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

A. Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. The Kingdom of Tonga, in the southern Pacific Ocean, is an archipelago of more than 170 islands scattered across more than 700,000 square kilometers of sea, but only 36 of these islands are inhabited. Tonga is the southernmost group of the islands of Polynesia, halfway between Hawaii and New Zealand. Its administrative divisions are spread across three island groups: Tongatapu, Ha'apai and Vava'u. The capital, Nuku'alofa, is on Tongatapu island and is home to more than 70% of the country's 108,000 inhabitants.

2. As a small island nation, Tonga needs to import most of the goods, and 98% of these arrive by sea. Nuku'alofa Port is the main international port and the country's lifeline, given its geographical isolation from international markets. Nuku'alofa Port handles more than 95% of the containerized volume. Neiafu Port, on Vava'u island, handles the rest.

3. The Ministry of Infrastructure has the overall responsibility for infrastructure planning and implementation; its Marine Department manages the maritime side of it. Ports Authority Tonga (PAT) is responsible for the management and operations of Nuku'alofa Port. It is a government-owned enterprise overseen by the Ministry of Public Enterprises and was established under the Ports Authority Act 1998. The operations of PAT are governed by both the Ports Authority Act 1998 and the Public Enterprises Act 2002.

4. Nuku'alofa Port plays a vital role in Tonga's economy. It is the largest port in Tonga, and PAT runs it as a natural monopoly. Its operations bring foreign-sourced income directly to the Tongan economy through port duties and marine charges levied on visiting foreign ships and cargo movements. PAT's performance has been satisfactory to date, regularly delivering dividends to the government.

5. Between 1906 and 1967, the main international wharf of Nuku'alofa was at Vuna, to the west of Nuku'alofa. It was replaced in 1967 by the Queen Salote International Wharf (QSIW), about 2 kilometers (km) east of the town. Nuku'alofa now has a separate cruise terminal at Vuna, on the site of the original main wharf, and a separate domestic ferry terminal. The ferry terminal, originally located at the QSIW, was transferred to a new harbor built with funds from the Government of Japan about 1 km west of the QSIW, and opened in June 2018. PAT operates all three facilities.

6. The QSIW has four wharves. Wharf no. 1—90 meters (m) long and 12.2 m deep—and Wharf no. 2—110 m long and 10 m deep—are used as container and general cargo terminals. Wharf 3 is 100 m long, 7 m deep, and used for local trade. Wharf 4 is 60 m long and also used domestically; its depth is unrecorded.

7. Most of the inter-island ferries arrive at the new domestic ferry terminal, except for the Friendly Island Shipping Agency, which still operates from wharves 3 and 4. Only wharves 1 and 2 are used for international cargo.

8. Tonga is served by seven international shipping companies and two tanker companies on a scheduled basis. Most of the international trade is containerized, accounting for about 68% of the 461,000 tons of cargo handled in 2018. Tonga's container cargo per 1,000 persons was

237 twenty-foot equivalent units (TEU) in 2018, which is higher than the regional average. The remaining cargo was dry bulk, breakbulk, liquid bulk, and ro-ro (roll on/roll off).

9. Tonga has a small gateway container market connected with its key trading partners. The seven shipping lines with regular services at Nuku'alofa are connected mainly (for 77.6% of the total volume) with the Far East, Australia, New Zealand, and the United States. Tonga's trade consists primarily of imports; its exports—mainly squash, vanilla, and coconuts packed in containers—are minimal. Australia, the Republic of Korea, and New Zealand receive 85% of Tonga's exports.

10. TEU volumes have increased from an average of 12,071 in 2010 to 25,205 in 2018. Demand growth continues and is expected to increase based on forecast growth in population and gross domestic product. Dry bulk cargo volumes largely depend on the construction activities generated by future sizable infrastructure projects.

11. The import of liquid bulk cargo is driven by the energy consumption for transport (70%) and power generation (20%). Vehicle ownership in Tonga is already high compared with other island economies and is not expected to increase significantly. The national energy plan aims to decrease the dependency on diesel generation. By 2050, it is expected that diesel imports will account for 54% of the country's power demand, which is significantly lower than the current market share of 91%.

Table 1: Shipping Statistics and Forecast

Item	2015a	2016a	2017a	2018a	2025e	2040e
Containers (TEU)	18,280	23,227	25,426	24,631	31,700	44,000
Dry bulk (tons)	29,500	39,900	32,400	27,800	31,400	41,100
Liquid bulk (tons)	49,100	57,600	55,700	54,800	69,900	80,600
Ship calls	143	173	160	152	154	168

a = actual, e = estimated, TEU = twenty-foot equivalent unit.
Source: Ports Authority Tonga and consultants' estimates.

12. Since the international cargo terminal at the QSIW is only 110 m long, it limits the size of vessels able to call—with large economic and safety impacts. At the wharves, containers are loaded and unloaded using the ships' gear, while reach stackers, forklifts, and an empty container handler are used in the yard. Yard operations are not well organized, and the lack of a formal traffic management plan exacerbates the inefficiencies. Port operations and management are mainly paper based since digitalization is minimal.

13. The infrastructure at the QSIW is deteriorating because of lack of maintenance and investment. A structural assessment of wharf no. 1 in March 2019 found it to be in an advanced state of dilapidation requiring immediate upgrade. Operations at the wharf were suspended because of safety concerns.

14. After a fatal accident in 2018, when a port employee was crushed between two containers, an audit revealed serious health and safety hazards, such as unpaved yard sections, poor-quality infrastructure, inadequate lighting, and lack of fire hydrants. The current security standard is barely meeting the requirements of the International Ship and Port Security Code (ISPS Code).[1] Moreover, uncontrolled dumping of rubbish and waste at the QSIW site, spillovers onto the

[1] The ISPS Code is a core international maritime regulation for the safety and security of ships, ports, cargo, and crews. It is an amendment to the Safety of Life at Sea Convention (1974/1988) that came into force in 2004.

foreshore, unbounded fuel storage areas, and pooling of water and other liquids jeopardize the environmental sustainability of the port.

15. Tonga is in a highly vulnerable region that is susceptible to climate change impacts and natural disasters. The cyclone season from November to March wreaks havoc on the port with strong waves, wind forces, tidal surges, and floods. Tonga's proximity to the active Tongan Trench also exposes it to strong earthquakes and tsunamis. While no major event was recorded on the main islands so far, a tsunami in 2009 caused nine fatalities in the Nuias archipelago 600 km further north. At Port Nuku'alofa, a large earthquake in 2006 left cracks in the yard behind wharf no. 2, causing its temporary closure during investigations. The port facilities have not suffered any other significant damages from natural disaster events, but every year during the cyclone season they incur one or two temporary shutdowns of 72 hours because of high-speed winds or surges.

2. Government's Sector Strategy

16. One of the goals defined in the Tonga Strategic Development Framework, 2015–2025 is the provision of safer, more reliable, and more affordable transport infrastructure and services to achieve dynamic and inclusive growth across the country.[2] Increased connectivity within the country and with other countries to reduce cargo and passenger transport costs is seen as a key means of improving Tonga's competitiveness.

17. The National Infrastructure Investment Plan, 2013–2023 outlines the priorities in the maritime space: (i) reduce the cost of services to reduce transport costs and improve Tonga's international competitiveness; (ii) improve the sustainability of maritime infrastructure by ensuring adequate maintenance, so as to minimize long-term costs and maximize availability; (iii) enhance inter-island shipping services to help improve socioeconomic conditions; (iv) increase the safety of the transport system, and its resilience to climate change and natural disasters, to minimize disruptions; (v) strengthen and reform the institutional framework that governs the management, maintenance, and financing of maritime infrastructure and services; and (vi) promote and better use a competitive private sector.[3]

18. The PAT Business Plan 2019–2024 defines the strategic priorities of developing superior seaport facilities, promoting sustainable growth and a sustainable environment, maintaining sound operational and financial performance, and ensuring Tonga's socioeconomic future through maritime trade.[4] A core function of PAT in facilitating trade for the nation's importers and exporters is to upgrade the ports' infrastructure, machineries, and equipment to enable the efficient turnaround of vessels and efficient and safe handling of cargoes.

19. In the 2030 Agenda for Sustainable Development, Sustainable Development Goal 9 calls on the global community to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.[5] The Framework for Resilient Development in the Pacific (FRDP), 2017–2030 highlights the need to proactively pursue the goal of greater resilience to disasters and climate change.[6] In response to these commitments, the Pacific Community

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2 Government of Tonga. 2015. *Tonga Strategic Development Framework, 2015–2025*. Nuku'alofa.
3 Government of Tonga. 2013. *Tonga National Infrastructure Investment Plan, 2013–2023*. Nuku'alofa.
4 Ports Authority Tonga. 2018. *Business Plan 2019–2024*. Nuku'alofa.
5 United Nations General Assembly. 2015. *Transforming our World: The 2030 Agenda for Sustainable Development*. New York.
6 Pacific Community, Secretariat of the Pacific Regional Environment Programme, Pacific Islands Forum Secretariat, United Nations Development Programme, United Nations Office for Disaster Risk Reduction, and University of the South Pacific. 2016. *Framework for Resilient Development in the Pacific, 2017–2030.* Suva.

developed the Green Pacific Port initiative, which integrates applicable global approaches and promotes more efficient port infrastructure and operations, reduced environmental impacts, better quality of working and living in port areas, and greater commercial benefits.

20. PAT joined the initiative in 2018, together with Fiji Ports Corporation Limited and Solomon Islands Ports Authority. The Green Pacific Port approach explores port development that enables the holistic—operational, energy-conscious, and environmental—management of ports.

B. Major Development Partners: Strategic Foci and Key Activities

21. The major development partners in Tonga are listed in Table 2.

Table 2: Major Development Partners

Partner	Project Name	Duration	Amount ($ million)
Urban Sector Development			
ADB and DFAT	Nuku'alofa Urban Development Sector Project	2012–2019	14.6
ADB	Tonga Integrated Urban Resilience Sector Project (TA)	2018–2019	0.9
	Urban Planning and Management System (TA)	2009–2010	0.7
	Integrated Urban Development Sector Project	2008–2013	11.3
DFAT	Nuku'alofa Urban Development Sector Project	2012–2017	6.1
	Nuku'alofa Reconstruction Assistance	2007–2008	0.8
People's Republic of China	Nuku'alofa City Reconstruction Project	2007–2011	67.9
European Commission	Sustainable Urban and Environmental Management Capacity Building and Environmental Protection	2008–2012	2.6
Public and Environmental Health, Urban and Sanitation			
JICA	Technical Support for Outer Island Services	2017–2020	1.5
ADB and DFAT	Nuku'alofa Urban Development Sector Project	2012–2019	See above
Government of New Zealand	Popua Dumpsite Rehabilitation	2007–2009	0.7
DFAT	Solid Waste Management Project	2004–2010	10.9
Water Supply			
ADB and DFAT	Nuku'alofa Urban Development Sector Project	2012–2019	See above
SOPAC	National Integrated Water Resource Management	2009–2011	1.5
Danida	Upgrade Nuku'alofa and Vava'u Water Supply Systems	2007–2008	0.8
DFAT and SOPAC	Water Safety Plan – Nuku'alofa Water Supply	2006–2007	0.5
JICA	Project for Improvement of Nuku'alofa Water Supply	2000–2004	10.7
DFAT	Nuku'alofa Water Supply Project	1997–0211	1.5
Transport, and Information and Communication Technology			
World Bank	Transport Sector Consolidation Project – Phase 1 and 2	2008–2018	23.0
World Bank	Tonga Transport Resilience Sector Project	2019–2024	27.0
DFAT	Nuku'alofa Urban Roads and Drainage Study	1993–2002	Unknown
JICA	Airport to the Central Business Area Road Project	1991	Unknown

ADB = Asian Development Bank; Danida = Danish International Development Agency; DFAT = Department of Foreign Affairs and Trade, Australia; JICA = Japan International Cooperation Agency; SOPAC = Pacific Islands Applied Geoscience Commission; TA = technical assistance.
Source: Asian Development Bank and other development partners.

C. Institutional Arrangements and Processes for Development Coordination

22. Development coordination processes are well established in Tonga and led by the Aid Management Division of the Ministry of Finance. This is complemented by bilateral consultations and ongoing dialogue during program discussions and project implementation missions. The Cabinet Development Coordination Committee is tasked to review requests for donor-funded projects by ministries, agencies, and departments before these are forwarded to the development partners for consideration.

23. The government development mechanism will facilitate the project consultations with stakeholders and the industry. Consultations with sector ministries, and coordination with the private sector and civil society groups take place as part of national development and sector planning, and annual budget preparation. The Ministry of Finance will be the executing agency and the Ministry of Infrastructure will be the implementing agency. The Asian Development Bank (ADB) engages in coordination through its in-country presence, regular missions (including virtual missions under the current travel restrictions), and electronic communication. The project governance structure as outlined in the project administration manual will ensure cross-ministerial engagement throughout the project.

D. ADB Experience and Assistance Program

24. Since the mid-1990s, ADB's assistance to Tonga has focused on urban, energy, and transport infrastructure. In 1994, ADB approved the Transport Infrastructure Project to upgrade 50 km of urban and rural roads, international cargo wharf no. 1, and eight inter-island port sites.[7] The project closed in November 2000, and the completion report concluded that the project had been implemented satisfactorily and that the derived benefits exceeded expectations.[8] The key lessons from that report that are applicable to the current project are to (i) undertake regular review missions at least every 6 months, and (ii) have construction supervision and project management carried out by people that live in Tonga full-time.

25. The 1994 project upgraded the international cargo wharf no. 1, the same wharf that will be upgraded again under the proposed project (output 1). Despite the involvement of an international contractor and engineer at the time, wharf no. 1 has underperformed and requires rehabilitation. The reasons for the underperformance are (i) a lack of monitoring and maintenance; and (ii) the nature of the aggregate used (coralline limestones) as part of the concrete mix, which is characterized by high porosity and offers no resistance in exposed marine structures. The new project will upgrade the infrastructure elements and strengthen QSIW operations, management, and processes, incorporating some of the recommendations of the review undertaken in 2005 by the World Bank as explained in the next paragraph.

26. A In 2005, the World Bank supported a review of the Tonga transport sector.[9] The review found that (i) Tonga faced many challenges in sustaining and developing the domestic, regional, and international transport links that are critical to its economic development; (ii) considerable infrastructure had been developed but was at risk of deterioration because of inadequate maintenance; (iii) the management and financial performance of PAT was being challenged; and (iv) Tonga was faced with new international requirements for port and airport security that have major implications for its trade with key partners. The review recommended actions to reverse

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7 ADB. 1994. *Kingdom of Tonga: Transport Infrastructure Project*. Manila.
8 ADB. 2001. *Project Completion Report: Tonga Infrastructure Project*. Manila.
9 World Bank. 2005. *Tonga Transport Sector Review – Final Report.* Washington, DC.

this situation, such as (i) making PAT responsible for all ports and harbors in Tonga; (ii) establishing explicit community service obligation arrangements to support the cost of providing and maintaining minor ports and harbors without cross-subsidization; (iii) preparing a business and development plan for future investment; and (iv) conducting a comprehensive review of port tariffs, performance indicators, and targets.

27. The review concluded that the maritime sector was generally performing well from an operational perspective, but it highlighted various concerns about financial, institutional, and corporate planning aspects, such as (i) an ambitious capital works program not supported by detailed analysis; (ii) an apparent lack of maintenance; (iii) a lack of effective mechanisms for setting, monitoring, and reviewing port charges and cargo-handling tariffs; (iv) poor mechanisms for adjudicating disputes between the various parties involved in port operations; and (v) lack of adequate provisions to ensure ongoing compliance with the ISPS Code.

28. In the new century, ADB's assistance has focused mostly on Tonga's urban and energy infrastructure, with the Integrated Urban Development Sector Project, the Nuku'alofa Urban Development Sector Project, the Climate Resilience Sector Project, the Outer Island Renewable Energy Project, and the Cyclone Gita Recovery Project. The Integrated Urban Development Sector Project closed in February 2015, and the completion report highlighted two key lessons. First, advance action and ADB's support for the recruitment of the project implementation assistance consultants resulted in their early and timely fielding, strengthening the project implementation capacities of the Ministry of Works (now known as the Ministry of Infrastructure). Second, ADB's guidance and support throughout the project—with frequent project review missions and regular communication with the ministry and the consultants—ensured the timely and effective project implementation.[10]

29. ADB will continue to support Tonga in the development of its maritime operations. Its technical assistance is helping prepare the Master Plan for the Development of the Maritime Transport Sector in Tonga.[11] The scope of the master plan is countrywide and covers (i) an assessment of the maritime transport infrastructure, operating scheme, and institutional and legal framework; (ii) the formulation of a vision and strategy for the future development of maritime transport; (iii) the preparation of a road map to guide future investments; and (iv) the identification of policy improvements to the institutional and legal framework. The master plan will equip the Government of Tonga, ADB, and other development partners with a strategic tool for the development of the sector, and allows for an integrated approach to enhancing its overall safety, efficiency, and resilience.

30. The proposed project is aligned with the Pacific Approach, 2016–2020 in that it reduces costs by improving regional connectivity through transport infrastructure, strengthening risk management, and enabling value creation. ADB's Strategy 2030 also puts greater focus on small island developing states to strengthen connectivity, access, and institutional capacity, while tackling climate change impacts and disaster risks. Particularly relevant is the alignment with operational priority 7 of Strategy 2030—to foster regional cooperation and integration—since the proposed project will boost connectivity in the Pacific region and the competitiveness of Tonga.

[10] ADB. 2015. *Project Completion Report: Tonga: Integrated Urban Development Sector Project*. Manila.
[11] ADB. 2017. *Technical Assistance for Strengthening Domestic Transport Connectivity in the Pacific*. Manila.

Problem Tree for Transport (Water [Nonurban])