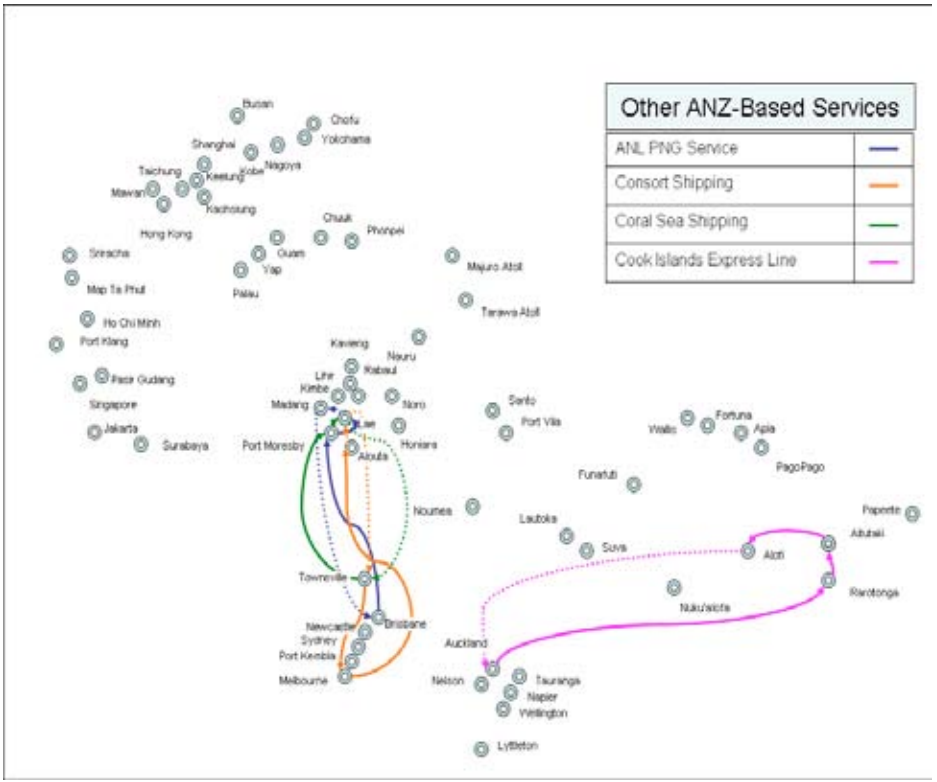


Sofrana Line

Sofrana Line operates a service every 18 days between New Zealand, Australia, Papua New Guinea, Solomon Islands, and Vanuatu.

Port Calls:	
Lyttleton	Napier
Tauranga	Auckland
Brisbane	Port Moresby
Lae	
Lihir	Rabaul
Port Vila	Honiara
	Lyttleton

Figure A10.6: Other Australia and New Zealand Based Services

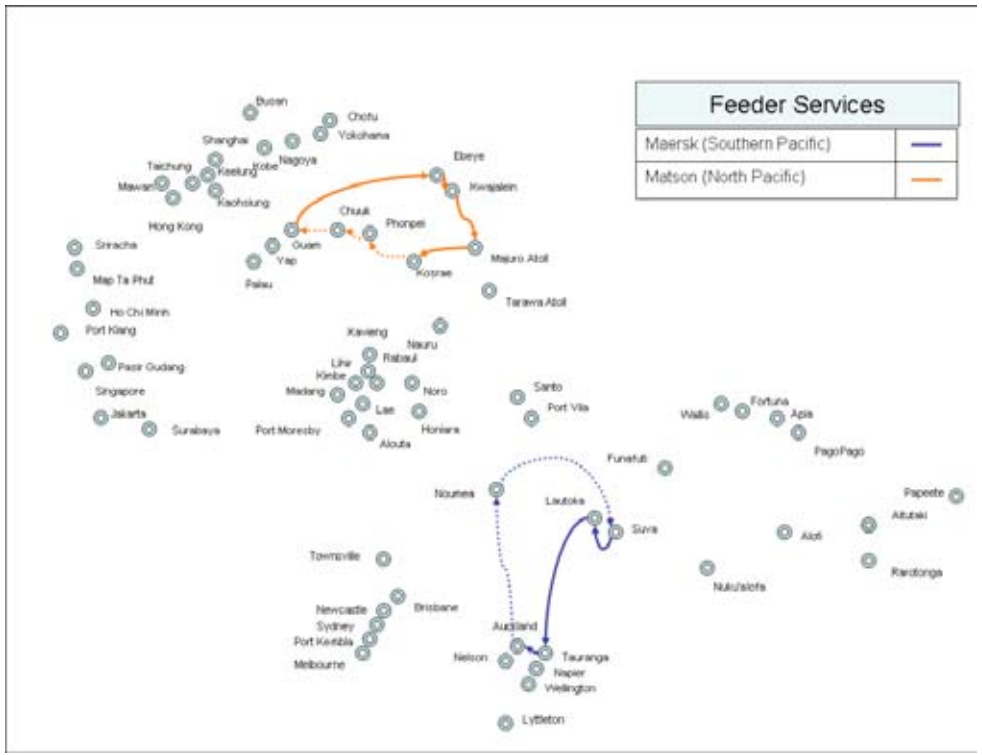


Other Australian and New Zealand (ANZ) Based Services

There are four other ANZ services operating within the Pacific Islands. These services typically operate bi-weekly services using small multipurpose vessels

Port Calls:	
ANL Service	
Brisbane	Port Moresby
Lae	Madang
Consort Shipping	
Townsville	Melbourne
Alotau	Lae
Coral Sea Shipping	
Townsville	Port Moresby
Lae	Townsville
Cook Islands Express Line	
Auckland	Rarotonga
Aitutaki	Alofi

Figure A10.7: Feeder Services



Feeder Services

Maersk Line operates a feeder service between New Zealand, Noumea, and Fiji Islands.

Matson operates a fortnightly feeder service between Marshall Islands and Federated States of Micronesia.

Port Calls:	
Maersk Line	
Suva	Lautoka
Tauranga	Noumea
Matson	
Guam	Ebeye
Kwajalein	Majuro Atoll
Kosrae	Pohnpei
Chu'uk	

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About Oceanic Voyages: Shipping in the Pacific

International shipping services are crucial to trade, growth, and development in the Pacific region. The vast majority of trade is carried by international shipping with countries outside of the region. Some cargo is bound for Australia and New Zealand, and significant proportions are destined for Asia, Europe, and North America, while very little is between Pacific island countries themselves. Outbound access to international markets for agricultural and marine products opens up opportunities for rural producers to expand their businesses and provide local jobs. Although some features of the Pacific region make provision of international services a challenge, there have also been some notable successes that offer key lessons for future development. Case studies of national shipping sector experience show the value of operating on commercial principles, attracting international and private-sector capital investment, assigning risk where it can best be managed, and liberalizing market access. Integration of the regional market for transport services, combined with harmonized but less restrictive regulations, would facilitate a greater range of services at more competitive prices. Pacific island country governments have the ability to create effective operating environments. When they do so, experience shows that operators will respond with efficient service provision.

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ADB aims to improve the welfare of the people in the Asia and Pacific region, particularly the nearly 1.9 billion who live on less than $2 a day. Despite many success stories, the region remains home to two thirds of the world's poor. ADB is a multilateral development finance institution owned by 67 members, 48 from the region and 19 from other parts of the globe. ADB's vision is a region free of poverty. Its mission is to help its developing member countries reduce poverty and improve their quality of life.

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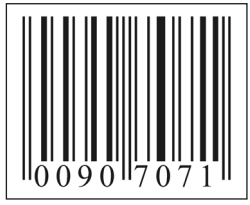

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