Tonga: Integrated Urban Resilience Sector Project

Development pressure in Tonga’s capital, Nuku'alofa, is increasing as a result of population growth and further investment in sustainable urban infrastructure and services.

The geographical, geological and socioeconomic features of Tonga class it as one of the countries most at risk to the adverse impacts of climate change. The current and future climate-related drivers of risk for Tonga and, in particular, for Nuku'alofa, include sea level rise, tropical cyclones, increasing air and sea surface temperatures, and changing rainfall patterns. Nuku'alofa, and particularly the low-lying areas of Sopu and Popua, are highly vulnerable to climate change and suffer from recurrent flooding events, resulting in (i) personal and economic losses, (ii) flood damage to property and infrastructure, (iii) perpetual standing water, (iv) ideal conditions for mosquitoes and the transmission of waterborne diseases, and (v) loss of access to properties.

Flooded in Nuku'alofa remains an unabated issue. Development of Sopu and Popua is constrained by large swamps, requiring substantial filling to enable properties to be developed. Many lots within Sopu and Popua have not been developed or registered, as households are unable to fill their properties to a habitable level above seasonal flood levels. Additionally, the effects of extreme weather events, exacerbated by climate change, are worsening the situation. The piecemeal raising of road levels and filling of residential land to cope with the floods on an individual basis has altered the natural drainage patterns and created additional swamps and open water bodies. Lack of institutional arrangements and responsibilities for the provision of drainage services (new drainage and maintenance of existing ones) and the lack of legislation and regulations have contributed to limited drainage improvements and resultant marginal living conditions in Sopu and Popua where households facing financial hardship are over-represented.

Improvements to Nuku'alofa’s water supply system provided through the Asian Development Bank (ADB) and the Government of Australia funded Nuku'alofa Urban Development Sector Project (NUDSP) are yielding positive results in terms of operation, water pressures, water security and financial performance of the state-owned Tonga Water Board (TWB). However, although the improvements and accomplishments have been substantial, TWB is also facing several serious constraints:

(i) Effective management and protection of its new additional water resources is not in place, which puts its recent investments in additional production capacity at risk.
(ii) People do not like the water supplied by TWB because it is ‘hard’ water and prefers to drink softer water from uncontrolled sources, which may create public health issues.
(iii) The improved water supply pressures have resulted in higher water losses due to leakage, increasing the percentage of non-revenue water, which is now estimated at about 40% to 50% of production (up from 30% in 2011).
(iv) Adequate asset management is lacking, resulting in inadequate maintenance and lack of maintenance budget.
(v) System components in TWB’s outer island operations need upgrading or rehabilitation.
(vi) Billing efficiency and metering are improving but still below acceptable standards.
(vii) An agreed framework and policy for setting water tariffs does not exist, creating uncertainty and ad-hoc changes in TWB’s revenues.
(viii) The cooperation between TWB, Tonga Power Limited, and Waste Authority Limited (WAL) is intensifying under the new government-initiated shared Board, but guidance is needed on the way forward. There is a lack of capacity in fields such as project management, technical planning, technical skills, human resource planning, and the organisation needs to improve its professional image.

The current NUDSP will pilot new on-site sewage treatment and disposal facilities to selected households in Nuku'alofa. However, further investment in improved on-site sewage treatment and disposal facilities for an additional 400 households is necessary and would enhance public and environmental health in Nuku'alofa, particularly in low lying areas, such as Sopu and Popua, where the high water table and chronic flooding render on-site sewage treatment and disposal a high health risk to residents.

Additionally, the Cabinet has recently approved WAL to be responsible for waste management services nationwide. In order to fulfill its new obligations, WAL requires additional capacity building support (technical trainings on waste management operations, maintenance, training of trainers etc) and investment support to purchase additional equipment to run the waste management operations in Tongatapau and the outer islands.
### Project Rationale and Linkage to Country/Regional Strategy

A Transaction Technical Assistance (TRTA) is currently undertaking the due diligence for the ensuing investment project and assist the implementing agency prepare for the Project. The TRTA is: (i) assisting the ensuing project implementing agency to plan, design and prioritise investments to increase resilience to disasters and climate change, and increase and improve access to water and sanitation in Nuku’alofa; (ii) assessing technical suitability, economic, financial and social viability, capacity and institutional issues, address environmental and social safeguards, and climate change resilience of the project, (iii) identifying and implementing selected measures to strengthen project implementation capacity of the implementing agencies, and (iv) conducting integrity and due diligence screenings.

The proposed ensuing project will have the following outputs:

- **Output 1: Effective flood risk management system implemented.** Engineering solutions for flooding mitigation and climate change adaptation will be tailored to the particularities of each area within Nuku’alofa and will involve, for example, the cleaning and repair of the existing drainage system, construction of new drains, rehabilitation of natural water streams, construction of small canals allowing a controlled water discharge from the swamps and drains into the sea, filling of critical areas, and a comprehensive drainage system maintenance program. Advanced geotechnical studies need to be undertaken in some areas, particularly in Popua, to design the most adequate solution given the characteristics of the soil and water paths. Additionally, institutional arrangements will be made to ensure the capacity of the Government to properly maintain the drainage system. Effective disaster risk management legislation, in particular, a comprehensive Flood Management Master Plan for Nuku’alofa is necessary make possible a transformative change in Nuku’alofa’s flood management system and to ensure the effectiveness of the structural investments and the coordination of all the stakeholders involved.

- **Output 2: Disaster resilience strengthened.** A community based disaster risk management program will raise awareness while educating in risk mitigation, climate change adaptation, preparedness and response, as well as on the relevance of properly maintaining the flood management system. Coastline protection measures will be also built or enhanced using different hard and soft engineering and bioengineering techniques to control the coastline erosion and reduce the impact of flood surges and tsunamis in Nuku’alofa and other coastal urban areas in Tongatapu. This output will complement the current ADB financed Tonga Climate Resilience Sector Project, which focuses in geographic areas outside Nuku’alofa, ensuring coordination and complementarity among the activities of both projects and avoiding overlapping.

- **Output 3: Water supply service in Nuku’alofa improved.** TWB has recently prepared a draft investment proposal under an ADB funded technical assistance which outlines the necessary improvements to help the organization overcome its major constraints in water supply service. The project will support some of the highest priority investments in the plan, which include: (i) a non-revenue water reduction program; (ii) rehabilitation and upgrading of undersized pipes; iii) improved groundwater management; (iv) enhanced asset management; (v) tariff review; vi) metering and billing program; and vii) capacity building and institutional strengthening.

- **Output 4: Public and environmental health enhanced.** The project will also enhance public and environmental health by providing upgraded on-site sanitation facilities up to 400 selected households in Nuku’alofa, particularly in the low-lying communities of Sopu and Pepua, and will provide necessary solid waste management equipment and capacity building support to WAL to support the waste management operations in Tongatapu and the outer islands.

- **Output 5: Other urban infrastructures are upgraded and well maintained (candidate subprojects implemented).** Selected high-priority urban infrastructure projects identified will be implemented. Due diligence will be needed for identified subprojects, which will then be submitted to ADB for approval.

These outputs will result in the following outcome: Improved, effective and climate resilient urban infrastructure in Tongatapu. The project will be aligned with the following impacts: (i) Living standards in Nuku’alofa improved, and (ii) Resilience to existing extreme natural events and to the threat of climate change increased.

### Implementation Arrangements

ADB is the executing agency for the TA, which will be implemented by ADB’s Pacific Department. ADB will be responsible for consultant recruitment in close consultation with the government. The government will provide counterpart support in the form of counterpart staff, provision of office space, communication facilities for co-located personnel, and contributions. These implementation arrangements are similar to the ones in place during previous urban sector projects in Tonga. As per the lessons learned from these projects, stakeholder coordination during project preparation will be strengthened to prevent overlapping and to ensure a smooth implementation. Additionally, particular attention will be paid to the implementing agencies to ensure that their capacity to manage the project is strengthened and that adequate budgets are allocated at all times to carry out regular maintenance work that will safeguard the long-term sustainability of the infrastructure, and for regular operation and maintenance of the equipment provided under the project.

### Impact

<table>
<thead>
<tr>
<th>Project Outcome</th>
<th>Description of Outcome</th>
<th>Progress Toward Outcome</th>
<th>Implementation Progress</th>
<th>Description of Project Outputs</th>
<th>Status of Implementation Progress (Outputs, Activities, and Issues)</th>
<th>Geographical Location</th>
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<tr>
<td>Summary of Environmental and Social Aspects</td>
<td>Environmental Aspects</td>
<td>Indigenous Peoples</td>
<td>Stakeholder Communication, Participation, and Consultation</td>
<td>During Project Design</td>
<td>During Project Implementation</td>
<td>Business Opportunities</td>
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<td>Consulting Services</td>
<td>ADB is currently providing consultants and management for the TRTA. The total consultant input amounts around 37.5 person-months, comprising 25 person-months from international consulting services and 12.5 person-months from national consulting services. A firm has been engaged in accordance with ADB’s Guidelines on the Use of Consultants (2013, as amended from time to time) using the quality- and cost-based selection procedures (90:10) and a simplified technical proposal. Disbursements under the TA is being done in accordance with ADB’s Technical Assistance Disbursement Handbook (2010, as amended from time to time).</td>
<td>Responsible ADB Officer</td>
<td>Vicedo Ferrer, Maria</td>
<td>Responsible ADB Department</td>
<td>Pacific Department</td>
<td>Responsible ADB Division</td>
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**Timetable**

- Concept Clearance
- Fact Finding
- MRM
- Approval: 06 Jun 2017
- Last Review Mission
- Last PDS Update: 09 Jan 2019

### TA 9328-TON

#### Milestones

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#### Financing Plan/TA Utilization

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**Project Page**

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**Request for Information**

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