



## RENEWABLES READINESS ASSESSMENT

# SOLOMON ISLANDS

FEBRUARY 2024



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# ABBREVIATIONS

<b>°C</b>	degrees celsius	<b>MMERE</b>	Ministry of Mines, Energy and Rural Electrification
<b>ADB</b>	Asian Development Bank	<b>MW</b>	megawatt
<b>ADFD</b>	Abu Dhabi Fund for Development	<b>MWh</b>	megawatt hour
<b>BESS</b>	battery energy storage system	<b>NDC</b>	Nationally Determined Contribution
<b>CBSP</b>	Community Benefit Sharing Program	<b>NEP</b>	National Electrification Plan
<b>CO<sub>2</sub></b>	carbon dioxide	<b>PALS</b>	Pacific Appliance Labelling and Standards
<b>DBSI</b>	Development Bank of Solomon Islands	<b>PPA</b>	power purchase agreement
<b>EV</b>	electric vehicle	<b>PRIF</b>	Pacific Region Infrastructure Facility
<b>FESRIP</b>	Framework for Energy Security and Resilience in the Pacific	<b>PV</b>	photovoltaic
<b>FRDP</b>	Framework for Resilient Development in the Pacific	<b>RE-SIP</b>	Renewable Energy Strategy and Investment Plan
<b>GCF</b>	Green Climate Fund	<b>RRA</b>	Renewables Readiness Assessment
<b>GDP</b>	gross domestic product	<b>R&amp;D</b>	research and development
<b>GEF</b>	Global Environment Facility	<b>SBD</b>	Solomon Islands dollar
<b>GWh</b>	gigawatt hour	<b>SDG</b>	Sustainable Development Goal
<b>ICT</b>	information and communications technology	<b>SEIA</b>	Solomon Islands Electricity Authority
<b>IPP</b>	independent power producer	<b>SEIAPI</b>	Sustainable Energy Industry Association of the Pacific Islands
<b>IRENA</b>	International Renewable Energy Agency	<b>SIDS</b>	small island developing state
<b>JICA</b>	Japan International Cooperation Agency	<b>SIEA</b>	Solomon Islands Electricity Authority
<b>km<sup>2</sup></b>	square kilometres	<b>SIESF</b>	Solomon Islands Education Strategic Framework
<b>kV</b>	kilovolt	<b>SINEP</b>	Solomon Islands National Energy Policy
<b>kW</b>	kilowatt	<b>SINU</b>	Solomon Islands National University
<b>kWh</b>	kilowatt hour	<b>SIWA</b>	Solomon Islands Water Authority
<b>LPG</b>	liquefied petroleum gas	<b>SPC</b>	Pacific Community
<b>MECDM</b>	Ministry of Environment, Climate Change, Disaster Management and Meteorology	<b>SPIRES</b>	Stimulating Progress towards Improved Rural Electrification in the Solomons
<b>MEPS</b>	minimum energy performance standards	<b>SPREP</b>	Secretariat of the Pacific Regional Environment Programme
<b>MFAT</b>	Ministry of Foreign Affairs	<b>THDP</b>	Tina Hydropower Development Project
<b>MJ</b>	megajoule	<b>USD</b>	United States dollar



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## EXECUTIVE SUMMARY

The Solomon Islands, which comprise 992 large rugged volcanic islands and small coral atolls, are located at 160 degrees east longitude and 9 degrees latitude south of the equator. The country had a population of 694 619 in 2020 and has experienced average annual population growth of 2% over the last decade. Around 87% of the population lives in rural areas and outer islands and depends fully on fishing and farming. The country has a year-round tropical climate, with December through March being the hottest months and also the hurricane season in the Pacific region. The mean annual temperature is 25.6 degrees Celsius, with average annual rainfall of 3 072 millimetres (1991-2020).

The economy of the Solomon Islands experienced steady growth from 2005 but was severely affected by the COVID-19 crisis, from which it has been slowly recovering. Economic growth is reliant on exports of agricultural commodities (fish, cocoa, coconut oil) and minerals. The Solomon Islands National Development Strategy (SINDS) 2016-2035 envisages economic and social development for all Solomon Islanders, as it gives priority to achieving energy security, mitigating climate change and contributing to the achievement of the Paris Agreement and the Sustainable Development Goals.

The Renewables Readiness Assessment (RRA) is a comprehensive tool designed by the International Renewable Energy Agency (IRENA) with the aim of evaluating a country's conditions to determine the suitability for the advancement and implementation of renewable energy that will foster energy transition and climate action. The RRA process in the Solomon Islands delineated strategic measures aimed at expediting the implementation of renewable energy initiatives and programmes. The country-led, consultative process was initiated and led by the Ministry of Mines, Energy and Rural Electrification (MMERE) and was facilitated by IRENA through the SIDS Lighthouses Initiative, which engaged key local stakeholders to determine gaps and opportunities, and to identify priority strategic actions. These strategic actions were grouped into seven areas and aim to improve energy security, and access to affordable and reliable energy services within the Solomon Islands.



## Recommendations for implementing energy transition priorities in the Solomon Islands

The recommendations for implementing energy transition priorities in the Solomon Islands require significant capital, human and infrastructure resources, which should be facilitated through multi-level partnerships. The seven strategic actions are summarised below, and a matrix provided in Annex 4 further details these actions, which correspond to the resource requirements identified during the RRA process.

### **1. Promote institutional restructuring and foster market competition in the Solomon Islands electricity grid.**

The Electricity Act has been amended to open the market for the participation of independent power producers (IPPs). The establishment of an independent regulator with clear mandates is key to unbundling electricity distribution and transmission, where the participation of IPPs is managed effectively through a power purchase agreement. It is also recommended that MMERE remains as the co-ordinator of the Solomon Islands energy sector and oversees energy transition efforts. It is imperative to implement the amended provisions of the Electricity Act, including new regulations aimed at providing concessional initiatives for private sector engagement and consumer participation. Appropriate regulations and grid codes will be needed for net metering (when rooftop solar is considered), for grid-connected solar farms and for geothermal development, such as the Savo project. The regulations will take into consideration the competing interests of Solomon Power, IPPs, customers and the community at large and will ensure greater adherence to grid codes and standards.

In strengthening local capacity with knowledge and experience in national and regional energy sector reforms, it is recommended that legislation, regulations, monitoring and evaluation tools, and compliance requirements are integrated into the local curriculum of the Solomon Islands National University and the University of the South Pacific, Solomon Islands Campus. Furthermore, research and development (R&D) programmes need to be further strengthened in tertiary institutions to improve public and community awareness of the benefits of energy sector reform through a bottom-up approach. This will also enable community groups – in particular, women entrepreneurs, villages and faith-based organisations – to be fully engaged in the reform processes.

## **2. Establish and enforce technical standards for off-grid renewable energy systems and pursue enhanced energy data management to ensure climate resilience.**

Given that reliable and accessible energy data are essential to policy design and planning, it is recommended that all public and private institutions that gather, analyse and store data pertaining to the energy sector should ensure that these data are accessible for use in national energy sector planning, policy development and regular updating of the national energy data repository, to be hosted by MMERE. The collation and analysis of these energy data will assist in establishing appropriate technical standards for the installation, operation and maintenance of off-grid solar photovoltaic (PV) systems and other off-grid renewable energy solutions. The Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) developed regional guidelines and solar design and installation standards, which can serve as an interim measure while a national standard is developed.

It is also imperative for MMERE to publish annual energy data reports to reflect key energy indicators and how the energy transition efforts in the Solomon Islands are progressing towards achieving the national, regional and global targets. With appropriate capacity and financial support, MMERE and all relevant stakeholders will ensure data integrity and develop a user-friendly energy data repository that is pertinent for policy design and planning.

## **3. Enhance innovative funding mechanisms aimed at facilitating the deployment of renewable energy for sustainable development.**

The investment market in the Solomon Islands remains donor dependent due to the small market size and the lack of financing mechanisms for renewable energy and energy efficiency technologies. The availability of commercial lending specifically for these products and services is limited. A sustainable investment plan for renewable energy and energy efficiency is a starting point, and a risk financing facility can be designed and featured as a key component. Resource assessments and potential projects need to be linked with the plan and must consider a community benefit-sharing model and baseline financial mechanism that will allow for future operations and project continuation.

It is important to strengthen project bankability and increase renewable energy investment through public-private partnership models such as private investors that engage directly with the community. Provincial government partnership with the community is pertinent to the deployment of renewables in the Solomon Islands. Other innovative financing solutions that can be explored include credit with local banks such as the Development Bank of Solomon Islands (DBSI) to meet the needs of small and medium enterprises and individual households. This can enable access to loan products and services such as energy efficiency home retrofits, non-cash payments and bartering with crops and handicrafts, and cash transfers and electricity payments using local mobile phone services.

#### **4. Increase market confidence in electric mobility and similar innovative solutions for the maritime and aviation sectors.**

E-mobility, involving the use of electric vehicles (EVs) or plug-in hybrid EVs can vastly reduce the Solomon Islands' dependence on fossil fuels. Given the lack of available information and of an appropriate government strategy, it is recommended that pilot programmes are developed for innovative solutions including R&D, capacity and financial support that will provide technical insights on the appropriateness, applicability, operation and maintenance, and sustainability of such technologies in the Solomon Islands. Once proven feasible, a roll-out programme of transitioning the land transport sector to EVs should be developed, including building appropriate infrastructure and increasing private sector participation that will benefit from tax incentives. Integrating appropriate training programmes can cover subjects of EV operation and maintenance, data collection from vehicle charging stations, and opportunities for partnership with experienced entrepreneurs in the regional and international markets.

For the maritime and aviation sectors, it is important to keep abreast of market developments in innovative technologies and of ongoing support to various decarbonisation efforts led by the International Maritime Organization, the Secretariat of the Pacific Regional Environment Programme (SPREP) and the Pacific Community. The domestic maritime sector of the Solomon Islands is dominated by small boats with outboard motors, used for inter-island travel, fishing and recreational transport. It is recommended that energy efficiency measures are taken into consideration, such as replacing two-stroke engines with four-stroke engines and integrating solar panels or electric propulsion systems to assist the outboard motor during low-speed or idle conditions.

#### **5. Co-ordinate an implementation framework for the renewable energy nexus for priority sectors such as information and communications technology (ICT), health, agriculture, food, water, education, tourism, fisheries, forestry, etc.**

The implementation of best practices within the renewable energy nexus is crucial for advancing quality of life, livelihoods, and access to essential and critical services, as well as fostering sustainable development in the Solomon Islands. To strengthen ongoing efforts, several strategic approaches are recommended, such as the need to meticulously document the existing national experience with the renewable energy nexus and to derive essential lessons to identify the social and economic benefits that directly contribute to the objectives outlined in the Solomon Islands National Energy Policy (SINEP) and the climate targets of the Nationally Determined Contribution (NDC). Conducting a thorough nexus assessment across priority sectors of the country is paramount to identify opportunities to scale up the application and deployment of renewable energy technologies coupled with energy efficiency interventions within key sectors.

It is further recommended that a comprehensive national strategy delineating specific action priorities within priority sectors such as water, education, health, agriculture, tourism, ICT, security, fisheries, forestry and climate change be developed in close consultation with key stakeholders and should include an implementation framework and a financing plan. Lastly, to foster wider understanding and engagement, there is a need to increase awareness among all stakeholders regarding the social, economic and technical benefits of the renewable energy nexus.

## **6. Identify opportunities to maximise energy efficiency savings.**

Energy conservation is the easiest and most readily achievable means to reduce energy consumption and improve efficiency, requiring relatively little effort and cost. Thus, increased public awareness programmes are recommended to sensitise communities to the benefits of energy conservation and efficiency interventions. Policy measures such as minimum energy performance standards (MEPS) and labelling programmes may need to be reviewed to regulate imports of electrical appliances by 2035, as highlighted in the Solomon Islands updated NDC. It is also recommended that ongoing training programmes are implemented, including but not limited to socio-economic impacts, technical benefits, technology and financing options to scale up energy efficiency projects for all institutions. This underscores the importance of undertaking energy audits for large commercial and government office buildings.

Furthermore, there are opportunities to maximise energy efficiency practices relating to the operations of Solomon Power, including addressing technical losses in the power systems and undertaking planning studies to understand the constraints that integrating high shares of renewables can present. There are also opportunities for energy efficiency savings in the transport sector by incentivising vehicle owners to invest in energy-efficient cars or electric vehicles (EVs). The option of limiting the importation of vehicle models older than ten years can be explored, and improvements to public transport networks may be adopted to complement existing initiatives.

## **7. Leverage partnerships to harness innovative renewable energy solutions.**

The global renewable energy market is seeing innovative solutions in ocean-based technologies; growing interest in geothermal exploration; the development of green hydrogen and bioenergy solutions; and improved approaches in wind energy deployment. These innovative solutions will benefit the Solomon Islands' efforts to harness its indigenous renewable resources and to deploy renewable energy technologies. It is important to establish strong partnerships among resource owners, communities, relevant government agencies, the private sector and financing institutions to guarantee the success of energy transition efforts and to maximise the benefits for the population.

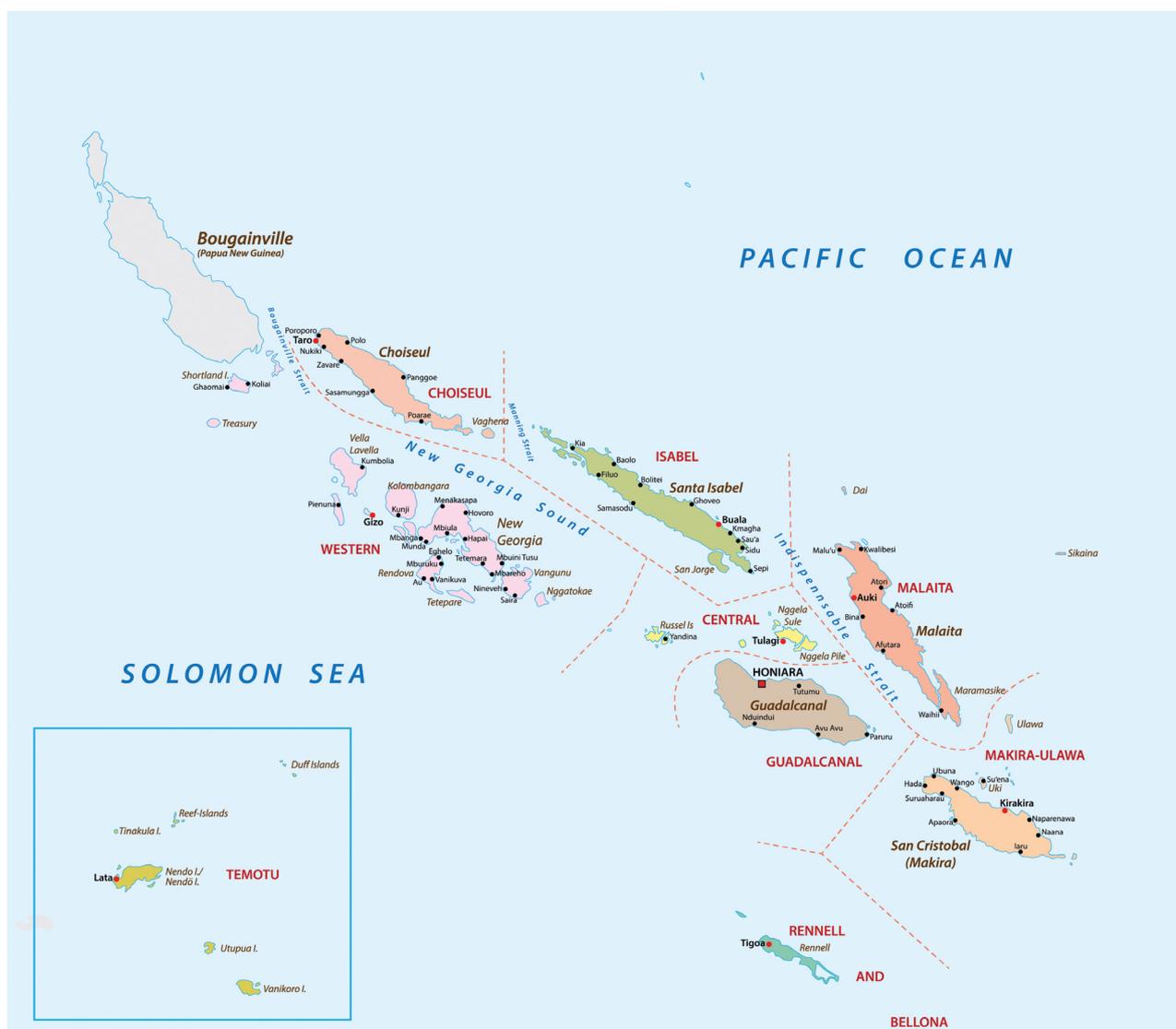
Strong and genuine partnerships with regional institutions, development partners, research institutes and financing institutions will enable the Solomon Islands to be a test bed and incubator for emerging innovative solutions, such as ocean-based technologies. This can provide the basis to further enhance R&D programmes for renewable energy application technologies, resource assessments and feasibility studies, implementing pilot innovative renewable energy solutions and increasing their visibility in regional and global platforms.

# 1 INTRODUCTION

## 1.1 COUNTRY BACKGROUND

The Solomon Islands is in the Pacific Region, located at 160 degrees east longitude and 9 degrees latitude south of the equator. It comprises 992 islands, of which 147 are inhabited, and covers an area of 461 000 square kilometres (km<sup>2</sup>), of which 28 446 km<sup>2</sup> is landmass (see Figure 1) (Solomon Islands Government, n.d.a). The population has increased over the last decade at an average annual growth rate of 2%, reaching 694 619 persons in 2020 (see Figure 2) (Solomon Islands Government, n.d.b). While 13% of the population lives in the capital city of Honiara, the remaining 87% lives in rural areas and outer islands, surviving on subsistence economic activities (Solomon Islands Government, n.d.b).

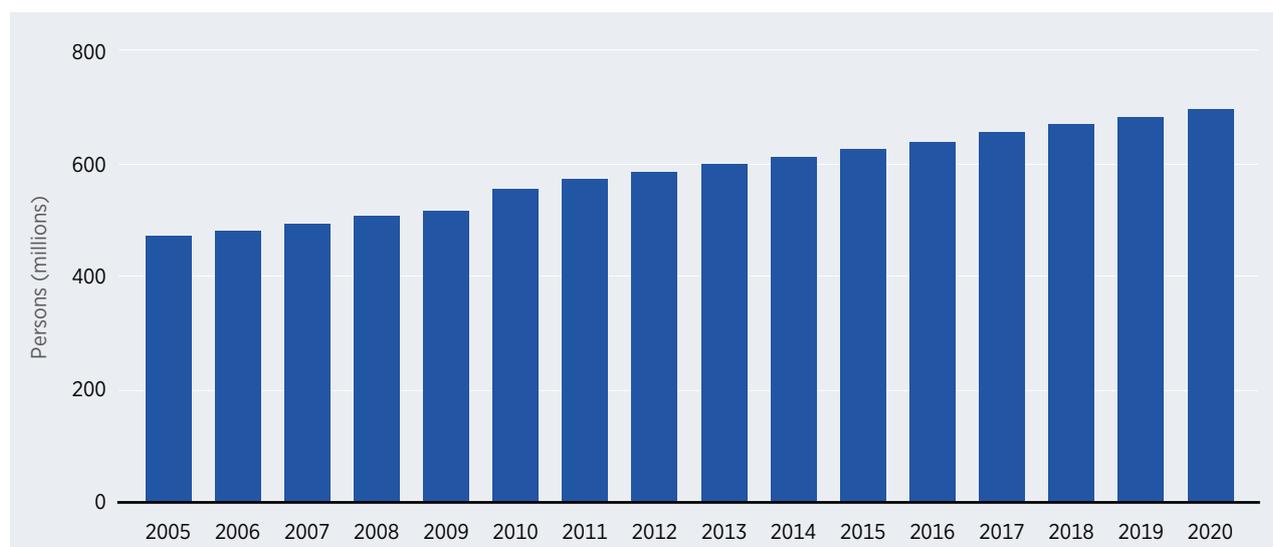
**Figure 1** Map of the Solomon Islands



Source: World Atlas, n.d.

**Disclaimer:** This map is provided for illustration purposes only. Boundaries and names shown on this map do not imply the expression of any opinion on the part of IRENA concerning the status of any region, country, territory, city or area or of its authorities, or concerning the delimitation of frontiers or boundaries.

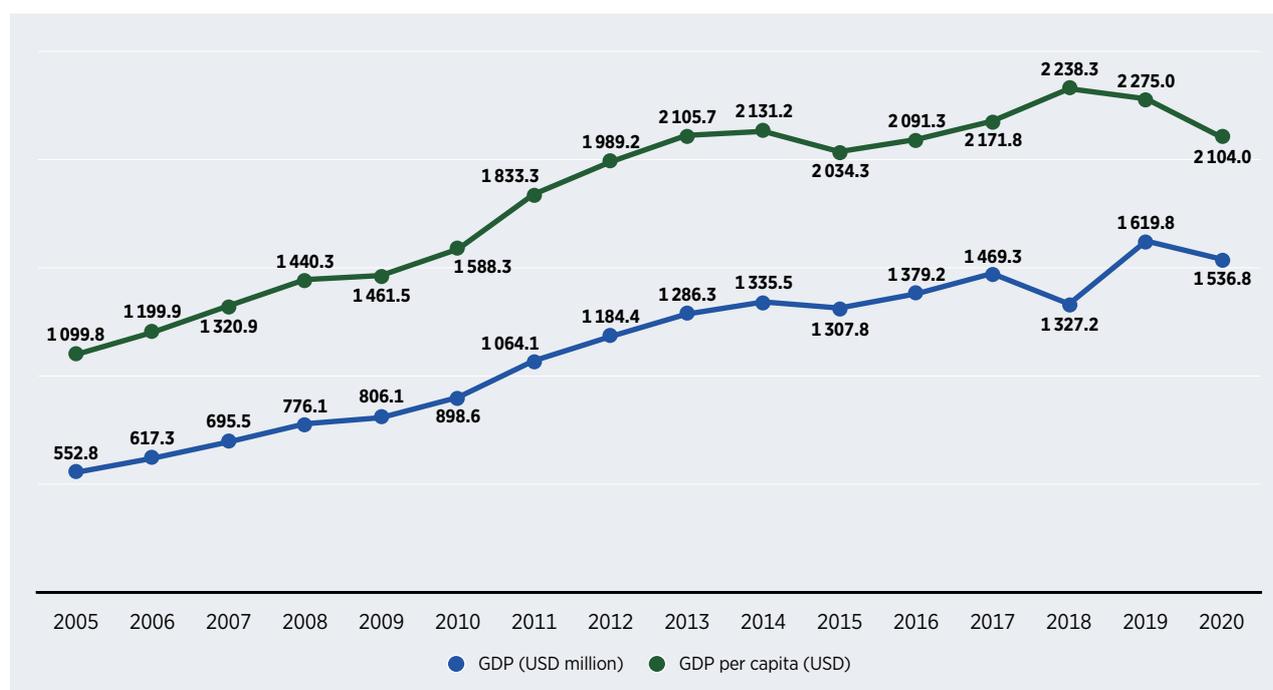
**Figure 2** Population growth, 2005-2050



Source: Solomon Islands Government, n.d.b.

The economy of the Solomon Islands is fragile and remains vulnerable to external economic shocks, including global geopolitical, health crises and natural disasters. Figure 3 shows that between 2005 and 2020, steady economic growth resulted in an increase in the Gross Domestic Product (GDP) per capita from USD 1099.8 to USD 2104. According to Central Bank of the Solomon Islands, the impact of the declined export prices for key commodities such as agriculture and forestry exacerbated by the COVID-19 pandemic affected this growth. (Solomon Islands Government, 2021a).

**Figure 3** Gross domestic product, 2005-2020



Source: ADB, n.d.



This economic decline has been exacerbated by political and socio-economic tensions, leading to civil unrest in November 2021 (Solomon Islands Government, 2021a). The economic resource base is dependent on logging, mining, agriculture, forestry and fisheries. The labour participation rate in 2018 was an estimated 70%. The predominant employment sector is agriculture, forestry and fisheries, accounting for 69.7%, followed by the services sector (20.6%) and the industry sector (9.8%) (ILO, 2019). Jobs in the energy sector are comparatively low; however, a growing labour market presents opportunities for new skills and activities (ADB, n.d.).

### Environment and topography

The Solomon Islands has a tropical monsoon climate. The hottest months are November through March, whereas April through October are cooler and drier. The daytime temperatures vary from 25.6 degrees Celsius (°C) to 32°C (Encyclopedia of the Nations, n.d.; World Bank, n.d.a), with an average humidity of 80% and annual rainfall of 3 072 millimetres (1991-2020). The wet monsoon weather often brings cyclones between December and March (Encyclopedia of the Nations, n.d.). The predominant topography of the country is volcanic and rugged, with flowing rivers. The larger islands in the Solomon Islands, such as Choiseul, New Georgia, Santa Isabel, Guadalcanal, and Malaita, are volcanic in nature, while the majority of the smaller islands consist of coral atolls.

## 1.2 RENEWABLES READINESS ASSESSMENT (RRA)

The Renewables Readiness Assessment (RRA) process is a country-led, consultative process developed by the International Renewable Energy Agency (IRENA) to identify policy and regulatory pathways that support the acceleration of renewable energy transition and the facilitation of energy efficiency interventions. The RRA for the Solomon Islands was led by the Ministry of Mines, Energy and Rural Electrification (MMERE), with the support of IRENA through the SIDS Lighthouses Initiative. The Solomon Islands RRA kicked off with a country assessment to gauge the current economic performance, social and political development, energy sector reform and climate commitment. An extensive consultation with relevant stakeholders<sup>1</sup> followed, with all their views documented in the Country Background Report and the Issues Paper, which contextualises the recommendations to implement energy transition priorities in the Solomon Islands.

<sup>1</sup> See Annex 1 for the stakeholders' consultation list.

# 2 ENERGY CONTEXT

## 2.1 ENERGY SUPPLY AND DEMAND

The Solomon Islands is heavily dependent on imported fuels to meet the energy demands for transport, electricity generation, mining and domestic applications. According to the Energy Profile<sup>2</sup> of the Solomon Islands, the energy intensity in 2020 was 4.4 megajoules (MJ) per USD of GDP (in 2017 purchasing power parity). Just over three-quarters of the population (76%) had access to electricity, while only around 10% had access to clean cooking solutions. The total energy supply comprises 56% fossil fuels and 44% renewable energy. The renewable energy capacity in the Solomon Islands in 2022 was made up of 79% solar, 14% bioenergy and 6% hydropower (IRENA, 2023a).

Total fuel imports for power generation represented 1% of GDP in 2019 (PRIF Coordination Office and SPC, 2021). However, data were insufficient on the use of fuel within the various sectors of the Solomon Islands. Fuel prices on the international market fluctuate, and occasional supply shortages impact local prices in the Solomon Islands (see Table 1). Fuel prices are regulated, and the pricing template is reviewed regularly following monthly submissions by the oil companies to the Consumer Affairs and Price Division of the Ministry of Commerce, Industry, Labour and Immigration, which ensures that the approved price is gazetted and implemented. The country imports diesel (500 parts per million), unleaded petrol (92 RON), dual-purpose kerosene and liquefied petroleum gas (LPG).

**Table 1** Price per litre by fuel type in the Solomon Islands, 2014, 2018 and 2022

Fuel type	Wholesale price		Retail price		
	2018	2022*	2014	2018	2022
Automotive diesel oil (USD/litre)	0.94	1.46	1.47	1.20	1.77
Unleaded petrol (USD/litre)	0.91	1.35	1.52	1.16	1.64
Kerosene (USD/litre)	0.87	1.33	1.61	1.18	1.35
LPG (USD/kg)	3.11	-	-	3.38	-

**Source:** PRIF Coordination Office and SPC, 2021.

**Note:** 2022 prices as of 1 July 2022.

### Electricity supply

The Solomon Islands Electricity Authority (SEIA), which trades as Solomon Power, is a vertically integrated and medium-sized state-owned power utility based in Honiara, with 11 outstations servicing eight provinces.<sup>3</sup> It operates electricity networks of 33 kilovolts (kV), 11 kV and 0.4 kV in the main urban and industrial areas of the eight provinces.

<sup>2</sup> See Annex 2 for the Solomon Islands Energy Profile.

<sup>3</sup> See Annex 4 for a list of Solomon Power operation sites.

The Honiara grid system is the largest power operation, with 33.75 megawatts (MW) of installed capacity, of which 95% is diesel based. This grid supplies Honiara township and surrounding centres such as Tandai and Malango. The main fuel for all operations is diesel, which accounts for 39% of the country's total greenhouse gas emissions (Solomon Islands Government, 2015). Numerous rural communities continue to lack access to the electricity grid, due mainly to challenges such as long distances and challenging topography, high expenses associated with connecting new customers, and the scarcity of available financing to support new infrastructure projects.

The share of installed grid-connected renewable energy is low, at only 2%. However, in the Solomon Islands National Energy Policy (SINEP) 2020-2030, the government set a target to achieve 50% renewable electricity generation by 2035. The power utility has expressed a more ambitious target of 100% renewable energy by 2030, which will require significant resources,<sup>4</sup> effort and commitment over the long term to reduce the country's reliance on fossil fuels. The run-of-river Tina Hydropower Development Project (15 MW), currently under construction, is expected to contribute to these targets by providing 68% of electricity demand for Honiara (see Box 1).

### Box 1 Tina Hydropower Development Project (THDP)

The 15 MW Tina Hydropower Development Project (THDP) is one of the biggest infrastructure projects in the Solomon Islands, budgeted at USD 241.8 million and financed through a consortium of financiers. It aims to reduce electricity costs by displacing 75% of the current diesel fuel power generation supply; minimise price fluctuations related to the volatile international market; increase the share of renewables in the Honiara grid by using available hydropower resources; reduce greenhouse gas emissions and attract private investment through a public-private partnership to mobilise finance for the public sector.

The THDP is located around 20 km southeast of Honiara, and immediate communities (Malango and Bahome) are expected to share the project benefits. The Community Benefit Sharing Program (CBSP) is a significant component of the project, consisting of the CBSP fund drawn from the project revenues; infrastructure for electricity supply, water and sanitation facilities and human resource development (vocational and technical training) to create employment opportunities that will benefit around 5 000 people, including rural schools and health clinics.

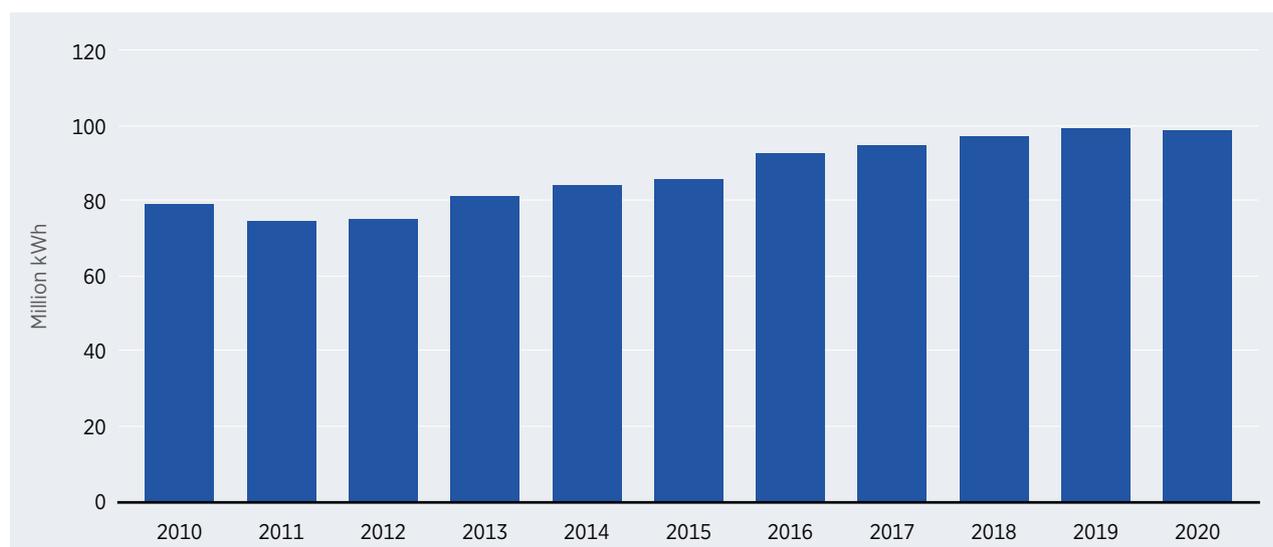
The consortium of financiers includes the Asian Development Bank (ADB), the Abu Dhabi Fund for Development (ADFD), the Korea Economic Development Cooperation Fund (ECDCF), the Green Climate Fund (GCF), Solomon Islands Government and the World Bank. The commercial licence (contract) has been awarded to Tina Hydropower Limited (THL) to operate as an independent power producer, based on a 34-year power purchase agreement with Solomon Power.

**Source:** Tina Hydropower Ltd., 2020.

<sup>4</sup> The Tina Hydropower Development Project alone is more than USD 240 million.

As the population has grown over the past decade, electricity production has also increased. The supply capacity increased substantially between 2010 and 2020, from 79.1 million kilowatt hours (kWh) to 98.9 million kWh (see Figure 4). In 2018, the annual electricity generation on the Honiara grid totalled around 84 215 megawatt hours (MWh), necessitating the consumption of 21 350 kilolitres of diesel. The output from the Fighter One solar farm exhibited variations throughout the year, corresponding to the fluctuations in monthly solar radiation.

**Figure 4** Electricity production, 2010-2020



Source: ADB, n.d.

During the period 2012-2019, the country’s installed generation capacity showed no change, whereas the production capacity declined due to political instability and social unrest. The reserve capacity increased from 25% to 49% during this period. The Lungga station is the dominant power generation station, producing at least 80% of the total electricity for the period 2017-2021 (see Table 2). The Lungga and Honiara power stations supply Honiara township, where the electricity demand is highest.

**Table 2** Electricity production by station, 2017-2021

Station	2017 (GWh)	2018 (GWh)	2019 (GWh)	2020 (GWh)	2021 (GWh)
Lungga	80.73	81.75	83.04	83.74	83.46
Honiara	1.65	2.46	2.80	1.85	1.52
Outstations	9.73	11.17	11.77	11.96	11.67
Henderson Solar (1 MW)	1.19	0.89	1.47	1.40	1.3
Ranadi Solar (500 kW)	0.042	0.015	NA	NA	NA
Independent power producers	0.94	0	0	0	0
<b>Total</b>	<b>94.28</b>	<b>96.29</b>	<b>99.08</b>	<b>98.95</b>	<b>97.95</b>

Source: Solomon Power, 2020; Solomon Power, 2021.

Note: GWh = gigawatt hour.



Solomon Power has engaged independent power producers (IPPs) that must be licenced and allowed to be connected to the grid through the terms and conditions of the agreed power purchase agreement (PPA). Depending on the working arrangement, the IPPs are given a fixed term,<sup>5</sup> which is reviewed at the end of the contract. The demand for IPPs is growing but is managed on a case-by-case basis due to the lack of a regulatory framework and incentives. The ongoing review of the Electricity Act will facilitate the participation of IPPs in the open market.

Solomon Power continues to demonstrate commendable financial stability, which is attributed to its strategic revenue collection practices. This stability enables the organisation to independently finance small-scale development projects such as grid infrastructure upgrades (for example, transformers in 2019), the establishment of solar hybrid outstations and the implementation of new generation units. Notably, major projects requiring multimillion-dollar investments will continue to rely on donor funding.

Despite these advancements, the resilience of the grid infrastructure remains a concern due to continuous wear and tear, necessitating ongoing repair and maintenance of generating units as well as various components of the distribution networks. An ongoing challenge facing power generation in the Solomon Islands is the fuel cost. This issue will persist until a substantial increase in the deployment of renewable energy occurs, which would lead to a notable reduction in diesel demand.

### Electricity demand

Access to electricity in the Solomon Islands has been historically low compared to other Pacific small island developing states (SIDS) but has increased steadily, more than doubling from 35.4% in 2010 to 76.3% in 2021. Similar trends were observed for both rural and urban populations. However, access to clean cooking among urban populations has remained level since 2010, at around 36%. Energy-efficient and clean cooking initiatives need to be pursued aggressively in the country.

<sup>5</sup> Tina Hydropower Ltd. was granted a 34-year PPA.

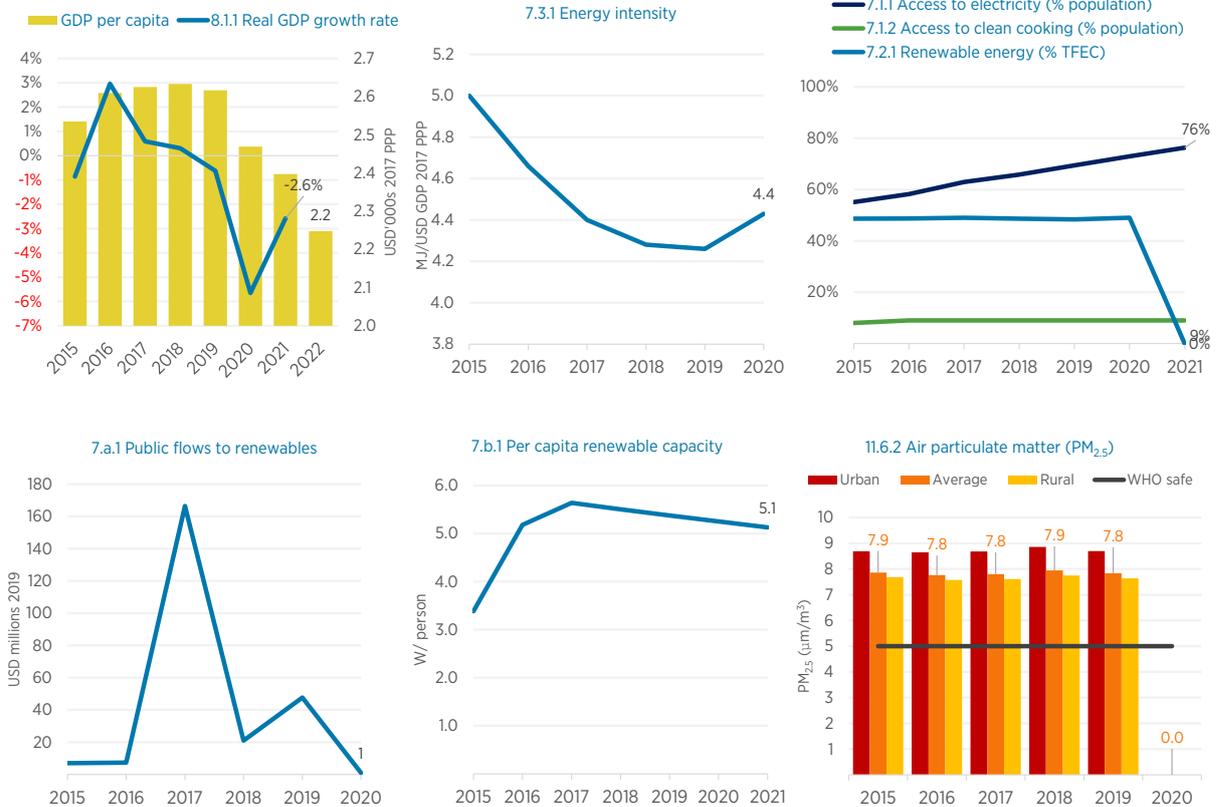
Figure 5 Solomon Islands Energy Profile

ENERGY PROFILE

Solomon Islands



COUNTRY INDICATORS AND SDGS



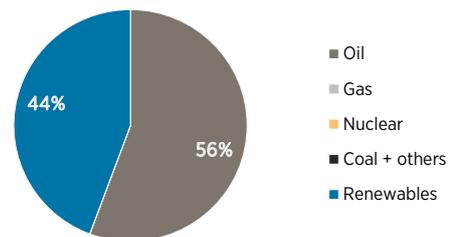
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	4 282	4 209
Renewable (TJ)	3 310	3 350
Total (TJ)	7 592	7 559
Renewable share (%)	44	44

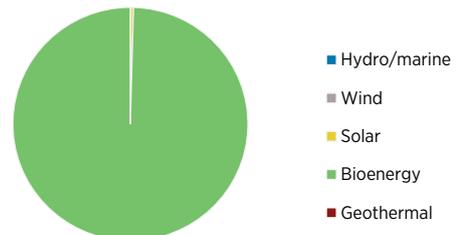
Growth in TES	2015-20	2019-20
Non-renewable (%)	-1.7	-1.5
Renewable (%)	+1.2	+0.8
Total (%)	-0.4	-0.5

Primary energy trade	2015	2020
Imports (TJ)	4 682	4 556
Exports (TJ)	0	0
Net trade (TJ)	- 4 682	- 4 556
Imports (% of supply)	62	60
Exports (% of production)	0	0
Energy self-sufficiency (%)	44	44

Total energy supply in 2020



Renewable energy supply in 2020



Source: IRENA.

The electricity tariff is regulated through the Electricity Tariff Regulation of 2016. The tariff consists of three components: a network access charge, a fuel charge and an energy charge. All customer groups pay the same fuel rate, although they each pay different rates for network access and energy use. The customer base of Solomon Power grew by 37% between 2015 and 2020. By 2020, Solomon Power served 24 372 customers, of which 76% are post-paid and pre-paid customers in Honiara (see Table 3).

**Table 3** Electricity production by station 2015, 2019 and 2020

	2015	2019	2020
Honiara	11 796	15 923	18 508
Auki	937	1 480	1 644
Gizo	789	863	1 030
Noro	469	635	736
Munda	370	566	610
Tulagi	242	275	253
Kirakira	259	281	287
Buala	22	262	272
Lata	233	270	285
Malu'u	155	155	387
Taro	-	214	236
Seghe	-	119	124
<b>Total</b>	<b>15 272</b>	<b>21 043</b>	<b>24 372</b>

Source: Solomon Power, 2016, 2020, 2021.



Tariff charges in the Solomon Islands have been the highest in the Pacific region (see Table 4). In 2018/2019, the rates were USD 0.72 for residential users; USD 0.79 for commercial, industrial and government users; and USD 0.76 for demand or high-voltage users. The average annual household<sup>6</sup> electricity bill was around USD 330 in 2009 and USD 530 in 2014. In 2018/2019, customers' weekly expenditure was around USD 6.20 (SBD 50) (PRIF Coordination Office 2021).

**Table 4** Electricity tariffs by end-user category (USD per 4 kWh), 2018/19 and 2023

End user category	Solomon Islands		Regional tariff 2018/2019		
	2018/2019	2023*	Lowest	Highest	2022
Residential	0.72	0.80	0.16	0.72	1.77
Commercial	0.79	0.73	0.19	0.79	1.64
Industrial	0.79	0.72	0.19	0.79	
Government	0.79	0.72	0.19	0.79	1.35
Demand or high voltage	0.76	-	-	-	-

**Source:** Solomon Power, 2019; PRIF Coordination Office and SPC, 2021.

**Note:** Effective 1 June 2023.

In remote and rural communities, solar lighting systems remain the main source of electricity for studying, entertainment, cooking and mobile phone charging in the hours after sunset. In 2009, around 7 924 households were using rooftop solar photovoltaic (PV) systems as their main source of electricity, and around 1 754 freezers and refrigerators were operating in rural communities.

## Transport

The transport sector (land, sea and air) is fully dependent on imported fuel to meet growing needs. However, data on demand trends are limited, and the potential for renewable energy options is currently low. In 2010, the energy sector accounted for 618.81 gigagrams of carbon dioxide equivalent emissions (Gg CO<sub>2</sub>eq), or more than 50% of the country's total greenhouse gas emissions. Within the energy sector emissions, the road transport sector alone contributed 176.91 Gg CO<sub>2</sub>eq (UNEP CCC and pManifold consortium, 2022). Decarbonising the transport sector remains a significant challenge, as it warrants a combination of policy, technology and market solutions.

The growing urban population in Honiara exerts pressure on urban transport, and the number of vehicles on the road has grown exponentially in recent decades. The number of registered vehicles (cars, buses, taxis, motorcycles, etc.) totalled 40 126 in 2021, and is projected to reach 61 793 by 2050. This calls for change, which is expected to be driven by the prohibitive cost of fuel imports, climate change concerns, poor air quality, congestion and "pedestrian first" safety measures.

<sup>6</sup> Five persons using around 150 kWh per month.



Globally, the shift to cleaner transport options is already visible, with China being the main supplier of electric vehicles (EVs). Some of the Pacific SIDS – such as the Cook Islands, Fiji, Samoa and Tonga – have introduced imported EVs, yet the initiatives remain limited in scope and scale.

In the Solomon Islands, the development and growth of the transport sector are guided by the SINEP (2020-2030) and the Policy Roadmap for E-Mobility (2021). The latter provides guidance on the deployment and scale-up of EVs and proposes a co-ordinated approach to improving their affordability, creating infrastructure, and building skills and capacity, including minimising environmental externalities such as impacts on the grid from variable renewable energy generation.

The Solomon Islands is currently running trials with solar-powered vehicles. Trials with biofuels were conducted in Honiara and Auki, but the market potential is yet to be realised. A 2016 report identified the occasional use of vehicles powered by LPG, notably in forklift operations during cargo handling at ports, where such services are indispensable. Despite this, LPG-fuelled vehicles have not gained significant traction among vehicle owners. The likelihood of increased adoption seems low unless incentives are provided through pertinent policy structures.

The international market potential for renewable transport options (land and sea) is growing, and the Solomon Islands may benefit if the new policy framework is effectively implemented with market incentives to attract investors. However, the EV option is only part of the solution, alongside other necessary measures such as stricter emission standards, support for public transport, integrated transport planning, hybrid vehicles and improved collection of used (older) vehicles.

## Energy efficiency

Energy efficiency offers potential savings in both monetary terms (for the economy and households) and energy, resulting in reduced dependence on imported fuels. The country's energy efficiency targets are expressed in MMERE's National Energy Policy 2020-2030, Volume 2: Energy Efficiency and Energy Conservation: Strategy and Implementation Plan. The Minimum Energy Performance Standards Labelling Policy of 2016 aims to improve energy efficiency and conservation by 10% in all sectors by 2025. The energy intensity performance of the Solomon Islands has improved, declining from 5.6 to 3.8 MJ per USD of GDP during 2012-2018.

Past initiatives have focused on increasing energy efficiency awareness through media outreach (radio, television and mobile phone messaging). Solomon Power has been educating its customers about energy-efficient practices and safety measures.

Other initiatives have included energy labelling and rating of appliances such as refrigerators, freezers, televisions and air conditioners, as part of the Pacific Appliance Labelling and Standards (PALS) programme. The Solomon Islands imports a range of white goods and household appliances from New Zealand and Australia, and the performance standards of these goods comply with standards in these countries. A 2017 survey on consumer awareness and the use of energy ratings, conducted through the PALS programme, found that around 77% of consumers recognise the labels from these markets.

Minimum energy performance standards (MEPS) have been enforced in the Solomon Islands through the Customs and Excise Act of 2012 (including the Consumer Protection Act of 1995) since January 2016, covering refrigerators and freezers, air conditioners and lighting (International Institute for Energy Conservation and Renewable Energy & Energy Efficiency Partnership, 2012). Education and awareness programmes are needed to increase consumer understanding of energy efficiency benefits.

On the supply side, energy efficiency can achieve savings for Solomon Power, and the utility has undertaken infrastructure upgrades to achieve efficiency performance. Through these efforts, distribution losses were reduced greatly from 20% in 2010 to 6% in 2018. The performance of the Solomon Power network has improved, with the System Average Interruption Duration Index (SAIDI) showing a decrease from 117.3 minutes in 2020 to 86.1 minutes in 2021. Similarly, the System Average Interruption Frequency Index (SAIFI) decreased from 0.64 minutes in 2019 to 0.39 minutes in 2020 (Solomon Power, 2021) Solomon Power, 2022a).

The Government of the Solomon Islands has adopted national standards for solar PV equipment and installation through the Secretariat of the Pacific Regional Environment Programme's (SPREP) regional initiative known as the Pacific Islands Green House Gas Abatement through Renewable Energy Project (PIGGAREP). Regional standards and guidelines for solar PV installation that have been developed by the Pacific Power Association through the Sustainable Energy Industry Development Project are available for adoption by the Solomon Islands and other Pacific SIDS.

In the transport sector, efficiency gains can be achieved by granting vehicle owners incentives to invest in energy-efficient cars that meet emission targets. The importation of vehicle models older than 10 years may be restricted and phased out completely, thus providing space for new and more efficient vehicles. Time-of-use tariffs, particularly for EVs and other forms of electrified transport, reflect a pricing structure that may vary based on the time of day and on electricity demand. Furthermore, improvement to public transport networks and infrastructure may be adopted to complement the existing initiatives.

Market information on the economic benefits of achieving energy efficiency remains limited. Extensive awareness campaigns, training and technology demonstrations will be effective in improving the existing situation. Additionally, periodic data collection and subsequent evaluation of efforts can help with long-term energy efficiency planning and programme-scale interventions.

### Clean cooking technologies

The energy sources for cooking vary between urban and rural remote communities, influenced by the availability of resources. The share of the population with access to clean cooking during the past decade was estimated at 9% (IRENA, 2022; IRENA, 2023a). The Energy Efficiency and Conservation Policy of 2019 encourages the purchase and use of efficient cooking technologies.

The Household Income and Expenditure Survey 2012-2013 report recorded six categories of cooking fuels in use (see Table 5) (Solomon Island National Statistics Office, 2021). Around 90% of all households use wood and coconut shells as their main source of fuel (in rural areas, this share is 97%, compared to 57% for urban households). The second leading source of cooking fuel is gas (used by 33% of households in urban areas), followed by sawdust and charcoal.

**Table 5** Sources of cooking fuel, 2013

Main cooking fuel	Number of households		
	National	Urban	Rural
Wood / coconut shells	97 341	10 782	86 559
Gas	7 251	6 191	1 060
Sawdust / charcoal	2 209	1 408	801
Electricity	551	221	330
Kerosene	462	320	142
Other	227	93	134
<b>Total</b>	<b>108 041</b>	<b>19 015</b>	<b>89 026</b>

Source: Solomon Island National Statistics Office, 2021.

Wood stoves sometimes are installed for cooking purposes. However, the burning of firewood indoors in inefficient wood stoves poses health risks, and collecting supplies is time consuming and often requires travelling long distances to find wood. In Falake village (Malaita), women (holding the leading role in the family) spend two full days per week collecting firewood (Econoler and IUCN, 2020).

Cooking technologies have improved over the decades, with sawdust stoves used locally at the cost of USD 25 to USD 80. The efficiency level of the stove technology has improved 25% over the past decade, although most households continue to use traditional cooking methods.

Renewable energy options present opportunities for women to reduce labour-intensive cooking efforts, contributing to improved health conditions. Certain communities across the Solomon Islands use renewable cooking technologies such as solar cookers, biogas (biodigesters), methanol and retained heat cookers. An opportunity exists to expand these technologies from small-scale use to broader medium- and large-scale applications (Econoler and IUCN, 2020).



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## 2.2 LEGAL FRAMEWORK

The energy sector of the Solomon Islands operates under the governance of numerous legal frameworks and regulations, which establish guidelines, standards and policies for its operation. These legal instruments encompass a wide range of aspects, including but not limited to the production, distribution, consumption and conservation of energy resources. They serve as essential tools in shaping the energy sector, ensuring compliance, promoting sustainability and fostering innovation. A summary of legal instruments for the energy sector is provided in Table 6.

**Table 6** Energy sector legal instruments

Title of legal instrument	Implementing agency	Description
Petroleum Act of 1996	Ministry of Mines, Energy and Rural Electrification	Ensures the safe storage, handling and transport of petroleum products.
Customs and Excise Act of 2012	Ministry of Finance and Treasury	Regulates the import and export of goods, collection of customs and excise duties, and licensing of warehouses.
Electricity Act of 1996	Solomon Islands Electricity Authority (SIEA or Solomon Power)	Established Solomon Power.
Electricity Regulations of 1993		SIEA is the regulator for Solomon Power.
Electricity Tariff (Base Tariff and Tariff Adjustments) Regulations of 2016		SIEA is the regulator for Solomon Power.
Consumer Protection Act of 1995 and Regulation of 2016	Ministry of Finance and Treasury	Provides energy consumer protection.
State Owned Enterprises Act of 2007		Regulates retail prices of petroleum products.
State Owned Enterprise Regulation of 2010		
Price Control Act of 1982	Ministry of Trade and Commerce	Established Price Advisory Committee to fix charges for goods and services.
Weights and Measures Act of 1972 and Regulation (amended in 1979).		Established protection for consumers purchasing commodities by weight or measure.
Environment Act of 1998	Ministry of Environment, Climate Change, Disaster Management and Meteorology	Provides protection for the environment and natural resources and ensures sustainable use of resources.

**Source:** Solomon Islands Government, various acts of Parliament.

## 2.3 NATIONAL DEVELOPMENT POLICIES

Table 7 provides a list of all relevant policy impacting the development and growth of the energy sector.

**Table 7** Energy sector policies

<b>National Development Strategy (NDS) 2016-2035</b>
The national vision is “Improving the social and economic livelihoods of all Solomon Islanders”. The Framework prioritises energy as critical for sustainable economic growth and for the effective delivery of health and education deliveries, including other economic services. The NDS targets reducing the share of homes with no electricity to 50% by 2035 and increasing the share of homes using solar power from 15% to 50% by 2035.
<b>National Energy Policy (SINEP) 2020-2030 – MMERE</b>
Guides the planning and management of energy sector development during the 10-year plan period. Targets increasing electricity access for urban households to 80% and for rural households to 35% by 2025. Calls for increasing the renewable energy share in power generation to 50% by 2035 in urban and rural areas, and for improving energy efficiency and conservation in all sectors 10% by 2030. (See Box 2 for details.)
<b>Renewable Energy Roadmap 2021 – MMERE</b>
Provides the pathway for achieving 100% renewable energy by 2030. Proposes a set of essential policy, legislation, institutional, financial and management reforms needed to achieve this objective.
<b>Minerals Policy 2017-2021 – MMERE</b>
Sets the agenda for minerals exploration and outlines standards for investment, protection of communities and resources.
<b>Minimum Energy Performance Standards Labelling Policy 2016 – MMERE</b>
Enforces minimum efficiency performance standards for electrical appliances (refrigerators, freezers, air conditioners, lighting).
<b>Solomon Islands Electrification Strategy 2022 (NEP) Electrification Strategy and Implementation Report; Implementing the NEP – MMERE</b>
Sets out the electrification development priorities and reforms for the next 10 years. The national targets are stipulated in the SINEP 2020 for increased energy access in urban and rural communities by 2025.
<b>Policy Roadmap for E-Mobility in Solomon Islands 2022 – MMERE</b>
Guides the deployment and scale-up of electric vehicles as a tool for achieving the national emission targets. Proposes a co-ordinated approach to improving the affordability of EVs, creating infrastructure, and building skills and capacity, including minimising environmental externalities.
<b>Nationally Determined Contribution (NDC) 2015, 2021 – Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)</b>
Outlines a national target to reduce greenhouse gas emissions 12% below 2015 levels by 2025 and 30% by 2030 compared to the business-as-usual scenario. International assistance can further reduce emissions by 27% by 2025 and 45% by 2050. In 2021, the ambition was updated to target net-zero emissions by 2050.
<b>National Climate Change Policy 2012-2017 – MECDM</b>
Outlines strategies to mitigate climate change and to pursue low-emissions development using renewable energy and relevant mitigation technologies.

**Source:** Solomon Islands Government, 2014.

## Box 2 Solomon Islands National Energy Policy (SINEP) 2020-2030

The vision of the National Energy Policy is “unlocking the development potential of Solomon Islands economic base through a dynamic and effective energy sector”. The Policy’s broad outcomes are to develop an energy legislation, increase electricity access in urban households to 80% by 2025, increase electricity access in rural households to 35% by 2025, increase access to safe, affordable and reliable petroleum fuels in outer islands and remote rural locations, increase renewable power generation in urban and rural areas to 50% by 2035, increase the development and penetration of gaseous fuels and alternative liquid fuels from indigenous raw materials, and improve energy efficiency and conservation in all sectors 10% by 2030. The estimated budget for SINEP implementation is USD 151 million (see Table 8).

**Table 8** SINEP 2020-2030 implementation budget

Sub-sector	Estimated budget (USD million)
Governance	4.18
Electric power (urban)	64.00
Electric power (rural)	14.95
Renewable energy	60.05
Petroleum and alternative and gaseous fuels	1.67
Energy efficiency and conservation	6.29

The institutional framework is designed to function through the Energy Advisory Committee (EAC), consisting of 12 ministries, as a multi-sectoral committee with an administrative and oversight role of SINEP implementation. A Technical Working Group (TWG) supports and reports to the EAC on project implementation and progress. The TWG membership is more robust with representation of government agencies, industry experts and donor partners. The MMERE will lead the co-ordination and implementation of the SINEP and monitor progress through a log-frame matrix.

**Source:** Solomon Islands Government, 2014.

The Solomon Islands has a huge untapped potential of renewable energy resources that can provide affordable local solutions to imported fossil fuel. The SINEP (2020-2030) estimates the potential capacity for different renewable energy sources (see Table 9).

**Table 9** Renewable energy resource potential by source

Renewable energy source	Estimated potential capacity
Geothermal	20-200 MW
Small hydropower	11 MW
Total hydropower	300 MW
Solar energy (off-grid)	1 MW
Traditional biomass (timber, wood/forest waste, biofuel)	20 MW
Off-grid biomass / biogas schemes (rural communities)	500 kW
Wind	Detailed study needed

**Source:** Solomon Islands Government, 2014.

## Regional development policy frameworks

The Solomon Islands national development effort is complemented by regional policy frameworks on regional energy development, climate change and security. Table 10 summarises the two most important regional instruments guiding energy sector development in the region.

**Table 10** Regional policy instruments guiding energy sector development

Framework for Energy Security and Resilience in Pacific Islands (FESRIP) 2020-2030 – Secretariat for the Pacific Community
<p>Adopted in 2021, the FESRIP outlines three pathways towards a resilient and renewable-based energy system: 1) a policy approach to create effective renewable energy plans and legal instruments and to enhance NDCs; 2) support for the development of renewable energy and energy efficiency projects; and 3) attracting investments (SPC <i>et al.</i>, 2020). The Pacific Community (SPC) and IRENA are joining efforts to boost the region’s resilience, and the Solomon Islands will be a key stakeholder to and recipient of the FESRIP Framework. IRENA is currently co-ordinating technical support to Solomon Power for a grid stability study, solar rooftop analysis and post-RRA projects.</p>
Framework for Resilient Development in the Pacific (FRDP) 2017-2030 – Pacific Islands Forum Secretariat
<p>The FRDP provides high-level guidance to different stakeholder groups on how to enhance resilience to climate change and disasters in ways that contribute to and are embedded in sustainable development (Pacific Community (SPC) <i>et al.</i>, 2016). The Framework consists of three strategic goals: 1) strengthened integration adaptation and risk reduction, 2) low-carbon development and 3) strengthened disaster preparedness, response and recovery. The FRDP is implemented through the Pacific Resilience Partnership, where enabling elements such as inclusivity, partnership, integrity and quality, and leadership facilitate the implementation process.</p> <p>The renewable energy transition theme is at the core of the low-carbon development goal to reduce the carbon intensity of development processes – increasing the efficiency of end-use energy consumption, increasing the conservation of terrestrial and marine ecosystems, and enhancing the resilience of energy infrastructure while increasing energy security and reducing net greenhouse gas emissions (Pacific Community (SPC) <i>et al.</i>, 2016).</p> <p>See: <a href="http://www.resilientpacific.org">www.resilientpacific.org</a>.</p>

## 2.4 INSTITUTIONAL STRUCTURE

The institutional landscape is made up of stakeholders representing public stewardship, private economic aspirations, community benefits, and development support and partnership.

### Ministry of Mines, Energy and Rural Electrification (MMERE)

MMERE is the main government agency responsible for developing the minerals sector, petroleum, energy, water resources and rural electrification. Its mission is “to develop the natural renewable and non-renewable resources sustainably for the social and economic advancement of the people of the Solomon Islands”. The MMERE Corporate Plan 2019-2022 advocates “consolidating service delivery for success”, and it envisages developing natural renewable resources and non-renewable resources sustainably for the social advancement of the people of the Solomon Islands.

The Energy Division (Department of Energy) is responsible for energy policy and planning and for management of the national energy sector. Assisted by development partners and key stakeholders, it recently developed the national energy policy framework, SINEP (2020-2030) and the Policy Roadmap for E-Mobility in Solomon Islands 2022. Its core services are policy, planning and management; rural electrification; renewable energy; energy efficiency and conservation; petroleum and data management; and the National Ozone Unit.

The functions of the Energy Division are extensive, but its staffing capacity (16 personnel in 2022) and funding resources are limited. The budgets for 2022 were estimated at USD 253 715 (SBD 2 million) for the recurrent budget and USD 796 236 (SBD 6.5 million) for the development budget, which is equivalent to 8% of the Ministry's total budget (Solomon Islands Government, 2021a).

### **Solomon Islands Electricity Authority (SIEA) / Solomon Power**

The Solomon Islands Electricity Authority (SIEA) trades as Solomon Power. Established under the Electricity Act of 1996, it is the main supplier and distributor of electricity on the island. It is mandated to oversee the registration of electrical contractors, ensure that industries and contractors comply with the Electricity Act and the Australian/New Zealand (AS/NZS) Wiring Standards, by inspecting all electrical installations before connecting to Solomon Power mains and oversee the licensing of standby generators, IPPs and co-generation of power (Solomon Power, 2020).

As a commercial entity, Solomon Power is also regulated under the Public Enterprise Act of 2007 and reports to the Ministry of Finance on its business performance. In terms of energy sector policy targets that impact Solomon Power's performance, the company complies with targets stipulated in the Renewable Energy Roadmap 2021-2030 and the National Electrification Strategy and Plan 2023-2032. Solomon Power is committed to implementing national sector policies to increase energy access, improve energy security and sustain energy supply for the islands. It operates stations in Auki, Buala, Gizo, Honiara, Kirakira, Lata, Malu'u, Munda, Noro, Seghe, Taro and Tulagi (see Annex 2 for a map of Solomon Power outstations.)



# 3 RENEWABLE ENERGY DEVELOPMENT

The Solomon Islands has set an ambitious target for net zero greenhouse gas emissions by 2050. Achieving this goal will serve the country in transitioning away from heavy reliance on imported fuels (95% diesel-based electricity); improving the currently low energy access (14% grid access in 2018), increasing the participation of consumers and IPPs, reducing greenhouse gas emissions (74 302 tonnes of CO<sub>2</sub> equivalent annually on average from 1994 to 2010) and strengthening the market regulatory environment.

The growing population (2% annually) brings an increase in energy demand and pressure on existing energy resources. Harnessing the potentials of renewable energy sources will contribute greatly to achieving the national economic and social outcomes aspired to in the National Development Strategy 2016-2035.

## 3.1 DRIVERS FOR ADOPTION OF RENEWABLE ENERGY

The Solomon Islands has an access rate of 76%. and a notable characteristic is that around 80% of the population resides in rural areas and outer islands, yet it accesses merely 20% of the total grid electricity. Conversely, the remaining 80% of electricity production caters to the primary urban centre of Honiara. The prevailing electricity tariff in 2020 was the highest in the region at USD 0.72/kWh. Compounded by costly connection charges, existing customers face challenges in maintaining continuous connectivity. Prospective customers, perceiving the service as economically unfeasible, hesitate to avail themselves of the utility.

Around 95% of energy production in the Solomon Islands is contingent upon imported petroleum, exposing the economy to the volatility of international price fluctuations. This heavy reliance on imported energy sources not only poses economic risks but also has negative consequences for the environment, contributing to poor air quality and the generation of toxic wastes. Renewable energy emerges as a viable and indigenous alternative, offering the potential to mitigate the country's profound dependence on imported energy and to address economic and environmental concerns.

Active involvement of both the private sector and communities is imperative for the successful transition to renewable energy in the Solomon Islands. Consumers, encompassing both private individuals and businesses, can contribute to this transition through various initiatives such as the installation of rooftop solar PV systems, engagement in IPP ventures involved in energy generation and supply to the grid, and the adoption of EVs. Enhanced participation in these endeavours is anticipated to strengthen the labour market and facilitate the wider adoption of renewable energy technologies.

In facilitating this transition, the government and Solomon Power have undertaken measures to open market entry for households, communities and IPPs. These measures include amendments to the Electricity Act, restructuring of tariffs, and the introduction of institutional reforms, notably the establishment of the Energy Advisory Committee. Additionally, preparations are under way for the establishment of an independent regulatory authority focused specifically on overseeing energy and water utilities. These strategic initiatives aim to create an enabling environment for increased participation and sustainable development within the renewable energy sector.

The Solomon Islands Policy Roadmap for E-Mobility 2022 has established specific targets for the electric vehicle fleet, encompassing both passenger and freight vehicles. The category of passenger vehicles covers buses, cars, and three-wheelers, whereas freight vehicles pertain to trucks. The cumulative number of vehicles, comprising buses, cars, and goods vehicles, is expected to increase from the current 40 126 vehicles to 45 880 vehicles by 2030 and 61 793 vehicles by 2050. As the adoption of EVs progresses, new services are anticipated to emerge across the EV supply chain. These services may span from the importation of EVs, to aspects such as service repairs and waste management, reflecting the dynamic growth and evolving landscape of the EV industry.

Anticipated economic developments are poised to materialise as the energy sector undergoes a transition towards renewable energy. While the current number of existing green jobs remains unknown, a notable surge is foreseen with the emergence of new enterprises stemming from initiatives such as rooftop solar programmes, the expansion of EVs, operational advancements in mini-grids and the implementation of geothermal projects. In tandem with this growth, there will be a corresponding need for the expansion of training programmes to cater to the escalating demand for enhanced expertise within the industry.

The acknowledgment of gender roles in the establishment and development of small business enterprises in the tourism sector is expected to greatly influence income-generating opportunities for local communities. This recognition underscores the importance of inclusivity and gender considerations in fostering sustainable economic growth and development within the emerging landscape of renewable energy activities. The adoption of renewable energy in the Solomon Islands is driven by key factors that encompass environmental, economic and social considerations. Leading drivers for the widespread acceptance and integration of renewable energy sources include the following:

- 1. Environmental concerns:** Growing awareness of environmental issues, such as climate change, air pollution, and the depletion of finite fossil fuel resources, propels the transition to renewable energy. The desire to reduce greenhouse gas emissions and mitigate the impact of human activities on the environment is a primary driver.
- 2. Energy security:** Dependence on finite fossil fuels from geopolitically sensitive regions can pose risks to energy security. The Solomon Islands seek to diversify its energy sources by investing in renewables to reduce vulnerability to supply disruptions and geopolitical tensions.
- 3. Cost competitiveness:** Advances in technology and economies of scale have greatly reduced the costs associated with renewable energy generation. Renewable energy sources have become economically competitive or even more cost-effective than traditional fossil fuels, driving increased adoption.
- 4. Policy and regulations:** Government policies and regulations play a crucial role in promoting renewable energy adoption. Incentives such as subsidies, tax credits and renewable energy standards encourage businesses and individuals to invest in and use renewable energy technologies.
- 5. Job creation:** The renewable energy sector has become a significant source of employment, offering job opportunities in manufacturing, installation, maintenance and research. Governments often promote renewable energy adoption to stimulate economic growth and job creation.
- 6. Technological advancements:** Ongoing advancements in renewable energy technologies enhance efficiency, reduce costs and expand the range of available options. Improved energy storage solutions and smart grid technologies further facilitate the integration of renewable sources into the energy mix.
- 7. Corporate social responsibility (CSR):** Businesses are increasingly adopting renewable energy solutions as part of their CSR initiatives. Demonstrating a commitment to sustainable practices can enhance a company's reputation and appeal to environmentally conscious consumers.
- 8. Energy independence:** The Solomon Islands strives for greater energy independence by diversifying its energy sources, reducing reliance on imported fossil fuels and tapping into locally available renewable resources.
- 9. Community and public support:** Public awareness and support for renewable energy initiatives can influence policy decisions and encourage the development of sustainable energy projects. Communities may also benefit directly from renewable energy projects through job creation and local economic development.
- 10. Long-term cost stability:** Renewable energy sources often offer more predictable and stable long-term costs compared to fossil fuels, which can be subject to price volatility. This stability is attractive to both consumers and businesses planning.

The convergence of these drivers has led to a huge shift towards renewable energy as a sustainable and responsible means of meeting Solomon Islands growing energy needs.

## 3.2 CURRENT STATUS OF RENEWABLE ENERGY DEVELOPMENT

### Solar energy

There is considerable solar energy potential in the Solomon Islands because the country is situated 9 degrees latitude south of the equator, and the solar radiation is estimated at 5.5 to 6.5 kWh per square metre per day (Solomon Islands Government, 2014). Solar energy has been widely deployed as a source of energy for lighting, water heating, and cooling in both private and business activities. Growing deployment of solar technology has contributed to reducing weekly kerosene costs for rural households and annual diesel costs for utilities.

Historically, solar energy was a main source of electricity for church missions in the early 1970s, and its uptake by rural communities increased gradually during the 1990s. In 2011, around 8 000 households received solar installations as their source of electricity (IRENA, 2013).

Over the past decade, the solar lighting market has grown significantly spurred by government policy incentives, lower-cost appliances and equipment. The uptake of solar technology in remote and rural communities is encouraged by the availability of transportable and affordable solar lighting kits containing a solar panel, battery and light bulbs.

Solar PV development is increasing in the Solomon Islands and is progressing at various stages. Two solar operations are currently connected to the Honiara grid, and eight large grid-connected solar power projects are in the pipeline, with an expected total capacity of 20.22 MW (see Table 11).

**Table 11** Existing and planned solar PV development projects for Honiara grid

Projects	Installed capacity (MW)	Status
<b>Existing</b>		
Fighter One Solar Farm	1.0	Grid connected. In operation. Solomon Power.
Ranadi Rooftop Solar	0.05	Installation at Solomon Power. In operation. Solomon Power.
<b>Sub-total</b>	<b>1.05</b>	
<b>Planned</b>		
Henderson Solar Farm Extension	2.0	Detailed design progressed slowly (2023).
Ranadi Rooftop Solar	0.22	Contract signed June 2022. Solomon Power.
Tanagai Solar Farm	1.5	Re-tender completed, with evaluation report completed by end of the year. Solomon Power.
Foxwood Hybrid Solar	4.0	Land not procured. Budget not yet approved. Concept design developed. Expected commission in 2022. Solomon Power.
Lungga Solar Farm (Seventh Day Adventist Church site)	4.0	Land not procured. Budget not yet approved. Concept Design to be developed. Expected commission in 2022.
Tenaru Solar Farm	4.0	Land not procured. Expected commission in 2022.
Tasahe Solar	2.0	Land not procured. Budget not yet approved. Expected commission in 2023.
Makira Solar	3.0	Land not procured. Budget not yet approved. Expected commission in 2024.
<b>Sub-total</b>	<b>20.22</b>	

Source: Japan International Cooperation Agency (JICA) *et al.*, 2021; Solomon Power, 2022b.

However, as compared to its regional counterparts, the Solomon Islands has a low installed capacity of large, grid-connected solar generation. In 2018, around 2% of the total energy produced was generated from renewable sources, well below the shares in Fiji (62%), Samoa (46%) and Papua New Guinea (38%) (Pacific Region Infrastructure Facility (PRIF) Coordination Office *et al.*, 2021). Current pipeline projects are progressing slowly due to the long negotiation processes on land access as well as delays in mobilising construction materials and paving road access.

Solomon Power continues to undertake network extensions and planned potential solar farm sites to enable a further 2171 potential customers on the Honiara grid and around 1441 new customers in the province to become grid-connected (Solomon Power, 2020). In the off-grid segment of the market, stand-alone solar technology is widely used in remote communities. Solar hybrid systems have also been growing in popularity in the remote islands (see Table 12), although communities remain reliant on diesel generators. Recent policy incentives (such as reduced taxes on development project materials) will boost the uptake of solar technology in rural and remote islands.

**Table 12** Solar hybrid installations at Solomon Power outstations

Project	Installed capacity (MW)	Status
Munda solar hybrid	1.0	Partially commissioned.
Tulagi solar hybrid	0.250	
Kirakira solar hybrid	0.320	Installations in progress.
Malu'u solar hybrid	0.140	Works in progress. Project commission expected 2024.
Lata solar hybrid	0.290	
(Guadalcanal) Visale solar hybrid	0.109	Re-tender approved in November 2022. Projects funded by Solomon Power and World Bank Solomon Islands Electricity Access and Renewable Energy Expansion Project (SIEAREEP).
(Malaita) Dala solar hybrid	0.496	
Bina solar hybrid	0.360	
(Isablel) Baolo solar hybrid	0.107	
(Renbel) Tigoa solar hybrid	0.263	
Hauhui solar mini grid	0.815	New solar mini grids. Funded by New Zealand Ministry of Foreign Affairs (MFAT).
Samamunga solar mini grid		
Vonunu solar mini grid		
Makira: Namugha solar mini grid		New solar mini grid. Construction supervision contract. Funded by MFAT.

Source: Solomon Power, 2022a; Solomon Power, 2022b.

The importation of hybrid electric vehicles is growing in the region, and the Solomon Islands transport market is expected to accept solar-powered and hybrid vehicles once appropriate infrastructure (such as refuelling stations and better roads) is in place.

The solar market (grid and off-grid) is reliant on enabling technology (battery storage) to enhance the capacity and performance of solar PV systems. Battery storage has become a key component of project planning and of basic solar lighting kits; thus, future growth is expected in the medium to long term. Solomon Power is tendering the design of a proposed central battery energy storage system (BESS) for the Honiara grid. The Renewable Energy Roadmap 2030 proposed a BESS system for 4 MW / 2 MWh, accounting for 2% growth. The target completion date for the BESS design is 2024 (Solomon Power, 2020).

## Hydropower

The Solomon Islands has existing hydropower reservoirs, but their effective use is impeded by factors such as rugged terrain, long distances from demand centres and insufficient infrastructure. Beginning in the 1960s, feasibility studies have been conducted to evaluate the potential of these hydropower resources. In the Guadalcanal, studies identified 41 potential sites, with a capacity of around 4 800 kilowatts (kW); however, a considerable number of these locations remain inaccessible owing to their mountainous terrain and remote geographical placement (Japan International Cooperation Agency [JICA] *et al.*, 2021). Several sites in the vicinity of Honiara – such as the Tina, Komarindi, Lungga and Maotapuku rivers, have been studied as having MW-potential supply for the Honiara grid, where demand is concentrated (see Table 13).

**Table 13** Main hydropower potentials in the Guadalcanal

Projects	Installed capacity (MW)	Status
Tina Hydropower	15	Expected to commence operation in 2024. Financial agreement in 2018. PPA contract between Tina Hydropower Ltd. signed with Solomon Power. First public-private partnership project in the Solomon Islands. Project cost of USD 241.88 million.
Lungga Hydropower	20.3	Reservoir-type scheme with planned 50-metre-high rockfill dam. Project did not advance due to geological challenges.
Komarindi Hydropower	6.6	Run-of-river type scheme. Project was suspended due to increased construction cost, land acquisition and geological challenges. It remains earmarked as a follow-up to the Tina Hydropower Project.
Maotapuku Hydropower 1	1.6	Located on Maotapuku River in central Guadalcanal. Estimated output of 7 828 MWh annually. Requires a 3.5 km long access road from Gold Ridge mine road. Project cost of USD 24.9 million.
Maotapuku Hydropower 2	1.4	Estimated output of 6 619 MWh annually. Project cost of USD 27 million.

Source: JICA *et al.*, 2021.

Small-scale hydropower stations are operating in the outer islands and provinces to supply remote and rural communities (see Table 14). Two stations are under repair due to infrastructural damage, five are operational, and three projects are under procurement.

**Table 14** Hydropower stations in operation

Province	Station	Installed Capacity (kW)	Status
Malaita	Malu'u	30	No repair work expected. A solar hybrid plant constructed instead by Solomon Power (ADB funding)
	Masupa	40	Funding needed for repair
	Manawai	30	Needs repair
	Rae'ao	30	Needs repair
	Nario	25	Operational
Western	Vavanga	18	Operational
	Bulewata	45	Operational
	Palagati	50	To be installed / procurement
Guadalcanal	Fox Bay	50	To be installed / procurement
Makira	Naharahau	50	To be installed / procurement
Isabel	Buala	150	Commissioned 2016

Source: Solomon Islands Government, 2021b.

## Bioenergy

Bioenergy sources in the Solomon Islands are wood, coconut shells and oil palm waste. The primary supply was around 43% in 2016-2018 due to large use of biomass for cooking and other purposes. The Renewable Energy Strategy and Investment Plan (RE-SIP) outlines four options for biomass application in the Solomon Islands, which are biomass gasification technology for power generation from coconut and forestry waste, direct combustion for power generation from burning waste and by-products to produce steam via a turbo alternator, direct use of coconut oil as a full/blended substitute for diesel; and biodiesel manufactured from biomass (e.g. vegetable oil).

The application of biogas technology from waste (piggeries) for cooking fuel at the Youth with A Mission Campus (YWAM) and the Tetere prison compound are good examples of bioenergy potential for small-scale domestic purposes. The YWAM training programme incorporates a six-week seminar on biogas technology and construction.

Solomon Power trialled coconut oil at the Auki station in Malaita in 2014, with funding from the ADB, and found that use of the oil is feasible when blended at 10%, 20% and 60% for a 340 kW unit. However, the project stopped due to supplier (local company) issues. The coconut oil market, according to Solomon Power, is open to IPPs, which may find a niche market for this technology. This creates an opportunity for the local economy, but the sustainability of supply is essential to the success of the project.

The Ministry of Environment, Climate Change, Disaster Management and Meteorology conducted research on the use of biofuel in a 26 kVA genset, and it was proven effective. An ideal blend has been found and requires resources to scale and trial it in vehicles.

Coconut oil is an immense potential diesel substitute for transport and has been proven in the Solomon Islands as well as elsewhere in the region. One of the largest producers of coconut oil, Solomon Tropical Products (STP), commercially produced coconut biodiesel in 2010 and ran a five-year trial of coconut oil in vehicles to determine its feasibility and viability. The outcome of the trial demonstrated that biodiesel can be used in any engine (without modification) and in generators, including the company's shipping vessel (MV Tafusibata) ('Pacific Biofuel', 2010). Despite these achievements, the adoption of biodiesel has not been substantial. This is mainly because of limited awareness, higher costs per litre compared to regular diesel, the absence of incentives, and various other factors contributing to this situation.

### Geothermal

The Solomon Islands comprises several volcanic islands, with notable hotspots encompassing Western Guadalcanal, the Ngokosoli river valley of Vella Lavella, Simbo Island and Savo Island (see Photo 2). As outlined in the RE-SIP, an active feasibility study is under way on Savo Island for the development of a 20 MW geothermal power generation plant, being undertaken by Solomon Power in collaboration with a foreign investor. If the geothermal potential proves viable, it will enhance the energy mix in the Solomon Islands by providing technological advancements and increased capacity. Implementing an IPP arrangement will be essential, requiring the country to enhance its capabilities in managing such a significant undertaking.



Savo Island is one of the potential geothermal sites in the Solomon Islands

*Julia Peterle © Shutterstock.com*

### Wind

Wind power is the fastest growing renewable energy technology globally, and its use is rising due to falling costs. Some regions across the world experience high wind speeds; however, optimal locations are occasionally situated in remote areas (IRENA, n.d.). According to New Energy and Industrial Technology Development (NEDO), a reliable wind speed of 7 metres per second will enable investment in a reasonable-size wind project. Wind data for the Solomon Islands are lacking. In 2011, a wind resource assessment project was funded by SPREP's Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP) on sites on Buala, Kirakira, Rennell and Taro. No data are available on the outcome of the project.

Small wind turbines are being used in Honiara (e.g. hotels), but there are no extensive commercial applications. However, noting the ever-changing wind market and technology advancement, it may be feasible for the Solomon Islands to consider expanding and strengthening previous wind resource assessment projects in the medium to long term.

### Offshore renewables and ocean energy technologies

The development of offshore renewables and ocean energy technologies exhibits varying stages of progress. Diverse types of ocean technology – such as wave, ocean thermal, tidal, offshore wind and floating solar PV – contribute to this evolving landscape. Exploration of the ocean's potential within the Pacific region is actively under way through initiatives funded by Australia and New Zealand. Despite highlighting considerable potential, the implementation faced hindrances due to inadequate supporting infrastructure. While the vast Exclusive Economic Zone (EEZ) of the Solomon Islands holds promise, current limitations in data and research prevent the identification of potential ocean energy sources. Although the SINEP (2020-2030) acknowledges the potential of ocean technology, it refrains from immediate commitments, suggesting a likelihood of considering this aspect as a long-term consideration.

### 3.3 RENEWABLE ENERGY OPPORTUNITIES IN ADDRESSING THE NEXUS ISSUES

Renewable energy presents multifaceted opportunities for addressing interconnected nexus issues related to health, food and water security, education, tourism, fisheries, and information and communication technology (ICT) in the Solomon Islands (see Box 3).

In terms of health care, the reliable and sustainable power generated from renewable sources can play a pivotal role. It ensures the uninterrupted supply of energy to health care facilities, supporting critical medical equipment, vaccine refrigeration and emergency services. Simultaneously, the adoption of clean cooking solutions, such as solar cookers and biogas stoves, emerges as a viable strategy to replace traditional methods, reducing indoor air pollution and mitigating associated health risks.

Renewable energy also contributes greatly to water and sanitation initiatives. By powering water pumping and purification systems, it enhances access to clean water, addressing a fundamental prerequisite for preventing waterborne diseases. Furthermore, in the agricultural sector, renewable energy supports precision farming technologies, irrigation systems, and sustainable practices, thereby contributing to food security and improved nutritional outcomes.

Educational infrastructure benefits from the reliability and sustainability offered by renewable energy sources. Electrification of schools, made possible through these sources, supports educational facilities, lighting, and access to digital learning tools, thereby fostering enhanced educational opportunities.

#### Box 3 Empowering Lives and Livelihoods – Renewables for Climate Action

IRENA and the United Arab Emirates officially launched the “Empowering Lives and Livelihoods – Renewables for Climate Action” initiative at COP28. The initiative aims to strengthen climate resilience and adaptation in vulnerable communities by transforming agri-food and health value chains with renewable energy.

Cross-sector partnerships are important to facilitate the deployment of renewables solutions in the agri-food and health sectors to benefit communities at the frontlines of climate change. The Initiative will bring together governments, foundations, philanthropies, and the private sector, among other stakeholders, to commit funding for programmatic support to least developed countries and small island developing states (SIDs), which will result in increased finance flows to support the uptake of renewable energy solutions, enriching lives and livelihoods in the health and agriculture value chains.

Recognising the crucial role of women and youth along these value chains, the Initiative also presents an opportunity to achieve greater gender and social equity in both the agri-food and health sectors.

Community empowerment is a cross-cutting theme facilitated by community-based renewable energy projects. By providing local populations with access to clean and reliable energy, such initiatives positively impact health, education and economic activities within communities. Within the tourism sector, the integration of renewable energy technologies, such as solar-powered resorts and wind-powered accommodations, promotes sustainable tourism practices. These initiatives aim to preserve ecosystems, support local economies and contribute to responsible tourism. Renewable energy solutions extend their impact to the fisheries and aquaculture sectors, powering operations and supporting sustainable practices that enhance the resilience of these critical industries.

In terms of information and communication technology (ICT), renewable energy sources bolster the resilience of ICT infrastructure, ensuring reliable connectivity and access to information across various sectors, including health and education. This, in turn, facilitates telemedicine services, enhancing access to health care in remote areas and contributing to improved health outcomes.

Moreover, the growth of the renewable energy sector translates into the creation of green jobs, contributing to economic development and poverty reduction. In summary, the strategic integration of renewable energy solutions into diverse sectors can foster sustainable development, enhance resilience and effectively address complex nexus issues impacting the health, well-being and prosperity of communities.

### Renewable energy enhances water and sanitation systems

The demand for water is a basic human need and is the core of human survival. In the Solomon Islands, water resources serve various purposes, primarily catering to drinking and cooking needs, alongside a moderate demand for agricultural activities and communal endeavours, including power generation. Among the United Nations Sustainable Development Goals (SDGs) is SDG 6, which includes “universal access to both safely managed water supply and sanitation by 2030”. The National Development Strategy 2016-2035 targets for 2035 include water supply access by 60% and sanitation access by 40%. The targets of the Solomon Islands Rural Water Supply Sanitation Hygiene Strategic Plan (RWASH) 2021-2025 are shown in Table 15 (Solomon Islands Government, 2021c).

**Table 15** Rural Water Supply Sanitation Hygiene Strategic Plan (RWASH) targets for 2025

	Community water supply	Household sanitation	Hygiene	Wash facilities in schools (basic)	Wash facilities in health clinics (basic)
Target for 2025 (share of population with access)	75%	25%	26%	75% water 38% hygiene	45% water 20% hygiene
Annual rate of increase	3%	2%	2%	3%	4%

Source: Solomon Islands Government, 2021c.

The Ministry of Health and Medical Services leads co-ordination mechanisms for rural water, sanitation and hygiene (WASH) at the strategic and operational levels. Urban water and sanitation services are delivered by Solomon Water, with the provincial government delivering urban services where Solomon Water is not mandated (Solomon Islands Government, 2016).

The Solomon Islands National Water and Sanitation Implementation Plan (National WATSAN IP) 2017-2033 is a 12-year whole-of-government plan that lists various priority issues, including policy objectives with targeted activities (see Table 16) (Solomon Islands Government, 2017).

**Table 16** National Water and Sanitation Implementation Plan (WATSAN IP) policy objectives for renewable energy

Issues	Policy objectives	Activities	Indicators	Responsibility	Period
High water pumping costs and the use of non-renewable energy for pumping.	increased hydropower generation and other commercial purposes.	Update nationwide survey of all potential hydropower and joint water supply sites.	Report to MMERE confirming priority sites.	MMERE, SIEA	3 years
		Progressive installation of hydropower/water supply systems.	15% of total electricity generated by hydropower.	MMERE, SIEA	12 years
Total reliance on fossil fuel for electricity generation, especially for pumping water.	increased use of renewable energy in water supply systems.	Surface water supply systems designed to generate hydropower or minimise use of non-renewable fuels.	Energy-producing or energy use minimisation systems used in all new surface supply systems.	Solomon Islands Water Authority (SIWA), MMERE, SIEA, provincial governments	2 years
Failure to capitalise on hydropower opportunities due to requirements for land acquisition.		New renewable energy water supply pumping system installed where practical.	30% of power used in water supply systems from renewables.	SIWA, MMERE, SIEA, Ministry of Rural Development, provincial governments	2 years and ongoing

Source: Solomon Islands Government, 2017.

The Household Income and Expenditure Survey 2012-2013 report recorded that the primary sources of drinking water are standpipes (39%) and rivers/springs (22%) (see Figure 8). The main urban water source is metered pipes (57%) overseen by Solomon Islands Water Authority, followed by household tanks (16%). In rural communities, community standpipes are the main source of drinking water (45%), followed by rivers/springs (25%), household tanks (13%) and community tanks (11%). The report states that 92% of households use the same water source for drinking and cooking. In terms of access, 59% of households in the country travel for water (21% in urban areas and 61% in rural areas).

Renewable energy has an important influence on the Rural Water, Sanitation and Hygiene (RWASH) targets and the National Water and Sanitation Improvement Plan (WATSAN IP). Renewable energy technologies offer a viable solution for enhancing access to water resources crucial for human consumption, household requirements, and agricultural practices such as irrigation and livestock farming. Notably, these technologies are already being advocated in the Solomon Islands, particularly the use of solar-powered water pump systems, which have enhanced water extraction from wells, streams and rivers (see Figure 9).

Solar-powered desalination plants enable the purification of water for human consumption in remote communities with limited land-based water resources; these systems are most needed in times of drought and during weather-related disasters. Desalination technology has proven to be an effective adaptation tool elsewhere in the region, and it may be feasible in small remote and isolated island communities in the Solomon Islands that have no water sources from rivers, streams and lakes.



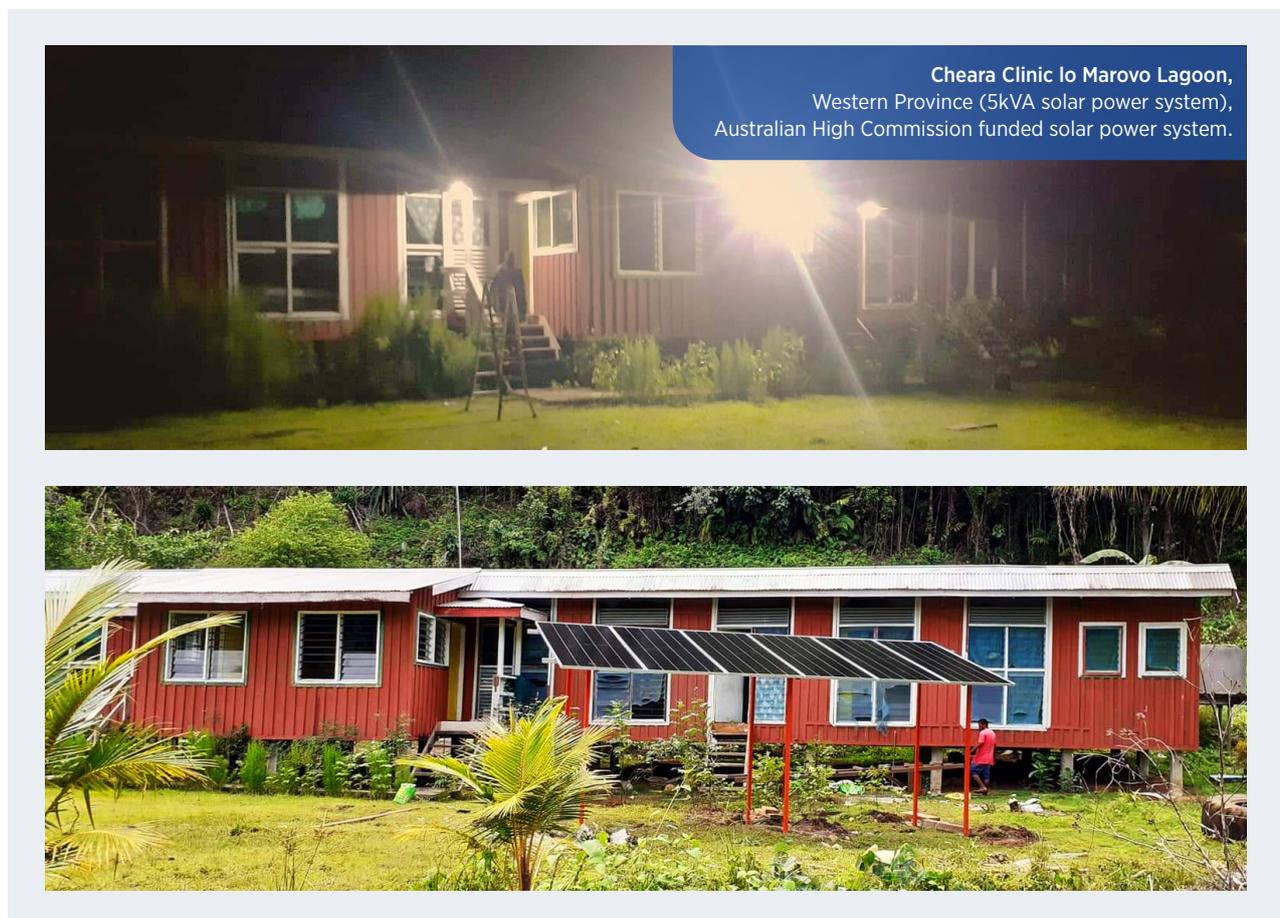
*Jeffrey Aluta Jionisi © Shutterstock.com (Guadalcanal, Solomon Islands)*

## Renewable energy contributes to the advancement of health care services

Health care service is an important priority for the Solomon Islands, and health services are available through nine provincial health care clinics. Challenges to health care delivery include the remoteness of many locations and a lack of access to electricity for storage of vaccines and general medicine, such as running operating facilities or dental equipment. In 2020, 23% of health care services did not have access to electricity (World Health Organization, the World Bank, Sustainable Energy for All and the International Renewable Energy Agency, 2023). Remote health clinics are often underfunded and rely heavily on grant funding to finance the installation of a solar PV system (or stand-alone generator) to improve access to electricity, thus reducing service disruption.

Renewable energy solutions, particularly solar PV systems, provide viable solutions for health care services in remote and rural communities. Numerous instances exist where renewable energy technology has been applied in isolated, rural and outlying island communities that lack access to an electricity grid (see Figure 6). During the past decade, health clinics have had solar-powered vaccine refrigerators and air-conditioned patient rooms and operating facilities. Solar hot water heating allows clinics to sterilise equipment used for surgeries, dental care and other services.

**Figure 6** Cheara Clinic in Marovo Lagoon, Western Province



Source: Superfly FB, 2021.

## Renewable energy's contribution to the education sector

SDG 4, which aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”, is one of the aspirations and building blocks for the Solomon Islands Education Strategic Framework (SIESF) 2016-2030. The SIESF’s vision states that:

*All Solomon Islanders will develop as individuals and possess the knowledge, skills and attitudes needed to earn a living and to live in harmony with others in their environment. We envisage a united and progressive society in which all can live in harmony with fair and equitable opportunities for a better life. Parents and member of the community are to develop a sense of ownership of all educational institutions.*

The overarching strategic goal of the SIESF 2030 is to consolidate the universal completion of basic education for all children by 2030 and to provide extended access to quality secondary and technical and vocational education and training. SDG 4 and the SIESF affect other SDG goals for poverty alleviation, health, gender equality, reduced inequality, sustainable consumption and climate change (Solomon Islands Government and Ministry of Education and Human Resource Development, 2015). In the same vein, SDG 7 on “energy access for all” serves these SDG goals and the SIESF 2030 to achieve their goals. This strong linkage justifies the renewable energy nexus and education.

In 2019, a total of 1100 schools and early childhood care and education centres were operating in the Solomon Islands, of which 46% were primary, 25% early childhood education, 22% community high school, 5% rural training centres and 2% provincial and national secondary schools. The student enrolment for 2019 was 209 377 students.

Education services in remote and isolated communities are delivered by churches and private providers through rural training centres that offer technical skills training. These facilities are challenged by a lack of electricity for basic lighting and for powering essential teaching equipment, learning aids and communication devices. Education is a national priority, and the Solomon Islands in partnership with development partners and Solomon Power will install new hybrid mini-grids throughout the country, which will benefit schools. Table 17 lists the number of schools with energy access by province.

At Selwyn College, one of the biggest boarding schools in the Solomon Islands, an existing solar PV-diesel hybrid installation is an example of renewable energy adding value to education service delivery (see Figure 7). For two decades, the College was running a diesel generator mini grid that used 38 400 litres of diesel annually, accounting for 20% of the annual budget. The new 160 kW solar hybrid system provides 24-hour electricity for the school to power equipment, internet service, lighting, water pumping and other activities. The project was funded by the European Union and implemented by Germany’s Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (Georgina Kekea, 2018). Similarly, the Wairokai community high school has a 15 kVA solar PV system commissioned in 2019. These two schools serve as prototypes for future replication in other schools.

Remote learning is increasing due to improved access to electricity through stand-alone or hybrid solar PV installations that provide power to remote schools and learning institutions. Increased energy access has reduced constraints for internet connectivity for learning and communication.

**Table 17** Schools with energy access, by province and source

Province	Mains	Generator	Solar	Total
Central	3	4	15	18
Choisel	3	11	26	40
Guadalcanal	13	27	49	89
Honiara	21	1	1	23
Isabel	2	9	16	27
Makira and Ulawa	3	12	34	49
Malaita	13	22	75	110
Rennell and Bellona	1	2	2	5
Temotu	2	3	13	18
Western	13	24	57	94
<b>Total</b>	<b>74</b>	<b>115</b>	<b>288</b>	<b>477</b>

Source: Solomon Islands Government, 2023.

**Figure 7** Selwyn College solar hybrid project

Source: GIZ Pacific, 2019.

### The role of renewable energy in the tourism sector

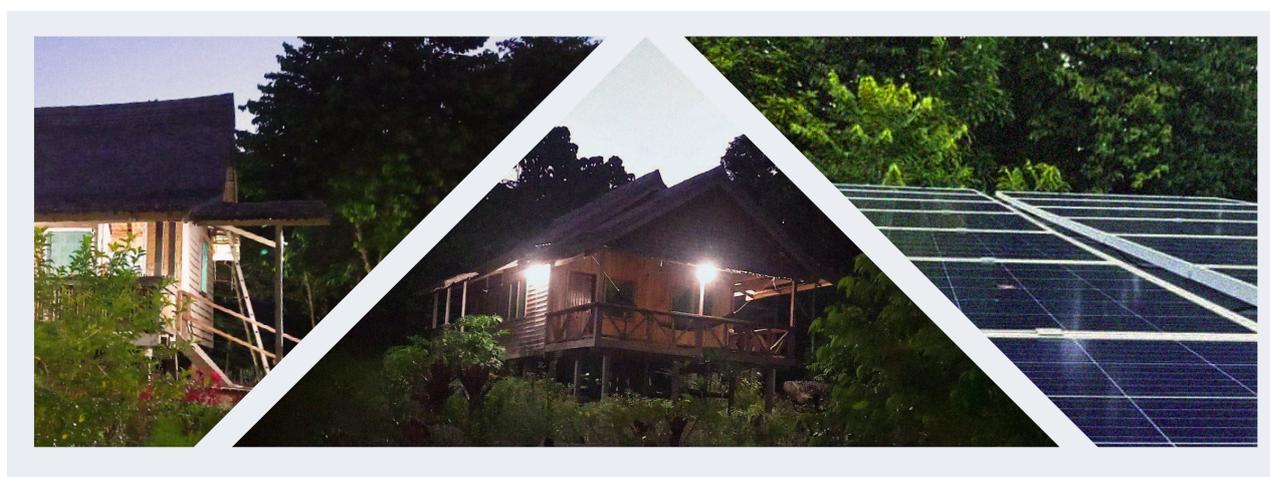
The role of renewable energy in developing tourism in the Solomon Islands is fundamental to improving economic and social benefits. Tourism is recognised in the National Development Strategy as one of the potential sources of economic growth. In 2019, tourism contributed 5.1% of GDP and less than 1% of the country's employment. In the same year, tourism receipts totalled USD 78 million, and spending per person was USD 1 411 (Pacific Private Sector Development Initiative, 2021).

The Solomon Islands Tourism Recovery Plan (SITRP) 2021-2030 outlines strategies to revitalise the industry in the wake of COVID-19. The plan targets 100 000 arrivals annually by 2035. In 2019, around 48% of visitors arrived for business, 23% for leisure, and the remaining 29% were people returning home to see relatives and friends and to engage in other activities. The private sector leads tourism in the Solomon Islands, as various industry associations are engaged in advocacy, training and co-ordinating support. Domestic travel is a significant challenge, thus limiting tourist visits to outer islands. The high electricity tariff is a burden to tourist operators that are struggling with low occupancy.

The lodging capacity was around 259 facilities, comprising hotels and guest houses. Within Honiara, a minimum of seven hotels owned by foreign entities catered to accommodation needs, complemented by locally owned guest houses. Beyond Honiara, at least 130 guest houses are managed locally, in addition to a limited number of resorts overseen by foreign entities (Pacific Private Sector Development Initiative, 2021). The accommodation infrastructure is dependent on energy for cooling (air conditioning, refrigeration), heating (cooking, warming, water, *etc.*), entertainment (television) and relevant commercial activities (sports). Small-scale tourist operators also require a similar level of energy access to be able to thrive.

The energy cost for running an accommodation facility is often significant, but savings (resulting from incorporating renewable energy in the mix) can also be significant (up to 20%). Provincial tourist operators are gradually investing in stand-alone solar PV systems for their main electricity source and back-up power supply (see Figure 8).

**Figure 8** Suki Wild Resort, Western Province



Source: GIZ Pacific, 2019.

Technology options from renewable energy offer cost-saving measures – such as solar PV, solar water heating, and energy-efficient appliances for lighting, cooking, and cooling, especially air conditioning.

### **Empowering food security, agriculture and fisheries through renewable energy**

Agriculture is the foundation of the livelihoods of 85% of Solomon Islanders. It is a vital source of nutrition, security, and employment and a key contributor to the national economy. The sector accounts for 16% of the country's GDP on average but receives 1.5% of the national budget.

The sector's economic performance has been declining, and research and extension have been marginal. Land-use planning has not yet started, and food imports are rising, while exports (copra, cocoa, palm oil) are stagnating. Growth is constrained by a lack of investment; low production and sector productivity (affecting food security, export earnings and employment generation); a lack of infrastructure, including ICT capabilities; customary land ownership; and weak land-use planning, among others.

The Agriculture Sector Growth Strategy and Investment Plan (AGSIP) 2021-2030 outlines key strategies to revitalise the sector. It envisages “a sustainable, resilient, competitive and profitable agriculture sector, enhancing economic growth, food sovereignty and prosperity for all Solomon Islanders”. The vision is to be achieved through the delivery of four key programmes: 1) governance, management and innovation; 2) national food and nutrition security; 3) livestock production for import substitution and 4) crop production for export earnings.

The agricultural farming types are: 1) smallholder subsistence farming with occasional sales of surplus; 2) smallholder commercial farming with deliberate market production including cash crops and 3) commercial farming including plantations.

The role of renewable energy in achieving the AGSIP is prominent in meeting the needs for electricity, heating, cooling and transporting supplies to market. Positive impacts take shape in the form of reducing hunger, minimising fuel costs, and limiting dependence on fossil fuels, along with providing reliable energy for irrigation. The government and development partners have donated solar PV systems to provincial farmers for whom irrigation is much needed (see Figure 9).

**Figure 9** Various installations in the Guadalcanal, Western and Central Provinces



Source: Superfly FB, 2021.

Cold storage and refrigeration increase the shelf life of produce and maintain the quality of products from livestock, crops and fisheries. Solar freezers have been donated to fishing communities through government rural development funds and development projects. Manure from livestock wastes has been used by remote boarding schools to build a small biogas plant for cooking and lighting.

**Enhancing information and communication technology (ICT) through renewable energy**

The Solomon Islands has embraced digital technology to accelerate economic growth and social development, and renewable energy has been an enabler in the development of the ICT sector. The Solomon Islands ICT Strategic Plan 2019-2023 envisages “empowered SIG services to Solomon Islanders through Solomon Islands ICT Services effective design and delivery of ICT”. The country plans to improve telecommunications infrastructure to provide quality and reliable internet services.

The government service delivery to provinces has been effectively facilitated by ICT infrastructure. The ICT sector contributes to the national economy, with the gross revenue improving from USD 13 million in 2010 to USD 41 million in 2020. As of 2020, the average revenue per user was around USD 105, highlighting the sector’s burgeoning impact on economic activities and user engagement within the Solomon Islands.

The digital market is regulated by the Telecommunications Commission of the Solomon Islands in accordance with the Telecommunications Act of 2009 through a licensing process for market entry. The mobile networks are Our Telekom and B Mobile, with a total of 464 000 subscribers and 66.3% penetration in 2020. The fixed broadband market penetration is 0.16% (1 046 subscribers), while the telephone network (Our Telekom as major operator) has 6 279 subscribers and 18.7% penetration.

Since 2010, the number of mobile subscribers has grown 19% on average. Mobile internet subscribers grew from 8 205 in 2010 to 133 148 in 2020, which reflected 38.8% growth, while there is a steady decline in other communication services subscriptions. The falling cost of data from USD 0.18 in 2014 to USD 0.01 in 2020, coupled with improved ICT services, has positively impacted the growth.

Mobile phone services have facilitated access to financial services such as payment of utility bills and retirement savings to the Solomon Islands National Provident Fund through the mobile network.

Renewable energy technologies provide a sustainable and least-cost option for off-grid communities and household users. The education, health and tourism sectors have invested in renewable-powered ICT to improve their services to communities and to increase business returns. (See Figure 10 for a demonstration of ICT penetration enabled by renewable energy technology.)

**Figure 10** Goldie College Computer Lab, Munda, Western Province



Source: Superfly FB, 2018.

### 3.4 FINANCING RENEWABLE ENERGY PROJECTS

Developing the energy sector has been a significant undertaking in pursuit of the country's ambitious emission reduction target. Sector development has required ongoing financing support, technology intervention and capacity development. Financing of energy programmes relies heavily on external funding through bilateral and multilateral collaborations with development agencies and international financing institutions.

The Solomon Islands National Energy Policy (SINEP) 2020-2030 proposed an estimated financing package of USD 151.14 million to implement the Plan's priorities. The investments during the previous SINEP (2019) were around USD 574.12 million. Table 18 enumerates ongoing projects, many of which receive funding through grants. A notable portion of this funding is allocated to renewable energy projects, emphasising enhanced energy access, emission reduction, capacity development and various other objectives.

**Table 18** Funded past and ongoing renewable energy projects

Project title / objective	Financing arrangement
<p><b>Tina Hydropower Development Project</b> (So <i>et al.</i>, 2021)</p> <p>Generate hydroelectricity at the Tina River area in Guadalcanal province.</p>	<p>Co-financing partners:            ADB (USD 30 million)            World Bank (USD 33.63 million)            IRENA ADFD (USD 15 million; IRENA, 2023b)            GCF (USD 86 million)            APIP Trust Fund (USD 12.7 million)            Korean EDCF (USD 31.6 million)            Tina Hydropower Ltd. (USD 10.8 million)            SIEA (USD 20.75 million)            Solomon Islands Government (USD 1.4 million)  <b>Total of USD 241.88 million (loans and grants)</b></p>
<p><b>Solar Power Development, 2016</b> (So <i>et al.</i>, 2021)</p> <p>Build a grid-connected solar power plant, put into operation by SIEA. Project Management Unit (PMU) renders efficient project management services, and business conditions are created for private sector investment in solar home systems.</p>	<p>ADB, USD 2.24 million (loan)</p>
<p><b>Provincial Renewable Energy Project, 2014</b></p> <p>Build the 750 kW Fiu River hydropower plant, put into operation by SIEA.</p>	<p>ADB, USD 6 million (grant)</p>
<p><b>Energy and Rural Electrification, 2014</b></p> <p>Expand rural electrification to 2 000 new unelectrified households, 8 provinces and 10 600 people. Solar home systems of three lights per house provide power for small electric items such as mobile phone charging. Each year, this results in kerosene savings of around USD 387 683 (SBD 2 827 290) and mitigates more than 536 tonnes of CO<sub>2</sub>.</p>	<p>JICA, USD 3.99 million (grant)</p>
<p><b>Solar PV Plant Honiara, 2017</b> (Masdar, 2016)</p> <p>Bolster energy resilience and reduce costs associated with diesel imports.</p>	<p>United Arab Emirates, USD 5 million (grant)</p>
<p><b>Stimulating Progress towards Improved Rural Electrification in the Solomons (SPIRES)</b> (GEF, 2020)</p> <p>Reduce greenhouse gas emissions in rural areas and replace them with renewable energy sources, such as solar and hydropower.</p>	<p>United Nations Development Programme / GEF co-financing of USD 19 million (USD 2.6 million / USD 16.5 million)</p>

<b>SB Development of Community-Based Renewable Energy Mini-grids</b> (GEF, 2014)	World Bank / GEF co-financing of USD 6.8 million (USD 0.9 million / USD 5.9 million)
<b>Electricity Access and Renewable Energy Expansion Project (EAEP)</b> (World Bank, 2018) Provide a partial subsidy to low-income households to enable connection to the Solomon Islands Power network.	Funding is leveraged from Solomon Power (USD 545 000) and household beneficiaries (USD 235 000) Total of USD 19.9 million from IDA (USD 10.3 million) SIDS DOCK (USD 1.6 million) CIF (USD 7.1 million) GEF (USD 946 750)
<b>Solomon Islands Power Development Project</b> Build 2 MW solar power generation capacity with battery at outstations in Kirakira, Lata, Munda and Tulagi.	ADB / GEF, USD 15.2 million (grant)
<b>Solomon Island Renewable Energy Project</b> Increase community access to rural electrification in Namugha (Makira), Hauhui (Malaita), Vonunu (Western) and Samamunga (Choiseul) through installation and connection of solar-diesel hybrid mini-grids.	MFAT / Solomon Power co-financing of USD 3.89 million / USD 3.86 million (SBD 34.8 million / SBD 34.5 million)

The ADB estimated that its sector support during the 2007-2020 period was USD 247 million, higher than its support to any other small Pacific Island country. This is because donors (such as the ADB) focused their support on countries with higher populations, such as Papua New Guinea, the Solomon Islands and Vanuatu (So *et al.*, 2021).

Grant funding comes with many challenges, causing delays to project implementation. For instance, if the Solomon Islands government were to apply for Green Climate Fund accreditation, considerable time (at least six months) would be needed to review the existing fiscal management system and to augment it if necessary to ensure alignment with the GCF requirements. Once accredited, the disbursement of funds is efficient; however, this scenario is unlikely due to limited capacity.

In terms of loans, international financing institutions often require guarantees for private sector loans. However, many local entrepreneurs cannot meet the minimum requirement due to a lack of resources. This hampers the local private sector community from engaging in energy development. Households face constraints in accessing finance due to factors such as low income, distance from service centres and insufficient documentation. A considerable number of households do not possess bank accounts, and many reside in remote areas where banking services are not accessible.

The country has six local financing institutions<sup>7</sup> from which local entrepreneurs and households can take out loans to set up new business ventures or to purchase electrical and efficient appliances. These institutions provide loans for personal purposes, new business ventures, new homes, *etc.* Table 19 provides examples of these financing opportunities.

<sup>7</sup> Four commercial banks (ANZ, Bank of the South Pacific, Bred Bank, Pan Oceanic), Development Bank of Solomon Islands, and National Provident Funds.

**Table 19** Local financing services

Bank	Finance service	Package in USD
Development Bank of Solomon Islands	A Livelihood and Investment facility (LAIF). Loans can be used for the purchase of small solar power systems, solar lighting units, solar refrigerators and other solar products.	USD 600 to USD 9 000 13% interest, 5-year term
Bank of the South Pacific	Personal loans.	Variable interest rate; short term
	Business loans.	Minimum balance USD 50 000 1-10-year term, variable interest rate
Australian and New Zealand Banking Group (ANZ)	Rural banking services; personal loans.	Variable interest rate
Microfinance / Group Savings Scheme	Helps women vendors and others raise venture capital for their businesses.	14-20% interest

The lack of access to financing for household and community needs highlights poverty as being one of the major challenges to developing the energy sector in the Solomon Islands.



*Narong Khueankaew © Shutterstock.com*

# 4 RECOMMENDATIONS

The transition to a renewable energy landscape is an onerous task, with many moving parts that cover strategic issues contributing to the Solomon Islands' social and economic development. At the heart of national advancement are improved access to electricity and enhanced energy security through the development of local renewable energy resources, coupled with capacity building and skills enhancement.

This section discusses the recommended strategic actions based on the extensive stakeholder consultation and national workshops. A detailed matrix of all activities, with estimated costs,<sup>8</sup> is shown in Annex 3. The seven strategic actions are outlined below.

## 4.1 PROMOTE INSTITUTIONAL RESTRUCTURING AND FOSTER MARKET COMPETITION IN THE SOLOMON ISLANDS ELECTRICITY GRID.

***Implement the amended provisions of the Electricity Act, including new regulations to provide concessional initiatives for private sector engagement and consumer participation.***

Opening the electricity market to improve private sector participation requires changes to the current regulatory and policy environment. A review of the Electricity Act has recommended: a clear definition of renewable energy and standards; drafting a new Energy Act to clearly define the regulatory functions of key institutions (such as MMERE and a new regulatory entity); establishing an independent regulator for energy and water; and opening the electricity market to IPP investment and participation in grid-connected generation and rooftop solar applications.

Implementing the electricity regulatory reforms, starting with institutional restructuring to establish an independent regulator, will be an important first step. An independent regulator is critical to the process of unbundling distribution and transmission, where the participation of IPPs is managed effectively through a PPA. An independent regulatory function will require clear mandates, administrative processes and procedures. A central agency such as MMERE remains the leading agency to co-ordinate the energy sector development.

Appropriate regulations to ensure private sector concessional initiatives will be needed for net metering demands (rooftop solar), large utility-scale grid-connected solar farms and geothermal development (Savo project). Such a framework must be transparent and account for the competing interests of solar energy owners, Solomon Power and its customers, and the community at large.

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<sup>8</sup> Estimates for each activity were proposed by the RRA stakeholders based on their knowledge and experience from past project budgeting.

Local capacity with knowledge and experience in national and regional energy sector reform is important in guiding a reform process. Such capacity is lacking, but the government can access external support through its existing network. In the medium to long term, local capacity can be developed through training and awareness programmes. Monitoring and evaluation are often overlooked during market restructuring and reform initiatives. The purpose of such a process is to identify gaps by looking closely at what is not working.

Research tools – such as field customer surveys, online questionnaires, face-to-face interviews and consultations, workshops and focus groups – are useful instruments for collecting data on stakeholder experience with, and understanding of, the regulatory reform. The application of research tools may vary with processes and procedures, but all must fulfil regulatory requirements. Learning from other countries and similar utilities would be valuable but should be contextualised to suit local needs.

***Strengthen research and development programmes related to electricity market reform and improve public and community awareness of reform benefits through a bottom-top approach.***

It is valuable to document the lessons learnt and the experiences with energy sector reform and the renewable energy transition from neighbouring countries, and to adopt or adjust relevant experience that may add value to current sector reform initiatives. Documentation of experience may include private sector concession initiatives, flexible financing modalities, tariff restructuring, technology options, grid operation with high shares of variable renewable energy, resource assessment, data and statistics.

An aggressive roll-out of community awareness is imperative to consolidating local knowledge. Taking a bottom-up approach, where simple messaging can translate commitment and partnership to expected outcomes and achievement for the country's renewable energy transition, will ensure that no one is left behind.

## **4.2 ESTABLISH AND ENFORCE TECHNICAL STANDARDS FOR OFF-GRID RENEWABLE ENERGY SYSTEMS AND PURSUE ENHANCED ENERGY DATA MANAGEMENT TO ENSURE CLIMATE RESILIENCE.**

***Strengthen energy data collection, storage and analysis on off-grid renewable energy applications to form the basis of developing appropriate standards for design, installation, operation and maintenance.***

Off-grid renewable energy installations vary in size and are used mainly for household, school, health and community applications. A growing trend in recent decades has led to more than 9 000 off-grid solar PV systems in operation in rural communities and outer islands. Ongoing community technician training (both men and women) appears to be reliant on development projects and fails to ensure that communities learn in real-time about new off-grid solar PV technologies.

Cyclone-resilient design and installation standards are now being followed in neighbouring Pacific SIDS, and communities in the Solomon Islands may benefit from such development. Current Pacific regional and national projects provide additional opportunities to incorporate national, regional and (where relevant) international industry standards to achieve sustained renewable energy deployment and community benefits. The SEI-API-developed regional standards will serve as an interim measure while a national standard is developed.

The private sector may play a role in waste-to-energy R&D in the Solomon Islands. Reliable and accessible energy data are essential to policy design and planning. Renewable electrical companies – such as Superfly, SunPower, Guadalcanal Electrics, as well as Chinese shops, among others – must also provide data.

Every public institution and private company that gathers, analyses or stores energy data for the purposes of project design, performance reporting, business development and other purposes must submit, by law as a regulatory requirement, such data annually to MMERE. MMERE will host a national energy data repository for national energy sector planning and policy development. Each of these institutions must receive support and institutional strengthening to ensure that data integrity is maintained. To determine the needs and priorities of database hosts, MMERE and MECDM must undertake a review with assistance from relevant development partners.

#### Box 4 Evaluation of rooftop solar PV potential - IRENA's SolarCity Simulator

In 2022, IRENA initiated the development of the SolarCity simulator for Honiara, Solomon Islands. The SolarCity simulator is an innovative web-based application designed to provide comprehensive knowledge to homeowners, investors and country authorities (ministries, municipalities and public utilities) to support the planning and deployment of rooftop solar PV systems.

The simulator allows users to assess: 1) the potential energy generation and economic viability of different system designs, which facilitates target setting at local and large scales; 2) the impact of different policy instruments, such as feed-in tariffs, subsidies, tax credits, and net metering, on the rooftop solar PV markets; and 3) the social and environmental benefits, such as greenhouse gas emission reduction and job creation opportunities, to propose more-effective policy strategies.

The methodology used to develop the simulator relies on a robust power generation model to calculate the hourly and annual energy production. This is based on the selected city's solar resource profile and on 3-D building footprints calculated from high-resolution satellite images. A simplified financial model is used to establish a range of economic indicators, such as payback, equity internal rate of return (IRR) and investment cash flow. This comprehensive approach helps stakeholders make informed decisions and devise strategies that align with their sustainability objectives.

IRENA conducted similar development for Basseterre and Charlestown in Saint Kitts and Nevis, São Tomé in São Tomé and Príncipe, Castries in Saint Lucia, Victoria in Seychelles, and Port Louis in Mauritius. The simulator has become a valuable source of information for these cities to maximise the deployment of rooftop solar PV systems in cities.

To learn more, see [Solar Simulators: Applications to Developing Cities](#) and [Guidelines](#).



-  Creation of the 3D building footprints
-  Calculation of the solar PV annual generation
-  Quantification of the economic returns
-  Quantification of the social and environmental benefits
-  Integration into web-based platform

### 4.3 ENHANCE INNOVATIVE FUNDING MECHANISMS AIMED AT FACILITATING THE DEPLOYMENT OF RENEWABLE ENERGY FOR SUSTAINABLE DEVELOPMENT.

#### ***Strengthen project bankability and increase renewable energy investment through partnership.***

The investment market remains donor dependent due to the small market size and the lack of financing mechanisms for renewable energy and energy efficiency technologies. Grant funding comes with many challenges, where the financing requirements and processes are time consuming and cumbersome, causing delays to project implementation. In terms of loans, international financing institutions often require guarantees for private loans, and many local entrepreneurs and households cannot meet the minimum requirement due to lack of capacity. Projects of significant size are often difficult to finance locally; however, blended finance could be feasible, as occurred with the Tina Hydropower Project.

A sustainable investment plan for renewable energy and energy efficiency is a starting point, and a risk financing facility can be designed and featured as a key component. Resource assessments and potential projects need to be linked with the plan and must consider a community benefit-sharing model and baseline financial mechanism that will allow for future operations and project continuation.

### 4.4 INCREASE MARKET CONFIDENCE IN ELECTRIC MOBILITY AND SIMILAR INNOVATIVE SOLUTIONS FOR THE MARITIME AND AVIATION SECTORS.

#### ***Increase e-mobility market penetration by building appropriate infrastructure.***

E-mobility is an innovative technology, and awareness of its benefits is exceptionally low due to a lack of available and disseminated market information and a government push strategy. The high tariff is a disincentive to accelerating the transition from diesel to clean fuels. Thus, a tariff reform may ease the uptake of electric vehicles.

Piloting e-mobility technology for R&D will provide insights on the technical issues, installation, and maintenance skills that are imperative to growing the local market. Private sector participation in infrastructure development will benefit from tax incentives.

An immediate training roll-out component is integral to transitioning to the EV market, as there are needs and demands that potential markets must be aware of and fully understand prior to commitment. Training programmes can cover subjects of EV operation and maintenance, data collection from vehicle charging stations, and opportunities for partnership with experienced entrepreneurs in the regional and international markets.

#### ***Create awareness of innovative renewable energy solutions for the maritime and aviation sectors.***

The Solomon Islands relies on maritime transport for both freight and passengers (domestic and international). Domestic shipping consists of freight and passengers, fishing, tourism and others.

International shipping consists of freight, cruise ships, fishing and leisure yachting. To keep abreast of market developments in maritime and aviation technologies, a national implementation and investment plan will chart the course for aligning national initiatives with regional programmes on innovative renewable energy solutions targeting clean fuel and energy efficiency. Ongoing support to international policy initiatives (through the International Maritime Organization, SPREP and SPC) must form a commitment to decarbonising the sector.

The domestic maritime market for inter-island travel, fishing and recreation is dominated by small boats with outboard motors. Renewable energy and energy efficiency pilot projects for outboard motors (two-stroke engines), such as replacing two-stroke with four-stroke engines or integrating solar panels or electric propulsion systems to assist the outboard motor during low-speed or idle conditions, will be crucial to determining cost savings, reduced emissions, efficient technology and acceptability. Testing innovative technology appropriateness and sustainability will build market confidence.

#### **4.5 CO-ORDINATE AN IMPLEMENTATION FRAMEWORK FOR THE RENEWABLE ENERGY NEXUS FOR PRIORITY SECTORS SUCH AS INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT), HEALTH, AGRICULTURE, FOOD, WATER, EDUCATION, TOURISM, FISHERIES, FORESTRY, ETC.**

***Apply best practices of the renewable energy nexus to improve lives and livelihoods and facilitate sustainable development.***

Through application of the nexus, renewable energy technologies have proven their impact in improving lives and livelihoods through increased access to resources. To enhance current efforts, it is recommended to document existing national experience with the renewable energy nexus and lessons learnt to identify social and economic benefits, directly contributing to the SINEP goals and the NDC climate targets, develop a national strategy that reflects existing nexus action priorities for each of the sub-sectors: water, education, health, agriculture, tourism, ICT, security, fisheries, forestry and climate change, conduct nexus assessment on the above priority sectors to identify opportunities to scale up the application and deployment of the nexus approach across the key sectors, increase community awareness of the social, economic and technical benefits of the nexus by widely disseminating lessons learnt, innovative technologies, training opportunities and potential project financing sources and build the capacity of relevant sectors to undertake energy audit and management.

#### **4.6 IDENTIFY OPPORTUNITIES TO MAXIMISE ENERGY EFFICIENCY SAVINGS.**

***Increase public awareness and stakeholder engagement programmes to raise understanding of energy efficiency in the economy.***

MMERE has implemented minimum energy performance standards (MEPS) and labelling programmes through regional partnerships with development partners (SPC, PRIF, etc.). Existing MEPS and labelling programmes may need reviewing to identify economic and technology opportunities to scale up efforts.

Appropriate legislation for energy efficiency will be imperative. The continuation of energy efficiency consumer awareness and training initiatives is recommended, including assessment of the impacts of economic and technical benefits, energy labelling, technology, and financing options for investment in energy efficiency projects for households, communities, businesses and public institutions. Conducting energy efficiency audits of government and large commercial buildings to determine savings and energy efficiency best practices should be pursued aggressively and it is also recommended to look into the energy efficiency gains in the transport sector, such as incentivising vehicle owners to invest in energy-efficient cars that meet emission targets. Importation of vehicle models older than ten years may be restricted and phased out completely, thus providing space for new and more efficient vehicles. Time-of-use tariffs including improvements to public transport networks may be adopted to complement existing initiatives.

### ***Improve supply-side management in the power sector.***

Solomon Power, as the electricity provider, has improved its energy efficiency performance in recent years through infrastructural maintenance and servicing. Ongoing operational and maintenance programmes will ensure efficient performance of the power infrastructure. Furthermore, there are opportunities to maximise the energy efficiency practices of Solomon Power's operations by addressing technical losses in the power systems. Planning studies are crucial to understand the constraints that integrating high shares of renewables can present.

## **4.7 LEVERAGE PARTNERSHIPS TO HARNESS INNOVATIVE RENEWABLE ENERGY SOLUTIONS.**

### ***Implement innovative solutions and sustainable energy applications and options.***

The future of the energy sector transformation in the Solomon Islands will be shaped by a range of innovative technologies and innovative solutions. These include geothermal exploration, green hydrogen applications for transport and electrification, innovative designs for ocean-based technologies, and new directions for wind and bioenergy exploitations. The following recommended actions will enhance current effort such as developing an R&D programme for innovative renewable energy solutions in co-ordination with relevant partners, Implementing pilot projects on innovative solutions and fostering collaboration with regional institutions and development partners on the development of innovative and sustainable energy solutions.

Since market innovation and technological change in the Solomon Islands is developing, strong partnerships between resource owners and communities, including the relevant government agencies, will be fundamental to the success of the renewable energy transition. Local training institutions such as Solomon Islands National University must have capacities to deliver on the R&D programme that are country applicable. New and sustainable renewable energy options mobilised in the Solomon Islands will demonstrate adoption and confidence in the renewable technology shift.

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# ANNEX 1.

## LIST OF STAKEHOLDERS CONSULTED DURING THE RRA PROCESS

	Name	Institution	Title / Position
1	Samuel Kwaoga	Solomon Islands National University	HOD Electrical
2	Solomon Pita	Solomon Islands National University	TVET Director
3	Kengo Hoshina	JICA Solomon Islands	Project Formulation Adviser
4	Elmar Ebling	Asian Development Bank	
5	Rebecca Lane	Australian Department of Foreign Affairs and Trade	Infrastructure Advisor
6	Walter Malau	Global Green Growth Institute	Climate Finance Manager
7	Joe McCarter	New Zealand High Commission	First Secretary
8	Nicola Noble	British High Commission	Acting High Commissioner
9	Emma Davis	British High Commission	Deputy High Commissioner
10	Joanne Aihunu	United Nations Development Programme	Team Leader, Resilient Sustainable Development Unit
11	Nafitalai Cakacaka	Development Bank of Solomon Islands	Chief Executive Officer
12	Vaela Ngai Devesi	Ministry of Women Youth Children & Family Affairs	Director
13	Elda L. Wate	Ministry of Agriculture and Livestock	Deputy Secretary of Administration and Strategic Planning
14	Thaddeus Siota	Ministry of Environment Climate Change, Disaster Management and Meteorology (MECDM)	Director
15	David Tufi	MECDM	Principal Mitigation Officer
16	Wycliff Tupiti	Office of Prime Ministry and Cabinet	National Coordinator
17	Nelmah Joseph	Ministry of Finance and Treasury	Chief Financial Officer
18	Christopher Vehe	Ministry of Mines, Energy and Rural Electrification (MMERE)	Permanent Secretary
19	John Korinhona	MMERE	Director of Energy
20	Gabriel Aimaea	MMERE	Deputy Director of Energy
21	Samuel Kekou	MMERE	Senior Energy Officer
22	David Jnr Ma'ai	MMERE - SPIRES	Project Manager
23	Lania Temahua	MMERE - SPIRES	
24	Andrew Daka	MMERE - SPIRES	Technical Advisor

25	Roy Atu	Ministry of Education and Human Resource Development	Project Officer
26	Sylvester Tiki	Ministry of Provincial Government and Institutional Strengthening	Chief Information Officer
27	Kitione Malugulevu	Private Financing Advisory Network (PFAN)	Consultant
28	Gabriel Kuruwai	YES Electrical	Director
29	Grace Kikiribatu	FESCS	Director
30	Eddie Musuota	SunPower Energy	Technician & Sales
31	Tapera Bird	Superfly Solar Company	Director
32	Martin Sam	Solomon Power	Chief Engineer
33	Jeremy Maneipuri	Solomon Power	Deputy Chief Engineer
34	Andrew Suka	Solomon Power	Manager Capital Works
35	Josiah Rade	Solomon Power	Manager Planning
36	Yonghoon Chang	Tina Hydropower Limited (THL)	Chief Executive Officer
37	Taehoon Pak	THL	Chief Technical Officer
38	Fred Conning Tavuata	THL	Deputy Project Manager
39	Thompson Araia	Ministry of Women, Youth, Children & Family Affairs (MWYCFA)	
40	Jennifer Wate	Development Services Exchange	General Secretary
41	Alice Hou	NGO	
42	Grayham Tahu	NGO	
43	Hamptan Pitu	New Zealand High Commission	Development Programme Coordinator
44	Renee Berthome	World Bank, Honiara Office	Energy Specialist
45	Esmey Lautagi	JICA, Solomon Islands Office	
46	Liam Sau	Prime Minister's Office	Policy Secretary, Social Sector
47	John Siau	Solomon Power	Manager Regulatory
48	Judith Jacinta Reynolds	SPIRES Project	Project Manager
49	Rex Tara	SPIRES Project	Community Liaison Officer
50	Daniel Rove	MMERE	Deputy Secretary
51	Toswell Kaua Jr	MMERE	Energy Project Officer
52	Richard Bapo	MMERE	Principal Energy Officer
53	Mariana Nonga	MMERE	Senior Energy Officer
54	Mary Falea	MMERE	Energy Officer
55	Phil Kenioma	MMERE	Trainee
56	Maxwell Suta	MMERE	Energy Technician
57	Lindsay Teobasi	Private sector	Managing Director

# ANNEX 2.

## REGISTERED VEHICLES, PROJECTED VEHICLES, VEHICLE PRIORITISATION AND RANKING

**Table 20** Registered vehicles and projected vehicles

Total Registered Vehicles	2021	Projection 2030	Projection 2050 (from CAGR)
Buses	2	2	3
Light buses (up to 26 seats)	922	1 054	1 420
Motor car (up to 2 000 cc)	12 243	13 999	18 854
Moto car (above 2 000 cc)	8 055	9 210	12 405
Taxis	855	9 210	12 405
Goods vehicle (up to 3.5 tonnes)	8 747	10 001	13 470
Goods vehicle (3.5 – 7.5 tonnes)	428	489	659
Goods vehicle (more than 7.5 tonnes)	1 141	1 305	1 757
Motorcycle	402	460	619
Other	131	150	202
<b>Total</b>	<b>40 126</b>	<b>45 880</b>	<b>61 793</b>

Source: Mahadevia *et al.*, 2022.

**Table 21** Vehicle ranking

Vehicle category	Rank	Comment
Buses (standard)	1	Owned by and operated by companies, government ministries and state-owned enterprises for transport of employees, pick-ups, and drop-offs, of children from schools (as part of the employment benefits of certain companies in the country). According to the participants at the prioritisation workshop, these companies, state-owned enterprises and government ministries have the capacity and resources to invest in this expensive and low-emission technology.
Minibuses	2	A sizeable number of individuals or transport operators used minibus technology as a means of providing public transport. All short routes from the feeder roads into suburbs and other destinations from the central bus stations used minibuses as a mode of transport. Investing in minibuses will help strengthen the public transport system and contribute to improved accessibility for socially disadvantaged groups such as women, children, older people and those with physical disabilities.
Cars (taxi)	3	Used as public transport. There is a potential that taxi operators could use the technology for their business operations. In the Solomon Islands, taxi operators are usually individuals who operate in this business. Some are also operated by companies, but this is very minimal. There is potential that some taxi operators could invest in this technology.
Three-wheelers	4	Three-wheelers are not a popular transport option in the country. Some individuals own this technology, but it is not seen every day in Honiara.
Two-wheelers	5	Motor bikes, as two-wheelers are commonly known in the country and by workshop participants, are the least common category of all the technologies. As with three-wheelers, not many people own a motor bike in the country, besides the few operated by the Royal Solomon Islands Police Force. They are not seen on the road on a daily basis, but only at some special occasions. Although it is the cheapest category by total cost of ownership, it is not a popular mode that could attract many users' ownership and investment.
Cars (personal)	6	Used by individuals for private purposes. Certain individuals and companies could also invest in this technology besides public-purpose ownerships. Many state-owned enterprises, government ministries and corporate businesses also invest in and operate four-wheelers for private uses. Workshop participants perceived that vehicles with EV systems should be introduced.
Truck (medium- and heavy-duty vehicles)	1	Operated by businesses such as Tongs Corporation Limited, Red Devils and others in the market. According to workshop participants, this group has the money to implement EV systems, but for now they will continue to use diesel and internal combustion engines. Very few operators exist in the country.
Truck (light-duty vehicles)	2	Used for loading of goods, market produce and other commodities. According to workshop participants, this is prioritised first for freight. The majority of light truck operators are in Malaita Province, the most populated province in the country.

Source : Mahadevia et al., 2022.

# ANNEX 3.

## SOLOMON POWER OPERATION SITES



Source: Solomon Power.

Disclaimer: This map is provided for illustration purposes only. Boundaries and names shown on this map do not imply the expression of any opinion on the part of IRENA concerning the status of any region, country, territory, city or area or of its authorities, or concerning the delimitation of frontiers or boundaries.

# ANNEX 4.

## STRATEGIC ACTIONS, ACTIVITIES, AND BUDGET MATRIX

STRATEGIC ACTIONS AND ACTIVITIES	PERIOD	BUDGET (USD million)
<b>1. Promote institutional restructuring and foster market competition in the Solomon Islands electricity grid.</b>		
<b>ACTIVITY 1.1:</b> Implement the amended provisions of the Electricity Act, including new regulations to provide concessional initiatives for private sector engagement and consumer participation.	To be completed by June 2030	9.5
<b>SUB-ACTIVITIES 1.1</b>		
1.1.1 Implement regulatory reform ( <i>i.e.</i> institutional restructuring) (includes TAs and drafting of legislation)		5.0
1.1.2 Develop appropriate regulations, amend existing policies to ensure private sector concessional initiatives are available and accessible to renewable energy local businesses and foreign investors.		2.0
1.1.3 Incorporate topic of legislation and regulations, existing tools for monitoring and evaluation, and compliance requirements in the curriculum of local technical institutions ( <i>e.g.</i> SINU). USD 0.5 million (taking into consideration social inclusion for selected participants).		2.0
<b>STAKEHOLDERS</b>		
<ul style="list-style-type: none"> <li>• Ministry of Mines, Energy and Rural Electrification (MMERE)</li> <li>• Ministry of Finance and Treasury (MOFT)</li> <li>• Ministry of Justice and Legal Affairs (MJLA)</li> <li>• Solomon Power</li> <li>• Solomon Islands National University (SINU)</li> <li>• Development Bank of Solomon Islands (DBSI)</li> <li>• Solomon Islands Chamber of Commerce and Industry (SICCI)</li> <li>• Communities and resource owners</li> </ul>		
<b>ACTIVITY 1.2:</b> Strengthen research and development programmes related to electricity market reform and improve public and community awareness of reform benefits through a bottom-top approach.		3.5
<b>SUB-ACTIVITIES 1.2</b>		
1.2.1 Capture, share and adopt lessons learnt and best practices (private sector concession initiatives, flexible financing modalities, tariff restructuring, technology options, resource assessment data system, and others considered impactful) from similar island economies.	Sub-Activity 1.2.1 to be completed by June 2025.	0.1
1.2.2 Roll out and continue ongoing whole-community awareness and demonstration programmes through a bottom-up approach (simple messaging can translate commitment and partnership to expected outcomes and achievement for the country's renewable energy transition).	Sub-Activity 1.2.2 is ongoing.	3.0

1.2.3 Review regularly (as/when appropriate) the progress and impacts of the community awareness programmes.

0.4

**STAKEHOLDERS**

- Ministry of Mines, Energy and Rural Electrification (MMERE)
- Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)
- Ministry of National Planning and Development Coordination (MNPDC)
- Ministry of Communication and Aviation
- Solomon Power
- Solomon Islands National University (SINU)
- Provincial governments / Ward Development Committee
- Media outlets
- Communities and resource owners
- Non-governmental organisations, civil society organisations (CSOs), church/faith-based organisations
- Development partners

**KEY FOR SUCCESS**

1. Stakeholders and the local community need to be aware of legislation, regulations, policies and national strategies and plans related to the energy sector. *(Note: tailor-made to the audience, e.g. community vs. policy makers)*
2. Active participation of development partners, CSOs and private sector engagement.
3. Training and development guided by MMERE, Solomon Power, SINU, University of the South Pacific and industry players.
4. Structured approach to implementation (reporting, informing SIG and stakeholders).
5. Application of best practices in electricity market reforms.
6. Stakeholders equipped with knowledge and understanding to make informed decisions to achieve a just, equitable and inclusive energy transition in the Solomon Islands.

**2. Establish and enforce technical standards for off-grid renewable energy systems and pursue enhanced energy data management to ensure climate resilience.**

**ACTIVITY 2.1:**

**Strengthen energy data collection, storage and analysis on off-grid renewable energy applications to form the basis of developing appropriate standards for design, installation, operation and maintenance.**

2024-2027

2.7

**SUB-ACTIVITIES 2.1**

2.1.1 Establish a national, just, equitable and inclusive energy transition database. (USD 2 million)

2.0

2.1.2 Support and strengthen existing institutional capacities that are currently hosting an energy database. (USD 0.5 million)

0.5

2.1.3 Adopt SEIAPI/regional renewable energy standards as an interim measure while developing national renewable energy standards. (USD 0.2 million)

0.2

**STAKEHOLDERS**

- Ministry of Mines, Energy and Rural Electrification (MMERE)
- Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)
- Ministry of Agriculture and Livestock (MAL)
- Ministry of Foreign Affairs, Economy and Trade (MFAET)
- Ministry of Finance and Treasury (MOFT)
- Ministry of Commerce, Industry, Labour and Immigration (MCILI)
- Ministry of Home Affairs (MHA)
- Solomon Power
- Solomon Island National University (SINU)
- Solomon Island Chamber of Commerce and Industry (SICCI)

**KEY FOR SUCCESS**

1. Participation of renewable energy suppliers, government agencies, and academic institutions and all relevant stakeholders in developing and operationalisation of a national just, equitable and inclusive energy transition database.
2. A roll-out plan provides guidance to the implementation, and standards are to be incorporated in existing laws. Standards must be consistent and enacted by law.

### 3. Enhance innovative funding mechanisms aimed at facilitating the deployment of renewable energy for sustainable development.

**ACTIVITY 3.1:**

**Strengthen project bankability and increase renewable energy investment through partnership.** 2024-2025 105.3

**SUB-ACTIVITIES 3.1**

3.1.1	Develop a sustainable investment plan for renewable energy and energy efficiency.	1.0
3.1.2	Develop a risk financing facility for renewable energy and energy efficiency.	100.0
3.1.3	Conduct resource assessments and feasibility studies on potential renewable energy resources.	2.0
3.1.4	Explore opportunities that will attract donors and potential partners regarding renewable energy development.	0.2
3.1.5	Adopt a community benefit-sharing model.	0.1
3.1.6	Develop a strong financial mechanism baseline that will allow future operations.	2.0

**STAKEHOLDERS**

- Funding agencies (financial institutions and donors)
- Rural communities
- Government ministries
- Solomon Power
- Resource owners
- Non-governmental organisations
- Provincial governments
- Development Bank of Solomon Islands (DBSI)
- Accredited renewable energy and energy efficiency suppliers and distributors

**KEY FOR SUCCESS**

1. Development of bankable project proposals and securing investment for implementation.
2. Awareness to potential owners/communities/areas.
3. Reliable and cost-effective tariff structure (inclusive of in-kind contribution).
4. Improved living standards through socio-economic activities.

<b>4. Increase market confidence in electric mobility and similar innovative solutions for the maritime and aviation sectors.</b>		
<b>ACTIVITY 4.1:</b> Increase e-mobility market penetration by building appropriate infrastructure.	2023-2025	15.0
<b>SUB-ACTIVITIES 4.1</b>		
4.1.1 Develop an e-mobility pilot project for research and development. (USD 5 million)		5.0
4.1.2 Support private sector participation in infrastructure development. (USD 5 million)		0.5
4.1.3 Develop technical training programmes for e-mobility in SINU. (USD 5 million)		0.2
<b>ACTIVITY 4.2:</b> Create awareness of innovative renewable energy solutions for the maritime and aviation sectors.		7.0
<b>SUB-ACTIVITIES 4.2</b>		
4.2.1 Develop an implementation and investment plan for innovative renewable energy solutions for the maritime and aviation sectors that is aligned to the regional programmes. (USD 2 million)		2.0
4.2.2 Develop a pilot project for outboard motors (2-4 stroke). (USD 5 million)		5.0
<b>STAKEHOLDERS</b>		
<ul style="list-style-type: none"> <li>• Ministry of Mines, Energy and Rural Electrification (MMERE)</li> <li>• Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)</li> <li>• Ministry of Finance and Treasury (MOFT)</li> <li>• Ministry of Infrastructure (Land Transport Management Division)</li> <li>• Ministry of Aviation and Communication</li> <li>• Solomon Power</li> <li>• Solomon Islands National University (SINU)</li> <li>• Solomon Island Maritime Authority</li> <li>• Private sector</li> </ul>		
<b>KEY FOR SUCCESS</b>		
<ol style="list-style-type: none"> <li>1. Adoption of e-mobility and innovative solutions for the maritime and aviation sectors.</li> <li>2. Increased knowledge and confidence in e-mobility.</li> </ol>		

**5. Co-ordinate an implementation framework for the renewable energy nexus for priority sectors such as information and communications technology (ICT), health, agriculture, food, water, education, tourism, fisheries, forestry, etc.**

**ACTIVITY 5.1:**

**Apply best practices of the renewable energy nexus to improve lives and livelihoods and facilitate sustainable development.** 2024-2030 9.5

**SUB-ACTIVITIES 5.1**

5.1.1 Document the existing national experience with the renewable energy nexus and lessons learnt to identify social and economic benefits that directly contribute to the SINEP goals and the NDC climate targets and subsequently raise community awareness. 0.5

5.1.2 Develop a national strategy that reflects existing nexus action priorities and addresses gender needs for each of the sub-sectors: water, education, health, agriculture, tourism, ICT, security, fisheries, forestry and climate change. 3.0

5.1.3 Conduct nexus assessment on priority sectors (listed in 2 above) to identify opportunities to scale up the application and deployment of the nexus across the key sectors. 5.0

5.1.4 Develop at least four bankable project proposals and secure investment for the renewable energy nexus with related priority sectors. 1.0

**STAKEHOLDERS**

- Ministry of Mines, Energy and Rural Electrification (MMERE)
- Ministry of Finance and Treasury (MOFT)
- All relevant ministries (nexus-related).
- Solomon Power
- Development partners (IRENA, World Bank, ADB, AUSAID, MFAT, JICA, etc.)
- Financial institutions
- Resource owner.
- Solomon Islands National University (SINU)

**KEY FOR SUCCESS**

1. Active participation of relevant stakeholders in the deployment of renewable technology solutions in the priority sectors.
2. Funding secured and implementation of renewable energy nexus projects.

6. Identify opportunities to maximise energy efficiency savings.		
<b>ACTIVITY 6.1:</b> Increase public awareness and stakeholder engagement programmes to raise understanding of energy efficiency in the economy.		11.0
<b>SUB-ACTIVITIES 6.1</b>		
6.1.1 Review existing MEPS and labelling programmes to identify economic and technology opportunities to scale up efforts. Develop and endorse appropriate legislation for energy efficiency.	<b>2024-2027 (MEPS labelling)</b>	2.0
6.1.2 Continue energy efficiency consumer awareness and training initiatives, including assessment of impacts of economic and technical benefits, energy labelling, technology, and financing options for investment in energy efficiency projects for households, community, businesses and public institutions.	Ongoing (awareness initiatives) to regularly update consumers on market dynamics, particularly technology changes and financing modalities.	2.0
6.1.3 Conduct energy efficiency audits on government and large commercial buildings to determine savings and energy efficiency best practices.		3.0
6.1.4 Include energy efficiency concepts in schools or education curricula at all levels.		4.0
<b>SUB-ACTIVITIES 6.2</b>		<b>20.0</b>
6.2.1 Continue ongoing operational and maintenance programme to ensure efficient performance of power infrastructure.		
<b>STAKEHOLDERS</b>		
<ul style="list-style-type: none"> <li>• Ministry of Mines, Energy and Rural Electrification (MMERE)</li> <li>• Ministry of Finance and Treasury (MOFT)</li> <li>• Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)</li> <li>• Ministry of Education</li> <li>• Solomon Power</li> <li>• Solomon Islands National University (SINU)</li> <li>• Media outlets</li> <li>• Development partners</li> <li>• Consumers and relevant stakeholders</li> </ul>		
<b>KEY FOR SUCCESS</b>		
<ol style="list-style-type: none"> <li>1. Availability of market information and active participation of energy efficiency products, local importers and distributors.</li> <li>2. Improved and efficient power infrastructure and services.</li> </ol>		

## 7. Leverage partnerships to harness innovative renewable energy solutions.

ACTIVITY 7.1: Implement innovative solutions and sustainable energy applications and options.	2024-2030	15.0
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### SUB-ACTIVITIES 7.1

7.1.2 Develop an R&D programme for innovative renewable energy solutions in co-ordination with relevant partners.		4.0
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7.1.2 Implement pilot projects on innovative solutions.		7.0
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7.1.3 Foster collaboration with regional institutions and development partners on the development of innovative and sustainable energy solutions.		4.0
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### STAKEHOLDERS

- Ministry of Mines, Energy and Rural Electrification (MMERE)
- Solomon Islands National University (SINU)
- Ministry of National Planning and Development Coordination (MNPDC)
- Ministry of Finance and Treasury (MOFT)
- Ministry of Education
- Solomon Power
- Resource owners/communities
- Regional institutions / development partners
- Private sector
- Commercial financing institutions
- Research institutions

### KEY FOR SUCCESS

1. Agreement / engagement of resource owners and communities.
2. R&D financing and partnership is secured.
3. SINU has capacity to deliver R&D programme for innovative solutions that are applicable to the local context.
4. New sustainable and renewable energy options mobilised in the Solomon Islands.

