Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 28-Oct-2019 | Report No: PIDISDSA27981

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Project Name	Parent Project ID (if any)
Solomon Islands	P172294	Tina River Hydropower Development Project Additional Financing	P161319
Parent Project Name	**Region**	**Estimated Appraisal Date**	**Estimated Board Date**
Tina River Hydropower Development Project	EAST ASIA AND PACIFIC	25-Oct-2019	02-Dec-2019
Practice Area (Lead)	**Financing Instrument**	**Borrower(s)**	**Implementing Agency**
Energy & Extractives	Investment Project Financing	Solomon Islands Ministry of Finance and Treasury	Solomon Islands Ministry of Mines, Energy and Rural Electrification, Solomon Islands Electricity Authority, Tina Hydropower Limited

Proposed Development Objective(s) Parent

The project development objective (PDO) is to increase the share of renewable energy through hydropower in Solomon Islands.

Components

Component 1: Tina River Hydropower Facility (HPF)
Component 2: Access Roads
Component 3: Transmission lines
Component 4: Technical Assistance

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	1.00
Total Financing	1.00
of which IBRD/IDA	0.00
Financing Gap	0.00

DETAILS

Non-World Bank Group Financing	
Trust Funds	1.00
Australia-Pacific Islands Partnership Trust Fund	1.00

Environmental Assessment Category

A-Full Assessment

Decision

The review did authorize the team to appraise and negotiate

B. Introduction and Context

Country Context

Solomon Islands is a remote archipelago with one of the lowest population densities (20 persons/km^2) and urbanization rates (17 percent) in the world. The country consists of 997 islands encompassing a total land area of 29,900 km^2 spread over 1.34 million km^2 of ocean. The population of approximately 616,000 is dispersed across an estimated 90 islands.[1] The island geography, coupled with weak infrastructure links, presents formidable challenges to service delivery and economic integration. Major obstacles to development are the high cost environment resulting from the country's remoteness as well as its small market, lack of competition, high transportation and energy costs, and customary land issues. It is also vulnerable to natural disasters such as cyclones, tsunamis, flooding, drought and earthquakes.

Solomon Islands has one of the lowest levels of gross domestic product (GDP) per capita among the Pacific Island states, at US$1,424/capita in 2018. The country is still recovering from many years of intermittent political turmoil and civil strife. Locally referred to as the "tension", the conflict during 1998-2003 disrupted the functioning of state and social institutions which resulted in a 40 percent decline of GDP. Peace was restored through an Australian-led Regional Assistance Mission to Solomon Islands (RAMSI), and key state functions were rebuilt and strengthened over the years. The country has subsequently enjoyed a relatively stable security situation which supported economic growth.

The economy has since rebounded but remains vulnerable to external shocks. The Solomon Islands Government (SIG) managed its economy pursuant to the agreed principles of the Honiara Club Agreement (HCA) set up to support the recovery of Solomon Islands, and the economy grew mainly on export of commodities such as logging and substantial amounts of Official Development Assistance. However, the global financial crisis of 2009 hit Solomon Islands hard, resulting in GDP contracting by 4.7 percent, a budget crunch and a depletion of foreign currency reserves. Furthermore, oil price spike of 2008, and subsequently during 2011 to 2013, demonstrated Solomon Islands' vulnerability to global oil

[1] Population data based on *Solomon Islands 2012/13 Household Income and Expenditure Survey – National Analytical Report [Volume 1]*, October 2015.

price volatility as the country's balance of payments came under severe pressure since fossil fuels account for about a quarter of all imports. Economic growth has moderated over the past five years, driven by the softening international commodity prices from 2011 onwards, the impact of a natural disaster in 2014 (which brought about the closure of the country's only operating gold mine), and limited diversification of the economic base. The economy remains highly dependent on grossly unsustainable log production, estimated to have accounted for 60 percent of exports, 20 percent of domestic revenues, and 32 percent of foreign exchange receipts in 2018. Critically, despite sustained economic growth in the post-conflict period, real per capita GDP remains below its pre-conflict level. While this can primarily be attributed to the rapid rate of population growth experienced over the past decades, effectively it means that on average, Solomon Islanders are relatively worse off today than they were over 20 years ago. In the context of low economic growth, lack of essential services and infrastructure, marked inequities between formal settlements and informal and rural areas, conflicts over land tenure, poor links between the indigenous and imported political system, and a high level of youth unemployment, the risk of conflict recurrence remains relevant.

Going forward, real GDP is projected to grow on average by 3.0 percent over the medium-term (in the next 5 years). There are considerable downside risks to this outlook, notably the expected decline in log production over the medium-term. On the positive side, large infrastructure projects are going ahead including the Tina River Hydropower Development Project (TRHDP), which is expected to start producing power by 2024; and the undersea internet cable, which is expected to boost growth over the longer run. But on the negative side, fiscal challenges may prove hard to manage, logging activity is likely to decline, and the timing of the mining sector expansion is unclear. Growth is projected at 3.0 percent on average over 2018–23, while inflation is expected to remain moderate at 3.2 over the medium term.

Sectoral and Institutional Context

Low access to electricity services. About 9 percent of the population in Solomon Islands has access to grid-connected electricity supplied by the national power utility, Solomon Islands Electricity Authority (SIEA), and about 2 percent are supplied by diesel generators owned by households or communities.[2] Access to grid electricity is uneven across the country. About 50 percent of the urban households are supplied by SIEA of which the majority are being supplied through the Honiara Electricity System (HES) in the capital city, with a population of nearly 70,000, on the main island of Guadalcanal. Only about 3 percent of the rural households is supplied by SIEA or through diesel generators owned by households or communities. Nationally, one-third of the households have installed small solar home systems, with photovoltaic (PV) panels typically of 20 watts, which are only sufficient for a few light bulbs and to charge cell phones. At an average annual consumption of 125 kilowatt-hours (kWh) per capita, the country has the lowest consumption rate in the Pacific.

Demand and supply. Currently the demand growth on the HES is constrained by limited distribution network coverage, small number of overall customers and high retail tariffs (see section below). Interruptions in supply caused by frequent maintenance of diesel generators used to be a constraint to the expansion of the HES, but have improved significantly in the last five years, a direct result of the Bank-supported Solomon Islands Sustainable Energy Project (SISEP) which closed in March 2019. The total

[2] Electrification rate based on *Solomon Islands 2012/13 Household Income and Expenditure Survey – National Analytical Report [Volume 1]*, October 2015.

installed capacity of the HES is 29.0 megawatts (MW), out of which 28.0 MW are diesel generators and 1 MW is a solar farm. Peak demand of the HES has increased from 9.3 MW in 2003 to 15.82 MW in 2018 representing a compound annual growth rate (CAGR) of 3.6 percent. Over the same period, annual electricity generation in HES grew at 4.3 percent CAGR from 45.1 gigawatt-hours (GWh) to 85.1 GWh, with a notable 6.7 percent growth in 2016 alone mainly due to the increased generation capacity realized through the commissioning of four 2.5 MW diesel generators. Total electricity generated in the provincial grids was 11.17 GWh in 2018.

Heavy reliance on imported diesel, high cost of generation and high retail tariff. SIEA's system was almost 100 percent reliant on diesel generation. The cost of generation reduced over recent years, from US$35.6 cents/kWh in 2014 to US$26 cents/kWh in 2018, along with the drop of oil prices. Retail tariffs for grid-supplied electricity, adjusted down from US$ 93 cents/kWh in 2014 to an average tariff of US$79 cents/kWh as of October 2019. The reduction was partly due to lower oil prices, and partly due to enforcement of a new tariff calculation methodology. The tariff regulation mechanism adopted since 2005 linked retail tariffs to fuel cost. However, while the retail tariff increased along with rising oil prices up to mid-2014, the drop in fuel cost which began in late-2014 was largely not translated into lower retail tariffs. As a result of this distortion in this tariff methodology and efficiency improvements since 2010, SIEA has enjoyed a high profit margin on its electricity sales in recent years. To rectify the retail tariff distortion, the new tariff methodology, *Tariff Regulation of 2016*, was introduced in January 2017 to appropriately reflect the fuel price in the tariff. Through the new tariff methodology, tariff levels are set by determining the Maximum Allowable Revenue for SIEA based on Non-Fuel Revenue Requirements and a pass-through of Fuel Charges of all fuel costs, including power purchased under power purchase agreements, adjusted for heat rate and losses. However, the retail tariff is still significantly higher than the Pacific regional average of residential retail tariffs, which is approximately US$ 40 cents/kWh. Although no affordability survey has been conducted, it is understood that the expensive tariff is one of the major factors for the extremely low annual consumption per capita.

To expand access and to improve reliability, affordability and sustainability of electricity services, SIEA plans to implement its least-cost expansion plan (see section below), expand its network coverage, improve system efficiency and significantly expand the use of less expensive, indigenous renewable energy sources. With commissioning of the 15 MW TRHDP (the Project) by 2024 according to the least-cost plan, financial projections suggest that the retail tariff could be further lowered to US$33 cents/kWh by 2024 and US$26 cents/kWh by 2052 (one year before the end of the TRHDP Power Purchase Agreement [PPA] period), compared to US$51 cents/kWh by 2023 and US$65 cents/kWh by 2052 without TRHDP. The retail tariff in the "without TRHDP" scenario is much higher since diesel generation still represents a higher share in the energy mix while diesel generation cost is expected to increase in line with World Bank's oil price forecast. With commission of TRHDP in 2023 and the expected incremental development of solar power, the share of energy from renewable energy sources would increase from 1 percent in 2016 to 85 percent in 2022 (68 percent from TRHDP and 17 percent expected from solar). By 2046, as the demand grows, share of TRHDP will reduce to 43 percent, and the share of solar will increase to 40 percent as they are incrementally developed, making the total renewable share 83 percent. Without TRHDP, 58 percent will be supplied by solar while diesel will be 42 percent in 2046.

Least economic cost generation expansion plan. The annual demand is projected to grow to over 140 to 250 GWh by 2040 under different scenarios of CAGR growth rate. Under the base case scenario

assuming: (a) a 2.1 percent CAGR[3] for demand growth; (b) international crude oil price growing from US$ 64/barrel in 2017 to US$ 72/Barrel in 2025, and growing up to 87 by 2046 in real terms; (c) solar farm installation price going down from US$ 2.8 to 1.6 million/MW from 2017 to 2030 and remaining constant afterwards; and (d) an economic discount rate of 3 percent pursuant to the Bank's *Discounting Costs and Benefits in Economic Analysis of World Bank Projects* (May 2016)[4], the least-cost expansion plan requires installation of over 54 MW new capacity in a combination of hydropower, solar and storage, and diesel capacity to meet the demand growth at the least economic cost, and commissioning of TRHDP in 2022. Using the above parameters, the optimization study also found that TRHDP constitutes a key component of the least-cost expansion plan.

Sector institutions. The Ministry of Mines, Energy and Rural Electrification (MMERE) is the supervising ministry for the energy sector, and its Energy Division bears responsibility for legal and regulatory development, institutional strengthening and supervision of the state-owned utility, SIEA. Operating under the Electricity Act, SIEA is a vertically-integrated power utility that is responsible for electric power generation, transmission and distribution to all urban and provincial centers. Retail tariff is nationally uniform and is regulated by MMERE, and there is a cross-subsidy between the HES customers with relatively lower cost of supply and the customers of the outer islands with higher generation costs mainly due to the high cost of transporting fuel. Since an independent regulatory authority does not exist in Solomon Islands, SIEA also advises SIG on regulatory instruments, and is given the authority to issue licenses to entities who wish to generate and distribute electricity in areas not supplied by SIEA. There are also small privately-owned generators, which are for self-consumption and some of which sell excess power to SIEA under loosely negotiated PPAs. In 2016, SIEA purchased 1.1 GWh from the Solomon Tropical Products company.

SIEA financial performance. SIEA was in financial crisis and close to insolvency with severe cash-flow problems until 2010 due to the "tension", large outstanding receivables, non-revenue losses, rising oil prices, large debt levels, and a depreciating Solomon Islands Dollar (SBD). Together with support provided through the World Bank-financed SISEP, SIEA's financial performance improved dramatically from making losses until 2010 to a net profit of SBD68 million in 2012, SBD107 million in 2015, and SBD80 million in 2018. Electricity sales revenues increased from SBD351.5 million in 2011 to SBD457.1 million in 2018, while the cost of generation kept going down, largely due to lower oil prices, from US$ 35.6 cents/kWh in 2014 to US$ 263.8 cents/kWh in 2016 and increasing against to US$26 cents/kWh in 2018. If the least-cost expansion plan is implemented, the lower tariff of TRHDP will lower further the cost of generation, making room for retail tariffs to be adjusted downward. System loss has been high at around 19-21 percent during 2011-2016, and SIEA targets aggressively to reduce it to 11 percent by 2021. SIEA's average earnings before interest, tax depreciation and amortization (EBITDA) margin is forecasted to grow from 24 percent to 53 percent, and net margin from 14 percent to 43 percent, over the projection period of 2017-2052. Accounts receivable have also improved from 70 days of sales in 2011 to 40 days in 2015.

[3] From the Debt Sustainability Analysis of Solomon Islands carried out by World Bank and International Monetary Fund.

[4] This guidance recommends the use of discount rate of twice the projected rate of GDP per capita in real terms. It is anchored in welfare economics and implies that the net benefits of a project at different points in time should be valued according to their marginal impact on welfare at the time they occur. Higher (lower) growth prospects would normally imply a higher (lower) discount rate for a particular country.

Indigenous energy resources and government strategy. Beyond the aims of lower cost of electricity, the *Solomon Islands National Energy Policy (SINEP)* aims to enhance energy security at a national level, by increasing the share of renewable energy to 50 percent of total installed capacity by 2020. SINEP estimates the country's *hydropower* potential to be 300 MW, but past attempts to develop hydropower in Guadalcanal to supply Honiara were abandoned due to customary land issues and challenging geological conditions. SINEP estimates the *solar* irradiation to be in the range of 5.5 to 6.5 kWh/m^2/day, and with the timing of its peak output coinciding with the daily peak load at mid-day, solar energy is regarded as a promising source of energy. In addition to SIEA's 1 MW grid-connected solar farm commissioned in 2016, SIEA plans to incrementally develop similar size installations. However, a significant constraint to developing solar farms in Solomon Islands is the difficulty of acquiring land in a country where approximately 90 percent of the land is customary. Other alternatives such as *geothermal, wind and biomass* have been examined, but do not currently offer cost-effective alternatives to hydropower and solar energy.[5] While SIEA was preparing to develop the 500 kilowatt (kW) Fiu River Hydropower Project in Malaita with assistance from the Asian Development Bank (ADB), that fell through due to prolonged land dispute. TRHDP will be the first large hydropower project in the country according to the SIEA's least-cost expansion plan.

Support of development partners. In addition to the previously mentioned SISEP, the World Bank is also supporting SIEA to implement an Electricity Access and Renewable Energy Expansion Project (SIEAREEP), which aims to: (a) increase access to electricity by providing a targeted subsidy to low-income households to pay for new service connections and in-house wiring which are unaffordable for households with limited income; and (b) to develop RE hybrid mini grids in a select number of provincial and and community population centers. The Energy Programme of the Secretariat of the Pacific Community's Economic Development Division provides technical assistance to MMERE, including on development of the SINEP in 2014. The Japan International Cooperation Agency (JICA) grant-funded a 50-kW parking lot rooftop solar facility for SIEA, and the governments of New Zealand and United Arab Emirates co-financed the 1 MW solar farm mentioned earlier. The Government of Australia (GOA) has provided ongoing support to TRHDP project preparation and is co-financing the Project.

C. Proposed Development Objective(s)

Original PDO

The project development objective (PDO) is to increase the share of renewable energy through hydropower in Solomon Islands.

Current PDO

The project development objective (PDO) is to increase the share of renewable energy through hydropower in Solomon Islands.

[5] A geothermal power project on Savo Island off the coast of Honiara had been considered, but was dropped due to uncertainty over resource availability and the high cost of the submarine cable needed to transmit power to Honiara. Measured wind speed data is not available in Honiara, but global wind models suggest fairly low wind speeds in the general area.

Key Results

Progress will be measured against the following PDO level results indicators, as applicable:

a. Share of renewable energy in the generation mix (%);
b. Generation capacity of hydropower constructed under the Project (MW); and
c. Electricity generated by the Project (GWh).

D. Project Description

The TRHDP will consist of four components: (i) hydropower facility (HPF); (ii) access road; (iii) transmission line; and (iv) technical assistance.

Component 1: **Tina River Hydropower Facility (TRHPF)** (Estimated cost: US$187.059 million). Under a 34-year PPA (including 4-year construction period), the Project Company, Tina Hydropower Limited (THL) will develop, finance, construct and operate the HPF with an installed capacity of 15 MW located on the Tina River, 20 km southeast of Honiara, and will comprise:

a. A roller-compacted-concrete (RCC) dam 72 m high (from foundation) located in a narrow gorge on the Tina River;
b. A waterway including a 3.3 km headrace tunnel in 3.3 m diameter, surge shaft and a surface-type steel penstock in 3.0 m diameter to convey water from the dam to the power station;
c. A powerhouse 5.7 km downstream of the dam site that will house three 5 MW Francis turbines and an extra bay for future installation of a fourth 5 MW turbine.

Component 2: Access Road (Estimated cost: US$25 million). The access road to facilitate HPF construction and operations includes two lots: Lot 1 involving the upgrade of the existing 13.2 km road from Black Post Junction to Managikiki Village; and Lot 2 involving a 5.5 km “greenfield” road through steep heavily forested terrain from Managikiki Village to the dam and power station sites. Upon commissioning of the HPF, Lot 1 will become the responsibility of SIG and Lot 2 will remain the responsibility of the Project Company (PC) for the duration of the PPA, after which it will hand over to SIG together with the HPF.

Component 3: Transmission Lines (Estimated cost: US$22.82 million). Generated power from the HPF will be evacuated to HES through two parallel single-circuit 66 kilovolt (kV) transmission lines of 21.6 km to the existing Lungga Diesel Power Station. The cost of this component includes the upgrading of Lungga Power Station since the highest system voltage at present is 33 kV.

Component 4: Technical Assistance (Estimated cost: US$7 million). This technical assistance (TA) supports the operation of the TRHDP Project Office (PO) under MMERE to finance consultants to monitor overall project implementation, provide awareness building and training for various stakeholders, monitor and support social and environmental safeguard arrangements and the Gender Action Plan (GAP), maintain a Dam Safety Advisory Panel (DSAP) and an independent social and environmental monitoring agent, liaise with various government counterparts and other stakeholders, support implementation arrangements agreed under the land acquisition process, support communities in utilizing their share of project benefits for community development, and to report to the Bank and other

financiers on project performance and achievement of objectives. A non-governmental organization (NGO) will also be engaged to work with landowning tribes in the upper catchment to support the first stages of establishing a protected area, up to the point of preparing a Protected Area Management Plan and Budget, if community members are interested and committed to doing so.

E. Implementation

Institutional and Implementation Arrangements

General. The PO under MMERE is the main implementing agency of the Project, as it has been during project preparation. The PO will provide overall project oversight, coordinate between the project components, project monitoring and reporting. As majority of the project financing will be provided through SIG, the Ministry of Finance and Treasury (MOFT) will play an instrumental role in coordinating the provision of financing from various sources. A donor coordination mechanism, led by the Bank, is expected to be established for reporting and information sharing between SIG and donors, and among donors.

Component 1 will be implemented by the Project Company, THL, a joint venture between Korea Water Resources Corporation (K-water) and Hyundai Engineering Co., Ltd. (HEC). Under the PPA, the THL will contract an Engineering-Procurement-Contract (EPC) contractor (HEC) for the construction of the HPF and the access road (Component 2), and an operation and maintenance (O&M) contractor (K-water) for the operation of the HPF and Lot 2 of the access road. The EPC contract, in particular, will be a fixed-price contract whereby the EPC contractor will assume all construction-related geological risks. THL will contract an Owner's Engineer to supervise the EPC contract.

Component 2 will be implemented as a part of the overall the EPC contract under Component 1. Supervision would be conducted by the THL's Owner's Engineer to review project design and ensure quality and timely construction of the access road.

Component 3 will be implemented by SIEA who will procure a supply and install contractor, and supervise the installation using its own resources and consultants it retains through a framework agreement.

Component 4 will be implemented by MMERE, through the PO, who will recruit: (i) key PO staff and DSAP members; (ii) environmental and social experts, including a gender focal point; (iii) an Independent Environmental and Social Monitoring Agent, and (iv) external auditors.

Financing Arrangements. On December 6, 2018, the Bank signed a financing agreement for IDA with SIG, including financing for (Component 1), construction of the transmission lines (Component 3) and TA (Component 4). The International Bank for Reconstruction and Development (IBRD) and IDA, acting jointly as the administrator for Australia-Pacific Islands Partnership (APIP) TF also signed a grant agreement with SIG to extend the APIP TF financing of the access road (Component 2) and TA (Component 4). The Bank had signed project agreements, respectively, with the THL for Components 1 and 2 and SIEA for Component 3. For GCF financing for (Component 1 & 2), which the Bank through IDA act as administrator, the Bank has already signed the Funded Activity Agreement (FAA) with GCF in July 2019 after some delays. The Bank will sign the IDA Financing Agreement with SIG before PPA Close Date.

.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The hydropower site is located on the Tina tributary of the Ngalimbiu River on the north of Guadalcanal and thirty kilometers east of Honiara. The site was selected based on relatively favorable geological conditions and consideration to avoid physical relocation of affected people. The dam site is located in the Tina Gorge, a narrow valley comprised of steep slopes that constrain the river in a narrow channel, and narrow ridge crests. Where the Tina and the Toni River converge, they form the Ngalimbiu River that flows through the coastal plane to the sea, with a small delta at its mouth. The vegetation cover in the upper catchment is dominated by montane forest, much of it undisturbed although increasingly threatened by logging. The catchment in the middle river is covered by lowland forest, some of it undisturbed, but showing increasing disturbance with distance downstream. In the vicinity of the villages downstream of the dam, the forest is largely disturbed, by settlements, garden plots, and logging. Terrestrial biodiversity is high, with a large number of animal species endemic to Solomon Islands, and, with the exception of the avifauna that evidences a preference for undisturbed areas, did not vary significantly between disturbed and undisturbed habitat. The Tina is a valuable aquatic habitat, with 57 species identified during the ESIA baseline surveys, all migratory. The project area consists of over 30 villages and hamlets, within the Malango Ward, of mainly indigenous people originating from the central Guadalcanal mountain lands, and several official —settler villages made up of people originating from South Guadalcanal/Weather Coast. The Bahomea tribal villages and their component hamlets are mainly stretched out alongside the Ngalimbiu River and lower-mid sections of the Tina River, and are often only hundreds of meters apart. The mountainous interior of Malango Ward is essentially unpopulated apart from periodic expeditions by the traditional owners for hunting and camping, and to reconnect with customary homelands. The indigenous people of the Tina area are therefore aware of the locations of their key originating villages and important cultural sites. Since membership of particular clans is claimed through kinship connection with people from successive historic settlements and originating places, knowledge of such places is important for establishing identity and land and resource rights.

G. Environmental and Social Safeguards Specialists on the Team

Chaohua Zhang, Social Specialist
Wolfhart Pohl, Environmental Specialist
Rachelle Therese Marburg, Social Specialist
Nathalie Suzanna Noella Staelens, Environmental Specialist

SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	
Performance Standards for Private Sector Activities OP/BP 4.03	No	
Natural Habitats OP/BP 4.04	Yes	
Forests OP/BP 4.36	Yes	
Pest Management OP 4.09	No	
Physical Cultural Resources OP/BP 4.11	Yes	
Indigenous Peoples OP/BP 4.10	Yes	
Involuntary Resettlement OP/BP 4.12	Yes	
Safety of Dams OP/BP 4.37	Yes	
Projects on International Waterways OP/BP 7.50	No	
Projects in Disputed Areas OP/BP 7.60	No	

KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The most significant environmental risks during project construction and operation will be alterations in the quantity and quality of water in the Tina River for drinking and washing and maintenance of aquatic habitat, and obstruction of fish migration up and downstream. Impacts on water quality will be limited to the construction period, but impacts on quantity and fish migration will persist as long as the project is operating and thus are considered long-term. Conversion of natural habitat is also a significant impact, and dam safety is an important issue.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

Alternative energy sources were compared on the basis of energy production; economics; reliability and limitations; and environmental and social benefits and constraints: demand-side management, wave and tidal energy, diesel-fueled generation (which, as a continuation of present practice, is also the « no-action alternative »), standard and pumped-storage hydro, solar, wind, geothermal, and gas-fired thermal. Ten different siting and configuration options were examined on Tina River, which had already been selected as the most favorable stream on Guadalcanal for

hydroelectric development. Different dam heights were considered. Evaluation of several types of fish passes by a fishery expert led to the selection of “trap and haul” to mitigate impacts on fish migration.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

The Project Company will be required to have in place adequate, qualified staff to fulfill its ESMP commitments. The MMERE Project Office staff will need to be augmented so that it can provide proper oversight of the environmental, social, health, and safety aspects of the project. The Environment and Social Panel contracted by MMERE will remain in place during an initial period of operation, as will the Dam Safety Panel, and MMERE will also engage an Independent Environmental and Social Monitoring Agent to monitor implementation of management and monitoring actions called for in the ESMP. The project will provide support to the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) for its monitoring activities.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

Electric power users on Guadalcanal are the broadest group of stakeholders. Stakeholders potentially affected by the project can be divided into several groups, some of which partly overlap: landowning tribes and families whose land is being acquired by the Government for the project; riverside dwellers and river users between dam and powerhouse; riverside dwellers and users downstream of the powerhouse but still in the upstream area; other residents in the upstream catchment; and river users downstream of the confluence of the Tina and Toni Rivers.

B. Disclosure Requirements (N.B. The sections below appear only if corresponding safeguard policy is triggered)

Environmental Assessment/Audit/Management Plan/Other

Date of receipt by the Bank	Date of submission for disclosure	For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors

"In country" Disclosure

Resettlement Action Plan/Framework/Policy Process

Date of receipt by the Bank	Date of submission for disclosure

"In country" Disclosure

Indigenous Peoples Development Plan/Framework

Date of receipt by the Bank	Date of submission for disclosure

"In country" Disclosure

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting) (N.B. The sections below appear only if corresponding safeguard policy is triggered)

CONTACT POINT

World Bank

Takafumi Kadono
Senior Energy Specialist

Borrower/Client/Recipient

Solomon Islands Ministry of Finance and Treasury
Mckinnie Dentana
Permanent Secretary
mdentana@mof.gov.sb

Implementing Agencies

Solomon Islands Ministry of Mines, Energy and Rural Electrification
Chris Vehe (Dr)
Permanent Secretary
cvehe@mmere.gov.sb

Solomon Islands Electricity Authority
Pradip Verma
CEO
pradip.verma@siea.com.sb

Tina Hydropower Limited
Jaeil Ryoo
Chief Executive Officer
jiryoo6901@gmail.com

FOR MORE INFORMATION CONTACT

The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 473-1000
Web: http://www.worldbank.org/projects

APPROVAL

Task Team Leader(s):	Takafumi Kadono

Approved By

Safeguards Advisor:	Peter Leonard	30-Oct-2019
Practice Manager/Manager:	Vilija Kostelnickiene	30-Oct-2019
Country Director:	Mona Sur	03-Nov-2019