SECTOR ASSESSMENT (SUMMARY): TRANSPORT (WATER TRANSPORT [NONURBAN])

A. Sector Performance, Problems, and Opportunities

1. Tuvalu is an independent constitutional monarchy in the southwest Pacific Ocean. Formerly known as the Ellice Islands, it separated from the Gilbert Islands after a referendum in 1975 and achieved independence from the United Kingdom on 1 October 1978. The 10,782 inhabitants live on Tuvalu's nine atolls, which have a total land area of 27 square kilometres.[1] The nine islands, from north to south, are Nanumea, Niutao, Nanumaga, Nui, Vaitupu, Nukufetau, Funafuti, Nukulaelae, and Nulakita.

2. About 43% of the population lives on the outer islands. The small land mass, combined with infertile soil, creates a heavy reliance on the sea. The primary economic activities are fishing and subsistence farming, and copra is the main export.

3. The effectiveness and efficiency of maritime transport is highly correlated and integral to the economic development of Tuvalu. Government-owned ships are the only means of transport between the islands. Passenger and cargo ships travel from Funafuti to the outer islands and Fiji, so each island only has access to these ships once every 2–3 weeks. Table 1 shows the passengers and cargo carried by the ships since 2009. In addition to the regular services, these ships are occasionally used for medical evacuations. They also carry many Tuvaluan students to Funafuti, Vaitupu, and Fiji, where secondary or higher-level education is available. These ships therefore not only provide life-line support to the Tuvaluan people but also help keep them united.

Table 1: Outer Island Passenger and Cargo Data

Service	2009	2010	2011	2012	2013	2014	2015	2016	2017
Manu Falau									
Passenger	6,542	6,652	6,299	3,892	5,912	5,064	6,359	3,593	5,453
Cargo m^3	2,950	2,574	2,151	1,046	1,166	954	1,045	595	910
Nivaga II[a]									
Passenger	7,650	8,044	7,862	3,813	4,559	6,487	3,592		
Cargo m^3	4,403	2,529	2,084	982	957	1,707	403		
Nivaga III									
Passenger								11,294	7,750
Cargo m^3								2,103	1,185
Total									
Passenger	14,192	14,696	14,161	7,705	10,471	11,551	9,951	14,887	13,203
Cargo m^3	7,353	5,103	4,235	2,029	2,123	2,661	1,448	2,698	2,095

m^3 = cubic meter.
[a] Nivaga II, originally granted by the United Kingdom in 1988, gross tonnage of 1,043t, and passenger capacity of 209 was replaced by Nivaga III in December 2015.

4. In April 2018, the government's fleet consisted of five vessels:

(i) Nivaga III, passenger and cargo ship built in Japan in 2015 and granted in

[1] Secretariat of the Pacific Community—Statistics for Development Division (PRISM Project). Population Statistics.http://prism.spc.int/regional-data-and-tools/population-statistics (accessed 2 April 2018).

December 2015 by Japan; gross tonnage 1,270t; passenger capacity of 320 (international) or 429 (domestic); cargo capacity of 520 cubic meters (m^3); 31 crew.

(ii) Manu Folau, passenger and cargo ship built in 2002, granted by Japan; gross tonnage 582t; passenger capacity of 80; cargo capacity of 190 m^3; 23 crew.

(iii) Tala Moana, 34-meter (m) research vessel purchased on behalf of the Government of Tuvalu by the United Nations Development Programme (UNDP), to support UNDP and other projects in Tuvalu's outer islands.

(iv) Manaui, 19 m fisheries vessel built in 1989 and donated by Japan, due to be replaced in 2019-2020.

(v) Te Mataili, 31.5 m patrol boat donated by Australia and operated by the Tuvalu Police Service. This is being replaced by a new 39.5 m vessel in 2019.

5. A small landing craft (Tai Manino), procured in 2015 and used for fisheries surveillance, enforcement, and medical evacuation, was sold in early 2018.

6. Tuvalu's interisland maritime transportation service is heavily subsidized by the government (Table 2). Ship operations cost about A$3.0 million annually, while revenue from passengers and freight totaled about A$0.5 million during 2013–2015. The passenger fare is A$20 one way in the deck class regardless of distance, while the fare for first- and second-class cabins is A$100–A$200. The remaining costs of about A$2.0 million are covered by revenues from vessel registration, wharfage fees, and the government's direct subsidy of $1.2 million–$2.4 million per annum. If asset depreciation and the operation and maintenance of wharfs, docking facilities, warehousing, and other facilities are taken into consideration, the total subsidy could exceed A$5.0 million per annum. Revenue from vessel registration was volatile during 2013–2015, with fees dropping to almost nothing in 2014 but recovering in 2015. Passenger and freight income did not cover the cost of fuel, even though the fuel price was low during this period. Any negative variation in the fuel price would have a direct impact on the government subsidy.

Table 2: Financial Performance of Maritime Related Activities
(A$)

	2013	2014	2015	2016	2017
A. Revenues					
1. Direct from ship operation					
Passenger income	319,648	407,763	396,837	550,003	437,577
Freight income	176,277	152,521	132,546	159,646	136,450
Subtotal direct revenue	**495,925**	**560,285**	**529,383**	**709,649**	**574,027**
2. Indirect from ship operation					
Vessel registration	804,609	3,100	522,855	1,158,282	644,803
Wharfage charges	149,358	161,200	512,963	314,742	517,544
Other income	47,741	45,647	42,764	34,961	137,280
Subtotal indirect revenue	**1,001,708**	**209,947**	**1,078,582**	**1,507,985**	**1,229,627**
Total revenue	**1,497,633**	**770,232**	**1,607,965**	**2,217,634**	**1,873,654**
B. Expenditure					

1. Direct for ship operation					
Fuel	817,083	1,018,176	736,334	1,475,063	1,215,936
Staff	777,894	915,564	620,650	1,001,804	849,735
Maintenance	905,713	545,877	1,006,566	436,680	593,221
Subtotal direct costs	**2,500,690**	**2,479,616**	**2,363,550**	**2,913,547**	**2,658,892**
2. Indirect for ship operation					
Subtotal indirect costs	**256,392**	**701,127**	**511,158**	**756,263**	**692,659**
Total expenditure	**2,757,082**	**3,180,743**	**2,874,708**	**3,669,810**	**3,351,551**
Profit or loss	(1,259,449)	(2,410,511)	(1,266,743)	(1,452,176)	(1,477,897)

( ) = negative.

7. Government ships carry passengers and cargo between the capital and outer islands, but no outer island has a dock for them to berth alongside (the way loading and discharging of cargo and passengers takes place in Funafuti). Passengers and cargo have to be carried by small workboats that shuttle between the ship and the shore, which is dangerous when the sea is rough. Transferring between the ships and the workboats offshore is particularly dangerous because the ships and the workboats move differently. Workboats loaded with passengers and cargo navigate narrow channels, with operators needing to adjust their timing to cater for the period and direction of the swell coming from offshore. While Nanumea, Nukufetau, and Vaitupu have basic reception facilities for workboats, the movement of passengers on the other islands involves strenuous, potentially risky embarkation and disembarkation from workboats via shallow water, and cargo needs to be carried ashore manually. Numerous incidents have occurred during these transfers. Nowadays, transfer operations are not done when the sea is rough or after dark, which reduces the efficiency of ship operations. In the consultation during project preparation, these dangers in the transfer operations were confirmed by the outer island representatives.

8. Consultations carried out in March 2018 on all islands confirmed the safety concerns held by outer island residents, particularly for the sick and vulnerable, such as children, elderly, and people with disabilities. All communities expressed their wish for facilities that would make the transfer between ships and the shore safer, i.e., larger channels with better wharf and ramp infrastructure. The maritime transport master plan that is being formulated under the current project of the Asian Development Bank (ADB) is considering possible improvements to interisland vessels and workboats to improve the safety of passenger movements to and from the shore. The introduction of a dedicated cargo service in coming years would likely further improve safety and efficiency.[2]

9. Since Cyclone Pam hit Tuvalu in March 2015, the government and outer islands have expedited their efforts to make their infrastructure more resilient to climate risks. In Nukulaelae, for example, a project is in place to elevate houses to avoid damage from flooding. With assistance from the UNDP, the government secured funding support from the Green Climate Fund for coastal protection to reduce disaster risk. These actions require the Ministry of Communication and Transport (MCT) to increase its capacity to accommodate the transport of construction materials.

[2] ADB. 2016. *Proposed Grants and Administration of Grant to Tuvalu for the Outer Island Maritime Infrastructure Project*. Manila.

10. In addition to funding constraints in developing maritime facilities in Tuvalu, the environment demands careful consideration. The construction of channels through reefs requires attention to several issues.[3] The coastal environment is dynamic, with sand continually moving along the shore, and on- and offshore. Any new infrastructure needs to take this into account to avoid any net erosion or accretion. Vehicle access across the beach is essential to enable mechanized unloading from workboats. Unfortunately, the solid concrete ramps currently used have caused high levels of erosion at a number of locations. Infrastructure and construction plans must be designed in careful consideration of the coastal processes.

B. Government's Sector Strategy

11. The sector strategy outlined in the government's National Strategy for Sustainable Development, 2016–2020 (Te Kakeega III) recognizes that sea transport and shipping services between the eight outer islands remain an arduous task.[4] Servicing these communities by being able to ship greater volumes of bulk cargo more frequently is a development priority. The strategy also states that an interval of 2 months or more between ship visits is unacceptable. It tasks the Ministry of Home Affairs and Rural Development and the MCT with working together to produce outer island shipping schedules that minimize disruptions—a common characteristic of past shipping schedules—and maximize shipping efficiency for cargo and passengers.

12. The MCT strategy includes (i) consideration of alternative international air and sea services; (ii) the provision of safer boat passages on all outer islands; (iii) the provision of adequate shipping services to the outer islands; and (iv) the provision of more accurate and reliable observations, forecasts, and warnings on weather and climate. These objectives are backed up with refitting and maintenance programs for the five government-owned ships.

13. The maritime transport component of the Tuvalu Infrastructure Strategy and Investment Plan, 2016–2025, endorsed by the Tuvalu cabinet in December 2016, focuses on the construction of harbors on the four outer islands where ship-to-shore transfers are particularly problematic (Nanumaga, Niutao, Nui, and Nukulaelae).

14. Under the current project, Nukulaelae is the first of these islands to receive upgraded port infrastructure—field work will start in September 2018 for the construction of a new channel and small boat harbor. Geotechnical surveys are being planned for the other three islands. ADB will fund a new port construction in Niutao with the proposed additional financing, while the World Bank would finance a new harbor in Nanumaga, expected to be approved by the end of 2018.

15. Tuvalu's infrastructure strategy includes a whole-life approach, covering operation and maintenance (both routine and periodic maintenance). This approach includes the application of investment criteria for the prioritization of major infrastructure projects. The strategy goes to some lengths to explain that identifying the operation and maintenance cost will ensure adequate fund allocation, but failure to identify could result in non-allocation of the required funds.

C. Master Plan for Maritime Transport

16. As a component of the current project, a master plan for maritime transport is being developed to examine Tuvalu's transport needs and propose an action plan for future

[3] Cardno. 2007. *Updated Pre-Design Environmental Working Paper from the design documents for the Tuvalu Ship to Shore Transport Project (New Zealand Aid).*

[4] Government of Tuvalu. 2016. *Te Kakeega III: National Strategy for Sustainable Development, 2016–2020.* Funafuti.

developments. This work started in 2017. The purpose of the master plan is to examine ways of improving the safety, efficiency, and sustainability of outer island maritime transport. The scope is limited to outer island passenger and cargo requirements, and includes consideration of low-carbon options.

17. The first phase of the master planning activity concluded with the presentation and acceptance in December 2017 by the government of the sea transport working paper. That paper was prepared after a period of stakeholder involvement and incorporates the input of outer island communities. It addresses safety, efficiency, and sustainability issues and options (including low-carbon options) for outer island shipping, and includes recommendations for further investigation relating to shipping platforms and harbor dimensions.

18. The second phase of the master planning activity took place in the first half of 2018 and consists of a pre-feasibility harbor study that involved further stakeholder negotiations and reviews of several different harbour options. Visits to all islands were carried out in March 2018. During this phase, the costs of various vessel and harbor options were examined in more detail and evaluated. The third and final phase involves an appraisal of the options and the formulation of outline funding strategies, based on which an overall maritime transport master plan can be drawn up by October 2018.

D. Institutional Strengthening Plan

19. The current project also includes an institutional strengthening plan aimed at evaluating the current capacity of the government to maintain outer island maritime infrastructure and develop the means necessary to do so into the future. The plan's scope extends to outer island maritime infrastructure (not the current government vessels or infrastructure in Funafuti), and assets such as wharves, buildings, and navigational aids, along with maintaining the dredged depths in the channels.

20. The first report under this activity was prepared in late 2017. Finalised in February 2018, it examines the existing maintenance and asset management arrangements in Tuvalu. It highlights some significant programs occurring concurrently across the whole of government to rationalise and improve asset management and maintenance, in particular the Tuvalu Asset Management Framework and the Tuvalu Infrastructure Strategy and Investment Plan. It is envisaged that all future outer island maritime infrastructure assets will be managed in a manner similar to all government assets. An area that requires development is the implementation of these arrangements, and this has been the focus of the second institutional strengthening report, the Institutional Development Plan for Maintenance (IDP).

The IDP describes recommended coordination arrangements between the ministries involved in planning and delivering outer island maintenance services that will optimize the efficiency of transport to outer islands, and includes the allocation of responsibilities to different government levels. For example, staff led by the local government council (*Kaupule*) will have a role in monitoring and reporting on the condition of outer island assets. The IDP includes a series of undertakings needed in the next 6–12 months to build an asset register for existing navigational aids and design a suitably planned maintenance system. It also addresses the potential dredging requirements for maintaining access to channels and boat harbors in the event of siltation or blockage caused by severe weather. The implementation of the IDP will be monitored throughout 2018, and a report on the status of progress is due by the end of the year.