

Solomon Islands Knowledge-Action-Sustainability for Resilient Villages (SOLKAS) Project

Annex 2: Project Feasibility Study

Accredited Entity: Save the Children Australia

Version: B.36

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LIST OF ACRONYMS

AE	Accredited Entity	MECDM	Ministry of Environment, Climate Change, and Disaster Management
AR	Assessment Report (of the IPCC)	MEHRD	Ministry of Education and Human Resources Development
CBA	Community-Based Adaptation	MFMR	Ministry of Fisheries and Marine Resources
CCA	Climate Change Adaptation	MPGIS	Ministry of Provincial Government and Institutional Strengthening
CIS	Climate Information Services	MRD	Ministry of Rural Development
CLTS	Community-Led Total Sanitation	MSME	Micro, Small, and Medium-sized Enterprises
CMIP	Coupled Model Intercomparison Project	MWYCFA	Ministry of Women, Youth, Children, and Family Affairs
CITES	Convention on International Trade in Endangered Species	NAPA	National Adaptation Programme of Action
CSIRO	Commonwealth Scientific and Industrial Research Organization	NCCP	National Climate Change Policy 2012-2017
CSO	Civil Society Organization	NDA	National Designated Authority
DCC	Department of Climate Change	NDC	Nationally Determined Contribution
DFAT	Department of Foreign Affairs and Trade (Australia)	NDMO	National Disaster Management Organization
DRC	Disaster Risk Committee	NDMP	National Disaster Management Plan
DRR	Disaster Risk Reduction	NDS	National Development Strategy 2016-2035
EbA	Ecosystem-based Adaptation	NGO	Non-Government Organization
ECE	Early Childhood Education	NVA	National Vulnerability Assessment
ENSO	El Nino Southern Oscillation	O&M	Operation and Maintenance
ESS	Environmental and Social Safeguards	PMU	Project Management Unit
FAA	Funded Activity Agreement	RAMSI	Regional Assistance Mission to the Solomon Islands
FAO	UN Food and Agriculture Organization	RCP	Representative Concentration Pathway
FGD	Focus Group Discussion	RRMP	Residual Risk Management Plan
FNS	Food and Nutritional Security	SCA	Save the Children Australia
FRDP	Framework for Resilient Development in the Pacific	SCSI	Save the Children Solomon Islands
GCF	Green Climate Fund	SDGs	Sustainable Development Goals
GDP	Gross Domestic Product	SIDS	Small Island Developing State
GEDSI	Gender Equity, Disability, and Social Inclusion	SIG	Solomon Islands Government
GRM	Grievance Redress Mechanism	SIMS	Solomon Islands Meteorological Service
IPCC	Intergovernmental Panel on Climate Change	SNC	Second National Communication
IMF	International Monetary Fund	SOLKAS	Solomon Islands Knowledge-Action-Sustainability for Resilient Villages project
ITCZ	Inter Tropical Convergence Zone	SOP	Standard Operating Procedure
IUCN	International Union for the Conservation of Nature		
LDC	Least Developed Country		
MAL	Ministry of Agriculture and Livestock		

SPC	Secretariat of the Pacific Community
SPCZ	South Pacific Convergence Zone
SPREP	Secretariat of the Pacific Regional Environment Programme
SSP	Shared Socioeconomic Pathway
SST	Sea Surface Temperature
TVET	Technical Vocational Education Training
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WASH	Water, Sanitation, and Hygiene
WCPO	Western and Central Pacific Ocean
WHO	World Health Organization
YECSI	Young Entrepreneurs Council of the Solomon Islands

1. Introduction

1.1. Purpose

This feasibility study provides background information to the Green Climate Fund (GCF) funding proposal for the Solomon Islands Knowledge-Action-Sustainability for Resilient Villages (SOLKAS) project, prepared by Save the Children Australia (SCA) as Accredited Entity (AE) in partnership with the Solomon Islands Government (SIG).

The purpose of this report is to provide the justification and further detail of the project design process and supporting information used to prepare the funding proposal. It also includes an assessment of the project design.

1.2. Problem statement

The Solomon Islands, an aid-dependent least developed country (LDC) small island developing state (SIDS) with an overwhelming poor and rural population that is widely dispersed across an archipelago comprising approximately 1,000 islands, is highly vulnerable to climate change due to geographic and socioeconomic factors, as well as a high level of dependency on natural resources for livelihoods – particularly in rural and remote communities. Analyses have demonstrated that increasing temperatures, changing rainfall patterns, and increasing frequency/intensity of extreme events are key climate drivers of environmental change that have already started to affect communities directly and indirectly, leading to reduced food security, increased exposure to hazards, and reduced livelihood security and reduced access to education. These impacts lead to the core problem the project will seek to address: **children, youth, and rural communities do not have the information, skills, or resource to reduce exposure to climate hazards and build sustainable and resilient communities and livelihoods.**

At the same time, few donors have made significant funding available for the delivery of community-based/locally-led adaptation projects and the majority of highly vulnerable countries struggle to meet existing development needs at the community level, let alone provide substantial resources to address future challenges. This is especially true for the Solomon Islands. Due to its economic circumstances, SIG is not able to meet all the urgent adaptation needs of its widely dispersed population. These needs have been made more acute by climate change, to which Solomon Islanders have made almost no contribution historically. If SIG were to divert existing budgetary resources to community-based adaptation (CBA), it would necessarily compromise the government's ability to provide other essential public goods and services. In addition, most needed investments in institutional strengthening and for increasing adaptive capacity at the community level are essentially public goods with negligible potential to provide a financial return on investment. Despite this, SIG has prioritised CBA in its response to climate change. However, action to date has been curtailed by lack of funding options and implementation capacity.

1.3. The proposed project

The SOLKAS project will address the most prominent risks arising from climate change in rural communities across the Solomon Islands, helping to reduce and avoid significant impacts on assets, people, ecosystems, and culture. The project will implement an integrated set of activities aimed at increasing the adaptive capacity of children and youth through mainstreaming of climate change into educational curricula and youth training activities, as well as investments in increasing the physical resilience of school buildings and infrastructure. The project will also work with communities to adopt and apply improved data and information management technologies which will be designed to be appropriate to the local context to improve climate and disaster resilience planning and investments at the local level. The project is fully aligned with SIG's climate change adaptation policy framework, its National

Disaster Management Plan (NDMP), which also provides the institutional framework for adaptation and resilience building), and its sectoral development plans, strategies, and priorities. The project will be implemented through three mutually supportive outcomes:

- Outcome 1: Communities and schools have localised adaptation plans anchored in increased climate change-relevant knowledge and skills and access to up-to-date climate information
- Outcome 2: Communities and schools have access to locally-led climate-resilient livelihoods, food security, nutrition, and infrastructure
- Outcome 3: Strengthened institutions enable adaptive governance that is inclusive, responsive to community needs, and facilitates access to resources for sustainable adaptation and innovation.

The project will work to: a) build knowledge and capacity in communities – starting in schools and branching out to whole communities; b) establish effective institutions to organize and catalyse a sustained process of locally-led adaptation investments; c) strengthen the administrative and governance arrangements that SIG has designed to support villages; and d) help communities transition to more resilient livelihood strategies – including supporting business innovation. This will contribute to an overall paradigm shift away from piecemeal approaches to a comprehensive system of building national adaptive capacity that is coordinated at the national and provincial level and is driven by communities that are empowered to identify and address their own climate vulnerabilities and risks; ultimately setting the country on a path towards sustainable climate resilience. The approach will transform the way community-based, locally-led adaptation is supported in the Solomon Islands; and, as it is anchored in government systems and processes, it can be further scaled up over time to reach every community in the country. The project is innovative, while at the same time drawing on lessons learned and best practices from similar contexts in the Pacific, and leverages SCA's unique strengths and experience in strong alignment with GCF's investment criteria. The project is also highly complementary to other GCF-funded projects currently under development by International Union for the Conservation of Nature, Secretariat of the Pacific Regional Environment Programme (IUCN/SPREP) and the Secretariat of the Pacific Community (SPC), as well as to a range of other projects under implementation.

1.4. Design approach

The approach to the design of the SOLKAS project is the culmination of a process that has spanned more than four years. The final project has gone through multiple design iterations, and is result of extensive research, stakeholder consultations and validation, and engagement with government executing partners, as well as extensive discussions with GCF. The design process had been guided by, and has embedded in the project, several important principles that are at the centre of Save the Children's commitment to improving community resilience and adaptive capacity:

- Ensuring inclusive and meaningful stakeholder engagement at every step of design and implementation to ensure community ownership and that the design and activities precisely address community vulnerabilities and priorities;
- Ensuring that the design is grounded in a rigorous analysis of climate change physical processes, hazards, and impacts that have been observed and/or which are expected to manifest in the coming years;
- Ensuring that the project prioritizes inclusion and participation of the most vulnerable people across the Solomon Islands, and that the benefits from the project are equitably distributed across communities, and proactively address social and gender-based inequities;

- Ensuring alignment with SIG's overall development trajectory and climate change adaptation and disaster risk reduction priorities to ensure maximum buy-in and alignment with existing processes of governance, including budgetary processes, to ensure uptake and sustainability beyond the life of the project;
- Ensuring that the project's interventions create sustainable and scalable models that can be replicated across the archipelago, and which link to projects and programs currently being implemented by other development partners, as well as those that are in the pipeline; and
- Implementing proven community-based actions at scale, while supporting innovations to drive transformation and maximise paradigm shifting opportunities.

In this report, the first sections are dedicated to setting the context (**Section 2**) and presenting an overview of the current climate and its recent trends in the Solomon Islands followed by projections of climate change downscaled to the country (**Sections 3 and 4**). This comes together to inform a national vulnerability assessment (**Sections 4 and 5**) which ranks the wards in the Solomon Islands according to their exposure to climate risk. This vulnerability assessment is a key output in that it:

- prioritises the beneficiaries most in need (**Section 6.4**); and
- identifies the key climate drivers of vulnerabilities in communities so that these gaps can be targeted when developing the activities under this project (**Section 4.3**).

The report also presents the results of a field study that was undertaken specifically to support the design process. The field study is based on visits to 63 villages across 5 provinces. The field study comprised surveys with hundreds of respondents, 157 focus groups, and 646 key informant interviews with a representative group of stakeholders in each location, including women, youth and children. The field study is the basis for additional in-depth analyses on food security and livelihoods, resilience needs in the education sector, and rural market development, all of which inform this report.

This project proposal is built on many years of stakeholder engagement with key partners, government and communities. The earliest consultation undertaken with government stakeholders to develop the project concept commenced in 2017, with several concept development workshops held over 2017-2019, including with key government staff. The project has been developed in close coordination with SIG agencies, and will be executed through the Ministry of Environment, Climate Change, and Disaster Management (MECDM) and Save the Children Solomon Islands (SCSI), and hence has a very high level of country ownership.

2. Solomon Islands context

This section provides an overview of the current socio-political and legal environment in Solomon Islands to provide an understanding of the context in which the project will operate.

2.1. Brief country overview

2.1.1. Geography

The Solomon Islands (9.6457° S, 160.1562° E) covers an area of 461,000 km², with islands encompassing 28,000 km² of land spread across nearly 1,000 islands (see Figure 1, below) stretching for nearly 1,500km from one end to the other. The country consists of two parallel chains of volcanic islands and comprises a mixture of high islands and smaller coral atolls. The archipelago covers an area of 461,000 square kilometre (249,000 square nautical miles). The vastness of the ocean and its resources contribute immensely to the socio-economic livelihood of the peoples in the country. It is located in the South Western part of the Pacific Islands (8.7832° S, 124.5085° W) Region.

The volcanic islands of the country are mostly mountainous and covered with tropical rain forests. Beneath the forest canopies are anthropogenic grasslands and green vegetation. The atolls are fragile ecosystems with sandy beaches and reefs, they are threatened by coastal erosion, water quality, water availability, sanitation and destruction of natural habitats.

Despite the rich biological diversity of the country, there are several resource and environmental issues that affects sustainable development of the diverse island nation. These include an array of challenges from climate change variability and sea level rise, environmental degradation and pollution to resource management.

The climate of Solomon Islands is tropical oceanic – hot and humid but relived by cool winds and abundant, year round rainfall. The normal temperatures in the islands stabilizes around 30/31 °C (86/88 °F) from November to April, when the warmer and wetter winds from the north-west predominate, while they drop slightly from May to October, when the south-east trade winds, relatively cooler, prevail.

Rainfall generally averages between 3,000 – 3,500 mm (118 to 138 inches) in a year, but varies significantly across the country.

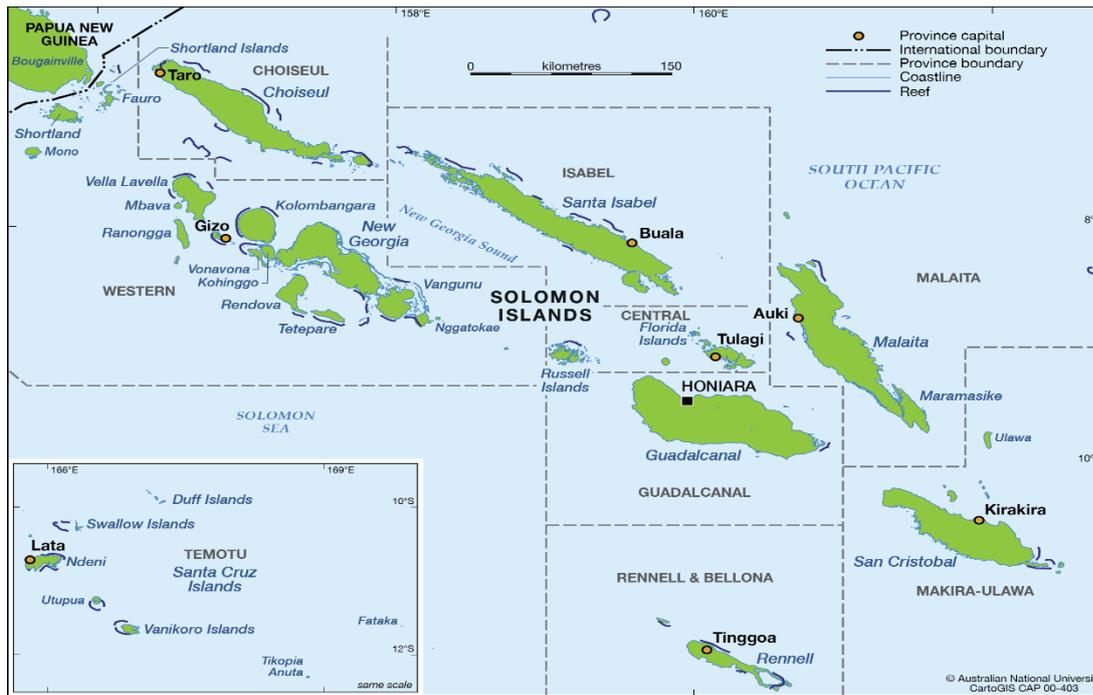


Figure 1: Map of the Solomon Islands

2.1.2. Demography

The demography of Solomon Islands comprises of diverse cultures, languages and customs – most Solomon Islanders live in small, widely dispersed settlements along the coasts of the tropical mountainous islands and sandy atoll islands. The country's population is currently around 721,000, and it has a high population growth rate of 2.3% with a large youth population. The population is expected to double by 2052 to nearly 1.5 million people, which will exacerbate existing challenges related to climate vulnerability, food security, and livelihoods if not addressed. The vast majority of people (80%) live rurally, in small, widely dispersed settlements along the coasts of the high islands and atolls. This rural orientation creates challenges for the government with respect to providing health services, education, and job creation.

Though the population is largely rural, a variety of factors (including, but not limited to, climate change) are driving high rates of migration to Honiara and provincial towns in search of jobs and opportunities. Provincial capitals play an important role as market centres.

2.1.3. Economic overview

The Solomon Islands is classified as a least developed country (LDC) despite its rich endowment of natural resources. The country faces a unique set of socio-economic development challenges. Though the country has made significant strides in recent years, the centralization of economic activities in the capital of Honiara and the geographical dispersion of the islands renders service provision expensive and limits the country's economic growth potential.

The country's economic structure is principally based on agriculture which constitutes 20% of the Gross Domestic Product (GDP) while government activity accounts for 15%. Other major sectors such as wholesale retail, forestry, fisheries, manufacturing, transport and real estate make up 44% of GDP while the remaining sectors such as communication, mining, construction, utilities, tourism and other services account for the remaining 21%. The main

drivers of economic growth over the decades have been the primary sector, particularly agriculture, forestry, and fisheries.

The internal conflict which lasted from 1999 to 2002 disrupted economic activities, resulting in balance of payment issues, deterioration in government finances, accumulation of government debt and debt repayment problem. Economic activities resumed in 2003, following the arrival of the Regional Assistance Mission to the Solomon Islands (RAMSI) which helped restore law and order and instil business confidence. In the early years since RAMSI's arrival, the economy held up well, posting a record 9.7% growth in 2010 following the reopening of Gold Ridge Mining. This is despite a sharp contraction to 2.9% in 2009 following the global financial recession in late 2008, and a slower growth of 1.0% in 2014, induced by the 2014 April flash floods.

In 2016, economic growth recovered to 5.9% driven by favourable gains in agriculture and forestry, and in industry and the services sector. However, growth has since been trending downwards, with an estimated 1.2% growth recorded in 2019 and -4.3% in 2020. The latter stemmed from the adverse impacts of COVID-19 on the domestic economy. Apart from the challenges relating to COVID-19, the country also faces several structural challenges including growing population, widening infrastructure gap, slowdown in economic growth, rapid increase in government debt and vulnerability to climate change. Climate change and its associated impacts pose significant risks to the country's economy and people's livelihood.

While the Solomon Islands has made significant economic gains since the RAMSI commenced in 2003, it remains one of the poorest countries in the Pacific. Economic growth remains barely above population growth and financial prospects for the country are bearish given the anticipated slow-down of logging activity due to unsustainable logging practices. The UN's Human Development Index has remained virtually stagnant over time. Although the Solomon Islands is trending favourably in the World Bank's Doing Business Index, businesses, especially micro, small and medium-sized enterprises (MSMEs) are still facing big hurdles on both the supply and demand side. The country is largely a price taker on commodity exports in markets that have wildly fluctuating prices. This, coupled with high operating costs, high transportation costs, low export volumes as compared to the region/world, land rights issues, small population representing a small domestic market opportunity, and low human resource capacity, hampers the Solomon Islands' prospects to promote domestic and international investment. This modest growth outlook has not provided adequate opportunities for women, who have a much lower rate of participation in the formal labour force than men and face multiple barriers to employment and business enterprise beyond informal trading. It also has done little to relieve the social pressure from widespread youth unemployment. The COVID-19 epidemic has exacerbated these challenges with rising transportation costs and delays and restrictions at the border, effectively shutting down the already struggling tourism sector for example.

The economy of Solomon Islands contracted by -4.5% in 2020, reversing the 1.9% growth in 2019. Due to quarantine restrictions, the economically important fish catch declined by 40%. Log output declined by 12%. The economy recovered somewhat in 2021, contracting by -0.2%. It is forecast to grow by 4.5% in 2022 as fishing and construction rebound. However, this may be optimistic given the economy was forecast to grow by 1% in 2021 and instead contracted.

Currently, hunger and poverty are widespread in the Solomon Islands. About 1 in every 10 people are undernourished, 12.7% of people live below the national poverty line and one person out of four lives on less than USD\$1.9 per day (FAO & SPC, 2012). In reference to the Solomon Islands National Development Strategy 2016–2035 (NDS), the government has already implemented plans for achieving the Sustainable Development Goals (SDGs) and improving the social and economic livelihoods of Solomon Islanders. In response to aligning food policy, the Ministry of Agriculture and Livestock (MAL) has begun boosting food and nutritional security (FNS) and sustainable agriculture in the Solomon Islands through its food

and security strategy as a priority action of the Solomon Islands Government (Solomon Islands Government, 2016 and FAO, 2012). Emerging development trends also contribute to the status of food security in Solomon Islands. These include:

- I. inadequate economic performance at the national level which has been aggravated by political instability and ethnic tension;
- II. slower growth in agricultural production than in population, urbanization, and rural-to-urban migration; and
- III. increasing threats of climate change and adverse effects on key production sectors. While reducing seasonal food shortages, the increasing dependence on imported food, especially rice and wheat flour, has introduced a new kind of food insecurity and exposed Solomon Islands to the uncertainties of global food production, supply, and cost.

The archipelago has very limited infrastructure, with approximately 1,694km of roads, only 126km of which are paved (7.5%), with 920km being private plantation roads. It is estimated that only 20% of the population have access to roads, most of which are along the coast (World Bank, 2018). Most of the movement of people and freight of goods is done via inter-islands ships or motor-powered fibreglass canoes. The Solomon Islands does not produce oil and imports diesel to cover 92%¹ of its electricity and the large majority of its transportation needs. As a result, Solomon Islanders pay among the highest prices in the world for electricity².

2.1.4. Key economic sectors

Agriculture

As the country's largest rural employer and source of income and responsible for a large portion of exports, the agriculture sector is a key contributor to the economy, livelihoods, food, and nutrition security (FAO, 2020). In 2020, the share of the labour force in the agricultural sector was 75%, while the agriculture sector contributes approximately 34% of GDP. Agriculture (including crops, livestock, fishing, and forestry) is the foundation of livelihoods in the country. With much of the agriculture and fisheries sectors linked to smallholder production, the food production systems are significant to both livelihoods and the economy of Solomon Islands (FAO FIRST, 2016 and SIG, 2019). These production systems and other livelihood cultivation systems are influenced by several factors including technology, infrastructure, government policies, economic governance, and government services (Bammann, 2007 and Kama, 2021). Agriculture represents over a third (16%) of GDP, but only receives a small proportion (approximately 1.5 per cent) of the total national Government budget – the lowest level of agriculture funding in the region (MAL, 2011 and FAO, 2020). Subsistence agriculture production in the Solomon Islands is dominated by traditional food adapted to local environments and tend to be nutrient rich (FAO, 2020 and FAO, 2019). Part of the FAO stocktake of agriculture sector activities addressing National Development Strategy (NDS) priorities is to align policy and resources to enhance farm production through improved farming systems to increase economic growth through enhancing sustainable subsistence-based farming system, including organic farming and indigenous crops. Solomon Islands National Food Systems is currently expanding without proper directions and abiding policies to guide its roles and to fulfill its purposes. When the current system is measured against the United Nation Food System, significant gaps and challenges emerge.

The main staple food crops grown are sweet potato (*Ipomoea batatas*), cassava (*Manihot esculenta*), taro (*Colocasia esculenta*), pana (*Dioscorea esculenta*), yam (*Dioscorea alatas*), banana (*Musa acuminata*) and other assorted vegetables. Crops such as cassava, cabbage,

¹ Ibid.

²https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/impact-stories/cleaner-cheaper-power-fuels-better-future-solomon-islanders

banana, pawpaw, sweet potato, and long beans are grown in over 80% of rural and urban household gardens. Livestock including poultry, pigs, apiaries, and cattle are kept by 64% of rural and 15% by urban households, but predominantly within Guadalcanal and Malaita (FAO FIRST, 2016 and MECDM & Save the Children, 2022). Crops which are newly introduced include Chinese cabbage, peanuts, watermelon, cucumber, okra, lettuce, and corn, all of which are produced to meet local demand.

Solomon Islands agriculture is characterised by three types of farming methods, namely (i) smallholder subsistence farming with occasional sales of surplus, (ii) smallholder semi-commercial farming with deliberate market production including cash crops, and (iii) commercial farming including plantations (FAO, 2020). Most rural households are classified smallholder farmers either subsistence or semi-commercial, selling occasional surplus food crops as well as small amounts of cocoa and coconut products, predominantly copra. Per-capita production of food crops has diminished, and the subsistence sub-sector is no longer fulfilling its traditional food security function. Speciality crops targeting niche markets include coffee, kava, vanilla, spices, and indigenous nuts, but volumes are low and erratic. Artisanal fishing in the lagoons and reefs provide the needed proteins, but due to declining yields, livestock (mainly pigs and poultry) are gaining importance as an additional source of relatively cheap protein. There is a large ocean tuna fishery which exports most of the catch and generates royalties for the Government. Private investment in the sector is scarce, with most agribusiness companies engaged in aggregating and exporting commodities with limited value addition

Solomon Islands' main export commodities include: timber, fisheries (tuna), coconut (copra), palm oil, and cocoa³, though unsustainable logging practices are expected to result in decreased timber exports. The limited agricultural land, estimated to be around 3.9% of total land mass⁴, in addition to complicated land tenure issues (most land is communally owned)⁵, result in limited opportunity for expanding agricultural activity or other international investment.

Fisheries

The Solomon Islands approved its first ever National Fisheries Policy in 2019 covering the period from 2019-2029. This overview is based primarily on the Policy. Fisheries and marine resources play a critical role in the national economy, being the second largest source of export income after forestry. The Solomon Islands fisheries are divided into four major sectors: offshore, inshore (coastal), inland freshwater and aquaculture.

Offshore fisheries. Solomon Islands offshore fisheries are dominated by tuna fishing, comprising purse-seine, long-line and pole and line fishery sectors. Tuna are a regional resource located in the Western and Central Pacific Ocean (WCPO). Because tuna are a regional resource their effective conservation, management and development require a high degree of cooperation between coastal states and those states with fishing interests. This subsector has low relevance for the current project.

Inshore/coastal fisheries. Inshore (coastal) small-scale fisheries are an important source of food security and household income in Solomon Islands. In rural areas, where most Solomon Islanders live, nearly half of all women and 90% of men fish or collect aquatic resources for food and income (SIG 2009). Fishing, and collection, is done with a wide range of gear and techniques and the fisheries themselves are diverse and composed of multiple species. The total value and quantity of inshore fisheries harvests have been estimated from a range of studies, none of which is comprehensive enough to be definitive for the whole country. Arena et al. (2015) valued inshore subsistence fisheries (defined as catching fish for home/own

³[https://www.un.int/solomonislands/solomonislands/country-facts#:~:text=There%20are%20six%20major%20islands,miles%20\(28%2C466%20sq.](https://www.un.int/solomonislands/solomonislands/country-facts#:~:text=There%20are%20six%20major%20islands,miles%20(28%2C466%20sq.)

⁴ <https://data.worldbank.org/indicator/AG.LND.ARBL.ZS?locations=SB>

⁵<https://openresearch-repository.anu.edu.au/bitstream/1885/141295/1/IB2017.5%20Joe%20Foukona.pdf>

consumption) at SBD 442 million per year (approximately USD54 million). While the absolute values differ amongst studies (e.g., World Bank 2000; Gillett 2009), it is likely that the real catch of subsistence fishers in Solomon Islands lies between 17,500 and 33,556 tonnes per year, and that these fisheries are more important to people's livelihoods than previously thought. The intensity of fishing varies among different provinces, suggesting that sustainable management practices should be tailored to the context of the province.

Inshore commercial fisheries also provide an important source of income for Solomon Islanders. Beche-de mer and trochus are highly valued on international markets. However, the value of exports and catches, of both commodities, have been decreasing steadily for the past 40 years. International trading of these inshore fisheries resources is governed by the requirements of the Convention on International Trade in Endangered Species (CITES) to which Solomon Islands is party.

Inland freshwater fisheries. The many large islands in the country result in a relatively large inland population having no direct access to marine food resources, and for this reason the Solomon Islands has a significant subsistence freshwater fishery. Information is scarce on the inland fisheries, and no comprehensive survey has been carried out. Anecdotal information and survey reports that focus on single islands suggest that flagtails, gobies, eels and freshwater shrimps are important native species (Gillett 2016). Mozambique tilapia inhabits many rivers, streams and swamps in Solomon Islands. In peri-urban settings inland of Honiara and Auki, Lees Lake on Guadalcanal and Lake Tengano on Rennell Island, people depend on tilapia as a supplementary or main source of animal protein (MFMR 2010). Limited by the information scarcity described above, freshwater fishery production in Solomon Islands in 2014 was deemed to be 2300 mt, with a farm gate value of SBD 29 million (approximately USD 3.5 million) (Gillett 2016).

Aquaculture. Aquaculture in Solomon Islands is still relatively undeveloped despite a long history beginning in the late 1950s. Aquaculture activities have included tilapia (*Oreochromis mossambicus*) farming, pearl oyster farming, farming of *Macrobrachium rosenbergii*, giant clam farming and seaweed (*Kappaphycus alvarezii*) farming. These activities have been the result of government and private sector initiatives. Aquaculture accounted for SBD 2.4 million (approximately USD 0.3 million) worth of exports in 2017 (Solic database 2017), solely due to seaweed. The sustained operation of a rural seaweed farming industry over recent years, and the ongoing interest of rural entrepreneurs in farming of freshwater, brackish-water and marine fish and marine resources, suggests that aquaculture has potential to develop further as one platform to secure food and nutrition security as well as create rural livelihood and national revenue generating opportunities.

Forestry

The Forestry sector is the most important source of export income in the Solomon Islands. Forests cover approximately 90% of the total land area, with structure and species composition varying across the archipelago. About 69% of the total forest area is estimated to be undisturbed. Montane forests are the least disturbed, with 90% being intact. A high proportion of the country's forests are not suitable for commercial logging by ground-based harvesting systems due to steep slopes and fragile soils. Around 22% of the national forest area was classified as suitable for commercial forest production, and it is estimated that approximately 18% have been logged. The recommended sustainable harvest rate is estimated to be 250,000m³ annually, however since 2006 the volume of logs exported has annually exceeded 1 million m³, gradually increasing in recent years and reaching the peak of logging at 2.7 million m³ in 2018. Nearly 85% of the active felling licenses are currently operating in already logged-over forests. In terms of export markets, 87% of round logs exported go to China, whereas sawn timber is mainly exported to New Zealand and Australia. The total Solomon Islands plantation area covers an estimated area of 35,600 ha, almost 80% of which are in industrial plantations located in Western Province. The revenue from logging accounts for 20% of government revenue and approximately 65% of the total value of export

income. The logging industry provides around 10,000 jobs, which represent 20% of total employment in the country.

Payments of royalties to resource owners also provide a source of revenue to rural communities, where the majority of people live subsistence lifestyles with limited access to basic infrastructure that are located at long distances from urban centres. For these communities, the forests continue to provide benefits such as timber and non-timber forest products, and ecosystem services.

Education

Of the total population of approximately 721,000, approximately 209,000 are children enrolled in schools (47-50% girls at most levels) as of 2019. There are a total of 1,050 schools in the country comprising:

- 271 registered and 280 unregistered early childhood facilities
- 510 stand-alone (years 1-6) primary (including 131 non-government) schools
- 243 community high schools (most of which include a primary and some early childhood education [ECE] centres)
- 15 provincial high schools (2 non-government), and 10 national high schools (8 non-government)
- 50 Rural Training/Technical Vocational Education Training (TVET) centres.⁶

Total gross enrolment rates in all levels of education were highest in 2017-18 at 79-80% for females and males. There is virtually full enrolment at primary school level, but then a large drop off at the transition to junior secondary, and larger still at the transition to senior secondary. There was an overall decrease in student population from 216,000 in 2018 to 209,000 in 2019 (pre-COVID-19). In 2019 the gross enrolment rates were: 82% for ECE, 114% primary, 68% junior secondary, and 32% senior secondary. Although the transition rate from primary year 6 increased marginally from 88.5% to 89.4% in 2019, the matriculation rate at the end of junior secondary decreased from 55.2% to 47.2%. There were slightly higher enrolment rates for females in junior secondary, but otherwise there is general parity in terms of attendance. Provincial enrolment rates varied widely, between 51-64% in the lowest ranking four provinces to 84-100% in the other six provinces and Honiara.⁷ The total primary out-of-school rate from 2016-2019 was 13%. Here too there are highs of 45% and 24% in Guadalcanal and Western provinces, and lows of 12%-<1% in the other administrative regions.

Long-term trends show late entry to school, high over-age enrolments, high levels of repetition in primary, and low promotion and matriculation rates across the school years. Most students leave school before senior secondary, due to infrastructure shortages, fees and other costs, lack of accessibility and academic focus of curriculum. The global COVID-19 pandemic has heightened what was already a crisis in education.

The Ministry of Education and Human Resource Development (MEHRD) goal is that “all Solomon Island children complete a quality and relevant education”. Whilst the official language of the country is English, the most widely used and understood is Solomon Islands Pijin.

The average literacy rate for Solomon Islands citizens 15 years and older is around 76%, which ranks the Solomon Islands 142nd globally. Only around 50% of the population complete the six years of primary school, only around 20% of women and 29% of men over 15 years

⁶ Government of Solomon Islands, Ministry of Education and Human Resources Development (2019). [Performance Assessment Report 2019. Solomon Islands Education Statistics Digest](#). p.12

⁷ Government of Solomon Islands, Ministry of Education and Human Resources Development (2019). [Performance Assessment Report 2019. Solomon Islands Education Statistics Digest](#). p.44

old have at least some secondary education, and only roughly 3% of the population have university degrees⁸.

On a positive note, the arrival of the deep sea fibre optic cable to Honiara in 2019, has drastically reduced data charges and increased access to the internet for thousands of Solomon Islanders, and presents the potential to serve as a major disruptive catalyst for access to the global economy. The benefits of this increased access to data have not yet flowed through to remote and rural populations – a barrier to accessibility of early warnings and climate information which this project will help reduce.

2.2. Policy landscape

The Solomon Islands has a number of policies that are relevant to the SOLKAS project, including climate policies, national development policies, and sectoral policies. Policies, strategies, plans, and frameworks with which the SOLKAS project is aligned, are described briefly below.

Nationally Determined Contribution (NDC). The Solomon Islands' NDC calls for a community-based approach for vulnerability mapping, adaptation planning, and management “to build capacity in vulnerable villages for localized adaptation actions”. It states that SIG “will establish the institutional structures and strengthen capacities at the community level in order to support the country-wide implementation of community-based vulnerability mapping and adaptation planning, and the community-based design and implementation of priority resilience measures through direct access to financing for such measures”. The design of the SOLKAS project is aligned with these imperatives.

Second National Communication (SNC). The SNC calls for strengthened capacities at the provincial and village level to support adaptation planning. It also emphasizes the importance of support for implementation and planning of adaptation actions at the community level, including establishing locally-managed marine protected areas and ensuring public participation in climate change programs and actions.

National Climate Change Policy 2012-2017 (NCCP). This policy is the most recent climate change policy for the Solomon Islands. The Policy highlights the importance of community-based adaptation, access to clean and renewable energy, and disaster/climate risk reduction as core objectives. It also highlights greater emphasis in cooperation and collaboration with linkages to development partners, regional, and international bodies.

National Disaster Management Plan 2018 (NDMP). The national disaster risk management plan (NDMP) is based on the National Disaster Council Act of 1989 and present practical and explicit framework for absorptive and adaptive capacity, supporting resilience at national, provincial, ward and community level. The NDMP is also aligned with the Framework for Resilient Development in the Pacific 2017-2030 (FRDP), which is the Pacific Region's response to the Sendai Framework. It clearly highlights the arrangement for multi-sectoral coordination and collaboration to effectively respond to changing conditions and increasing occurrence of disasters. The NDMP also prioritizes “community self-help and reinforcing local mechanisms in preparing for, managing, and recovering from disasters...” and “the general concept for disaster management is that communities are supported to take measures to prepare for, respond to and recover from disaster when they occur under the principle of supporting self-help and avoiding dependence”. The Plan further notes that “communities...have a role to identify the disaster and climate hazards they face and take initiatives to reduce their risk including addressing their land use and livelihood practices where appropriate”.

⁸<https://borgenproject.org/8-facts-about-education-in-the-solomon-islands/#:~:text=Government%20spending%20on%20education%20in,of%20the%20population's%20literacy%20rate>. See also Asian Development Bank, 2015.

Of central relevance to the SOLKAS project, the Plan outlines a system of disaster committees which also have responsibility for climate change adaptation. This includes provincial and municipal disaster committees, as well as Ward and village Disaster Risk Committees (DRCs). Roles and responsibilities of these committees at various levels include:

- Provincial executives are responsible for overseeing and providing direction to the establishment of arrangements for risk resilience through disaster management and risk reduction at the ward and local level. Provincial executives are also responsible for committing provincial resources to support community disaster management and risk reduction activity. Provincial executives are responsible also for committing provincial resources to support community disaster management and risk reduction activity. They are also responsible for the coordination of local resourcing for disaster management and risk reduction activity.
- Provincial Climate and Risk Resilience Committees are responsible for addressing hazards and the reduction of disaster and climate risk through the province as part of the resilient development framework. They focus on development and social livelihood practices, addressing the underlying causes of vulnerability (including poverty, hardship, and isolation) and on preventing the creation of new risks. They also are responsible for planning for disaster and climate risk reduction through the province and for supporting risk reduction and climate adaptation activity at the local level. Lastly, these committees are responsible for providing hazard information within the province, supporting risk and vulnerability assessments, and promoting and coordinating risk resilient programs and initiatives at the provincial and local levels.
- Ward responsibilities include identifying the disaster and climate hazards they face and taking initiative to reduce risk, including addressing land use and livelihood practices where appropriate. Ward Disaster Risk Committees are intended to support the activities of village level DRCs in disaster management and disaster and climate risk reduction. Their purpose is to provide a connection between the villages and the provincial arrangements to coordinate and support local activity for disaster and climate risk reduction these Committees are to provide the connection for village initiatives to be supported through the provincial planning and budgeting processes. The NDMP does not prescribe a structure for ward or village DRCs, and instead mandates that they be based on established groups within the area that are willing to take on the role. The NDMP further states that the committees are to accommodate local leadership modes of houses and councils of chiefs, churches, elders, or other appropriate community mechanisms and build on existing community, church, and NGO connections.
- Village DRCs are to be established at the village and associated settlement level or where appropriate amongst groups of up to 5-10 villages with a common interest based on existing community structures. Like ward DRCs they should be based on established groups in communities. Village DRCs are to undertake planning for disaster management and for disaster and climate risk reduction within their communities. The needs of vulnerable and marginalized groups are supposed to be accommodated in this planning. The village DRCs are to undertake risk resilience (DRR and CCA) activities including hazard and vulnerability assessments and the identification and implementation of risk reduction and mitigation initiatives. Village and ward DRCs are required to put in place standard operating procedures (SOPs) and to accommodate and align with local leadership and village/ward socio-political organizational systems. These committees are also supposed to be supported by the aforementioned provincial committees.

National Gender Equality and Women's Development Policy (2016-2020). This policy, which is currently being updated, highlights gender inclusion as critical in program development and implementation at all levels. It recognizes the gendered nature of climate

change impacts and the need for climate adaptation and DRR activities that are gender responsive. Notably, the policy explicitly acknowledges that women tend to be marginalized from community meetings in the Solomon Islands. The policy highlights seven priority outcomes, several of which have been embedded into the design of the SOLKAS project:

1. Gender responsive government programmes and services
2. Improved economic status of women
3. Equal participation of women and men at all levels of decision-making, governance, and leadership
4. Preventing and responding to violence against women and girls
5. Increased awareness and acknowledgement of the role of women in peace and security
6. Increased access to education and providing a supportive school environment
7. Improved access for women's right to sexual and reproductive health

National Adaptation Programme of Action 2008 (NAPA). The NAPA prioritizes actions to “[manage] the impacts of, and [enhance] resilience to climate change and sea level rise on agriculture and food security, water supply and sanitation, human settlements, human health and education, awareness, and information”. Specific priorities of the NAPA with which this project is aligned include:

- Managing the impacts of, and enhancing resilience to, climate change and sea-level rise, on agriculture and food security, water supply and sanitation, human settlements, human health and education, awareness and information;
- Coastal protection; and
- Infrastructure development.

National Development Strategy 2016-2035. The NDS sets out objectives for advancing human and economic development, ensuring peace and security, and for protection of the natural environment. The NDS is aligned with the Sustainable Development Goals that are relevant to its objectives. Four of the five objectives of the NDS will be addressed through the SOLKAS project, including:

- Sustained and inclusive economic growth;
- Poverty alleviated across the whole of the Solomon Islands. There is an acknowledgement here that the benefits of development have not filtered down to areas outside of Honiara, and poverty and risks of hunger due to a lack of food security are prevalent. The NDS also notes that in rural areas, basic needs such as water and sanitation are often not met. The NDS prioritizes activities to support the most vulnerable, including women, children and other vulnerable and disadvantaged groups (e.g., elderly and disabled). It also prioritizes the development of community engagement programs that address the needs of women, youth, and children which encourage social and communal stability. Importantly, the NDS indicates that the decentralization of government services and the involvement of the rural population will be critical elements in realizing poverty alleviation goals;
- All Solomon Islanders have access to quality health and education. Here the NDS indicates that the government will place priority on refocusing education sector expenditures on providing services at primary and junior secondary schools to achieve the target of universal completion of quality junior secondary education by 2030; and
- Resilient and environmentally sustainable development with effective disaster risk management, response, and recovery. A key element to this pillar is to improve disaster and climate risk management, including prevention, risk reduction,

preparedness, response and recovery, as well as adaptation as part of resilient development. The SOLKAS project will directly address the following key elements of this pillar:

- Increase awareness of disaster and climate risks at the community level by promoting risk awareness raising as part of ongoing development planning;
- Promote risk identification and assessment including assessment of vulnerability and hazards as part of the community development planning process and ongoing identification of development needs;
- Ensure adequate capabilities to address climate change and pandemic diseases through increased awareness and implementation of strategies founded on research and development and information exchange
- Support the development of community risk management plans in all high risk communities in the country and where appropriate, safe community evacuation centres catering for the needs of all vulnerable groups
- Train and organize leaders and key community members including representatives of vulnerable groups on community response and preparedness such as regular exercises and drills

The last of these objectives most explicitly related to climate change, recognizing the need to promote resilient and environmentally sustainable development by ensuring effective climate, disaster, and environmental risk management as a central element to all development decision making. The NDS also recognizes the need for communities to be able to respond effectively to climate change and the increasing frequency of storm surges and floods, as well as the need to strengthen disaster preparedness and risk reduction. The NDS also includes among its targets the goal that by 2025 public access to and knowledge of MECDM services (meteorological services, disaster risk management, climate adaptation/mitigation, environmental management and biodiversity conservation are improved.

Ministry of Provincial Government and Institutional Strengthening Corporate Plan (2017-2019)⁹. This plan includes several priority programs with which the project is aligned. This includes i) empowering and establishing local institutions with expanded roles and resources for service delivery (aligned to component 1 of the project); ii) building capacities of provincial leadership (aligned to component 3 of the project); and iii) ongoing technical support to provincial governments (aligned to component 3 of the project). The Plan also indicates that the Ministry of Provincial Government and Institutional Strengthening (MPGIS) will work to strengthen community governance through empowering roles of local governance institutions, such as chiefs, churches, and communities to uphold peace, law and order at the community level. The proposed project takes a similar approach to establishing and strengthening village and ward DRCs. Overall, the administrative responsibilities of MPGIS include capacity building for provincial governments, including administrators and assemblies, improving provincial development planning, and improved provincial budgets and funding systems. Hence MPGIS will be an important partner in implementing this project.

The Ministry of Education and Human Resources Development (MEHRD) has integrated climate change into the [Solomon Islands National Education Action Plan 2022-2026](#) and has included a focus on school safety and disaster management, including an objective to “start incorporating disaster, climate and environmental risk management considerations in the definition of access and quality goals.” There are three areas of focus under Disaster and Risk Management objective, all of which this project will support:

- Learning Continuity – including during disaster events

⁹ A more recent plan has not yet been finalized, and so the 2017-2019 plan is still the current official plan

- Disaster Preparedness – with focus on staff and systems capacity audit, and capacity strengthening, response preparedness
- Safe Schools – “Undertake steps in disaster, resilience, climate change and safe schools audit of all schools and education infrastructure”, and “Develop national infrastructure standards for education facilities, ensuring that standards are cost, resource, and logistically feasible within the national context.”

The [Strategic Framework for Youth Development and Empowerment in the Solomon Islands](#) and the [Solomon Islands National Youth Policy 2017-2030](#), both published in 2017, articulate how the country’s youth would like to see themselves, what they aspire to be and what to achieve, and focuses on six policy priorities. This project will support the achievement of five of these priorities:

- **Educational empowerment** (by 2030, the scope and content of education curricula delivered at all levels of the education system including formal, technical & vocational and non-formal education will; (i) properly equip students who progress to higher levels of education; and (ii) ensure all students leaving the education system at any level are adequately equipped with ‘appropriate skills sets’ to make them ‘work-ready’ and help them engage effectively in the labour market’)
- **Economic empowerment** (by 2030; at least 75% of youths who are not in educational institutions have secure career pathways through formal or informal employment opportunities, entrepreneurship and other innovative economic opportunities to improve their livelihoods and quality of life)
- **Health and wellbeing** (by 2030; (i) 100% of youths are aware of and are practicing health living and lifestyles; and (ii) actively engage in cultural, spiritual, sporting and other physical activities to improve their health and holistic wellbeing)
- **Sustainable development** (By 2030; youths are empowered and equipped to be effective catalysts and enablers of sustainable development – (i) enhancing opportunities for green and blue economies; (ii) strengthening resilience to natural disasters and climate change; (iii) ensuring food, water and energy security; (iv) promoting the use of appropriate and sustainable technological innovations and interventions to support sustainable development; and (v) implementing activities to achieve the SDGs relevant to Solomon Islands)
- **Leadership, governance, peace building, social inclusion and citizenship** (by 2030; (i) youths are empowered as agents of positive change, participating in leadership, decision making and governance mechanisms including traditional leadership and governance at all levels including household, village, community, provincial and national levels; and (ii) contributing to long-term social harmony and cohesion, peace and security, gender equality, equal opportunity and national unity that leaves no one behind).

The **Solomon Islands National Gender Equality and Women’s Development Policy 2016–2020** links national, regional and international gender commitments, providing policy direction, identifying strategic areas for action and calling for a collaborative approach among government agencies and NGOs to advance gender equality. There are seven policy outcome areas, all of which have critical bearing on the lives of rural women and girls. These are: 1) Gender Responsive Government Programmes and Services; 2) Improved Economic Status of Women; 3) Equal Participation of Women and Men at All Levels of Decision-Making, Governance and Leadership; 4) Preventing and Responding to Violence against women and girls; 5) Increased Awareness and Recognition of the Role of Women in Peace and Security; 6) Increased Access to Education and Providing a Supportive School Environment; and 7) Improved Access for Women’s Right to Sexual and Reproductive Health. This project will make contributions to many of these policy outcomes, including by increasing understanding

of gender issues within implementing partners, including a strong focus on young women in resilient livelihoods investments, increasing women’s engagement in and leadership of local adaptation planning processes, increasing understanding of the impacts of gender inequality at the community level, and ensuring targeted schools are safe and resilient places for girls to learn.

2.3. Legal and regulatory landscape

2.3.1. National Level

In addition to the aforementioned strategies, policies, and plans, there are several national laws that are relevant to the project’s design and implementation and design.

Environment Act (1998). This Act was passed to “establish integrated systems of development control, environmental impact assessment and pollution control; to prevent, control and monitor pollution and to reduce risks to human health and prevent the degradation of the environment by all practical means”. The Act established MECDM. Under MECDM is the National Disaster Management Organization (NDMO; see figure 2 for the organizational structure of MECDM), which is responsible for coordinating responses to natural disasters and humanitarian emergencies as well as for promoting and coordinating agency and community responses to disaster events. However, under the NDMP 2018, the role of the provinces is strengthened, and preparedness, climate risk assessment, and disaster risk response are now to be delivered through the provinces (with NDMO coordinating response). NDMO also serves as the secretariat for the National Disaster Council, which is responsible for strategic oversight of the NDMP and is accountable to the Cabinet.

Since the rollout of the NDMP, provincial disaster officers have been recruited and posted in each of the 9 provinces and Honiara. These officers report to the Provincial Secretary and are tasked with working with ward and village DRCs where they already exist, and establishing new ones where they do not. The provincial governments are currently in the process of establishing the institutional and physical infrastructure to support the provincial disaster officers and their duties, with some moving faster than others. Each of the provinces has also established a disaster management committee consisting of the provincial disaster officer and representatives from the provincial line agencies, and some provincial level trainings for disaster management have been conducted. However, implementation of the NDMP 2018 at the ward and village level is very inconsistent across the country.

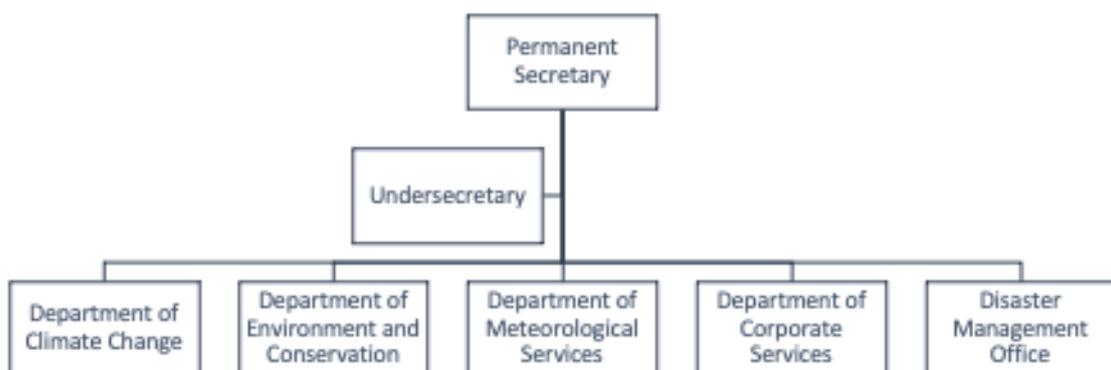


Figure 2: Organizational Structure of MECDM

MECDM has recently commenced implementation (with the support of SPREP) of a GCF Readiness project – **Strengthening the NDA Capacity and Strategic Engagement of Solomon Islands with the GCF**. The project, which will run until 2023, aims to help to identify significant human, policy and institutional gaps that Solomon Islands is facing in their effort to access GCF resources and other global climate funds. This project will help to address current gaps by strengthening the role of the NDA and the PMC, to be based at MECDM, and supporting the work of the new Climate Finance Resilience Unit, within the Ministry of Finance and Treasury, who will coordinate climate change finance reporting, including that with NGOs and donors. This readiness project will help establish more formal systems and processes for the approval of climate finance projects. As a GCF Accredited Entity with a current proposal in development, SCA has been engaged consistently by MECDM and SPREP on structures and processes to be developed. SOLKAS will also build MECDM capacity in the management of climate finance by working closely with them on the implementation of this project, where the ministry will serve as one of two Executing Entities.

2.3.1. Sector level

There are several sector regulations of relevance to the implementation of SOLKAS.

Agriculture and Fisheries

Biosecurity Act 2013. Prescribed regulations of the Biosecurity Act are – i) Prohibition of Animals Order (LN 55) 2016; and ii) Prohibition of imports Order (LN 19) 2016

Fisheries Management Act 2015. The Act establishes mechanisms for fisheries management and the sustainable regulation of the industry, such as licencing, fisheries access and management agreements.

Lands and Forestry

Land and Titles Act 1978 (Cap 133). Prescribed regulations of the Land and Titles Act are – i) Land and Titles Act - Land and Titles (Customary Land Appeal Court Allowances) Regulations 2008; ii) Land and Titles Act - Land and Titles (General) (Amendment) Regulation 1999 (LN 64) 1999; and iii) Land and Titles Act - Land and Titles (Land Board) Regulations (LN 69) 2014.

Environmental Health

Environmental Health Act 1980. Prescribed regulations of the Environmental Health Act are – i) Environmental Health (Public Health Act) Regulations 1987; and ii) Environmental Health (SARS Acute Respiratory Syndrome) Regulations 2003 – L/N 46/03.

SOLKAS implementation will be in conformity with all obligations under these regulations.

2.3.2. Provincial level

Provincial Government Act (1997). The Provincial Government Act 1997 sets out the functions of the Provincial Governments. Specific functions under the act including cultural and environmental matters, transport, agriculture and fishing, land and land use and rivers, forestry, and waters. There are a number of provincial ordinances that may relate to the functions of climate change in the country, but most of them focus on the issues of natural resource management. Regulatory or executive powers are derived from valid provincial ordinance or may be delegated to the province under national statutes, devolution orders, or by negotiation between the province and the responsible ministry. At the moment, climate change is not an explicitly devolved function of provincial governments.

2.3.3. Village level

Governance at the community level is exercised by traditional chiefs who are supported by community leaders, clergies and church pastors. **The Constitution of Solomon Islands** recognises *traditional systems of governance*¹⁰. According to Article 75 of the Constitution, The National Parliament of Solomon Islands shall make provisions for the application of laws, including customary laws. In doing so, the National Parliament shall have particular regard to the customs, values and aspirations of the people of Solomon Islands. Consequentially, Land and Titles Act 1978 was enacted to recognise *current customary usage*¹¹. The Customary Land Records Act 1994 was enacted to establish an *Office of National Recorder of Customary Land* and enables *customary land holding groups* to appoint representatives to deal with *recorded customary land holdings*.

2.4. Complementary projects and initiatives in Solomon Islands

2.4.1. Alignment with GCF readiness activities in Solomon Islands

There has only been one GCF-funded Readiness project in the Solomon Islands: “Strengthening the NDA Capacity and Strategic Engagement of the Solomon Islands with the Green Climate Fund”. The project was approved in 2019, but did not fully commence until recently. The project is being supported by the Secretariat of the Pacific Regional Environmental Program (SPREP). The project aims include:

- National Designated Authority (NDA) Capacity Strengthened
- Stakeholders engaged through consultative processes (engagement framework, GCF country programme)
- Direct access realized (institutional gap analysis, DAE accreditation action plan and training/workshops);
- Climate finance accessed (dialogues with AEs and GCF and, development of project concept note(s) and proposal(s))
- Private sector mobilized (private sector mapping exercise and workshops).

SOLKAS is aligned with the overall intent of the readiness project, especially increasing the flow of financing and also mobilizing the private sector. Further, SOLKAS support for integrating local and sub-national priorities into national level planning processes (Activity 3.2.3) will support the Readiness project’s focus on building institutional capacity in MECDM and across government. SOLKAS will also support increased flows of relevant climate, vulnerability and adaptation information to MECDM and other government agencies via support for the Climate Resilience Information Management digital toolsets (Activities 3.1.1 and 3.1.2) and installation of three additional automatic weather stations in under-served areas (in targeted provinces) (Activity 1.1.3). With increased capacity supported by the Readiness project, MECDM will be better positioned to utilise the information and data provided by SOLKAS in future decision-making processes.

2.4.2. Alignment with other projects

The development of SOLKAS has included a wide range of consultations with other actors in Solomon Islands. SOLKAS has been designed to build on and compliment a range of current and recently completed projects. It will also be implemented in complementarity with planned

¹⁰ Preamble of the Solomon Islands Constitution says that “we shall cherish and promote the different cultural traditions within Solomon Islands”.

¹¹ Land and Titles Act defines current customary usage as “the usage of Solomon Islanders obtaining in relation to the matter in question at the time when that question arises, regardless of whether that usage has obtained from time immemorial or any lesser period”

investments from a range of partners. A table of key investments relevant to SOLKAS is provided below, with information on how SOLKAS will be complimentary and coherent and prevent duplication and overlap.

Table 1. List of relevant projects in the Solomon Islands

Project details	Description	Points of complementarity
Current bilateral projects		
<p>Tina River Hydropower Development project (GCF FP044)</p> <p>2019-2026 USD 241.9 million World Bank (GCF)</p>	<p>15MW hydropower installation, aiming to meet 65% of Honiara's electricity demand</p>	<p>FP044 is increasing SIG exposure to renewable energy at scale and increasing understanding of the use cases for deployment of renewable energy across contexts. This should increase interest in the use of renewable energy at a range of levels – including SOLKAS' provision of small scale solar PV systems to DRCs</p>
<p>Integrated Economic Development and Community Resilience Project (IEDCRP)</p> <p>2022-2025 USD 23.6 million World Bank (IDA/LDCF)</p>	<p>IEDCRP (CRISP2+) will cover investments in all provinces and priority investments will be determined by the Provincial Government structure in consultation with the Central Government. The project will also complement the Government's commitments in the Provincial Capacity Development Fund (PCDF). As of September 2022, Provinces have identified 112 health and COVID-19 investments projects and 61 resilient economic infrastructure projects for the next three years. IEDCRP will focus on economic infrastructure, with around 20% of the relevant component to be used for specific adaptation actions at Ward level (USD1.6 million across all nine provinces). IEDCRP will support institutional strengthening and adaptation planning at Province and Ward level through provision of training and capacity development.</p>	<p>IEDCRP and SOLKAS will be highly complementary. As key implementing partners for both projects, MECDM and MPGIS will ensure there is no overlap and duplication of complementary actions supported by these two projects. This will include targeting of investments at Ward level under IEDCRP to ensure they do not overlap with SOLKAS. MECDM and MPGIS were key collaborators in the determination of SOLKAS targeting. With 183 Wards across the country, all requiring substantial adaptation support, MECDM and MPGIS will ensure that IEDCRP support targets a sub-set of the 131 Wards not targeted by SOLKAS. SOLKAS will target communities across 52 identified Wards with direct support for locally-led adaptation in key sectors related to food security and resilient livelihoods. The actions targeted by SOLKAS are complementary to those targeted by IEDCRP but different in scope. While IEDCRP focuses on economic infrastructure for physical investment, SOLKAS will focus on the physical resilience of social infrastructure (particularly schools). Further, SOLKAS investments will focus on small scale producers to increase the resilience of their livelihoods and community level food security. IEDCRP's support for Provincial and Ward adaptation planning capacity will complement SOLKAS' focus on community level planning and capacity building of hyper-local institutions (village DRCs). While SOLKAS will</p>

		<p>also work with Ward authorities to increase adaptation planning capacity, the targeted Wards will differ between the projects.</p> <p>The support provided to communities via SOLKAS will help increase their ability to secure other sources of adaptation finance, including via the PCDF, as they will have costed adaptation investment plans and the capacity to update them over time.</p> <p>A figure illustrating the complementarities and differences in SOLKAS and IEDCRP approaches is provided at the end of this table.</p>
<p>Solomon Islands Agriculture and Rural Transformation Project (ART)</p> <p>2022-2026 USD 15 million World Bank (IDA)</p>	<p>ART will target 25,000 people across three provinces (Guadalcanal, Malaita, and Makira), supporting the development and operation of Agribusiness Producer Organisations (APOs) (focused on cash crops and smallstock) to increase access to markets and increase productivity. The project will also support development of seed banks and nurseries to support APOs.</p> <p>ART will also provide climate smart agriculture technique training to MAL staff and extension officers. It will also host an annual innovation competition to incentivise innovative agriculture practices.</p>	<p>ART and SOLKAS will be very complementary. MAF is the lead partner for ART and a key implementing entity for SOLKAS.</p> <p>While the projects will work in the same provinces, SOLKAS will have a far greater reach of 154,643 people across these three provinces.</p> <p>Where ART is supporting seed banks and nurseries, we will ensure no overlap at Ward level. this will enable the two projects to reach a higher number of communities with this support.</p> <p>Where both projects are providing capacity building support to MAL staff and extension officers, these efforts will be harmonised (via MAL) to ensure no overlap or duplication. Foundational training provided by ART will be built on by SOLKAS to increase sustainability and complementarity.</p> <p>We will ensure close collaboration with MAF and the World Bank as the design of the two project's respective innovation incubators progresses. As the SOLKAS supported <i>Youth Climate Resilient Livelihoods Incubator</i> will cover a wider geography and has a broader sector focus, ART's annual innovation competitions could be delivered as part of the SOLKAS incubator challenges.</p>
<p>Strongim Bisnis</p> <p>AUD 11.8 million 2020-2023 DFAT</p>	<p>Aims to increase earnings for households by supporting businesses to become more profitable and competitive, empowering women and young people, and bringing more economic opportunities for Solomon Islanders across the country.</p> <p>Focuses on tourism and cocoa and coconut production for export. Includes support for entrepreneurs in Honiara.</p>	<p>SOLKAS has consulted consistently with Strongim Bisnis in the development of this project, particularly related to the Youth Climate Resilient Livelihoods Incubator. The two projects will collaborate to strengthen the national approach to youth livelihoods.</p>

<p>Provincial Governance and Services Delivery in the Solomon Islands II</p> <p>2022-2025 EUR 8 million UNDP/MPGIS (European Union)</p>	<p>The project aims at strengthening the governance systems for service delivery within provinces, notably by improving the coordination between provincial governments and the provincial sector offices for education and health. The project will encourage capacity development, administrative reforms, and improved financial management systems supported by performance-based grants.</p>	<p>SOLKAS will coordinate with the Provincial Government project especially with respect to Component 3 activities which will increase Province and Ward capacity to support local level adaptation sustainably. SOLKAS will also collaborate with the EU project's investments in the education system to ensure complementarity with SOLKAS' school-level investments and support for climate change curriculum development and roll out.</p>
<p>Ensuring Resilient Ecosystems and Representative Protected Areas in the Solomon Islands</p> <p>2021-2025 USD 4.9 million IUCN (GEF)</p>	<p>The project aims to increase effective ecosystem management for healthy, complementary networks of protected, productive and restored landscapes in Guadalcanal, Malaita and Rennell-Bellona provinces and a specific protected area focus in Temotu province.</p>	<p>SOLKAS will build on the work undertaken under the IUCN project, incorporating the outcomes of IUCN assessments into SOLKAS community adaptation planning processes to ensure they take a holistic approach to adaption.</p>
<p>Integrated Forest Management in the Solomon Islands</p> <p>2019-2023 USD 5.7 million with USD 30 million in in-kind co-finance) FAO (GEF)</p>	<p>Aims to assist the Government of the Solomon Islands to implement integrated management of protected and productive forest landscapes for sustainable community development and multiple environmental benefits.</p>	<p>While there is no overlap in targeted Wards, SOLKAS will build on work supported by FAO, particularly under the GEF project's second component, which will support enhanced integrated land management approaches in communities. SOLKAS will build these approaches into community adaptation planning processes.</p>
<p>Solomon Islands Technology Assessment Project</p> <p>2020-2023 MECDM/UNEP (GEF)</p>	<p>The Technology Needs Assessment supports a set of country-driven activities leading to the identification, prioritisation and diffusion of environmentally sound technologies for mitigation and adaptation to climate change.</p>	<p>SOLKAS will build on the findings of the TNA project when working with communities on adaptation planning and implementation. The SOLKAS supported <i>Climate Resilience Information Management digital toolsets</i> will further support MECDM to identify and address adaptation technology needs at the community level.</p>
<p>Safeguarding Solomon Islands endemic and globally threatened biodiversity and ecosystem services from key threats, particularly invasive alien species and unsustainable land use practices</p> <p>2022-2027 USD 7.8M with USD 19.7 million in co- finance UNDP/MECDM (GEF)</p>	<p>Solomon Islands indigenous species and ecosystems at reduced risk from invasive alien species, land degradation and unsustainable resource use as a result of effective government enabling and capacity, community participation, and resilient blue/green livelihoods.</p>	<p>SOLKAS' local level support for climate resilient agriculture will draw on the GEF project's "green farming systems" where practical and where these help to address climate vulnerabilities identified by the project and by the target communities. This will extend to "innovative agricultural practices for sustainable land management" developed for smallholder farmers under the GEF project as appropriate. SOLKAS will coordinate with the GEF project to identify synergies with respect to support for integrated land/seascape management plans with strong community governance.</p>

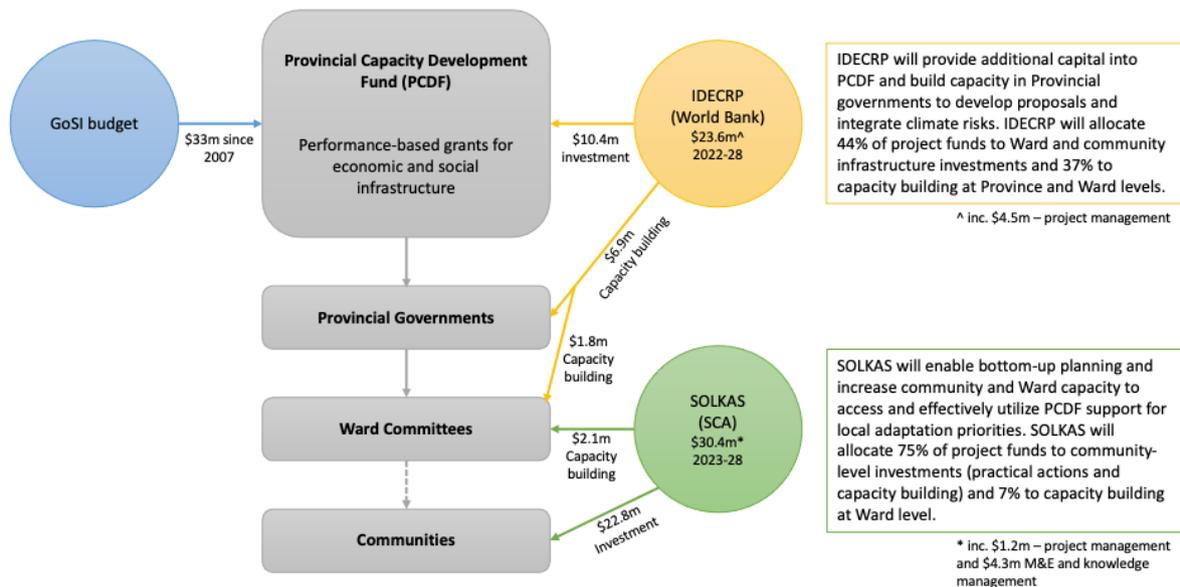
		<p>SOLKAS will also coordinate with the GEF project's support for diversified resilient livelihoods.</p> <p>As MECDM is a key partner in both projects, they will serve as the coordination point to ensure complementarity in implementation.</p>
<p>Strengthening Competitiveness, Agriculture, Livelihoods and Environment (SCALE)</p> <p>2020-2025 USD 25 million USAID</p>	<p>Aims at improving the enabling environment for increased trade and investment; promoting the expansion and further development of the agribusiness sector; and improving governance of the forestry sector. Focused on Malaita province.</p>	<p>SOLKAS will support targeted farmers to access SCALE economic infrastructure and will coordinate investments with SCALE during implementation.</p>
Relevant regional projects		
<p>Supporting Resilient Island Communities in Tuvalu, the Solomon Islands, Fiji and Vanuatu through the Local Climate Adaptive Living (LoCAL) Mechanism</p> <p>In development USD 47.9 million (4 countries) SPC/UNCDF (GCF)</p>	<p>The LoCAL Pacific facility is an Enhancing Direct Access (EDA) programme that will strengthen the climate resilience of local communities and economies by improving the capacity of communities and local governments to access and use financing for adaptation investments.</p>	<p>SCA is in close contact with SPC and UNCDF to ensure strong collaboration, coherence and complementarity between the LoCAL proposal and SCA's SOLKAS and VCCPR projects. SOLKAS and LoCAL will be highly complementary as LoCAL will work through Provincial governments to support Ward level priorities linked to Solomon Islands' NDC and NAP (once developed), while SOLKAS will work directly at the community level to support immediate adaptation priorities. SOLKAS investments will support Wards to better access LoCAL performance-based climate resilience grants.</p>
<p>Melanesia - Coastal and Marine Ecosystem Resilience Programme (M-CMERP)</p> <p>In development USD 50 million (3 countries) IUCN/SPREP (GCF)</p>	<p>Aims to enhance the resilience and adaptive capacity of Melanesian Pacific Island people to climate change by protecting, restoring and managing coastal and marine ecosystems and the services they provide. Will support integration of EbA into national planning and decision making and provide grants for EbA implementation.</p>	<p>SCA is in contact with IUCN as both proposals progress to ensure close collaboration, coherence and complementarity. Where relevant, SOLKAS will collaborate with IUCN to help integrate EbA approaches into local level adaptation planning and implementation. SOLKAS will also share local level adaptation plans with IUCN to help guide grant support.</p>
<p>Climate Information and Early Warning Systems, One Pacific Programme</p> <p>In development USD 189 million (14 countries) SPREP (GCF)</p>	<p>Aims to support 14 Pacific SIDS to gather and apply the critical hydrologic and meteorological information commensurate with the perceived urgency to provide early warnings of the multiple hazards associated with climate change and to undertake effective, science-based responses over the next decade.</p>	<p>SCA has a regular dialogue with SPREP on our respective Pacific pipelines. The sustainability of SOLKAS' investments in local level access to CIS and EWS will benefit from the One Pacific Programme's investments in last mile communications and support to update DRM planning, as well as support for national level institutional strengthening. In turn, SPREP's project will benefit from SOLKAS' investments in local</p>

		level risk mapping, climate hazard identification and community vulnerability assessments, as well as enhanced community level understanding of, and ability to utilise, CIS and enhanced EWS.
<p>Adapting tuna-dependent Pacific Island communities and economies to climate change</p> <p>In development USD 120.9 million (14 countries) Conservation International/SPC (GCF)</p>	<p>This programme will: 1) increase supply of tuna for domestic consumption as an adaption to degradation of coral reefs and the resulting food insecurity for vulnerable populations; and 2) usher in the reforms needed to minimise the risks for citizens of countries with economies that are vulnerable to climate-driven redistribution of tuna.</p>	<p>SOLKAS' community level investments in small scale near-shore artisanal fisheries (under Component 2) will complement Conservation International's larger scale support for Fish Aggregating Devices (FADs) and off-reef fisheries and post-catch processing. SCA will remain in contact with Conservation International and SPC as the two proposals progress to ensure complementarity and coherence of investments.</p>
<p>Agricultural Investment for Markets and Nutrition</p> <p>In development (2023-2027 anticipated) USD 15 million (2 countries) MAL (Solomon Islands) / MALFFB (Vanuatu) / IFAD / FAO (GAFSP)</p>	<p>The project aims to improve nutrition outcomes and increase farm incomes from resilient farming systems in rural communities in Solomon Islands and Vanuatu. The project will support increased capacity in extension services and producer groups. It will also strengthen value chains by connecting producer groups to private businesses, as well as increased access to information and provision of agricultural hardware. In Solomon Islands, the project will work with approximately 130 communities across Isabel, Western and Choiseul provinces. As of late September 2022, target communities had not yet been identified.</p>	<p>SOLKAS and the GAFSP project will be highly complementary. Food security and nutrition needs in rural communities in Solomon Islands are immense and both projects are needed. MAL is a key implementing partner for SOLKAS and leading development of the GAFSP project in Solomon Islands. MAL has confirmed there will be no overlap in communities targeted between SOLKAS (communities identified) and the GAFSP project (communities yet to be identified). The projects will work in synergy, via MAL, to ensure coherence in development and delivery of local level assistance and capacity building investments.</p>
<p>Climate and Ocean Support Program in the Pacific Phase 2 (COSPPac2)</p> <p>2018-2022 AUD 23 million (14 countries) SPC/BoM (DFAT)</p>	<p>Aims to enhance the capacity of Pacific Islands to manage and mitigate the impacts of climate change, variability and tidal events and working together with members to build tools that can forecast and report on climate, tides, and the ocean.</p>	<p>SOLKAS Component 1 activities related to providing locally-appropriate knowledge and information resources to communities will draw on learning from COSPPac2, especially in "the application and integration of traditional knowledge systems and the interaction between these and gender and social inclusion in the development and communication of tailored information products. COSPPAC2 climate information products (accessed via SIMS) will be an input into supporting increased local level understanding of climate change.</p>
<p>Governance for Resilient Development in the Pacific Project (GOV4RES)</p> <p>2020-2025</p>	<p>Gov4Res works with Pacific Island governments to ensure that countries adapt their decision making and governance systems towards more resilient development. The project theory of change rests</p>	<p>Save the Children has a strong relationship with UNDP in the region and with the Gov4Res team. In Solomon Islands, Save the Children is an implementing partner of Gov4Res.</p>

<p>USD 18.2 million (7 countries) UNDP (DFAT/ KOICA/ MFAT/ SIDA)</p>	<p>on a core assumption that Pacific Island people will be more resilient to the impacts of climate change and disasters if countries manage all development through a 'risk informed' approach. This is consistent with the Framework for Resilient Development in the Pacific, which calls for the mainstreaming of climate and disaster risk treating risk management as fundamental to all development decisions.</p>	<p>Gov4Res' investments in national level systems and processes for resilient risk informed development will strongly compliment and reinforce SOLKAS' investments at the Ward and local level.</p>
<p>Pacific Ecosystem-Based Adaptation for Climate Change+ (PEBACC+)</p> <p>2022-2026 EUR 5.8 million (5 countries) SPREP (KIWA/ FFEM)</p>	<p>Continuation of the PEBACC project, expanding to more countries. Aims to strengthen existing activities, diversify them, and integrate ecosystem-based adaptation into public policies to ensure its sustainability.</p>	<p>Where relevant, SOLKAS will collaborate with PEBACC+ to help integrate EbA approaches into local level adaptation planning and implementation. SOLKAS will also share local level adaptation plans with SPREP to help guide PEBACC+ support to communities.</p>
<p>Building Resilience of Health Systems in Pacific Island LDCs to Climate Change</p> <p>2021-2026 USD 17.9 million with USD 76 million in co-finance across four countries UNDP/WHO (GEF)</p>	<p>Aims to enhance the capacity of national and local health system institutions, personnel, and local communities to manage health risks induced by climate variability and change.</p>	<p>SOLKAS will coordinate the implementation of relevant activities with the GEF project; including integration of health information into local level EWS.</p>
<p>Melanesia Rural Market & Innovation-Driven Development Programme</p> <p>2021-2023 USD 2.8 million (2 countries) World Vision (IFAD)</p>	<p>Mapping locally available nutritious foods by season, Developing nutrition behaviour change strategies; Improving farming practices. Market analysis on agribusiness; Empower women & youth with appropriate agribusiness skills; Financial literacy, savings and leadership training; Agribusiness management and technical skills training; Market linkages & business relationship training; Grants for productive assets. In Solomon Islands the project targets a small number of communities in Malaita province</p>	<p>SOLKAS will coordinate with World Vision to ensure no overlap in targeted Wards. SOLKAS will also draw on the World Vision project's successes and lessons during implementation.</p>
<p><i>Relevant recently completed projects</i></p>		
<p>Rural Development Program II</p> <p>2016-2022 USD 46.9 million World Bank</p>	<p>Assist the Solomon Islands to improve basic infrastructure and services in rural areas and to strengthen the linkages between smallholder farming households and markets.</p>	<p>RDP has provided small scale infrastructure in every rural Ward in the Solomon Islands, working through the provinces to coordinate small scale, community driven projects. SOLKAS will build on this with its investments in community resilience. SOLKAS will</p>

		also draw on the lessons learned from RDP in terms of coordinating implementation across the dispersed archipelago and working through provincial level governments.
<p>Community Resilience to Climate and Disaster Risk in Solomon Islands Project (CRISP)</p> <p>2014-2020 USD 9.1 million World Bank</p>	Respond to the urgent need for country support in order to plan ahead for major disaster response and coordinated disaster risk management. Integrate climate change adaptation and disaster risk reduction in government policies and operations; strengthen climate and disaster risk information and early warning systems; support structural and non-structural disaster risk and adaptation investments at community and provincial levels.	SOLKAS will build on CRISP activities to strengthen adaptation and DRR capacity in local government by improving subnational planning and implementation linkages and mainstreaming at the Ward and provincial level. SOLKAS will also incorporate lessons learned and best practices from CRISP investments at the community level, in particular, local applications of risk analysis and planning for community investments, where appropriate.
<p>Pacific Ecosystem-based Adaptation for Climate Change (PEBACC)</p> <p>2017-2020 USD 5.4 million (3 countries) SPREP (Germany)</p>	Aimed to help ensure EbA is integrated into development, climate change adaptation and natural resource management policy and planning processes in three Pacific Island Countries, providing replicable models for other countries in the region.	Where appropriate and feasible, SOLKAS will apply lessons learned for community-level EbA options assessment process implemented through PEbACC project. SOLKAS will also explore the possibility of implementing identified EbA options as part of adaptation packages, though the scope of PEbACC was limited to one area outside of Honiara.

The figure below provides an overview of the complementarities and differences in SOLKAS and IEDCRP approaches.



3. Solomon Islands' climate and recent trends

3.1. Air and sea surface temperature

The Solomon Islands climate is generally humid and warm throughout the year with weak seasonal variations. There are two distinct seasons. The wet season (from November to April) across the country is generally driven by the inter tropical convergence zone (ITCZ) and the west monsoon, resulting in strong north-westerly winds and seas affecting mostly the northern part of the country. During this time, known locally as the *Komburu* (wet) season, there are heavy and long rainfall periods that influence agricultural activity in the northern part of the country. In the southern part of the country, the South Pacific Convergence Zone (SPCZ) drives the weather and the climate during the dry season (known locally as the *Ara* season, generally lasting from May to October), while during the wet season strong southeast trade winds bring onshore heavy rainfall that influences agricultural activities.

Air temperature is relatively constant throughout the year, ranging from 25°C to 32°C depending on location. Air temperature is closely related to sea-surface temperatures (SST). In the most comprehensive study of Solomon Islands temperature records to date, Keremama et al (2019) conducted an analysis of all available records for all seven meteorological monitoring stations in the country. The study found significant increasing temperature trends at all the stations between 1951 and 2011, with mean annual surface temperatures increasing between 0.14°C and 0.39°C per decade, with an overall annual average of approximately 0.24°C per decade. Comparing two 30-year epochs for Honiara showed that the rate of trends during the more recent epoch (1981-2011; 0.23°C/decade) has doubled that of a previous epoch (1951-1980; 0.12°C/decade); in other words, the *rate* of warming has increased. The magnitude and direction of the local trends are consistent with other studies for the region and global average.

These warming trends are illustrated in *Figure 3* (below); it should be noted that, due to data limitations, the baseline period for comparison in this analysis is 1981-2010 instead of the 1961-1990 period which is recommended by the World Meteorological Organization (WMO). In Honiara, where data is more complete, the analysis showed that the rate of warming during the 1981-2011 period nearly doubled the rate of warming from the 1951-1980 period (0.23°C and 0.12°C per decade, respectively). This would have the effect of understating the warming trend over the past 30 years. The analysis also found that over three decades the frequency of warm days and warm nights increased by 0.4 days and 1.4 nights per decade, respectively. The study also observed significant increases in warm days and nights and decreases in cool days and nights at most stations. The national average of warm days increased by 2.2 days per decade, and warm nights increased at an average rate of 0.8 per decade. Cool days and nights decreased at an annual national average rate of 0.4 days per decade and 1.4 nights per decade respectively.

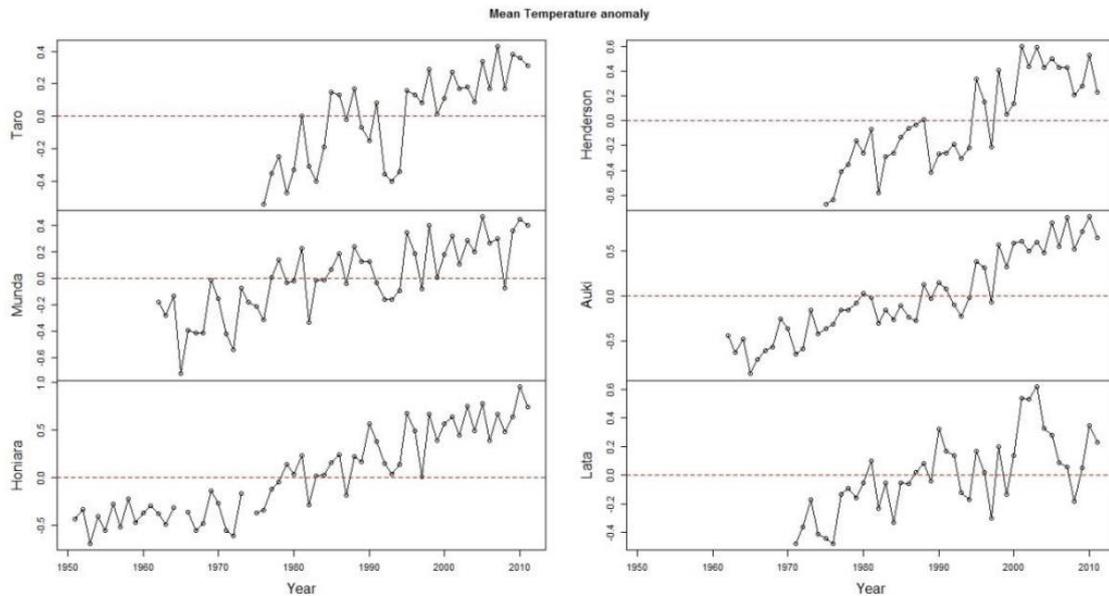


Figure 3. Regional temperature trends in across the Solomon Islands , (Keremama et al. 2019). It should be noted that the baseline period for comparison here is 1981-2010, as opposed to 1961-1990 which is used in many locations.

Rainfall

Average annual rainfall across the country ranges from 3000 to 5000mm, with most months experiencing rainfall totals exceeding 200mm. The wettest months are during the northwest monsoon season, with a tendency for reduced amounts during February when the equatorial trough is normally furthest south. Topography plays an important role in rainfall distribution within and among islands. Depending on the local topography, rainfall could be expected to increase with elevation with a maximum at about 600-1000 meters above sea level on windward slopes. The heaviest average yearly rainfall totals reach as high as 9000mm at some high elevation sites. Average historic rainfall (and temperature) for Honiara are shown in Figure 4, below.

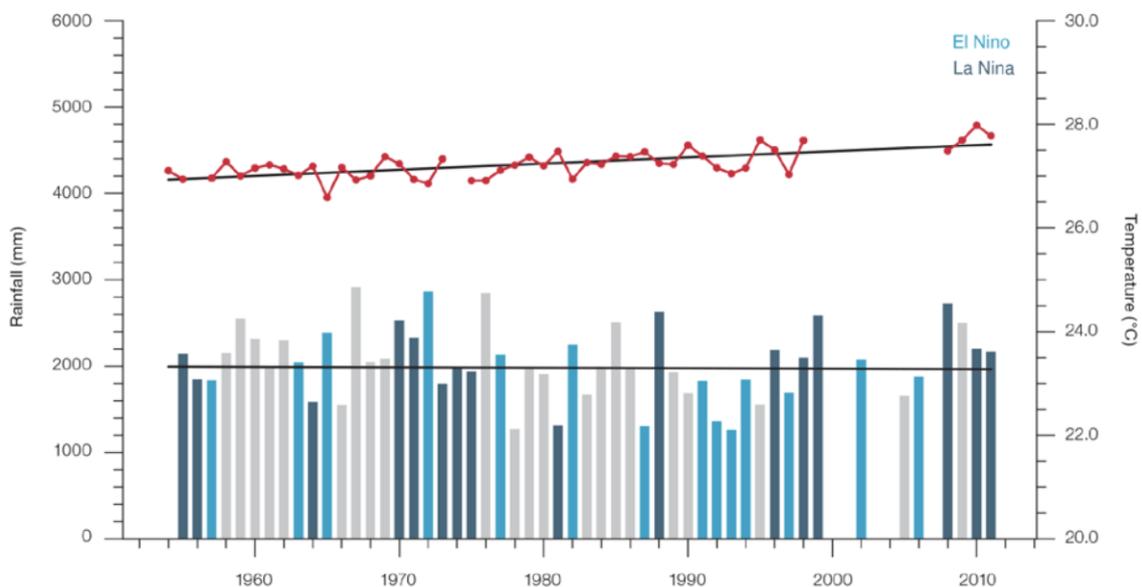


Figure 4. Average temperature and rainfall for Honiara (PACCSAPP, 2015)

3.3. Tropical cyclones

On average, the Solomon Islands receives 1-2 cyclones per year, generally between November and April. The country is just north of the latitudinal belt of greatest seasonal cyclone activity in the southern hemisphere (10-20S latitude), and so cyclones are not as common as they are in some parts of the Pacific. However, cyclones pose a serious threat to people, the economy, and the environment due to flooding and wind damage (Resmussen et al 2009). With respect to tropical cyclones, Maru et al (2018) analysed long-term trends to determine that while the frequency of tropical cyclones in the area around the Solomon Islands has decreased, their average intensity has increased. There have been severe floods on Guadalcanal, Malaita, Makira, and Santa Isabel islands in recent years with lives lost and severe damage to agriculture and infrastructure. In 2002 the island of Tikopia was hit by the category 5 cyclone Zoe. While there has been a decrease in the number of cyclones forming in recent years, the number of intense cyclones is increasing relative to the total number forming. The average number of cyclones affecting Solomon Islands annually is provided in Figure 5, below.

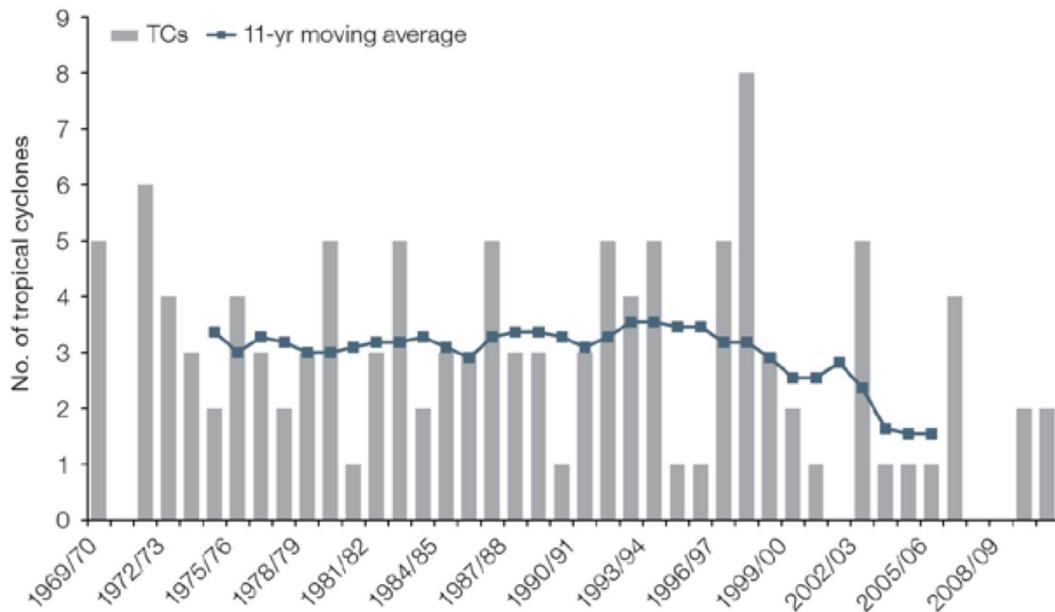


Figure 5. Time series of the observed number of tropical cyclones developing within and crossing the Solomon Islands EEZ per season. The 11-year moving average is in blue (PACCSAPP, 2015):

3.4. Other

Interannual variability. With respect to interannual variability, the interannual climate of the Solomons is driven primarily by the movement of the ITCZ, the SPCZ, and the El Niño Southern Oscillation (ENSO) (SIG 2017). There are significant correlations between ENSO indices and both rainfall and air temperature in the Solomon Islands (ABM & CSIRO 2011). El Niño events tend to bring a late start to the wet season and lower rainfall in both the wet and dry seasons, as well as cooler conditions in the dry season. Opposite impacts are usually observed during La Niña Events, when warmer water contributes to increased air temperatures and atmospheric moisture, leading to more rainfall. The wettest years in the Solomon Islands can be twice as wet as the driest years (AMB & CSIRO 2011). The 2014/2016 led El Niño event to increased sea surface temperatures which led to a severe coral bleaching event.

In general, increasing overall understanding of the science of climate change in the Solomon Islands has been identified as a priority in the country's Second National Communication (SNC). Though coverage of meteorological monitoring is limited and there are gaps in the records, the Solomon Islands Meteorological Services records show that annual surface temperatures for the western, central, and eastern regions of the country have increased over the last 30-50 years (UNEP 2019). It should be noted, however, that during the period in question, there are only seven weather stations with data (Keremama et al 2019). Moving forward it has been identified as a priority by SIG to improve hydrometeorological monitoring infrastructure across the country.

Disaster likelihood and impacts. An International Monetary Fund (IMF) analysis (Lee et al 2018) of the International Disaster Database (EM-DAT) indicated storms, floods, and droughts were the most common disasters impacting the Solomon Islands. The analysis also found that between 1980 and 2016, the Solomon Islands had a 51.4% likelihood of experiencing a natural disaster in any given year, with a mean damage of 8% of GDP and maximum damage of 14% of GDP. During this time, the mean population affected by disasters was 5.7% of the total national population, with the maximum population affected at 53.8%. The analysis also indicated that the Solomon Islands are among the Pacific Island Countries that are most likely to bear the most adverse economic cost from severe disasters, including those enhanced by climate change.

Sea level rise. An analysis published in 2012 indicated that rates of sea-level rise in the Solomon Islands over the preceding two decades were among the highest in the world, averaging 3mm/year since 1950 and 7-10mm/year after 1994 (Becker et al 2012). The 2019 *Solomon Islands State of Environment Report* (UNEP 2019) identifies several observed changes in physical/environmental conditions, including increasing temperatures, decreasing precipitation, changing patterns of weather, and extreme events. It also points to accelerated coastal erosion due to rising sea levels. The Report also indicates that the country may be currently experiencing sea level rise at a rate of 8-10mm/year, which is high in global terms.

4. Climate change projections and hazards

This section provides an analysis of climate change physical processes, impacts, and vulnerability in the Solomon Islands and was compiled to inform the development of the current Green Climate Fund (GCF) project design. The analysis includes the results of an extensive literature review including academic papers, development partner and non-government organization reports and analyses, government policies and strategies, and project reports. The analysis also includes primary source data from an extensive field assessment that was conducted in support of this feasibility study. The field assessment was conducted in 63 different villages across five provinces, and included one-on-one structured interviews with 646 participants, and a total of 157 focus group discussions. The climate change analysis also includes projections from the recently released Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) based on model runs from the sixth iteration of the Coupled Model Intercomparison Project (CMIP6).

As a country, the Solomon Islands is highly vulnerable to the impacts of climate change due to its geographical conditions and socio-economic context. Geographically, this vulnerability is connected to the location of the Solomon Islands as a tropical archipelago in the South Pacific. Vulnerability is also shaped by the geologic characteristics of the islands, as the archipelago comprises a mix of high islands, and low islands/atolls, each with their own mix of factors shaping the physical processes and impacts of climate change. The six main islands of Choiseul, New Georgia, Santa Isabel, Malaita, Guadalcanal, and Makira are characterized by rugged and mountainous landscape of volcanic origin. These islands experience flooding risks in the lowlands, and more erosion and landslides in the uplands. While the entire country is affected by sea level rise (SLR), the low-lying coral atolls are disproportionately vulnerable. However, SLR affects the entire archipelago, as approximately 85% of the population lives in rural villages located within 1.5km of the coastline (Filho et al 2020). These communities by and large derive their livelihoods directly from the environment with a high reliance on natural resources.

Key findings from this climate change analysis include:

- The Solomon Islands have experienced significant warming since 1951, and this trend is expected to continue into the future
- Storms, floods, and droughts are the most common disasters impacting the Solomon Islands
- SLR rates in the Solomon Islands are among the highest in the world
- Climate change threatens coral reefs in the Solomons and reef productivity
- Prior to the vulnerability assessment conducted to inform this project, no nationwide climate impact/vulnerability assessments have been conducted for the Solomon Islands;
- Most communities and local people that have participated in impact/vulnerability assessments at the level of the province and below have observed physical changes and impacts associated with climate change;
- An absence of locally-accessible information on climate change and agricultural resilience has increased rural vulnerability to extreme climate-related events, with adverse impacts on food security and nutrition; and
- Overall, the agricultural sector is the most vulnerable in the Solomon Islands.

4.1. Climate change projections

The most recent downscaled projections for the Solomon Islands are described in ABM and CSIRO 2014 and were based on IPCC Fifth Assessment Report (AR5) scenarios and model

runs from the Fifth Coupled Model Intercomparison Project (CMIP5). A summary of these projections for four representative concentration pathways (RCPs) is presented in *Table 2* (below).

Table 2. Projected changes in surface temperature, annual and seasonal rainfall, and sea level rise across four representative concentration pathways (RCPs).

RCP2.6 (low emissions) is shown in green (first row for each variable); RCP4.5 (low-medium emissions) is shown in blue (second row for each variable); RCP6 (medium emissions) is shown in purple (third row for each variable); and RCP8.5 (high emissions) is shown in red (fourth row for each variable). Projected changes are given for four 20-year periods based on 2030, 2050, 2070, and 2090 relative to a 20-year period based on 1995. Values represent the multi-model mean change, with the 5-95% range of uncertainty in parenthesis. After ABM and CSIRO 2014.

Variable	Season	2030	2050	2070	2090	Confidence
Surface air temperature (°C)	Annual	0.6 (0.4–0.9)	0.8 (0.6–1.2)	0.8 (0.4–1.2)	0.7 (0.4–1.2)	Medium
		0.7 (0.4–1)	1 (0.7–1.4)	1.2 (0.9–1.8)	1.4 (1–2.1)	
		0.6 (0.5–0.9)	0.9 (0.7–1.4)	1.3 (1–2)	1.7 (1.3–2.6)	
		0.7 (0.5–1)	1.3 (1–1.9)	2.1 (1.5–3)	2.8 (2–4)	
Total rainfall (%)	Annual	3 (-1–8)	3 (-1–7)	3 (-3–8)	4 (-1–12)	Low
		3 (-2–9)	3 (-4–9)	4 (-2–12)	3 (-4–10)	
		4 (-1–9)	3 (-3–8)	5 (-3–14)	4 (-6–15)	
		3 (-1–7)	3 (-3–9)	5 (-3–14)	6 (-7–20)	
Total rainfall (%)	Nov-Apr	3 (-2–9)	3 (-1–9)	3 (-3–9)	4 (0–10)	Low
		2 (-2–9)	2 (-4–7)	4 (-2–13)	4 (-1–10)	
		3 (-2–9)	2 (-4–9)	4 (-3–11)	4 (-5–14)	
		3 (-2–9)	3 (-5–10)	5 (-4–13)	6 (-6–20)	
Total rainfall (%)	May-Oct	3 (-4–8)	3 (-4–12)	3 (-5–11)	4 (-4–15)	Low
		3 (-4–11)	4 (-3–11)	4 (-3–11)	3 (-8–12)	
		4 (-3–13)	5 (-4–13)	5 (-8–16)	4 (-8–16)	
		3 (-2–8)	3 (-6–9)	5 (-7–15)	5 (-11–22)	
Mean sea level (cm)	Annual	13 (8–18)	22 (14–31)	32 (19–45)	42 (24–60)	Medium
		12 (7–17)	22 (14–31)	35 (21–48)	47 (29–67)	
		12 (7–17)	22 (14–30)	34 (21–47)	49 (30–69)	
		13 (8–18)	25 (16–35)	42 (28–58)	63 (40–89)	

In 2021 CSIRO and SPREP updated the aforementioned 2014 model runs to account for uncertainty regarding the impact of global warming and climate change on the SPCZ. The update included four “storylines” to project climate change in the Solomon Islands in the cases that the SPCZ moves to the south or to the north, under two different RCPs (2.6 and 8.5). These scenarios are reproduced in *Figure 3* below.

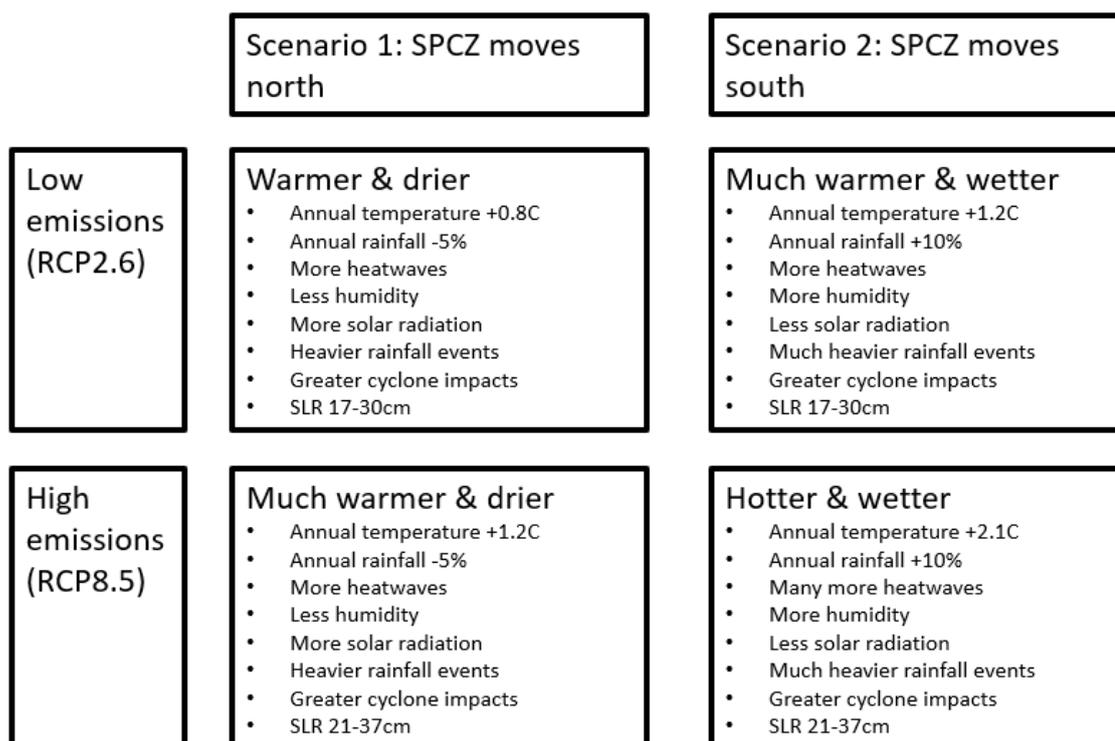


Figure 6. South Pacific Convergence Zone (SPCZ) change scenarios. Scenarios for the period 2040-2059 describing potential changes under different SPCZ migration scenarios and emissions trajectories, using 1986-2005 as a baseline. After CSIRO and SPREP 2015

Though no new downscaling work has been conducted specifically for the Solomon Islands since the CSIRO project, CMIP6 temperature and precipitation projections for all IPCC AR6 scenarios is shown in *Table 3* and *Table 4* respectively. These projections are taken from the World Bank’s Climate Change Knowledge Portal for the Solomon Islands.¹² *Table 3* provides decadal projections for temperature increase under the five shared socioeconomic pathways (SSPs) that are used in the AR6, replacing the RCPs from the AR5, whereas *Table 4* shows decadal projections for precipitation under the same SSPs. These projections are also shown as a group in Figure 7 for temperature. Figure 8 provides the multi-model ensemble projections for rainfall.

Table 3. Projected annual average warming under AR6 shared socioeconomic pathways (SSPs). Derived from the World Bank’s Climate Change Knowledge Portal.¹³

	2021-30	2031-40	2041-50	2051-60	2061-70	2071-80	2081-90	2091-2100
SSP1-1.9	0.43	0.57	0.64	0.59	0.55	0.47	0.48	0.43
SSP1-2.6	0.41	0.61	0.74	0.78	0.81	0.82	0.83	0.76

¹² <https://climateknowledgeportal.worldbank.org/country/solomon-islands/climate-data-projections>

¹³ <https://climateknowledgeportal.worldbank.org/country/solomon-islands/climate-data-projections-expert>

SSP2-4.5	0.45	0.65	0.88	1.11	1.28	1.45	1.56	1.67
SSP3-7.0	0.42	0.65	0.93	1.27	1.53	1.77	2.14	2.45
SSP5-8.5	0.49	0.74	1.09	1.44	1.83	2.25	2.70	3.07

Table 4. Projected changes in annual average precipitation (cm) under AR6 shared socioeconomic pathways (SSPs). Derived from the World Bank’s Climate Change knowledge Portal.

	2021-30	2031-40	2041-50	2051-60	2061-70	2071-80	2081-90	2091-2100
SSP1-1.9	+2.87	-1.85	-0.07	+3.03	-1.48	+3.84	-4.27	+0.63
SSP1-2.6	+1.21	+2.00	+7.38	+3.51	+3.34	+5.67	+7.96	+4.08
SSP2-4.5	+3.54	+7.11	+4.80	+8.82	+5.37	+6.92	+5.00	+4.41
SSP3-7.0	+2.28	+2.40	+2.51	+7.44	+4.22	+1.73	+0.31	+1.10
SSP5-8.5	+2.23	+3.15	-1.96	-0.40	+0.45	+0.79	+3.08	+1.73

Projected Mean-Temperature
Solomon Islands; (Ref. Period: 1995–2014), Multi-Model
Ensemble

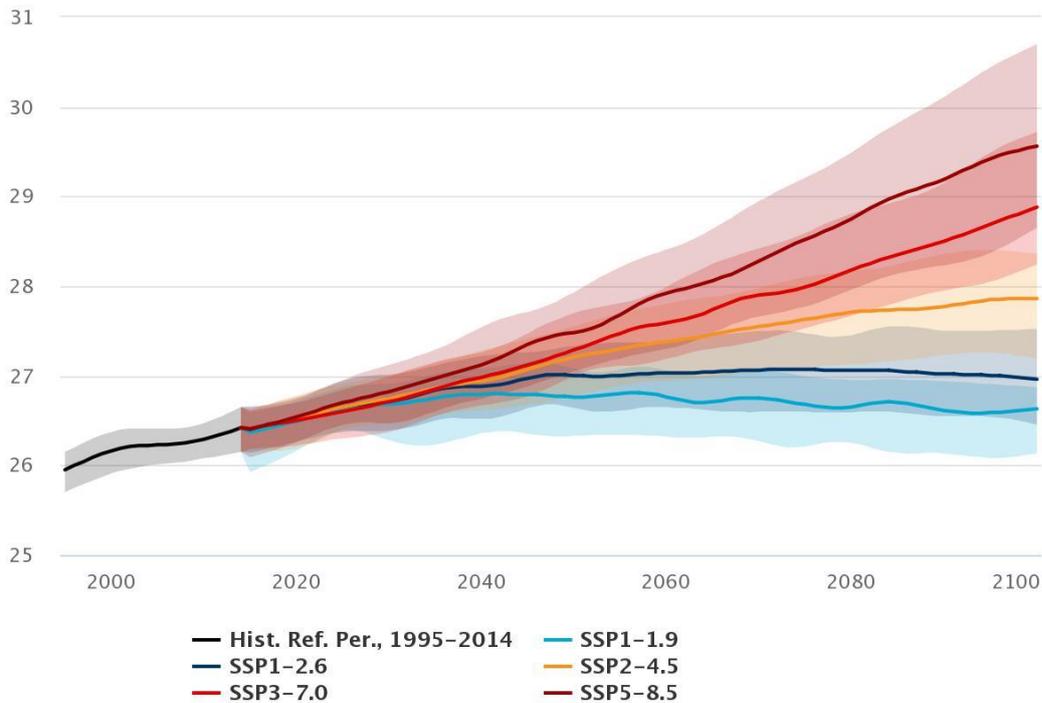


Figure 7. Project mean annual temperature increases, Solomon Islands. World Bank's Climate Change Knowledge Portal

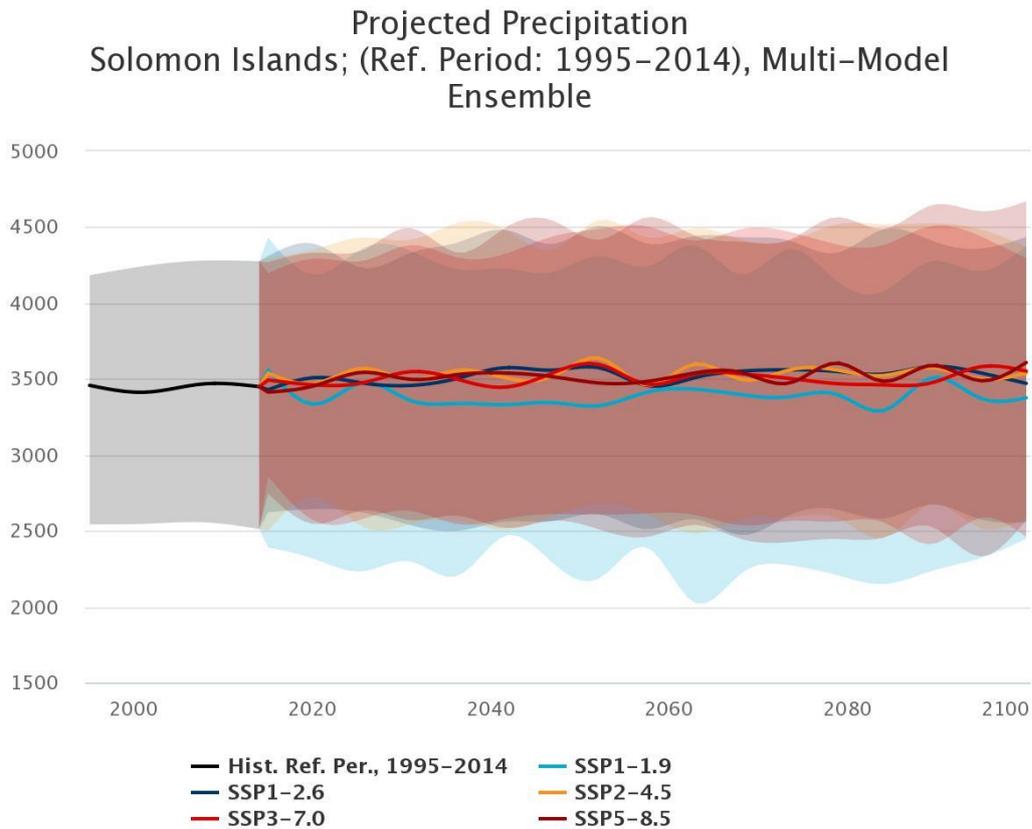


Figure 8. Project rainfall changes, Solomon Islands. World Bank's Climate Change Knowledge Portal

It should be noted that there are several factors that have hindered the production of new downscaling products for the Solomon Islands. These include a lack of in-country hydrometeorological monitoring coverage to support statistical downscaling, a lack of updated regional models to support dynamical downscaling, lack of support from development partners, and complex topography combined with small island sizes that tend to confound climate models. In the future the *State of Environment Report* (UNEP 2019) suggests several directions:

- Some species will be lost or displaced due to warming in higher altitudes
- Temperature increases in the range of 0.4-1.0C by 2030
- Average annual and seasonal rainfall is expected to increase
- Extreme rainfall periods will occur more often and will be more intense

SOLKAS includes provision to support the Solomon Islands Meteorological Service to procure and install three additional automatic weather stations. This will be a significant increase on the seven stations currently in operation and will begin to plug gaps in data.

4.1.1. Sea Level Rise

Future projections indicate that under RCP 2.6, sea levels could rise as much as 30cm by 2050 (mean 17cm) and 65cm by 2100 (mean 45cm), and under RCP 8.5, the increase could

be 40cm by 2050 (mean 25cm) and 110cm by 2100 (mean 75cm). *Figure 9*, below, shows observed sea level rise and projected rises across a range of scenarios.

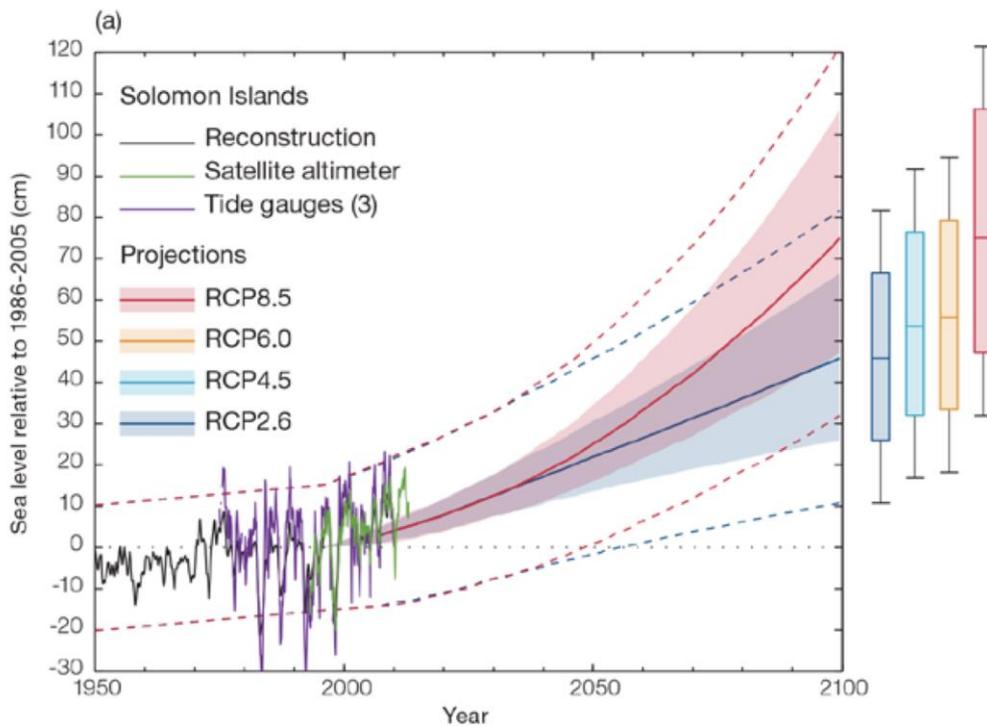


Figure 9. Observed and projected sea level rise in the Solomon Islands. The observed tide-gauge records of relative sea-level (since the late 1970s) are indicated in purple, and the satellite record (since 1993) in green. The gridded (reconstructed) sea level data at the Solomon Islands (since 1950) is shown in black. Multi-model mean projections from 1995–2100 are given for the RCP8.5 (red solid line) and RCP2.6 emissions scenarios (blue solid line), with the 5–95% uncertainty range shown by the red and blue shaded regions. The ranges of projections for four emission scenarios (RCPs 2.6, 4.5, 6.0 and 8.5) by 2100 are also shown by the bars on the right. The dashed lines are an estimate of interannual variability in sea level (5–95% uncertainty range about the projections) and indicate that individual monthly averages of sea level can be above or below longer-term averages (PACCSAPP, 2015)

4.1.2. Oceanic Conditions

Ocean acidification is expected to continue to increase. Earlier models (Brokovich et al 2012) suggested that by 2045 the annual maximum aragonite saturation state for the Solomon Islands will reach values below 3.5 and will continue to decline thereafter. This suggests that coral reefs will be vulnerable to actual dissolution as they will have trouble producing the calcium carbonate needed to build their skeletons. This will impact the ability of the reef structures to have growth rates that exceed natural bioerosion rates. Increasing acidity and decreasing levels of aragonite saturation are also expected to have negative impacts on ocean life apart from corals: including calcifying invertebrates, non-calcifying invertebrates and fish. Consequently, the abundance of reef fish, those who earn their livelihoods from reef fisheries and those who rely on fisheries as a significant food source are likely to be affected. Given that the vast majority of protein consumed in the Solomon Islands comes from locally-caught fish, this is a significant concern, especially with respect to food security. *Figure 10*, below, shows decreases in aragonite saturation across several scenarios.

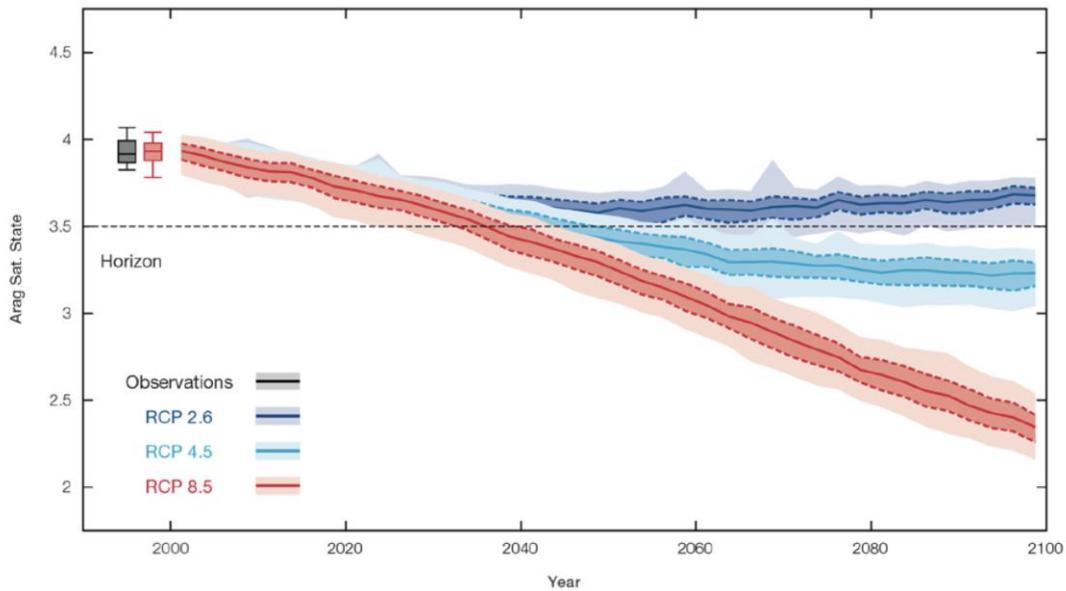


Figure 10. Projected decreases in aragonite saturation state in the Solomon Islands from CMIP5 models under RCP2.6, 4.5 and 8.5. Shown are the median values (solid lines), the interquartile range (dashed lines), and 5% and 95% percentiles (light shading). The horizontal line represents the transition to marginal conditions for coral reef health (PACCSAPP, 2015)

4.1.3. El Nino Southern Oscillation

The Solomon Islands experiences drought conditions during the El Nino phase of ENSO. In some cases (notably in 1997), droughts can lead to water shortages on many islands. During the La Nina phase, the waters over the western Pacific, including around the Solomon Islands, warm up, causing more cloud formation resulting in prolonged and high rainfall periods.

The one available study on tropical cyclones indicated that ENSO influences tropical cyclone genesis around the Solomons, and that more tropical cyclones were generated in El Nino periods, and that those cyclones tended to be strong (Maru et al 2018).

Robust projection of ENSO is not feasible with the current generation of climate model projections, and previous analyses point out that the data that is currently available prevents meaningful assessment of long-term trends for El Nino and La Nina, as well as the impacts of these phenomena on important sectors such as agriculture (Bird et al, 2022).

4.1.4. Uncertainty of model projections

It should be noted that virtually all sources (CSIRO & SPREP 2021, World Bank 2021a, Rosegrant et al 2015, CSIRO 2014) that utilized climate models from CMIP4 or CMIP5, and scenarios from the AR4 and AR5 agreed that various individual models are quite divergent for the Solomon Islands with respect to precipitation changes, and there are still gaps in the scientific community's understanding of how climate change will affect important phenomena such as ENSO and the SPCZ. Given the lack of consensus among models, and the wide range of variability among models that are each highly regarded individually (see Rosegrant et al 2015), it is important to focus on "no regrets" adaptation strategies that will provide benefits across a range of possible futures.

The two lowest emissions scenarios, RCP2.6 and RCP4.5, are below the current global emissions trajectory. According to AR5, in 2011 the total radiative forcing relative to 1750 reached 2.29 Wm^{-2} with *high* confidence. In AR6, by 2019 the radiative forcing had risen to 2.72 Wm^{-2} , of which 0.34 Wm^{-2} was due to the increase in GHG concentrations in the

atmosphere. Given this trend, RCP2.6 is unlikely to be achieved¹⁴, particularly when considering the pledges made to date on the 2021 update of the NDCs under the Paris Agreement. RCP4.5 is achievable if all current pledges are met and the remaining NDCs to be updated commensurately increase ambition – and that ambition continues to increase over time.

As a nation highly vulnerable to climate change impacts, the Solomon Islands needs to protect its population from the hazards presented by the most plausible future climate using the precautionary principle (represented by RCP6.0), rather than an aspirational one (represented by RCP2.6) or even that which is possible if all current pledges are implemented (represented by RCP4.5).

This is particularly the case as there remain significant uncertainties at the level of policy response and implementation globally (exemplified by the number of net-zero pledges made that lack a clear implementation framework or pathway to achievement). Therefore, the impact assessment for this project is based on the medium emissions scenario (RCP6.0) as an intermediary between the low emissions scenario (RCP4.5), which is recommended for the planet to avoid significant ecological tipping points (IPCC 2018), and the very high emissions scenario (RCP8.5). There are two considerations that make selection of any *specific* RCP a moot point:

1. **The projected changes do not diverge in a significant way between the RCPs until around 2040**, so the shorter-term projections remain valid regardless of the RCP utilised.
2. **The direction of change for all emissions scenarios is the same** (e.g., higher temperatures, more concentrated rainfall), with increasing intensity depending on longer term trajectories. Application of the precautionary principle, as a matter of good governance, would then point to the use of a higher-rated RCP.

Considering the above and the availability of scientific data on climate change forecasts and impacts specific to the Solomon Islands, the project design is informed principally by the medium emissions scenario (RCP6.0). Where available, impacts based on RCP4.5 are included. The project actions are also designed to be no-regrets adaptation actions – they will help increase resilience in the face of significant impacts, while still making sense in lower emissions scenarios, and even in a world without climate change impacts due to the target communities' existing exposure and vulnerability to climate extremes.

4.2. Impacts of changing climate trends on natural and human systems

The following sections describe climate change impacts on several sectors in the Solomon Islands. The information presented here is drawn from the extensive desk research conducted for the feasibility study. Results from the field study conducted for the feasibility study is presented in later sections.

4.2.1. Impact: Water, Sanitation, and Hygiene (WASH) sector

With respect to rural WASH impacts, Fleming et al (2019) used survey data from 1598 rural and 1069 urban households in the Solomon Islands to identify climate vulnerabilities. They noted that there are significant rural-urban inequalities with respect to sanitation, with 81% of urban households having some sanitation access, whereas only 20% of rural households had access. 80% of rural households practice open defecation, and pit latrines were the most widely utilized form of rural waste management. However, rural pit latrines were found to be vulnerable amidst increasing precipitation conditions, as they can flood due to rising groundwater levels. Intense flooding can lead to overflowing, contamination or drinking water,

¹⁴ In the RCP2.6 pathway, radiative forcing peaks at 3.0 Wm⁻² before 2050 to then fall back to 2.6 Wm⁻² by the year 2100.

and widespread spillage into the environment. These authors identified relatively low-cost improvements to enhance resilience, including using elevated pit latrines and watertight chambers, but they found that GoSI's Community-Led Total Sanitation (CLTS) approach does not currently prescribe latrine designs that are resilient to expected changes in weather and climate. The study recommended that resilient pit latrine designs be incorporated into CLTS programming, and that this should be accompanied by contextualized health messaging, behaviour change interventions, and financial assistance programs to overcome supply chain barriers in rural areas.

Chan et al (2020) examined potential climate change impacts on rural water sources in the Solomon Islands. They found that under cyclone and extreme rain conditions, communities tend to rely more on the abundant rainfall for household use, as there is a general preference in the Solomons to use rainwater rather than surface or groundwater. Hence when rainwater is available, the use of surface water and groundwater declines due to the perceived threat of fouling of these sources. On the other hand, during droughts the availability of rainwater is vastly reduced, and the likelihood of using unimproved surface and groundwater sources increases considerably.

4.2.2. Impact: Coasts, Fisheries, and Marine Resources

Coastal areas. As noted above, approximately 85% of the population lives in coastal areas. Commonly observed processes and impacts affecting coastal erosion and shoreline recession, loss of housing and infrastructure, increased nuisance flooding during spring tides and storms, and waterlogging of ground and wells (Mataki et al 2013).

Fisheries and marine resources. In the fisheries sector, Dey et al (2016) noted that fish and fish products account for more than 75% of total expenditures on animal protein in the Solomon Islands, and in some areas, fish make up more than 90% of the animal source food intake. However, this analysis indicated that, due to a range of pressures including population growth and climate change impacts, by 2050 demand for fish will exceed supply, especially from coastal capture fisheries, which are the most important source of fish for domestic consumption. This would have serious negative food security implications for the country.

4.2.3. Impact: Agriculture Sector

Overall, the agriculture sector is among the most vulnerable in the Solomon Islands. Agricultural commodities that are important as food (sweet potatoes, yams) and cash crops (coconut, cacao) are expected to decline due to climate impacts, further exacerbating the demand on limited natural resources (Basel et al 2020). Climate-induced disturbances, such as drought and saltwater intrusion are expected to affect food supply and food security via damage to crops and fields, and a decline in root crops, particularly taro, due to water temperatures and salt-water inundation has already significantly decreased yields (UNDP n.d.). In previous vulnerability assessments conducted in various parts of the archipelago, respondents at the village level commonly cite changes to environmental conditions as a result of a changing climate, and associated impacts. Agriculture sector vulnerabilities reported through previous studies include:

- Increases in pests and diseases in food gardens
- Flooding of food gardens and cash crops
- Waterlogging of garden areas and cash crops
- Topsoil erosion
- More landslides on sloping garden areas
- Reduced crop yields (all from Mataki et al 2013)

Farmers have also reported that increasing temperatures and heat stress have caused changes in tuber size in important staple crops, which leads to a declining harvest (Bird et al 2022). With respect to projections for the future, in a study utilizing four global climate models and agricultural modelling conducted for the Asian Development Bank, Rosegrant et al (2015) concluded that yields of rainfed taro to decline by 7.4%-16.1% by 2050 unless farmers adjust planting month and cultivar, which would reduce potential losses by 30%. The study also projected yield losses in the range of 12-16% for both rice and sweet potato under worst case scenario, but also indicated that effective adaptation measures implemented by farmers could help to avoid much of this loss.

4.2.1. Impact: Education Sector

Climate change threatens to make it harder for children to remain safe and protected and complete their education without disruption. The impacts on children and the education sector are making a significant problem worse. Extreme weather events and slower onset impacts affect school-aged children both directly (via death, injury, damage to infrastructure and school materials, and educational disruption/foregone education) and indirectly (via increased absenteeism, dropouts, and negative impacts on health and well-being, food security and nutrition, livelihood security and family incomes). Further context on climate change impacts on the education sector are provided in **Annex 27**.

4.2.2. Impact: Health Sector

General health impacts in of climate change in the Solomon Islands include more vector-borne diseases, respiratory diseases, waterborne and foodborne diseases, malnutrition, and non-communicable diseases (WHO & UNFCCC 2020). As temperatures increase, rainfall patterns change and extremes become more intense and/or frequent, impacts on community health, particularly on children's health, will escalate. Increases in vector-, water- and food-borne diseases are anticipated, as are increases in respiratory diseases and under-nutrition. This is exacerbated by an increasing reliance on imported foods with lower nutrition than homegrown produce. The lack of specific knowledge about climatic problems in crops can also be a constraint to adequately addressing the potential impacts in a manner that builds long term resilience and avoids maladaptation.

4.2.3. Disproportionate impacts on marginalised groups

Existing inequality and disadvantage in the Solomon Islands are amplified by climate change. Access to resources, decision making, information and safety are all mediated through norms associated with gender, disability and age.

Women's substantial unpaid care roles, early marriage and childbearing require agriculture and fisheries activities adapted to suit their needs. High levels of exclusion that people with disability experience also require targeted work to build skills and resources of people with disability, as well as shift perceptions of disability and inclusion amongst community leaders.

While national policies on climate change, agriculture, fisheries and gender equality recognise the importance of understanding men's and women's roles and striving for gender equality in building community climate and disaster resilience, translating these policies into service delivery is hampered by limited expertise in gender mainstreaming at national, provincial and ward levels of government. Consultations at community level undertaken during the development of this proposal highlighted that climate change has different impacts for men and women because of their different roles and responsibilities. As women are mainly responsible for home gardens they are largely affected by water, including flooding which destroys their crops, and time taken to collect water for household use. One male focus group mentioned that constant rain is leaking into homes and making it difficult for women to cook in the kitchen. Men are affected by reduced fish in the sea, needing to travel further out to catch fish, which takes more time and costs more money in fuel, and the stress of providing enough

for their family. A group in Malaita said that men feel pressure to find paid work because women's crops at home are failing, and also worry about whether the homes they have built will be strong enough to withstand strong winds and cyclones. These consultations reflect the findings of other studies.¹⁵ Gender-based violence is endemic, and women and girls lack systemic access to justice.¹⁶ People living with disability face even more significant barriers to accessing adaptation support. The project will mainstream GESI approaches into all activities and will engage a dedicated GESI advisor position.

4.3. Determining community vulnerability to climate change

The Solomon Islands has the second highest disaster risk score of 31.16 in the World Disaster Risk index, indicating it is a highly exposed nation to natural hazard driven disasters (World Risk Report 2021). As noted above, the population of the Solomon Islands is concentrated in the coastal zone and are therefore highly exposed to climate extremes and change. Subsistence agriculture and fisheries are particularly exposed to both land-based and marine events. Therefore, the agriculture and fisheries sectors in coastal areas, which provide food for up to 80% of rural communities, will be particularly vulnerable to climate change.

Though no nationwide climate impact/vulnerability assessments have been conducted for the Solomon Islands, several province/locality specific analyses have been carried out by academics and as part of various projects. These analyses shed some light on current and expected impacts and vulnerabilities across the archipelago. One of the more comprehensive vulnerability assessments was conducted in Choiseul province as part of an adaptation project (Mataki et al 2013). This study collected data in 27 communities concluded that adaptation responses in rural areas of the Solomon Islands should consider ecosystem-based adaptation (EbA). 26 of the 27 communities studied were located by the coast. Local people reported witnessing several processes and impacts associated with climate change, including:

- Coastal erosion and shoreline recession;
- Houses, coastal roads, water standpipes, and graves lost due to sea level rise;
- Waves overtopping barriers during spring tides and storms;
- Waterlogging of the ground; and
- Saltwater intrusion into wells.

Most villages in this study reported a perceived change in climate variability which led to challenges for agricultural production. Increases in the frequency and intensity of rainfall events were specifically identified as significant threats for crop production. In addition, erratic weather and increasing temperatures were reportedly keeping people from their gardens, leading to reduced crop production and yields.

Bird et al (2022) interviewed and conducted focus groups with farmers in two communities in North Malaita. They found that almost three quarters of farmers have observed a change in rainfall patterns, and nearly half have observed changes in temperature. The vast majority of farmers in the study (83.7%) expected continuing changes to precipitation and temperature regimes by 2050. The farmers in this study generally observed that losses in crop production were caused by cyclones and increasing temperature over time. Specific impacts included diminishing tuber sizes, affecting production of staple foods. This study concluded that an absence of scientific information on climate change and agricultural resilience has increased rural communities' vulnerability to extreme climate-related events, leading to adverse effects

¹⁵ See, FAO (2019) Country Gender Assessment of Agriculture and Rural Sector in Solomon Islands, available [here](#); and World Bank (2022) Project Appraisal for Integrated Economic Development and Community Resilience Project. Available [here](#).

¹⁶ See CARE and Live and Learn (2020) Solomon Islands Gender, Disability and Inclusion Analysis for Covid-19 and Tropical Cyclone Harold, available [here](#); and Asian Development Bank (2015) Solomon Islands: Country Gender Assessment, available [here](#).

on food security and nutrition. This underscores the need to increase general and sector-specific climate literacy at the community level in the Solomon Islands.

Doverella et al (2021) found that the impacts of climate change on water security in the Solomon Islands have been recognized but achieving long-term water security will be difficult for a variety of reasons, including high population growth rates. These authors note that 49% of the rural population in the Solomon Islands use natural and untreated water sources (e.g., streams, wells) for drinking water. In addition to direct impacts on the water supply, this dependency on untreated sources, combined with climate change, creates significant indirect vulnerabilities as well. An example of this is the extensive flooding of the Guadalcanal plains in January 2019, caused by abnormally high rainfall. The flooding contaminated drinking water sources and enhanced risks of vector- and water-borne diseases.

In a study of Rennell and Bellona province, Iese et al (2015) found that communities had already observed climate variations, including low rainfall and frequent cyclones, reporting impacts on food security and livelihoods. 96.6% of those surveyed said there had been changes in temperature, which most believed that heat stress was affecting plant growth. Communities also reported an increase in rainfall over the past 30 years.

Ensor et al (2018) found in a study of nine communities in Western Province that overall people tend to perceive environmental changes more acutely in terrestrial systems as opposed to marine systems. They also found that perceptions of risk were associated with gender and distance to the nearest market town. Basel et al (2020) also analysed communities in Western Province where residents reported unpredictable weather patterns; increasingly intense storms; drought; coral bleaching; sea level rise and inundation; and coastal erosion. Resources that are instrumental to local livelihoods, including fisheries and agriculture, are directly affected by variability and change, including altered rainfall patterns, increased storm intensity, increased air and sea temperatures, saltwater intrusion and ocean acidification.

McNaught et al (2011) analysed several communities in Temotu province where residents reported several issues which can totally or partially be connected to weather and climate, including high tides/inundation lack of safe drinking water, drought, cyclones, heavy rain, coastal erosion, declining fish stocks, decline in agricultural food production, and coral bleaching. Of these problems, the results show that high sea-level events (and associated erosion) are one of the greatest concerns for the community members, followed by declining fish stocks, water quality, agricultural production as well as the changing frequency of storms which were once easily predictable. These problems often result in damage to households and damage to crops.

Overall, it is noted that knowledge about current and future climate change impacts is highly variable across the country and within each community (Higgins et al 2019).

4.4. National Level Vulnerability Analysis

The design team undertook a national vulnerability assessment (NVA) as part of the feasibility study. The NVA utilized a semi-quantitative method, partially validated through government consultations, to assess all 183 Wards in the Solomon Islands to rank their relative vulnerability to climate change. The method applied the IPCC structured framework that includes the elements of exposure, sensitivity, and adaptive capacity. The components of the analysis and semi-quantitative approach are consistent with other vulnerability assessments applied in the Solomon Islands and broader region (e.g., Vanuatu Community-Based Climate Resilience project 2021; Solomon Islands, Basel et al. 2020; Great Barrier Reef, Johnson and Marshall 2007; tropical Pacific Island region, Bell et al. 2011, Thiault et al. 2021; Torres Strait islands, Johnson and Welch 2016; Arafura and Timor Seas, Johnson et al. 2021). The method uses a series of steps to apply a structured analysis for determining the potential impacts of climate change on communities in Wards, their relative level of vulnerability and drivers of vulnerability. Using available data and local knowledge, the assessment used indicators for hazard (climate and non-climate threats), exposure (shoreline geomorphology, topography/

elevation), sensitivity (dependence of crops for food, dependence on natural resources for income, condition of habitats, remoteness/accessibility) and adaptive capacity (education levels, health index, current community actions). A vulnerability metric was used to quantify results so that components were systematically ranked based on their relative vulnerability at a national level.

The national vulnerability assessment drew on available published data, government statistics and local knowledge. Some proposed indicators were removed due to lack of data, for example, 'population growth'. Importantly, because it is a relative assessment, the data used were consistently sourced and applied across the 183 Wards for each indicator. Stakeholder consultation with government during the process also provided data for the assessment.

The results provided a relative ranking of the 183 Wards in Solomon Islands from highest to lowest vulnerability to climate change and were used to strategically target beneficiaries (i.e. those that are most vulnerable and marginalised) in a transparent and justifiable approach. The results also identified the main drivers (or sources) of vulnerability, which were used to identify a suite of adaptation actions that specifically address the main sources of vulnerability and provide a 'menu' or package of adaptations for implementation. During project implementation, suitable adaptation actions will be selected from this 'menu' (adaptation package) by communities and implemented in partnership with beneficiary communities to minimise vulnerability and build resilience to climate change.

The results are spatially variable and show both high and low climate vulnerable Wards exist in each Province (Table 5, below) and sometimes on the same island (Figure 11, below). Demonstrating the influence of local conditions (biophysical and socio-economic) and the need to tailor adaptation actions to local conditions. The adaptation package will provide a menu of actions to address these specific vulnerabilities.

The full vulnerability assessment is at **Annex 23**.

4.4.1. Targeting beneficiaries¹⁷

The national vulnerability assessment provides an objective and transparent basis for identifying vulnerable Wards and therefore potential project beneficiaries. Relative vulnerability however is not the only consideration, and other factors are also relevant when selecting beneficiaries for the project. Through further stakeholder consultation, additional information was collected on each Ward to inform selection of direct beneficiaries for the project. The results of the NVA formed the basis for engaging with national and sub-national government to incorporate data on existing projects and government priorities, to inform selection of Wards that will be targeted for project activities. The selection of target beneficiaries considered:

1. Alignment with government priorities for climate change adaptation, including food security, livelihoods, natural resource management, disaster risk reduction and gender equity and social inclusion;
2. Alignment with government policies/regulations for climate change adaptation, including food security, livelihoods, natural resource management, disaster risk reduction and gender equity and social inclusion; and
3. Current enabling activities (i.e. opportunity to build on existing projects and activities to increase benefits) in each Ward.

These three criteria were considered as a filter to review the ranked Wards from highest vulnerability to lowest to select the Wards for the project to target. Interestingly, the response to these three criteria for each of the 183 wards was the same and positive. Meaning that there was alignment with government priorities and policies in every ward, and that there were current enabling activities in every ward. Therefore, the results of the vulnerability assessment

¹⁷ See also, Section 6.5 Beneficiary selection

remain the same and are the foundation for identifying direct beneficiaries. Based on the top 52 most vulnerable Wards the project will target 185,102 direct beneficiaries (ca. 25.7% of the total population) in six provinces (Table 5). Through scaling-up driven by sub-national governance, 277,797 indirect beneficiaries (ca. 32% of the total population) will be reached. The breakdown of direct beneficiaries across Provinces, Wards, communities and households is provided in the table below.

Province	# Targeted Wards	# Targeted communities ¹⁸	Population (2019 provisional)	# Households (2009)
Isabel	3	9	6,442	1,052
Central	5	15	13,064	2,026
Guadalcanal	10	30	46,871	6,330
Malaita	19	64	93,354	14,739
Makira-Ulawa	6	25	14,418	1,978
Temotu	9	27	10,954	2,117
Total	52	170	185,102	28,242

While direct beneficiaries will be the primary focus of support to implement adaptation actions, the capacity building in sub-national and national government and the systems established will facilitate scaling-up of project adaptations and resources to many more indirect beneficiaries. The indirect beneficiaries will be up to 277,797 people (49% W, 51%M) (38.5% of the national population, 60% of the population of the six targeted provinces). These indirect beneficiaries will be reached via scale out of some project activities by provincial and local authorities and further outreach via project supported IEC materials – including extended distribution of IEC materials across the targeted provinces via radio, social media and text messaging. This is likely to be a conservative estimate of the project’s total indirect reach as the MEHRD has committed to rolling out project-supported climate change curriculum materials and teacher training nationwide, and the MECDM has committed to utilising information from the project supported database to drive decision-making on local adaptation nationwide. These calculations are based on Save the Children’s approach to determining project reach, which for indirect beneficiaries includes that “a person is reached indirectly through communications, IEC, campaigning and/or awareness raising efforts or events conducted or supported by Save the Children or one of its implementing partners.” A number of SOLKAS’ indirect beneficiaries will be beneficiaries of investments from other relevant projects; however, these people will still receive benefits from SOLKAS which will help reinforce and embed the investments made by complimentary projects.

¹⁸ There are an average of 3-5 villages per Ward. For project implementation, some smaller villages that are proximate to each will be treated as a single community.

Table 5. Target Wards and direct beneficiaries and households based on the top 52 most vulnerable Wards in Solomon Islands.

Provincial vulnerability ranking	National vulnerability ranking	Ward	Population (2019 provisional)	Households (2009)
Isabel				
1	21	Sigana	2,785	438
2	45	Susubona	2,216	361
3	52	Koviloko	1,441	253
Central				
1	4	Banika	2,350	333
2	9	Lovukol	2,477	358
3	18	North West Gela	2,004	330
4	41	Pavuvu	2,477	333
5	46	Sandfly-Buenavista	3,755	672
Guadalcanal				
1	8	Vulolo	6,440	911
2	16	TetekANJI	1,620	214
3	23	Moli	5,374	802
4	24	Valasi	2,148	272
5	28	Vatukulau	2,649	417
6	29	Longgu	5,477	654
7	31	Avuavu	3,289	470
8	38	East Tasimboko	10,815	1,419
9	50	East Ghaobata	6,565	807
10	51	Talise	2495	364
Malaita				
1	2	Lauania	1,589	216
2	5	Faumamanu - Kwai	4,088	648
3	7	Sulufou - Kwarande	986	157
4	10	Siesie	4,264	656
5	11	Kwarekwareo	2,186	318
6	14	Gulalofou	6,863	1,081
7	17	Waneagu/Taelanasina	3,958	636
8	19	Buma	7,082	1,049
9	22	Fouenda	2,145	321
10	25	Takwa	11,460	1,802
11	27	Mandalua - Folotana	3,128	546

12	30	Sikaiana	283	60
13	32	Sububenu - Burianiasi	5,797	884
14	39	Fauabu	10,049	1,534
15	40	West Baegu - Fataleka	2,819	454
16	43	East Baegu	5,441	839
17	44	Waneagu-Taelanasina	3,958	636
18	47	Fo'ondo - Gwaiiau	6,295	1,135
19	49	Kwaimela-Radefasu	10,963	1,767
Makira-Ulawa				
1	3	Arosi East	2,643	383
2	12	Rawo	871	114
3	13	Haununu	3,403	437
4	33	Wainoni West	2,743	367
5	36	Ugi and Pio	1,556	207
6	42	Wainoni East	3,202	470
Temotu				
1	1	Polynesian Outer Islands	366	90
2	6	Nevenema	981	212
3	15	Tikopia	1,331	262
4	20	Vanikoro	1,340	266
5	26	Utupua	1,210	232
6	34	Lipe - Temua	822	158
7	35	North East Santa Cruz	1,909	349
8	37	Manuopo	1,067	209
9	48	Nanggu - Lord Howe	1,928	339
TOTAL			185,102	28,242

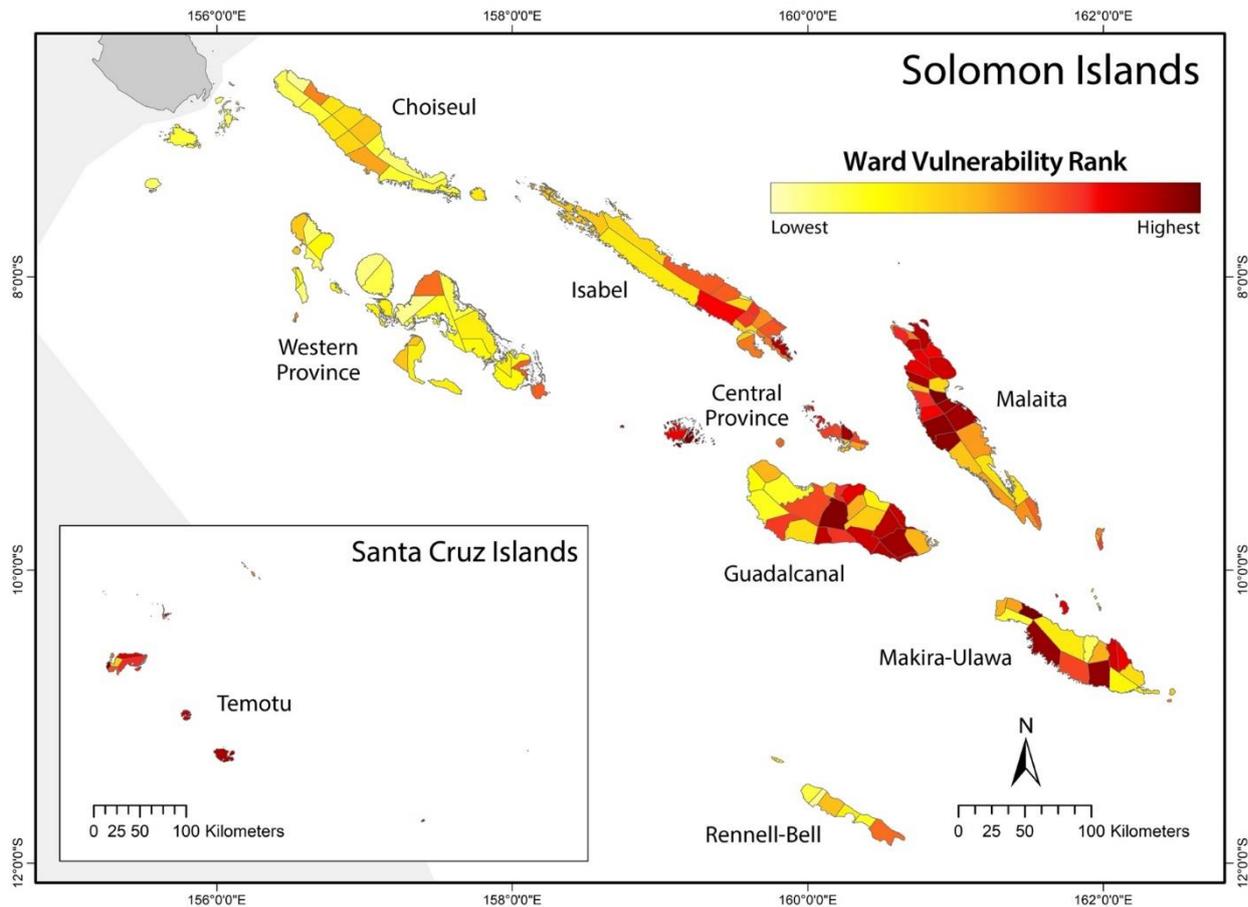


Figure 11. Map of the national relative ranked vulnerability of all Wards in Solomon Islands to climate change, with dark red being highest vulnerability and yellow/white being lowest vulnerability.

4.5. Local impacts and vulnerabilities

As noted in the introduction, an extensive field assessment was conducted to support this feasibility study. The field assessment was conducted in 63 different villages across five provinces (*province/number of villages*): Western province/15; Malaita province/11; Makira province/9; Isabel province/12; and Choiseul province/13. A total of 646 interviews were conducted (324 male, 322 female). These were supported by 157 focus group discussions. The results of the climate change elements of the field assessment are presented below.

Choiseul Province. A total of 133 people were surveyed (74 women, 59 men). Survey respondents reported the following processes had been observed:

- Soil salination 60/133 (45%)
- Sea level rise 129/133 (97%)
- Increased pests 46/133 (35%)
- Flooding 90/133 (68%)
- Drought 38/133 (29%)

Of these respondents, 89% (118) reported that environmental changes were affecting farming. Respondents noted decreased yields, pest damage to crops, decreasing land available for

cultivation, degradation of soil quality, destruction of crops due to flooding, erosion washing away topsoil, higher temperatures leading to reduced time in gardens.

84% of respondents reported effects on marine resources, including having to travel further to go fishing, damage to seaweed farming operations, erosion runoff negatively affecting reefs, reduced availability of shellfish, fish migrating away, fewer fish species, smaller fish, and reef damage.

Respondents also reported higher food prices (59%); decreasing food variety (69%); and decreasing food availability (51%).

Isabel Province. A total of 124 people were surveyed (62 women, 62 men). Survey respondents reported the following processes had been observed:

- Soil salination 69/124 (56%)
- Sea level rise 120/124 (97%)
- Increased pests 42/124 (34%)
- Flooding 97/124 (78%)
- Drought 11/124 (9%)

Of these respondents, 77% (85) reported that environmental changes were affecting farming. Respondents noted salt contamination of farm soil, flood damage to gardens, food shortages, damages to root crops, loss of topsoil, pests damaging crops, and lower food crop productivity.

84% of respondents reported effects on marine resources, including decreased shellfish production, fish migrating to deeper water, destroyed fish habitats, fishermen forced to find new fishing areas, fewer fish being caught, local extinctions, and coral bleaching.

Respondents also reported higher food prices (67%); decreasing food variety (66%); and decreasing food availability (57%).

Makira Province. A total of 117 people were surveyed (58 women, 59 men). Survey respondents reported the following processes had been observed:

- Soil salination 23/117 (20%)
- Sea level rise 92/117 (79%)
- Increased pests 85/117 (73%)
- Flooding 87/117 (74%)
- Drought 36/117 (31%)

Of these respondents, 98% (115) reported that environmental changes were affecting farming. Respondents noted damage to coconut farms, loss of topsoil, crop damage, loss of crop productivity, rotting of root crops, and pest damage to crops.

85% of respondents (99 of 117) reported effects on marine resources, including coral reef damage from siltation and pollution, coastal erosion, decline in bech d'mer and shellfish, fish migration to new places, decreased catch, smaller catch, greater labour effort, and having to travel further to catch fish.

Respondents also reported higher food prices (58%); decreasing food variety (68%); and decreasing food availability (62%). Respondents in Makira also noted that a lack of production/catch leads to increased local prices, affecting local purchasing power, and that floods have washed away gardens.

Malaita Province. A total of 114 people were surveyed (42 women, 72 men). Survey respondents reported the following processes had been observed:

- Soil salination 35/114 (31%)

- Sea level rise 94/114 (82%)
- Increased pests 95/114 (83%)
- Flooding 69/114 (61%)
- Drought 47/114 (41%)

Of these respondents, 96% (109) reported that environmental changes were affecting farming. Respondents noted shifting planting seasons, decreased crop productivity, plant pests and diseases, damage to root crops, landslides damaging and destroying gardens, destruction of coconut palms, reduction of soil quality, lower production, decreasing soil productivity, and soil salination.

87% of respondents (99 of 114) reported effects on marine resources, having to travel farther to catch fish, depletion of nearshore fisheries, smaller fish, greater labour effort required, less fish diversity, damage to reefs, coral damage from waves and siltation, coral bleaching, fish moving away, lack of fish breeding and nursery areas, and fewer shellfish.

Respondents also reported higher food prices (34%); decreasing food variety (85%); and decreasing food availability (89%).

Western Province. A total of 137 people were surveyed (63 women, 74 men). Survey respondents reported the following processes had been observed:

- Soil salination 81/137 (59%)
- Sea level rise 133/137 (97%)
- Increased pests 68/137 (50%)
- Flooding 71/137 (52%)
- Drought 46/137 (34%)

Of these respondents, 67% (92) reported that environmental changes were affecting farming. Respondents noted decreasing soil fertility, soil salination, poor production from root crops, lower productivity, landslides affecting gardens, smaller fruits, pest damage to crops, and heat damage to crops.

93% of respondents (128 of 137) reported effects on marine resources, including fewer fish, having to travel further to catch fish, siltation and damage to corals from increased erosion, fish migrating to new places, greater effort to catch fish, decreasing availability of bech d'mer, smaller fish, and fewer shell fish.

Respondents also reported higher food prices (55%); decreasing food variety (72%); and decreasing food availability (91%).

Conclusions from fields study with respect to climate impacts

The extensive interviews and focus groups conducted for the project design process indicate very clearly that villagers all across the Solomon Islands have noticed the physical processes of climate change and that they are already experiencing significant impacts. In all provinces the vast majority of those surveyed confirm the ongoing increase in sea level, which has impacted agricultural productivity through soil salination. Moreover, most villagers indicated that productivity of both marine resources and agriculture has been affected through various vectors, including damage to coral reefs and erosion from increased flooding. These findings are consistent with the results of other vulnerability assessments cited in the literature review, and underscore the critical urgency of adaptation at the local level to safeguard livelihoods and food security.

5. Adaptation gaps and climate analysis conclusions

5.1. Gaps identified

This section provides detailed information about gaps and barriers relevant to the project. The gaps and barriers described here have been divided into several categories. Each of these categories presents information from analyses that have been conducted in support of this project. The categories are described below:

5.1.1. General adaptation needs/actions

Bird et al (2022) found that farmers in North Malaita are adapting to changing environmental conditions. Methods for adapting included (from most common to least common): shifting cultivation, changing planting techniques, changing crops, expanding gardens, implementing soil and water conservation, using cover cropping and trees, and applying crop residue as fertilizer. Importantly, the study found that increased shifting cultivation is potentially maladaptive as it contributes to soil infertility and erosion. This underscores the importance of effective outreach to rural farmers to increase understanding of climate change trajectories and to introduce climate adaptive crops and planting techniques. This analysis also indicated that farmers want assistance from the government or NGOs in improving the overall agricultural system, and that they worry that current agricultural practices will not be viable in the future due to changing weather and climate conditions. The study further recommended that future projects focus on improving extension services and on increasing awareness between climate variability and impacts on cropping systems through churches, community meetings, and schools.

Basel et al (2020) worked with communities in Western Province to identify adaptation priorities. The main areas identified by the communities included local governance, leadership, and planning; farming and livestock; sustainable livelihoods; natural resource management; and capacity building for youth. Notably, these researchers emphasized the high level of social capital and cohesion existing in rural communities as an important asset in building resilience and local adaptive capacity. The study made a number of recommendations with respect to building local resilience, including:

- Good governance and leadership involving inclusive decision making that considers short and long-term perspectives, implementation and enforcement;
- Cultural identity encompassing social structure, traditional ecological knowledge, cultural pride, and land rights;
- Inclusive communities harboring gender inclusion, partnerships, and communication
- Access to clean water, sanitation, health care, and food
- Sustainable management of natural resources to meet local needs
- Shared community long-term vision
- Learning-by-doing and/or via connections to others
- Ability to stabilize favorable situations, navigating change and altering unfavorable situations.

Basel et al (2020) concluded that successful adaptation can be supported through increasing awareness, engagement, empowerment, local governance systems and youth leadership and capacity, especially as related to the management of local natural resources. Similarly, Malherbe et al (2020) highlight the relevance of social capital in building resilience in rural communities in the Solomon Islands, with findings that indicate that increased community cohesion led to a decline in vulnerability in most communities. They concluded that the maintenance of social capital should be a priority for policy makers and projects that aim to

reduce vulnerability in rural communities. Other studies (Syddall et al 2022; van der Ploeg et al 2020) support this conclusion.

In the Choiseul vulnerability study (Mataki et al 2013), communities expressed the need for more technical support from the government (provinces) in the areas of climate resilience agriculture, forestry, fisheries, and development planning. In addition, the study noted that most communities were aware of climate change through the media, but they did not have a good understanding of the impacts and implications for their livelihoods, safety, and standard of living.

5.1.2. Information gaps

The Solomon Islands, like all small island states, faces a unique set of challenges in dealing with climate variability and change. While several climate change and adaptation activities are ongoing, significant research, data, and information gaps will need to be addressed considering projected changes in climate. Detailed assessments of climate change impacts and risks focusing on food security, water resources, and coastal resources are required (MECDM & Save the Children, 2022). Water supply and demand studies need to be conducted by the Water Resources Department in Honiara, and this needs to be expanded to other critical urban areas to appropriately address issues and problems with water resources management and the development of an integrated coastal management

plan.

The MECDM & Save the Children, 2022 study and Kama, 2021 evidenced that in the five (Choiseul, Western, Isabel, Makira, and Malaita) provinces in remote and rural communities of Solomon Islands, there are gaps in knowledge in climate change among specific groups. This includes knowledge about climate change impacts and strategies for adaptation. This indicates that climate change can be seen in their remote and rural environment but that there is a lack of knowledge on how one should address the effects.

5.1.3. Food Security and livelihoods challenges

Market Challenges

Food security and livelihoods in remote and rural areas in Solomon Islands is influenced to a significant degree by available markets, transportation to move farm produce from farm to neighbouring markets, the demand for farm produce, and the quality of farm produce (MECDM & Save the Children, 2022). Value adding processes for agricultural products are rare in rural areas with the exception of traditional food processing for ngali nuts, cassava, taro, and fish. The input costs depend much on variable and fixed costs. These factors influence farmers decision to enter value adding or not. Farmers in remote and rural areas indicated the benefits of storage and food processing along the traditional post-harvest processes. Other cash crop value adding are on-going including cocoa, copra, coconut oil, honey, ginger, noni, peanuts, and kava.

There are several reasons why farmers are not selling enough at the markets. These include

- Crop damage by pest and diseases. Crops such as cabbage, beans, taro, and slippery cabbage are often damaged by insect pests and diseases. Examples of pests are caterpillars, fruit flies and taro beetles. Diseases like taro leaf blight damage taro leaves while fungus damage Chinese cabbage through rotting the stalk.
- High competition at the market. When most farmers grow the same crop for market, there is often a surplus of the same crop which creates downward price competition.
- Lack of Roads and Transport. One of the biggest setbacks in marketing is the accessibility to markets. This includes lack of roads and transportation to the markets. This prevents farmers from increasing their farm sales.

- Low demand of farm produce. In some remote areas in Solomon Islands like Baniata in Rendova Island, there is low demand for farm produce, and this has affected some farmers' day to day market sales.
- Family consumption of farm produce. When the soil is infertile and when arable land is limited, less food crops are grown for both families and for sales. When this does happen, there is less farm produce to support both for family consumption and to have extra for sale. In this situation, farm produce is consumed by family.
- Change of weather (Continuous rainfall). In many remote places such as the Eastern part of Malaita, continuous rainfall disrupts the movement of people including taking farm produce to the nearest market.
- Decrease in market prices. In the case of cash crops, many farmers are responsive to price fluctuations. When price for commodity such as cocoa goes down, farmers sell less cocoa. In the case of vegetables and root crops, the higher the supply is the lower the price will be. This is one factor preventing farmers to sell more of their farm produce.
- Lack of storage. The lack of storage causes the farmer not to sell all their crops and other farm produce. Without proper storage, it is impossible to sell all their farm produce continuously.

Extension Challenges

Conventional government-run agricultural extension services have notably failed to deliver improved agricultural productivity in rural Solomon Islands. In 1998, the single agricultural research station for the Ministry of Agriculture and Livestock was destroyed in an intercultural conflict. Therefore, the centralized agricultural research activities and the extension system associated with it, collapsed. Since then, conventional extension strategy was weakening with limited extension delivery in limited locations around the country.

Though several approaches have been introduced to improve agricultural production, MAL has limited capacity and resources. This is indicated by the level of funding for the Ministry, infrastructure, qualified personnel, transportation (Kama, 2021). It thus has low capacity to implement ambitious programs in the rural regions of the country and subsequently it has struggled to achieve its extension mission (Ho'ota, 2014 and Kama, 2021). In recent years, there has been growing dissatisfaction with the poor adoption rate of agricultural technologies in resource poor farming systems in the rural areas of Solomon Islands (Ho'ota, 2014; SPC, 2015; World Bank, 2015). The poor rate of adoption occurs partly because when agricultural technologies are developed, there is little input from farmers leading to a lack of ownership by the farmers (Stur, Horne, Hacker & Kerridge, 1999; Hazelman, 1988; ADB, 2005). In addition, the weak extension services and the lack of an agricultural research station and laboratory infrastructure is one of the major causes of the stagnation and collapse of extension services and research activities into innovative crops, crop production, and the increase in export of many commodities (ACIAR, 2006; Powles, 2013; Waetara et al, 2007; Crescent, 2015). Since 1999, there has been a remarkable reduction in research activities, especially in the development of new agricultural technologies tailored to rural farmers. The effectiveness of agriculture extension is affected by the following factors and challenges including:

- ***Distance and isolation:*** The geographical structure of many parts of the country is difficult with many scattered islands, steep slopes, and storm-prone coasts making it difficult to reach rural communities (Ho'ota, 2014). Transport limitations also make it difficult to reach and deliver extension services to remote islands and those communities living in the interior of bigger islands (Ho'ota, 2014; MAL, 2011). The distances from central markets (MAL, 2011; Ho'ota, 2014) has also caused difficulties for farmers. In addition, there are poor communication linkages between MAL headquarters and the provinces (MAL, 2011; Ho'ota, 2014). This tends to lead to a

lack of coordination and reduces the effectiveness of the network, which can be coupled with a reduced sense of teamwork and issues with the flow of command and information dissemination. All these factors distort and hamper the effective delivery of extension services.

- **Poor infrastructure, facilities, and equipment:** There is a lack of proper office space, staff accommodation and equipment in the provinces and other major centres. Strategies and plans to build much-needed infrastructure are often deferred due to the delays in government funding (MAL, 2011; Ho'ota, 2014). This is due to lack of prioritisation of these areas within the department's infrastructure needs and, in the Ministry's strategic plans and reviews. It is also for this same reason that the research station was never rebuilt (ADB, 2005), together with a lack of adequate land to house the research station and relevant infrastructure. Most provinces have limited infrastructure, and this limits visitations and dissemination of agriculture innovations (MAL, 2008; Ho'ota, 2014). The Fote Training Centre in Malaita Province for instance, has been taken back by landowners, leaving no land for MAL to run its research activities. However, the recent move by MAL to build its research station at Tenaru is yet to be finalised and implemented.
- **Lack of extension information:** There are two key reasons for the lack of extension information (MAL, 2011; Ho'ota, 2014). Firstly, there has been little research to help create farming innovations since the destruction of the research station near Honiara in 1999 (Kama, 2021). Secondly, for reasons previously stated MAL, the department responsible for extension information, is impaired in its capacity to perform these services (Kama, 2021).
- **Administrative:** There are several administrative challenges in relation to extension services. Importantly, there is a lack of operational guidelines for the conducting of field activities (MAL, 2011; Ho'ota, 2014), due to a lack of proper planning, implementation, and allocation of yearly work plans. The lack of funds also contributes to the situation. Another challenge is the frequent delays in the release of funds from the government, which also affects work efficiency (MAL, 2011; Ho'ota, 2014). The current rate of the disbursement of funds to the government ministries is slow and by the time funds are available the operational period allocated to use these funds has passed. This is a critical challenge and one that the ministry has no control over.
- **Personnel:** The department also lacks staff qualified to conduct scientific research on crops and livestock as well as specific operations in certain crops. These have caused setbacks for research programmes and extension services (Crescent, 2015, & Kama, 2021). This discussion highlights the challenges facing the successful conversion of agricultural extension programs within the Solomon Islands context.

In 2020, in Kama (2021) study confirmed that these factors and challenges are still exist in all provinces with little development done to alleviate them. Such factors and challenges are crucial drivers for effective extension service and sustainable mechanism for supporting food security and livelihoods. MAL has recently refocused its extension services on participatory agricultural extension on areas including (i) National food security; (ii) Agriculture livelihood and export-based expansion and (iii) Sustainable economic development export strengthening. All these strategies are in response to the need of food security, agriculture livelihood and sustainable economic development and export challenges and market extension delivery (Ho'ota, 2014).

Business challenges

Businesses operating (most of which are informal) in the Solomon Islands are facing an uphill battle. The main challenges for business in Solomon Islands can be summarised as the following:

- Very high cost of doing business due to 1) high cost of energy for transport and processing and 2) the remoteness and dispersed population.
- Lack of economies of scale at the supply side: Solomon Islands is a price-taker in the global commodity markets for exports, due to small volumes as compared to global supply. This results in price volatility. Solomon Islands exporters cannot negotiate, they are price takers as well. So, sometimes prices are high and sometimes they are low.
- Lack of economies of scale at the local demand side (domestic market), especially in rural communities: because of the few customers in rural areas, high transportation costs, and challenges of communication, there are many products and services which cannot be offered viably (for a profit) in rural areas. These products (if at all) are only available in Honiara or provincial capitals.
- Lack of human capital to drive innovation, due to low literacy rates and underperforming education systems (including vocational training and business management training).
- Local cultural norms (ex. Wantok) and the political system (hand-out mentality and corrupt practices).

These factors stifle the appetite and ability for businesses and entrepreneurs to innovate and/or start-up new ventures successfully. There are several challenges in running a farm as a business. The field study conducted for this project revealed the following challenges. About 40% indicated the accessibility to market due to transportation; 4% need more training on learning new methods with tools and equipment; 15% indicated that there is less demand for farm produce; 15% indicated no proper tools and equipment for cocoa plantation maintenance and management. 33% indicated climate change due to bad weather such as long periods of rainfall preventing kava drying process. 6% indicated no storage facilities. 4% indicated pests and diseases affecting farm produce. 22% indicated lack of labour and the costs involved. 2% indicated there is soil erosion and home consumption. 8% indicated that there is inadequate land for the farm. 2% of farmers indicated that there is no proper poultry house, stealing, lack of feeders, pesticides are expensive, soil salination, lack of livestock feed and there is competition on farm produce. 6% indicated flooding and landslides are hindering factors. 8% indicated the lack of proper fencing is needed for livestock and 6% indicated pests and diseases including birds as challenges.

Rural economies challenges

Based on the survey conducted by Save the Children, roughly 70% and 54% of rural households are engaged in land-based agriculture and sea-based activities respectively for consumption and cash-generating purposes. In practice, rural households typically have multiple income streams and work in family units comprised of multiple households. The cash crops grown by rural Solomon Islands communities can roughly be organised into two categories, crops feeding into an export value chain and crops for the domestic market. The most common export crops/products include copra/VCO/CNO (coconuts), cocoa, kava, bech-de-mer; while crops/products for the domestic market include betelnut, vegetables, fruit, pigs, poultry, and Ngali nuts. Domestic market products are sold mainly in the village market (due to high transport costs) with little value-added processing or preservation (due to high electricity costs or lack of access to electricity).

The survey found that these village markets are flush with competitors offering the same product to few customers who have little cash¹⁹. Besides the limitations such as land availability, access to finance, access to markets and demand, and limited business skills, business owners and potential entrepreneurs also face a lack of exposure to new innovations

¹⁹ There is a lack of cash at the village level (poor consumer purchasing power), which is spent on school fees, health expenses, consumer goods, construction materials, transport costs, church contributions, family obligations, etc

from outside the community/village (most learn/copy from neighbours, family, or friends). This factor is not helped by the poor telecommunications connectivity in rural areas, especially data services (3G or 4G); however, this will hopefully change for some communities with connection of the fibre optic cable to Malaita and Isabel provinces. Cooperatives or income-generating associations of farmers or fisherfolk are not common (and historically have not worked well) in Solomon Islands, and the few that exist are very small (with few members, for example 2-4 members).

Some of the most salient findings of the survey per rural stakeholder category are summarised below.

- 83% of **village leaders** said that they know about products that are currently not being produced in the village that have potential. Kava was by far the most popular answer, followed by copra, coconut oil, cocoa, and ginger. The main reasons why these products were not being produced and marketed included: the lack of market demand/buyers, followed by lack of technical knowledge on how to produce, then road infrastructure/transportation limitations, then availability of tools/materials and lack of resources to start. Products and services which would be useful in the village that are not easily available were listed to be: transportation services (truck/boat), agricultural and gardening tools/equipment, cool storage (solar freezer, ice cubes, esky), telecom services, bank agents, fishing gear and seeds.
- 84% of **smallholder farmers** sell in their village/immediate community, the remaining 16% in the provincial capital or Honiara. Smallholder farmers' main self-reported challenges of running their business include physical market accessibility (ex. distance, lack of roads, etc), poor weather conditions, lack of labour, pests, and low demand. The main reasons farmers could not sell more were lack of physical market access, closely followed by a lack of demand (not enough customers, too much competition, and resulting low prices), followed by poor weather conditions. Almost exclusively, smallholder farmers learned about new methods or products from neighbours, friends, and family members (80%), but it is not clear where the information originated in the first place. Also listed as information sources for new agricultural methods were local farmers in the village, radio (SIBC), books, agriculture extension, and SINU (20%). Neighbours, friends, and family members were also by far the most common source of information about demand and prices for agricultural products, followed by traders, radio (SIBC), and large farmers in the area. While 65% of Small Holder Farmers (SHFs) said that it would be beneficial to have a village/Ward-level storage unit, it is not clear how this unit would be maintained and operated, as there would need to be a mechanism to pay for maintenance, safeguard products, control inventory and resolve disputes. 88% of SHFs said that they would benefit from the following products/services which they cannot easily access currently: road access to markets and transportation services, agricultural equipment/tools and inputs, and agricultural methods training.
- The large majority (60%) of **fisherfolk** sell their catch in the local market, 15% sell in the provincial capital market, some in logging camps and very few in Honiara or to a hotel. 74% sell directly to consumers and 21% sell to traders. The biggest challenges fisherfolk face in running their business are: bad weather conditions (by far), followed by not having fishing gear or an Out Board Motor (OBM)/proper vessel, lack of storage/preservation (spoilage), decreasing fish stock, and few buyers/low demand. But when asked what prevents fisherfolk from higher sales, the answers were the following (by prevalence): high competition/low demand and prices, followed by decreasing fish stock/low fish catch, lack of proper equipment/gear, bad weather conditions, and lack of cool storage and consumption needs. Like smallholder farmers, fisherfolk learn about new fishing methods or gear mostly from neighbours, friends, or family, while a small number also listed local fisherfolk at the market and a fisheries centre. 61% of fisherfolk see a benefit of having a cooling, storage, and/or processing

unit in their village (for example, one respondent mentioned that the fisheries development centre at Tataba helps a lot in storing fish). 29% of fisherfolk thought that their village could produce seaweed, shells, clams, fish, bech-de-mer in ponds, and a separate question found that 15% of respondents manage saltwater ponds.

- The majority of **local traders** sell consumer goods, followed by copra, and petrol. Goods they buy in Honiara and sell in the provinces are mostly food stuff, followed by clothing, fishing gear, kitchen utensils, hygiene/sanitary products, tobacco products, and electronics. Most survey responses related to consumer products, being sold at village canteens, small shops, in the villages, directly to consumers. The biggest challenges in running their business include: customers buying “on credit” and not or delayed repaying (by far), followed by high transport/freight costs, low cash flow, high competition/low demand, and delay of transport services. Factors preventing local traders from increasing sales are: customer credit needs, high competition, high operating costs, and low cash flow.

Fisheries challenges

With respect to fisheries and their connection to food supply, Dey et al (2016) concluded through modelling that fish aggregation devices, improved natural resource management, and scaled up aquaculture would significantly improve the productivity of industrial offshore, coastal, and freshwater fisheries. Most relevant to this project, the analyses projected that investments in aquaculture could increase freshwater fish production by 31-33 times the current very low baseline level of productivity by 2035, and 36-38 times by 2050. The analysis also indicated that improved natural resource management practices could reduce pressure on nearshore reef fisheries and help to improve rural livelihoods and food security.

5.1.1. Social and health challenges

Climate resilient school infrastructure challenges

Field data collected in Save the Children’s survey of households found school infrastructure with significant problems. Findings include:

Question	Yes	Some times	No	Not Sure	No Response
School buildings safe from impacts of cyclones, coastal erosion, and other hazards	23%		48%	8%	20%
Sufficient water for drinking, handwashing and sanitation	23%	24%	36%	2%	
Route to school safe	48%	25%	21%	6%	
Children miss school because of bad weather	23%		48%	8%	20%
	Very often (> 10 days / year)	Often (10+ days / year)	Rarely (<4 days/ year)		No answer
Teachers or children stay home due to gastrointestinal problems / lack of clean water	17%	35%	27%		20%
Children or staff miss school due to WASH facilities not available	11%-13%	27-41%	45%-54%		
Unsafe routes to school due to: (297 responses) Rain and wind cause: Flooding, high tides, dangerous crossings in canoe, crocodiles, bridges are unsafe, downed trees, muddy, slippery paths, dangerous road conditions					

Field data collected in 2022 from households and education sector staff found school safety practices minimal, and children’s knowledge of safety procedures present, but not universal. Findings include:

Question	Yes	No	No Response
School communities assess hazards and risks regularly	35%	46%	18%
Children 6-16 know what to do to be safe in case of severe weather	72%	28%	0%

WASH challenges

With respect to building resilience of water resources, Chan et al (2020) noted that having multiple sources of water available improves the resilience of rural communities during extreme events. Given the preference in the Solomon Islands for rainwater over surface and groundwater, these authors recommended increased investments in household and community rainwater harvesting, which would improve water availability during both high and low rainfall conditions. They also recommended that these small-scale infrastructure investments be accompanied by more socially-focused technology transfer processes to facilitate development of community-agreed rainwater sharing protocols, clear delineation of responsibilities such as basic cleaning, minor maintenance, and agreements among community members for how payment for more expensive repairs of community rainwater harvesting infrastructure might be shared. They also recommended that communities work to develop disincentives for breaking agreed protocols, for directly causing damage, or for other behaviors which negatively affect water availability for others.

5.1.2. Challenges meeting national priorities

The National Development Strategy 2016-2035 contains a number of priorities that are directly related to climate vulnerabilities, including:

- Use local assessment data to identify specific projects that directly address climate change and disaster hazards
- Mainstream climate change by raising awareness and understanding of government and non-government policymakers and the general public about climate change and its causes and consequences and build consensus to facilitate, coordinate, and implement climate change enabling activities
- By 2025, public access to and knowledge of MECDM services (meteorological services, disaster risk management, climate adaptation/mitigation), environmental management and biodiversity conservation, and national focal point responsibilities for relevant international conventions are improved

The NDMP acknowledges action required on climate vulnerabilities, including:

- “supporting community self-help and reinforcing local mechanisms in preparing for, managing, and recovering from disasters
- “It is the role of provincial and local government and of the government sectors supported by donor partners, international agencies and NGOs to manage the impacts of disasters and support their communities both through their existing structures and through these special arrangements for coordination”

- Delegates to the village and Ward village disaster risk committees, the responsibility for local disaster management and climate and risk reduction activities

The updated NDC points out aspects that are lacking and which are yet to be completed:

- Community based vulnerability mapping, adaptation planning and management approaches to community-based adaptation projects on a whole of island basis
- Establishment of institutional structures and strengthening of capacities at the community level to support country wide implementation of community-based vulnerability mapping and adaptation planning

However, despite the presence of policies, implementation remains problematic in the Solomon Islands. Though comprehensive policy documents such as the Rural Water and Sanitation Hygiene Policy (2014), the RWASH Strategic Plan (2015-2020) and the Solomon Islands Water Development Plan have been developed, there is a lack of capacity and commitment by the national government towards financing and effective implementation of these policies and strategies (WaterAid 2016).

5.1.3. Challenges identified in field study

The interviews and focus groups from the field study posed a number of questions related to climate change adaptation. Focus groups of men and women were asked in all villages how farmers and fisherfolk are adapting to the changing environmental conditions that have been observed. In the vast majority of cases, villagers reported that there had been no changes in behavior, as the villagers didn't know how to adapt to the changes. In several cases villagers did report that farmers were improving soil drainage and changing crops, and that fisherfolk were using different techniques and equipment to catch fish. However, in many cases, the behavior changes would better be described as "coping" than adaptation, as they entail increased stress on households, resources, or both. For example, several villages reported that fisherfolk were coping with the changes by going farther into the ocean into deeper waters to fish, which requires more effort, or were shifting to night fishing, which tends to put more pressure on reef ecosystems and lead to overfishing. In other cases, behavior changes are potentially maladaptive, including opening up new land for cultivation, increasing the use of pesticides, and using charcoal deposits around plantings to deter pests.

The focus groups further revealed that in the vast number of cases there has been no application of smart agriculture. All of the communities were asked if they had received support and/or information about changing environmental conditions and climate change from provincial or national government, ministries, or agencies, and they all responded that they had not, indicating a lack of outreach and extension on the part of the government. Approximately 20% of villages had received some form of information or support (e.g., training, small infrastructure projects) from an NGO related to livelihood improvement, disaster risk reduction, or climate change adaptation.

In addition to this lack of outreach, the field work found that climate change awareness had not been universally incorporated in school curricula. 48% of children aged 7-14 had never heard of climate change, while 12% had little understanding of climate change. Approximately 40% of children expressed some level of awareness and could provide an example of climate change.

The field teams also asked focus groups what sort of knowledge, training, and support would be most useful in addressing changes in environmental conditions and for improving overall livelihoods in the village. The list below indicates the most common answers in descending order. This information provides important insights on the types of interventions that villagers are most receptive to:

- Climate change awareness and basic adaptation options: 44.7% of focus groups
- Climate resilient agriculture: 35% of focus groups

- Livelihood diversification and craft training: 32% of focus groups
- Improved disaster preparedness: 20% of focus groups
- Improvements to water infrastructure and sources: 20% of focus groups
- Improved marine resource management and fishing techniques: 20% of focus groups
- Accurate information about changing weather patterns: 18% of focus groups
- Provision of garden tools: 18% of focus groups
- Miscellaneous small-scale infrastructure: 18% of focus groups.

5.2. Scope of climate drivers considered in this project

As noted in the IPCC AR5, the high ratio of coastal area to land mass on small islands makes adaptation to sea level rise a significant financial and resource challenge, particularly since their communities most often require relocation and/or significant island infrastructure investment. Both these types of adaptation actions are outside the scope of this project (and the category of funding). The adaptation options for small islands that are most cost effective and successful have been shown to be community-based resource management approaches, including nature-based solutions to coastal protection, as well as locally-led actions. Further, global reviews of marine resources in particular (e.g., Gaines et al. 2018) have found that to optimise resilience to climate change, the primary need is to ensure that basic management is effective and sustainable. Therefore, supporting communities to maintain healthy ecosystems and restore degraded habitats strengthens food and livelihood security and reduces vulnerability to disaster risk, which are critical for increasing resilience to future climate uncertainty and change. **This project focuses on adaptation that support community-based actions and increases local capacity to build sustainable food-systems, livelihoods and reduce disaster risk.** Additionally, as noted in the studies above, increasing local level understanding of the implications of climate change for their lives and livelihoods is of critical importance in supporting sustainable adaptation; as is increasing the ability of local systems to make flexible, forward-looking decisions around adaptation governance. **The project will also address these gaps.**

Current available evidence indicates there are four key climate drivers exacerbating challenges facing targeted communities:

1. **Temperatures: air and sea** (including minimum, mean and maximum daily temperatures and events such as heatwaves). Slow onset change is also a key longer-term driver
2. **Rainfall patterns** (including increased duration of dry periods, changing frequency and intensity of extreme rainfall and ENSO associated rainfall)
3. **Increasing frequency/intensity of extreme events** (stronger storms and cyclones, increased flooding and storm surge)
4. **Sea level rise** (encroaching on lands and affecting livelihoods, increasing erosion and exacerbating storm surges)

In addition to addressing these specified sectors and climate risks, the community adaptation actions implemented through the project will provide co-benefits that will increase resilience to climate impacts out of scope, such as health outcomes and increased incomes. These co-

benefits will be achieved through the capacity and resilience building activities conducted with communities, as well as through partnerships and collaboration with complementary projects.

5.3. Climate analysis conclusions

Multiple sources agree that climate change adaptation should be locally led in the Solomon Islands and that strengthening local leadership and participatory planning processes are key factors in a community's ability to adapt to changing environments (Higgins et al 2019; Malherbe et al 2020). The research conducted for this analysis supports these conclusions, and makes the following recommendations for the project under development:

- Rural water access and supply are vulnerable to climate change, so the GCF project under design should assist local communities in identifying and understanding climate vulnerabilities and impacts on water resources and supplies, and in implementing locally appropriate adaptation measures.
- Rural communities across the Solomon Islands are highly vulnerable to climate impacts on agricultural productivity and food security, especially given the subsistence and small-holder nature of agriculture in the archipelago. The project should therefore help local communities implement adaptation measures to sustain productivity, while improving the ability of youth to engage in climate resilient agriculture and other livelihood pursuits.
- The project should work through local institutions (e.g., churches, community groups) and schools to increase knowledge of climate change impacts, adaptation, and livelihood diversification, given that these are the most effective channels to achieve sustainable transformations in rural communities.
- The project should work to strengthen existing and establish new locally-led institutions and structures for identifying and responding to climate vulnerabilities, and should provide them with technical support and tools so that communities are empowered to adapt to climate change in ways that enhance community livelihoods and well-being.

6. Project objectives

6.1. Theory of Change

The project's paradigm shift goal is:

IF Solomon Islands' remote and rural communities acquire – from schools and local governance institutions – knowledge of climate change risks and the skills and tools to adapt livelihoods and ways of living **THEN** they will have increased adaptive capacity to improve food security, nutrition, and infrastructure; pursue climate-resilient livelihoods; and access information flows and governance systems **BECAUSE** improved governance will respond to community needs; integrating climate risks into planning will safeguard food security, nutrition, and infrastructure investments; and communities and schools will take action and innovate to secure their future.

This goal will be achieved via three interlinked outcomes:

- **Outcome 1** – Communities and schools have localised adaptation plans anchored in increased climate change-relevant knowledge and skills and access to up-to-date climate information
- **Outcome 2** – Communities and schools have access to locally-led climate-resilient livelihoods, food security, nutrition, and infrastructure
- **Outcome 3** – Strengthened institutions enable adaptive governance that is inclusive, responsive to community needs, and facilitates access to resources for sustainable adaptation and innovation.

In order to address the core problem identified and the range of climate change challenges rural communities in the Solomon Islands are facing, the project will support a range of actions at community, Ward, provincial and national levels to increase knowledge and awareness of climate change and its impacts, build the skills necessary to ensure rural communities have the adaptive capacity to manage unavoidable impacts and make their own informed adaptation decisions across a range of possible climate futures. The project will also help communities to meet priority immediate adaptation needs via locally-led approaches to resilience building in schools and villages – helping to increase the resilience of critical local infrastructure (soft and hard), food security, manage water and watersheds, adopt resilient livelihood strategies, and pursue innovation and emerging opportunities.

The project's theory of change describes a shift to a climate resilient development pathway underpinned by an understanding that that communities require context specific knowledge and skills to manage the impacts of climate change. Further, communities need access to relevant and actionable climate information and functional adaptation governance processes. Communities also need to see and experience adaptation actions that make sense at their local level and initial support and resources to adopt new and innovative livelihood options that they can then scale up. Facilitating access to quality, consistent, scalable access to knowledge and skills is also critical to help communities independently scale up resilient livelihood options. This can be facilitated with ongoing just-in-time delivery of high-quality guidance and micro-learning self-study materials, based on specific end-user needs.

Climate change impacts are risking Solomon Islands trajectory of growth and further more leaving the country in a state of continual underdevelopment. Contributing to this is the fact that the country is overwhelmingly rural, and villagers lack the context specific knowledge and skills they need to shift to climate-resilient development pathways, as well as the local institutions and financial resources needed to support this transition. Another contributing factor is that government at all levels face difficulties establishing institutional linkages with

villages to support climate-resilient development. Though these arrangements exist on paper, there are barriers to operationalizing them. The dispersed nature of the country, with thousands of villages, combined with a lack of government resources characteristic of least developed countries means that, despite its best efforts, the national government has been unable to implement a comprehensive, systemic, and nation-wide approach to supporting resilience at the local level. Instead, the approach to addressing climate change has been characterized by largely uncoordinated donor-driven projects that address some symptoms, but do not provide a systematic or evidence-based response, particularly for the longer-term.

The project will help address these challenges to: a) build knowledge and capacity in communities – starting in schools and branching out to whole communities; b) establish effective institutions to organize and catalyse a sustained process of locally-led adaptation investments; c) strengthen the provincial administrative and governance arrangements that SIG has designed to support villages; and d) help communities transition to more resilient livelihood strategies – including supporting business innovation. This will contribute to an overall paradigm shift of building national adaptive capacity that is coordinated at the national and provincial level and is driven by communities that are empowered to identify and address their own climate vulnerabilities, risks and local responses; ultimately setting the country on a path towards sustainable climate resilience.

The approach will transform the way community-based, locally led adaptation is supported in the Solomon Islands; and, as it is embedded in government systems and processes, it can be further scaled up over time to reach every community in the country.

Working to address local climate change impacts at the community level is most effective if risks are identified and responses developed via participatory, locally driven processes as these have a higher degree of community ownership and are more likely to be sustained and sustainable over time. These kinds of actions are also more likely to be replicated within and across communities. Inclusive, participatory and locally led adaptation planning approaches help ensure that actions developed target the needs of the whole community (ensuring the voices of traditionally marginalised groups, including women, children and people with disability are heard and their perspectives are included). The benefits of the resulting adaptation actions are then shared more equitably. Evidence shows, for example, that including children's perspectives in adaptation planning processes enhances outcomes for the whole community.²⁰ SCA has extensive experience engaging school aged children in adaptation planning processes globally. In this project, children from around the age of 10 will be engaged in the formal community adaptation planning process. Younger children will be involved in the school-based risks assessments and planning processes, under the guidance of teachers and project staff.

²⁰ See, for example, Bharadwaj et al. (2022) *Child-centred community-based adaptation in Bangladesh: what works and why?* IIED, London; Treichel (2020) Why focus on children: a literature review of child-centred climate change adaptation approaches. *Australian Journal of Emergency Management*, April 2020; Mitchell and Borchard (2014) Mainstreaming children's vulnerabilities and capacities into community-based adaptation to enhance impact. *Climate and Development*, 6:4.

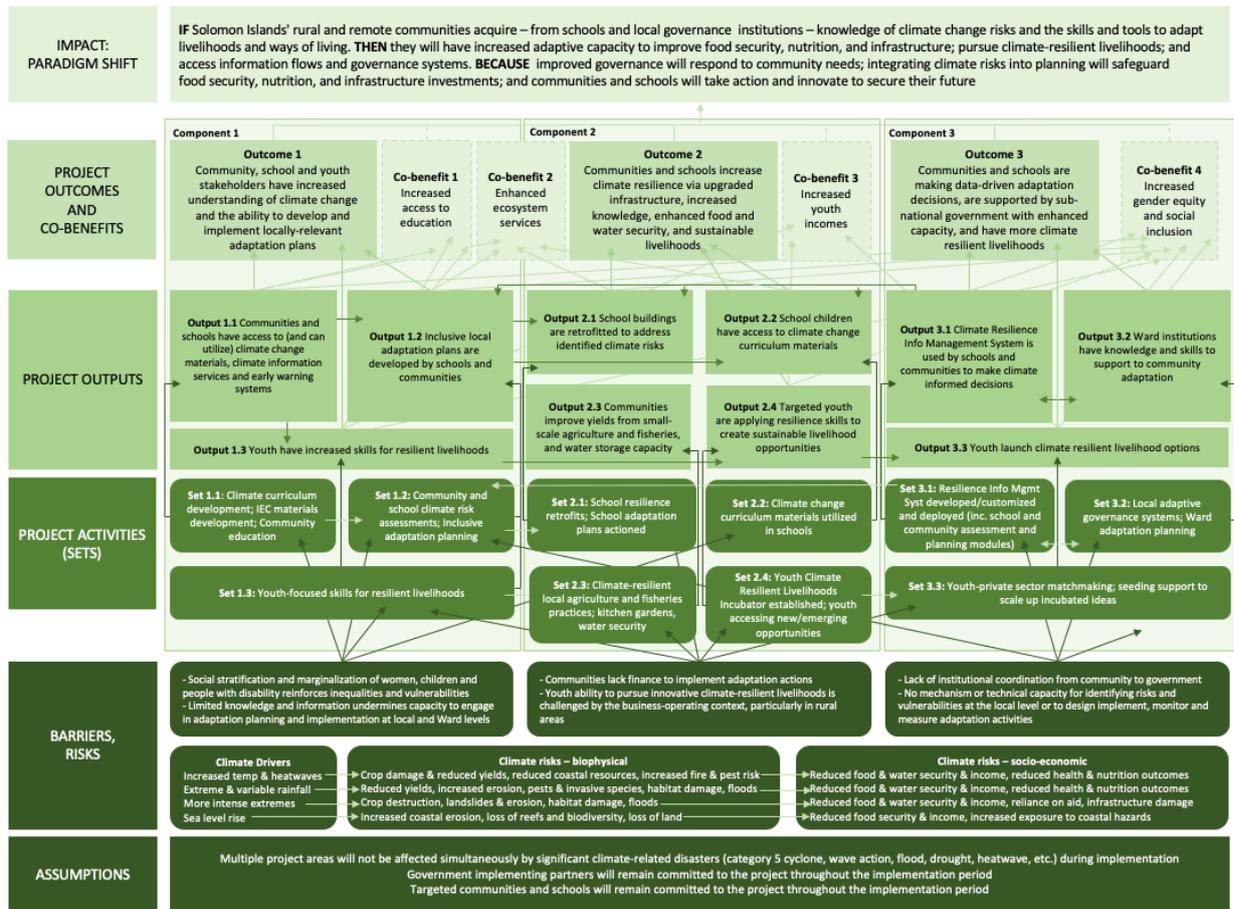


Figure 12. SOLKAS Theory of Change Diagram

6.1. Outcome overview

Outcome 1 – Community, school and youth stakeholders have increased understanding of climate change and the ability to develop and implement locally-relevant adaptation plans

Outcome 1 will focus on using schools as a key entry point to communities, building on years of work Save the Children has undertaken on school safety and climate change/DRR education around the world (including in Solomon Islands). It will support participatory adaptation planning processes and engage youth in skills building for livelihood resilience

Outcome 2 – Communities and schools increase climate resilience via upgraded infrastructure, increased knowledge, enhanced food and water security, and sustainable livelihoods

Outcome 2 will build on the planning processes undertaken at school and community level under Output 1.2, to directly support priority adaptation actions in schools and communities focused on school safety (physical and systems resilience) and community-level food and water security. Activities under this outcome will also focus on supporting youth to pursue entrepreneurial approaches to resilient livelihoods via the establishment of a Youth Climate Resilient Livelihoods Incubator.

Outcome 3 – Communities and schools are making data-driven adaptation decisions, are supported by sub-national government with enhanced capacity, and have more climate resilient livelihoods

Outcome 3 will help to ensure local, sub-national and national level capacity is built to sustainably support local level adaptation processes, including via support for national level maintenance of the digital toolsets for school and community adaptation planning/implementation system and feedback loops: the Climate Resilience Information Management digital toolsets. Activities will also help take strong youth-led resilient livelihood ideas to scale via facilitating private sector partnerships.

Together, the outputs and activities under leading to these outcomes, will help address the core climate problem identified by the project’s design, that children, youth and rural communities do not have the information, skills or resources to reduce exposure to climate hazards and build sustainable and resilient communities and livelihoods. The connections between the climate drivers (leading to the core problem) and the project’s solutions (helping address the core problem) are outlined in Figure 13, below.

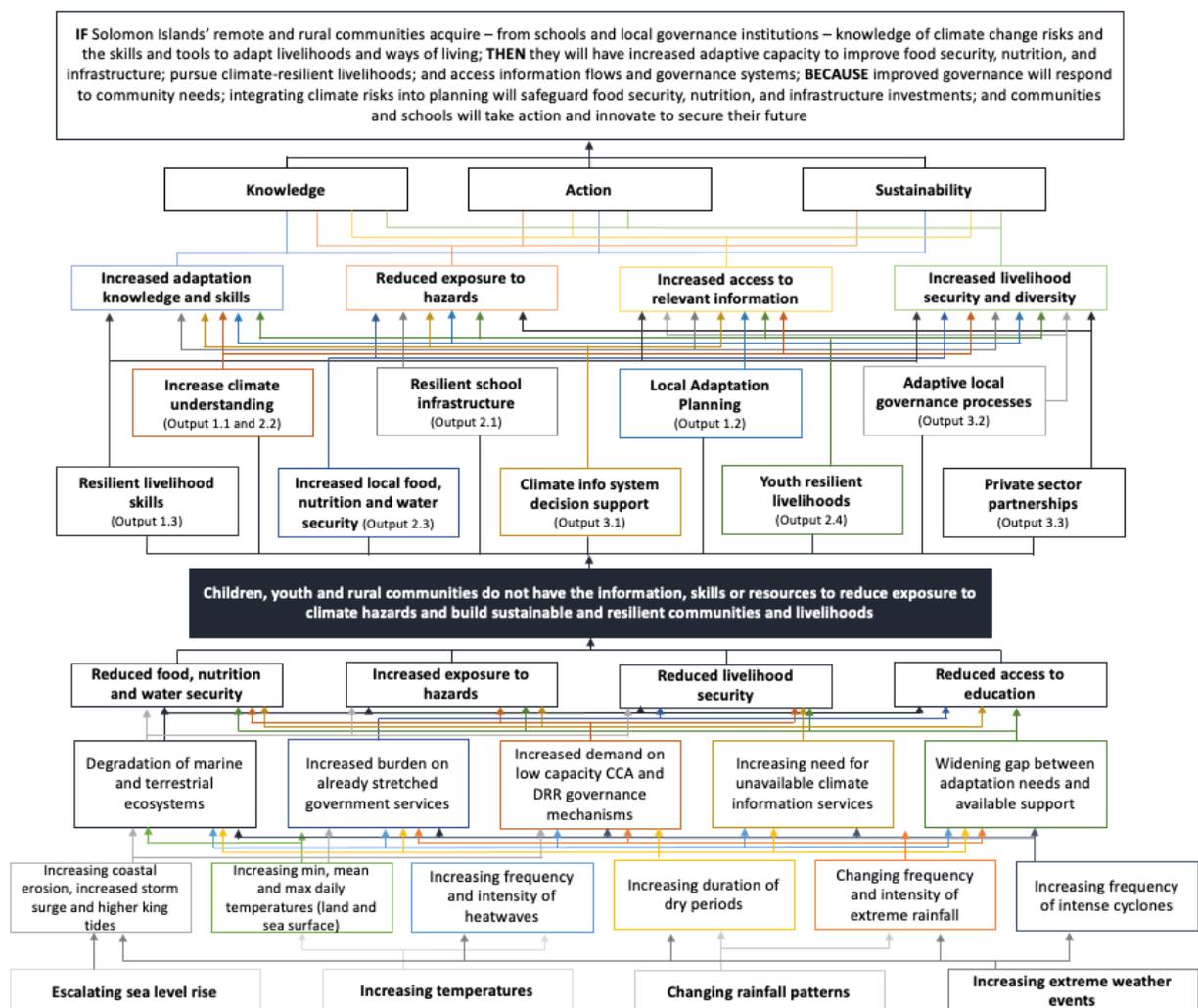


Figure 13. Impact and response chains for each climate driver and project output

6.2. Project outputs and climate rationale

Activity descriptions and climate rationale for each project output is provided below.

Output 1.1. Children, youth, and communities have access to (and can utilise) climate change materials, climate information services and early warning systems

Output 1.1. will work from schools outward to increase general understanding of climate change, its implications at the local level and identify actions that can be undertaken locally to reduce impacts and build resilience (including physical, social, and ecosystem based actions). Climate change will be integrated into the school curriculum (including teacher training materials) focusing on primary and lower secondary education (5-15 years – as attendance drops off significantly in upper secondary years). Technical and vocational education activities will also focus on out of school youths (15-25 years), with skills building sessions (see also output 1.3) for youth and broader communities via village level workshops. Social behaviour change, and information, education and communications materials will be developed and utilised in community education sessions. The project will also develop and distribute CIS products to inform community-level climate change adaptation planning processes (see also output 3.1), including enhanced connectivity for village DRCs (see also output 3.2).

Output 1.1 Activity descriptions

Activity 1.1.1: Increase school children's understanding of current climate change impacts and future risks (including curriculum materials and teacher training)

Under this activity climate change curriculum for schools and teacher training materials will be developed/improved for implementation at scale. During Phase 1 MEHRD will identify entry points for climate change content into existing and evolving school curriculum for K-12 grades, and curriculum development focal points to engage in the co-development process. Technical advisors (national and global) will identify existing best practices and materials from both Solomon Islands, more widely from across the Pacific, and globally. Climate change micro-learning materials will be identified, adapted and developed for integration across grades K-12. Teacher training materials to support use of these materials will be developed in parallel. All development and adaptation will apply gender equity, disability and social/linguistic inclusion lenses. During Phase 2 both student and teacher training materials will be piloted and effectiveness for learning will be assessed in project target areas, and recommendations made and implemented for refinement. During Phase 3 MEHRD will implement curriculum integration with teacher capacity development, and distribution of teaching and learning materials, nationwide. This will be achieved via (1.1.1.1) assessment of existing efforts to integrate climate change into the curriculum and international best practice approaches; (1.1.1.2) development (with MEHRD) of climate change micro-learning modules for students, for integration into school curriculum; (1.1.1.3) development of teacher training materials; (1.1.1.4) pilot testing of teacher training; (1.1.1.5) pilot testing of student curriculum materials; (1.1.1.6) review of pilot testing and refinement of materials; and (1.1.1.7) roll-out plan for curriculum integration, teacher capacity development, and distribution of teaching and learning materials nationwide.

These activities will result in the following deliverables: assessment undertaken; climate change modules developed; teacher training materials developed and piloted with a sub-set of teachers in targeted schools; at least 50% participants in teacher training sessions are women; all training materials and sessions are accessible for people with disability; all training materials and sessions are gender-sensitive; and climate change modules piloted in schools with trained teachers.

Activity 1.1.2: Increase children and community members' capacity to understand and identify climate change and disaster risks at the local level (including to food security and nutrition)

This activity will support adaptation action at the local level by increased awareness and generating momentum for change through the development and deployment of locally relevant and complementary social and behavioural change (SBC) / information, education and communication (IEC) materials; these will be used in communities to provide the common language and lay the groundwork to launch, supplement and reinforce the learning and action

associated with all other project outputs. Based on inputs from Activities 1.1.1 and 1.1.3, these materials will make use of the strengths of Solomon Islands custom and culture, relying especially on oral/aural in pidgin and local languages, and visual/graphic materials. Community education sessions will develop leadership and fluency for ongoing discussion and action. This will be achieved via (1.1.2.1) SBC and IEC materials to support community education (using inputs from activities 1.1.1, 1.1.3 and 1.3.3); and (1.1.2.2) roll out of community education sessions (see also 1.3.3).

These activities will result in the following deliverables: locally relevant SBC / IEC materials developed and utilized to support community education sessions; community education sessions delivered in at least 90% of target communities; 50% of participants and trainers in education and training sessions are women; all training materials and sessions are accessible for people with disability.

Activity 1.1.3: Increase access to and use of climate information and early warning systems at the local level

This activity will support the development and distribution of climate information services (CIS) products to inform community-level climate change adaptation planning processes, including enhanced connectivity for village DRCs. CIS products and knowledge management materials (including print, digital, audio, and mixed media) will be developed in partnership with national authorities (including MECDM and NDMO) for use in target communities, via (1.1.3.1) Conduct review of existing access to EWS in high-risk communities (disaggregated by sex, age, disability, language/dialect, etc.); (1.1.3.2) enhance community connectivity and EWS infrastructure where gaps exist (installation of rooftop or ground-based satellite dishes with solar PV/battery) and establish system for DRCs to on-sell data capacity within communities to help cover costs; (1.1.3.3) support DRCs to develop/update EWS protocols and communications strategies (including training on Community Based Disaster Risk Management (CBDRM) and effective responses to hazards) and ensure that warning systems reach all community members (last mile); (1.1.3.4) deliver CIS products and materials to communities from MECDM/NDMO identifying opportunities to further extend tailored materials for community-level use in target communities; (1.1.3.5) disseminate climate information to target communities through a range of media, including printed materials, social media, text messages and radio (e.g., radio drama).

These activities will result in the following deliverables: increased connectivity to improve access to climate information and EWS will be installed in at least 90% of targeted communities; local level EWS protocols updated; 50% of participants in education and training sessions are women; all training materials and sessions are accessible for people with disability.

Activity 1.1.4: Train DRCs in gender equality and disability inclusion as it relates to climate change adaptation and project implementation e.g., data collection, analysis, mainstreaming and inclusion

This activity will ensure that all key stakeholders understand the need to address the gendered impacts of climate change and relevant methodologies (e.g. data collection, analysis, mainstreaming and inclusion) via (1.1.4.1) gender equality and disability inclusion training package developed (to also be used for activity 2.1.4); and (1.1.4.2) deliver trainings.

These activities will result in the following deliverable: training developed and delivered across all project sites.

Activities under this output 1.1 will result in:

- 185,102 people (90,700 women, 94,402 men, 90,699 of whom are under 18) with increased understanding of the implications of climate change

- Development of climate change micro-learning modules for integration into school curriculum
- Teacher training materials developed and rolled out to teachers in all targeted schools
- Development of locally relevant social behaviour change and information, education and communication materials developed and utilized to support community education sessions across at least 90% target communities
- Increased connectivity to access climate information and EWS installed in at least 90% targeted communities.

Specific climate drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

The population of the Solomon Islands is overwhelmingly rural. In addition, the vast majority of the population lives within 2km of the coast and is highly dependent on land and marine natural resources for their food security and livelihoods. The scientific review conducted for this project indicates that all of the above listed physical processes are expected in the Solomon Islands, and findings from the field study indicate that in many villages, these changing conditions have already been observed. This makes these communities highly vulnerable to climate change impacts on multiple levels. Rural communities can adapt to climate change in three basic ways: 1) by adopting more climate resilient behaviours; 2) by altering livelihood strategies to be more climate resilient; and by contributing to community-led adaptation initiatives that directly address climate vulnerabilities.

The activities associated with output 1.1 will improve school and community education systems to provide locally-specific information about the physical processes and impacts of climate change. This information will be presented in accessible formats that connect with learners, thereby contributing to positive behaviour change. Through schools, children will learn about climate shocks and stresses, and how these affect food security, safety, and livelihoods in the community. In addition, through school and community education and capacity development, children, youth, and other priority groups will learn about climate resilient livelihood skills. Hence the activities in output 1.1 directly address the aforementioned climate drivers by strengthening both autonomous and community adaptive capacity.

Output 1.2. inclusive local adaptation plans are developed by schools and communities

Output 1.2 will build on the successful [Comprehensive School Safety Framework](#) process developed by the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (of which Save the Children is a core member). Under the framework, Save the Children has been pioneering app-based digital approaches to school safety assessments and planning (including a focus on climate change) as well as family and household safety and resilience. Under this output, the digital toolsets for both family and household safety and school climate and disaster risk assessment and planning process will be rolled out in target communities. Under this project, we will also develop a new suite of app-based community level climate risk and adaptation planning tools (see output 3.1). Schools and communities will be supported to undertake climate and disaster risk assessments to guide action planning.

This will be followed by participatory, locally-led adaptation planning processes in each school and community, building on the findings of the safety assessments and identifying key resilience building actions to be included in local level adaptation investment plans.

Output 1.2 Activity descriptions

Activity 1.2.1: Increase school and community understanding of immediate locally relevant climate and disaster risks via school and community safety assessments

Targeted schools will be supported to undertake annual school climate and disaster risk assessments using a structured and standardized, digital toolset (developed under activity 3.1.2 and with inputs from activity 1.1.3). This will combine nationally and locally available hazards, vulnerabilities and capacities information to generate ratings, rankings, and recommendations to inform ongoing action planning. Targeted communities will be supported to undertake local community-based hazards, vulnerabilities, and capacities information mapping, combining nationally and locally available data to generate ratings, rankings, and recommendations to inform ongoing community-based climate adaptation action planning. This will be achieved via (1.2.1.1) support to targeted schools to undertake annual climate and disaster risk assessments, via the School Climate and Disaster Risk Assessment app (developed under activity 3.1.2 and with inputs from activity 1.1.3); and (1.2.1.2) support to DRCs in targeted communities to lead community assessments, via the Community Climate and Disaster Assessment app (developed under activity 3.1.1).

These activities will result in the following deliverables: school climate and disaster risk assessments completed by at least 90% of target communities with schools; school climate and disaster risk assessments collect sex and disability disaggregated data; school climate and disaster risk assessments updated annually by at least 90% of schools with initial assessment; community climate and disaster risk assessments completed by at least 90% of target communities; and schools and communities receive and use action-planning recommendations based on their assessments provided by the digital apps.

Activity 1.2.2: Support inclusive adaptation planning processes in schools and communities

Targeted schools and communities will be supported to engage in participatory, locally-led adaptation planning processes, building on the data that will be consistently and automatically analysed, using standardized and participatory assessment tools, to develop resilience-building action plans. Targeted schools will undertake development and annual updating of their School Safety and Resilience Action Plan using a structured and standardized, digital toolset (developed under activity 3.1.2 and with input from activity 1.2.1). Action planning will cover all domains of the Comprehensive School Safety Framework (safer school facilities, school safety and educational continuity management, and risk reduction and resilience education). Schools' key structural/ infrastructural/environmental priority activities will be submitted to DRCs and Ward officials for validation and endorsement. DRCs in targeted communities will undertake participatory adaptation planning process using a structured and standardized, digital toolset (developed under activity 3.1.1 and with input from activity 1.2.1). Action-planning will include prioritization of structural, infrastructural, environmental and social vulnerability reduction activities, response to early-warning, and learning and action for livelihoods adaptation. Plans will be validated with community members, and Ward officials and updated on a 3-year cycle. This will be achieved via (1.2.2.1) support for participatory adaptation planning processes in targeted schools, via the School Climate Resilience Planning app (developed under activity 3.1.2 and with inputs from activity 1.2.1); (1.2.2.2) support to DRCs to lead participatory adaptation planning processes in targeted communities, via the Community Adaptation Planning app (developed under activity 3.1.1 and with inputs from activity 1.2.1); (1.2.2.3) schools' key 3-year structural /infrastructural /environmental

priority activities will be submitted for validation by DRCs, and by MEHRD at provincial level, implementation by SOLKAS and future projects; and (1.2.2.4) Community Resilience Plans, including key priority activities for implementation by SOLKAS and future projects, will be finalized and validated with community members and ward and provincial officials and reviewed and updated on a 3-year cycle.

These activities will result in the following deliverables: adaptation planning processes completed by at least 90% of target schools and refreshed on a 3-year cycle; adaptation planning processes completed by at least 90% of target communities and refreshed on a 3-year cycle; at least 90% of targeted schools; structural/infrastructural/environmental priority activities are endorsed by ward and province officials and signed off by MEHRD at provincial level; and Community Adaptation Plans for at least 90% of targeted communities are endorsed by Ward and Province officials and signed off by MPGIS.

Activities under output 1.2 will result in:

- School climate and disaster risk assessments completed by at least 90% target communities with schools
- Community climate and disaster risk assessments completed by at least 90% target communities
- At least 90% target communities with approved adaptation plans in place
- At least 90% target schools with approved adaptation plans in place

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

As noted above, the population of the Solomon Islands is overwhelmingly rural and dependent on natural resources. People live in small communities dispersed across several hundred islands. Given the remoteness of these communities, and the fact that the Solomon Islands is a least developed country, it falls to communities to take measures to build their own resilience. In addition, under the National Disaster Management Plan villages and Wards are required to develop disaster management plans which include provisions for adapting to climate change. Hence the locally-led adaptation planning processes advanced through this output will address all of the aforementioned climate drivers.

In addition, this output includes assessments of school safety and the development of safety plans for schools, which will improve the physical resilience of educational facilities as well as the safety of children.

Output 1.3. Youth have increased skills for resilient livelihoods

Output 1.3 will help increase rural youths' understanding of the impacts of climate change on their livelihood options, providing them with opportunities to develop new skills and resources for more resilient livelihoods. Youth representative role(s) will be formalised on Village and

Ward Disaster Risk Committees and School Committees, and youth will be supported to constructively engage in adaptation planning processes. The project will also work with the Young Entrepreneurs Council Solomon Islands and government operated Rural Training Centres and other providers to support youth in targeted villages to develop the skills they will need to pursue resilient livelihoods as climate change impacts escalate, via development of 'flipped classroom' and 'micro learning' model trainings on key issues (including climate-resilient agriculture, fisheries and livestock processes, food preservation and processing, natural resource management and nature-based solutions, non-timber forest product development, native cash cropping, etc. These will assure consistent delivery of quality guidance and training materials based on specific needs as they emerge over time.

Output 1.3 Activity descriptions

Activity 1.3.1: Support youth to effectively engage with local level adaptation planning processes

This activity will formalise youth representative role(s) on Village and Ward Disaster Risk Committees and School Committees, and build youth capacity to constructively engage in adaptation planning, via (1.3.1.1) working with NDMO and MPGIS to revise the village and ward DRC terms of reference to mandate youth representation; (1.3.1.2) working with MEHRD and schools for systematic engagement of children and youth in school safety and resilience; (1.3.1.3) supporting DRCs and School Committees in targeted villages and wards to engage youth and allocate roles; (1.3.1.4) developing targeted training for youth DRC and School Committee members on effective engagement in adaptation planning and implementation (in coordination with broader DRC training under activity 3.2.2); (1.3.1.5) rolling out training for youth DRC and School Committee members; (1.3.1.6) running mentoring sessions to support the empowerment of girls focused on confidence-building and leadership skills for adaptation; and (1.3.1.7) establishing a youth DRC network to share experiences and build capacity.

These activities will result in the following deliverables: DRC terms of reference updated to mandate gender balanced youth roles; School Committee terms of reference updated to mandate gender balanced youth roles; women leaders in at least 90% of target Wards are selected to deliver mentorship to small groups of adolescent girls with the aim to develop confidence; at least 90% of targeted village and ward DRCs have youth representatives; at least 90% of targeted village School Committees have youth representatives; at least 90% of youth representatives on DRCs complete targeted training; at least 90% of youth representatives on School Committees complete targeted training.

Activity 1.3.2: Support youth to develop skills for resilient livelihoods in a changing climate

This activity aims to support youth in targeted villages to develop the skills they will need to pursue resilient livelihoods as climate change impacts escalate. To ensure the capacity building is context-appropriate and market-relevant, the project's Entrepreneurship Coordinator will: 1) conduct a review of best practices of resilient livelihoods skills-building for youth in the South Pacific (including consultations with youth); 2) assess existing training packages and services providers in Solomon Islands and the region; and 3) conduct an initial private sector and youth business models scan of businesses in Solomon Islands to identify potential opportunities to link with youth entrepreneurs as buyers, suppliers, and/or trainers. Based on this, the project will develop and/or adapt a skills-building strategy, in collaboration with existing youth entrepreneur skills providers in Solomon Islands such as the YECSEI, government operated Rural Training Centres, Solomon Islands Small Business Enterprise Centre (SISBEC), and/or donor-funded programs. Skills-building will emphasize climate resilience and business management, especially financial management, marketing, and digital solutions, for key sectors of opportunity for rural entrepreneurs (including climate-resilient agriculture, fisheries and livestock processes, food preservation and processing, natural

resource management and nature-based solutions, non-timber forest product development, native cash cropping). Climate resilience skills-training will focus on the most relevant topics identified by the rural survey conducted by Save the Children in late 2021. From the beginning, skills-building will be informed by existing market opportunities identified by the Entrepreneurship Coordinator. Training methodologies will be appropriate for the rural Solomon Islands context, including 'flipped classroom' and 'micro learning' models. The project will roll out training packages to youth in targeted communities. The training will be available to interested youth and serve as a first step into a "funnel" process which will lead to participation in the climate resilience entrepreneurship incubator program (Activity 2.3.1). This will be achieved via (1.3.2.1) initial and ongoing assessment of private sector to assess opportunities to link with youth entrepreneurs for livelihood resilience; (1.3.2.2) review of existing training packages in Solomon Islands and the region targeted at appropriate and relevant climate resilient rural livelihoods skills development, with emphasis on climate resilience and business management, especially financial management, marketing, and digital solutions; (1.3.2.4) develop 'flipped classroom' and 'micro learning' model trainings on key issues (including climate-resilient agriculture, fisheries and livestock processes, food preservation and processing, natural resource management and nature-based solutions, non-timber forest product development, native cash cropping, etc., and linked to opportunities identified in 1.3.2.1); (1.3.2.3) roll out training packages to youth in targeted communities; and (1.3.2.4) engage interested youth in the YCRLI (under activity 2.3.1).

These activities will result in the following deliverables: existing resources review completed; targeted trainings in key areas developed; at least 30% of youth in targeted villages complete at least one training course (50% M; 50% W; 5% PWD); 50% of trainers are female.

Activity 1.3.3: Support children and youth to develop knowledge and skills for household, school and community resilience in a changing climate

This activity will support school-age children and youth to engage in household- and school-level risk identification, risk reduction and response preparedness, with support from adult champions of family and community safety and resilience. A variety of behaviour change nudges and incentives will be trailed to generate practice-based evidence to support selection of three proven strategies for scaling up of household and community climate change adaptation behaviours in the Solomon Islands. Using a structured and standardized, digital toolset (developed under activity 3.1.1) children and youth will reach 40% of targeted households in 75% of targeted communities, assessing and revising their plans, and documenting measurable change over time. The information gathered will provide families with ratings, rankings and recommendations to inform household action planning. Automated reports, aggregating data at community, Ward and Province levels, will provide local community and government stakeholders with inputs for community-level action planning. This activity will engage children and youth in household and school risk identification, risk reduction, and response preparedness, via (1.3.3.1) roll-out children and youth-led implementation of the FSRP App; (1.3.3.2) generate evidence on nudges and incentives to maximize behaviour change for safety and resilience at household, school and community levels; and (1.3.3.2) Ward and Province level aggregated reports provide inputs to DRCs for community-level planning.

These activities will result in the following deliverables: FSRP App is implemented by 40% of targeted households and provides inputs to 75% of targeted communities' adaptation plans; and three best methods for scaling up climate resilience behaviour change are identified for Solomon Islands.

Activities under output 1.3 will result in:

- At least 90% of targeted village and Ward DRCs have youth representatives (50% M; 50% W; 5% people with disability (PWD))
- At least 90% of targeted village School Committees have youth representatives (50% M; 50% W; 5% PWD)
- At least 30% of youth in targeted villages complete at least one training course (50% M; 50% W; 5% PWD)
- Family Safety and Resilience Plan App is implemented by 40% of targeted households and provides inputs to 75% of targeted communities' adaptation plans²¹
- Women leaders in at least 90% of target Wards delivering mentorship to small groups of adolescent girls with the aim to develop confidence.

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

This output complements the previous outputs, and so the climate rationale is similar to those explained above. It has been noted that the Solomon Islands' NDMP requires villages to develop disaster management plans, and that the increase in climate shocks and stressors necessitates coherent and organized resilience building on the part of communities and individuals. This output will improve the inclusiveness, and therefore the effectiveness, of local planning processes to address the aforementioned climate drivers.

This output will also support youth in developing skills for resilient livelihoods, and also livelihood diversification away from vulnerable occupations in agriculture. In this way the output addresses all of the climate drivers because they increase adaptive capacity and reduce dependence on natural resources. The output also helps existing enterprises to better address changing precipitation regimes, increased occurrence of climate shocks, and sea level rise. Lastly, the output will help to operationalize behavior change at the household level with school children as the agents, building on the knowledge they gain from output 1.1. This will help address vulnerabilities associated with food and water security, as well as disaster hazards and heat waves, since households will better understand how to prepare for and manage these occurrences.

Output 2.1. School buildings are retrofitted to address identified climate risks

Output 2.1 will implement the priority actions identified under the school safety assessment and planning process. Schools in targeted communities have increased physical resilience to the impacts of extreme weather and climate change via small-scale retrofits, upgrades, and

²¹ Note, the Family Safety and Resilience Plan App will be rolled out in a smaller number of communities than the community climate risk assessment and adaptation planning apps. Where the household app is rolled out, it will make a useful contribution to the community planning process; however, use of the household app is not a requirement for a strong community plan.

additions within the existing building footprint (i.e., WASH system upgrades, securing roofs, solar greening, evacuation route preparation, upgraded school access routes, etc.), keeping children safe while they learn.

Output 2.1 Activity descriptions

Activity 2.1.1: Support the implementation of School Climate and Disaster and Resilience Plans

This activity will ensure that targeted schools have safety and resilience assessments completed and School Safety and Resilience Plans in place and regularly updated, via (2.1.1.1) use the School Climate and Disaster Resilience app annually for action planning at school level (using the digital toolsets developed in activity 3.1.2); (2.1.1.2) support MEHRD with development and roll out of micro-learning modules for training on school safety and educational continuity management; and (2.1.1.3) support MEHRD and NDMO to identify key priorities for school safety and resilience planning at Provincial and National levels.

These activities will result in the following deliverables: at least 75 targeted schools use the School Climate and Disaster Resilience toolset annually for assessment, action planning, and monitoring, and integrate this into ongoing school-based management; at least two administrators and teachers in 90% of targeted schools have completed full MEHRD training on school safety and educational continuity management and at least 50% will have completed some micro-learning modules; and MEHRD and NDMO have identified key priorities for school climate and disaster resilience planning on a 3-year cycle for all provinces and at national level.

Activity 2.1.2: Support schools to increase physical resilience to the impacts of extreme weather and climate change (retrofitting and additions)

This activity will ensure that schools in targeted communities have increased physical resilience to the impacts of extreme weather and climate change via small-scale retrofits, upgrades and additions within the existing building footprint to: upgrade resilience of WASH systems impacted by changing rainfall patterns and drought; increase access to renewable energy to improve learning environments, including temperature, lighting, and access to teaching and learning tools; and preparation of safe access to schools and evacuation from school. This will be achieved via (2.1.2.1) resilient infrastructure retrofits undertaken in accordance with validated plans and priorities; (2.1.2.2) school WASH systems upgraded to increase climate resilience; and (2.1.2.3) solar PV systems installed at schools to increase access to energy for learning.

These activities will result in the following deliverables: infrastructure assessments undertaken in at least 95 targeted schools; action plans developed for at least 95 schools; infrastructure retrofits completed in at least 95 schools; WASH systems upgraded for resilience in at least 95 targeted schools; and solar PV systems deployed to at least 95 targeted schools.

Activities under output 2.1 will result in:

- At least 75% of targeted schools use School Climate and Disaster Resilience digital toolset annually for assessment, action planning, and monitoring, and integrate this into ongoing school-based management
- At least 2 administrators and teachers in 90% of targeted schools have completed full MEHRD training on school safety and educational continuity management
- Infrastructure retrofits completed in at least 95 targeted schools
- WASH systems upgraded for resilience in at least 95 targeted schools

- Solar PV systems deployed to at least 95 targeted schools

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

This output will directly address these drivers of climate change by improving the physical resilience of schools. Based on the specific vulnerabilities, schools will be retrofit to improve air flow and facilitate natural cooling (to address heat waves), to improve drainage, shelter, and accessibility during extreme rainfall events, and resist high windspeeds and flying debris during increasingly severe cyclones. In addition, WASH infrastructure at schools will be upgraded to better cope with water shortages and flooding. Schools will also be provided with solar PV systems to increase access to energy to improve the learning environment and help improve outcomes (to help meet SDG 4 and 7).

The improvements from this output will also improve the physical health of children, as well as learning outcomes, by improving the physical conditions within classrooms (e.g., cooler during heatwaves), and improving school attendance.

Output 2.2. School children have access to climate change curriculum materials

Output 2.2 will support increased knowledge of climate change among school children and their teachers via the rollout of the climate change curriculum materials developed under Output 1.1.

Output 2.2 Activity descriptions

Activity 2.2.1: Support use of climate change curriculum materials in targeted schools

This activity will ensure targeted schools are using project-supported climate change curriculum materials in classrooms, via (2.2.1.1) teacher training for climate change micro-learning modules developed in activity 1.1.1 rolled out across targeted schools; (2.2.1.2) formal and informal curriculum materials developed in activity 1.1.1 rolled out in targeted schools; (2.2.1.3) evaluate materials and implementation progress in year four; and (2.2.1.4) update materials, if needed, based on review.

These activities will result in the following deliverables: at least 75% of teachers in targeted schools have accessed micro-learning modules to support teaching climate change to children; at least 50% participants in teacher training sessions are women; all training materials and sessions are accessible for people with disabilities; climate change modules in use in 90 targeted schools; and materials are evaluated for impact on knowledge and skills and updated if relevant.

Activity 2.2.2: Provide Gender Equality, Disability and Social Inclusion capacity strengthening support to MEHRD and NDMO

This activity will support increased understanding of, and capacity to address the gender and disability differentiated impacts of climate change in the education sector, via (2.2.2.1) 3-day training on theoretical underpinnings and practical approaches to gender equality and

disability inclusion in climate change adaptation and disaster risk reduction; (2.2.2.2) identification of Gender Equality, Disability and Social Inclusion (GEDSI) focal points within MEHRD and NDMO; and (2.2.2.3) peer to peer learning among relevant government departments on GEDSI with progress workshop held.

These activities will result in the following deliverables: training delivered; focal points identified; peer learning systems established.

Activities under output 2.2 will result in:

- At least 75% of teachers in targeted schools have accessed micro-learning modules to support teaching climate change to children
- Climate change modules in use in 90 targeted schools

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

This output will directly address these drivers of climate change by improving the understanding of climate change and its associated impacts among school children in targeted Wards. With increased understanding of the key issues, children will be better placed to engage in adaptation planning and action in their homes and communities now and into the future. They will also be better equipped to pursue climate-resilient livelihoods options post-graduation. Children will also know better how to react and ensure their own safety during extreme events (e.g., tropical cyclones).

Output 2.3. Community food and water security and nutrition outcomes are enhanced through climate-resilient agriculture and fisheries techniques and application of nutrition education and water management

Output 2.2 will implement high priority adaptation actions identified via the community-level adaptation planning processes. These activities will include local scale climate resilient agriculture and fisheries initiatives to increase food security. Community and school kitchen gardens will also be supported (through increased understanding, supply and accessibility) to promote enhanced nutrition and climate-resilient crop uptake. Local scale investments to address hazards and vulnerabilities related to water resources and to increase resilience of this resource will also be supported.

Output 2.3 Activity descriptions

Activity 2.3.1: Support application of locally led climate-resilient agriculture innovations

This activity will support implementation of local scale climate resilient agriculture initiatives to increase food security, based on the key activities identified in Community Resilience Plans (activity 1.2.2), via (2.3.1.1) confirm and document what existing and traditional men and

women's agricultural practices exist in each target community and their seasonal calendar (in combination with activity 1.2.2); (2.3.1.2) ensure climate-driven risks to agriculture resources and mitigating measures are integrated into community adaptation planning processes (with activity 1.2.2); (2.3.1.3) identify, adapt and/or develop gender-sensitive and socially inclusive training materials on climate-resilient agriculture and water conservation techniques that will best suit changing conditions – including intercropping, seed selection, grafting techniques and planting, management (in combination with activity 1.3.2); (2.3.1.4) conduct training on climate-resilient agriculture techniques tailored to men's and women's roles at community level; (2.3.1.5) supply tools and establish field demonstrations of climate-resilient agriculture techniques tailored to men's and women's agricultural roles (including traditional methods where appropriate); (2.3.1.6) establish new or support existing nurseries (with locally appropriate agricultural kits including: rakes, forks, spades, hoes, watering cans and wheel barrows) at Ward level for raising climate-resilient seed stocks, including native food crops varieties, and germinating seedlings for food crops and native grasses and tree seedlings; and (2.3.1.7) distribute resilient native food crops planting materials (simple but locally appropriate agricultural tools similar to those mentioned above in the kits) to male and female farmers, including identified, locally-appropriate climate-resilient varieties of: fruit and nut trees, coconut, vegetables.

These activities will result in the following deliverables: farmers in at least 150 targeted communities receive training on climate-resilient agriculture; agriculture resource threats and mitigating measures integrated into Community Resilience Plans in 150 targeted communities; field demonstration sites established in at least 150 of targeted communities; at least 80% of trained farmers apply climate-resilient agricultural methods; at least 80% of engagement includes separate women's, disability and youth focus groups; nurseries established / supported in at least 90% of targeted Wards; at least 47 targeted farmers receive seedlings of climate-resilient food crop varieties; and at least 80% of targeted farmers receive simple agriculture tools.

Activity 2.3.2: Establish/scale-up community-, school- and home-based kitchen gardens for enhanced nutrition utilising climate-resilient crops

This activity will support adoption (through increased understanding, supply and accessibility) of kitchen gardens to promote enhanced nutrition and climate-resilient crops, via (2.3.2.1) deliver family-based nutrition education based on local food and kitchen gardens with diversified, climate-resilient crops and training to promote nutrition and greater use of traditional foods; (2.3.2.2) distribute fencing materials, seeds, seedlings and plants to schools, communities and households to facilitate seed exchanges and seed saving to increase local independence and resilience; and (2.3.2.3) establish demonstration training gardens in schools and communities to raise vegetable and tree seedlings for increased climate resilient nutrition.

These activities will result in the following deliverables: 90% targeted community members (over 15) receive training on resilient kitchen garden design and nutrition (50%M, 50%W, 20%Y and 5% PWD); and kitchen gardens established in schools and communities in 47 targeted Wards.

Activity 2.3.3: Support climate-resilient adaptations to local fisheries for food security

This activity will support implementation of local scale climate resilient fisheries initiatives to increase food security, based on the key activities identified in Community Resilience Plans (activity 1.2.2), via (2.3.3.1) engage communities (50%M; 50%W, 20%Y and 5% PWD) to determine coastal habitat and resource conditions and threats (in combination with activity 1.2.1); (2.3.3.2) integrate risks and mitigating measures to fisheries resources into community adaptation planning processes (with activity 1.2.2); (2.3.3.3) develop a locally appropriate and scalable coastal resource management training program that includes key capacity areas: the effects of fishing, habitat management tools, monitoring and sustainable self-governance (in

combination with activity 1.3.2); (2.3.3.4) conduct training on climate-resilient fisheries and coastal resource management techniques at community level to suit men's and women's different roles in fishing and coastal resource management; (2.3.3.5) support community-level implementation of climate-resilient fisheries management and development of locally appropriate governance mechanisms; and (2.3.3.6) support diversification and sustainability of fisheries resources (alleviating pressures on inshore fisheries) by providing off-shore (near shore) fishing equipment (fishing lines, hooks, weights and nets etc) in targeted communities, including, in some instances, Fishing Aggregating Devices (FADs)). Any FAD deployment will include an assessment of the cost/benefit and will align with the larger scale regional offshore fishing project currently under development by Conservation International.

These activities will result in the following deliverables: coastal habitat area, resource condition and threats determined for 90% of target communities in coastal areas; fisheries resources threats integrated into Community Resilience Plans in 90% of targeted coastal communities; fishers in at least 60% of targeted coastal communities receive training on climate-resilient fisheries and coastal resource management; at least 80% of targeted coastal communities participate in coastal resource management activities; at least 80% of trained fishers apply climate-resilient methods; at least 80% of engagement includes separate women's, disability and youth focus groups; and at least 50% of targeted fishers use off-shore fishing equipment.

Activity 2.3.4: Support application of village climate resilient water resource management techniques and technologies

This activity will support implementation of local scale climate resilient investments to address hazards and vulnerabilities related to water resources, based on the key activities identified in Community Resilience Plans (activity 1.2.2), via (2.3.4.1) engage communities (50%M; 50%W; 20%Y, 5%PWD) to determine key climate risks to water resources (in combination with activity 1.2.1); (2.3.4.2) risks to water resources and mitigating measures integrated into community adaptation planning processes (with activity 1.2.2); (2.3.4.3) support implementation of priority adaptation actions, including: stabilization and afforestation of stream banks to prevent erosion and siltation of reefs; riparian (river) habitat restoration; rainwater harvesting and storage in existing building footprint; improved efficiency water access points; and introduction of deficit irrigation techniques.

These activities will result in the following deliverables: water resources threats determined for 150 target communities; water resources threats and mitigating measures integrated into Community Resilience Plans in 150 targeted communities; and priority adaptation actions on water resources implemented in at least 100 targeted communities.

Activity 2.3.5: Strengthen extension worker service to support women's roles in agriculture

This activity will help increase the government's ability to integrate gender issues into adaptation support, via (2.3.5.1) conduct analysis of gender differences in access to extension services, technology adoption and agricultural productivity; (2.3.5.2) disseminate findings of analysis and hold action planning workshop; (2.3.5.3) develop strategies for improving agricultural services to account for gender differences in agricultural roles and access to extension services and agricultural inputs; (2.3.5.4) develop training modules on gender-responsive extension and advisory services; and (2.3.5.5) train agricultural extension workers, and others involved in agricultural extension programmes, in GESI considerations, especially responding to women's needs.

These activities will result in the following deliverables: analysis conducted and findings disseminated; strategy developed; and training delivered.

Activities under output 2.3 will result in:

- 80% of trained farmers and fishers are implementing climate resilient agriculture/fisheries practices
- At least 60% of target communities have increased water storage capacity
- Agriculture, marine and water resource threats mitigating measures integrated into Village Resilience Plans in 90% targeted coastal communities
- Field demonstration sites established in at least 150 targeted communities
- Nurseries established / supported in at least 47 targeted Wards
- Kitchen gardens established in schools and communities in 47 targeted Wards

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

As noted elsewhere, communities in the Solomon Islands are very vulnerable to climate change given their remote and rural characteristics as well as their dependence on natural resources. The activities associated with this output will address the climate drivers in a number of ways. Climate resilient agriculture activities will reduce exposure and sensitivity to droughts, extreme rains, heat waves, and soil salination from sea level rise, thereby improving productivity, which will increase food security and livelihoods. Improved home gardens will have a similar effect, and will help to diversify diets, improve nutrition, and strengthen food security. Activities aimed at fisheries and marine resources will help communities adapt to increasing sea surface temperatures and associated processes, including weaker reef health and ecosystems and fish migration. Lastly, activities aimed at improving water resource management will address impacts on local water supplies associated with both flooding and drought, and will improve emergency preparedness.

Output 2.4. Targeted youth develop sustainable livelihood opportunities

Output 2.4 will focus on the development of a Youth Climate Resilient Livelihoods Incubator which will help enable youth in targeted communities to deploy the skills they have acquired under output 1.3 to develop entrepreneurial approaches to resilient livelihoods. Youth supported by the Incubator will be able to access sustainable resilient livelihoods opportunities within and beyond their communities. Activities under this output will extend, for the first time, support to current and potential entrepreneurs in rural and remote areas.

Output 2.4 Activity descriptions

Activity 2.4.1: Establish and scale YCRLI

This activity aims to develop, test, and scale a context-appropriate customized youth entrepreneur incubator, build capacity of youth entrepreneurs, and identify youth entrepreneur “challenge” finalists. The Entrepreneurship Coordinator will review and assess best practices

for rural youth entrepreneurship models and incubators in the region and work with key partners to develop an Incubator model that is suitable for the context, based on evidence from current and past youth entrepreneurship efforts in Solomon Islands and the region. The model will be tested in a sub-set of target communities, assessed, and adapted as necessary. The model will then be rolled-out to all targeted communities. The project will conduct outreach in targeted communities to raise awareness of the youth entrepreneur incubator. Interested youth will participate in workshops to help generate innovative livelihoods ideas that are viable and respond to market opportunities identified by the Entrepreneurship Coordinator in partnership with private sector actors in the Solomon Islands. Incubator “challenges” will be held for key sectors to identify new ideas and youth will be supported to develop their ideas in “ideation bootcamps” in Honiara, where youth can connect with other entrepreneurs and learn about market opportunities from the private sector. Both new ideas and adaptations of existing livelihoods will be accepted. Finalists will be chosen by a panel consisting of project staff, private sector representatives and government officials. These actions will be achieved via establishment of a YCRLI to help scale up ideas generated under activity 1.3.2. This will be achieved via (2.4.1.1) to identify best practice youth entrepreneurship models in the region; (2.4.1.2) identify diverse young men’s and women’s priorities and challenges for entrepreneurship; (2.4.1.3) work with key partners to develop Incubator model suitable for the context, based on evidence from current and past youth entrepreneurship efforts in Solomon Islands and the region; (2.4.1.4) pilot the Incubator in a sub-set of target communities and revise as necessary; (2.4.1.5) scale model out to all targeted communities; (2.4.1.6) undertake outreach in targeted communities to help youth generate innovative livelihood ideas for the incubator that are viable and respond to market opportunities (as identified in 1.3.2.1); (2.4.1.7) hold incubator ‘challenges’ for key sectors to identify new ideas; and (2.4.1.8) hold youth incubator ‘ideation bootcamps in regional centres /Honiara.

These activities will result in the following deliverables: locally relevant incubator model developed that responds to male and female youth interests and needs (including those with a disability); incubator active in at least 150 target communities; at least 5 sector ‘challenges’ held; and at least 50% of incubator participants are women (with process structured to reduce barriers to their participation, i.e., timing and provision of child care).

Activity 2.4.2: Support youth to access new/emerging resilient livelihoods opportunities within and beyond communities

The aim of this activity is to provide intense training and mentoring support to youth entrepreneur “challenge” finalists, facilitate connections to markets, and scale-up the incubator model. Incubator “challenge” finalists will be supported with additional training, mentoring and market connections as needed. In this stage, finalists will receive customized one-on-one support by the Entrepreneurship Coordinator and/or other mentors to fine-tune their ideas to help ensure that they are successful. This stage may also include meetings with representatives from private sector actors who are potential buyers and/or suppliers for business models identified in collaboration with the Entrepreneurship Coordinator. At the same time the incubator model will be scaled beyond project target areas via partners. This will be achieved via (2.4.2.1) challenge finalists supported with training (with activity 1.3.2), mentoring and facilitating connections to markets; (2.4.2.2) challenge finalists pitch ideas to an expert panel and winners are selected; (2.4.2.3) working with partners to expand Incubator model beyond the project targeted areas; and (2.4.2.4) linking youth entrepreneurs with each other via virtual and/or analogue platforms and/or events.

These activities will result in the following deliverables: At least 2 challenge finalists from at least 26 targeted Wards (50%M; 50% W, 5%PWD) supported to create viable businesses; incubator identifies and supports at least 25 new resilient livelihoods ideas; at least 1 challenge targeted to support women’s resilient economic empowerment; at least 5 platforms to link with youth entrepreneurs developed.

Activities under output 2.4 will result in:

- At least 500 youth participate in Youth Climate Resilient Livelihoods Incubator
- At least 5 sector challenges completed
- At least 25 new resilient livelihood ideas launched by Incubator participants

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

Like the activities in output 2.3, those associated with output 2.4 directly address the climate drivers by improving the resilience of youth livelihoods that are vulnerable to these processes, and by expanding the range of livelihood opportunities that are available to youth to include less vulnerable occupations that are also less dependent on natural resources. By helping to facilitate a transformation in rural employment away from the subsistence and primary sectors to more value-added and less resource dependent occupations, the project will enhance the resilience of the entire village.

Output 3.1. Climate Resilience Info Management System is used by schools and communities to make climate informed decisions

Output 3.1 will support the co-development of community and school-level adaptation planning systems, the Climate Resilience Information Management digital toolsets, building upon school safety assessment modules currently being developed (see output 1.2). To support ongoing access to the digital tools, each local level adaptation planning committee (the Village Disaster Management Committees) will be provided with satellite-based internet connectivity (which can be sustainably managed via intra-community on-selling of excess data). See also the section on innovation, below.

Output 3.1 Activity descriptions

Activity 3.1.1: Co-develop and deploy climate Resilience Information Management digital toolset suite for data-driven community climate adaptation planning and decision-making

This activity will support a co-development process for the CRIMS, guided by the nine "[Principles for Digital Development](#)". This will anchor ownership and leadership of the core toolsets under MECDM and MEHRD (See Activity 3.1.2). Oversight will be provided by Technical Working Groups under each Ministry. Three digital toolsets will be co-developed, piloted and refined with oversight provided by the MECDM Community-based Adaptation Technical Working Group. The toolsets are:

- A. Family Safety and Resilience Planning
- B. Community Climate and Disaster Risk Assessment
- C. Community Adaptation Planning

D. Community Climate Program Management Modules

During Phase 1 (the first 18 months of project implementation) a rapid scoping of current best practices in community-based risk reduction and resilience in the Pacific, and participatory needs analysis will be undertaken to provide a sound foundation for co-developing, piloting and refining the project's toolset. During the next 12 months of the project (Phase 2), the toolsets will be deployed and evaluated by both local community-based end-users as well as Ward, Provincial and national level stakeholders, using the data for planning and decision-making. During Years 4 and 5 (Phase 3) based on this evaluation, the three toolset modules will be revised for scaling up, to reach 90% of targeted communities, and beyond, and will be fully owned and operated by MECDM. The data generated will be used for local, sub-national and national planning and decision-making and technical working groups will be formed, led by MECDM, to provide ongoing oversight of the digital toolset suite for community-based adaptation and anchor ownership. This will be achieved via, (3.1.1.1) the use of global best practices and processes for co-development of digital toolsets (including participatory needs analysis); (3.1.1.2) co-develop, pilot and refine four toolset modules under MECDM leadership (Phase 1); (3.1.1.3) deploy and evaluate the four toolset modules under MECDM leadership (Phase 2); (3.1.1.4) revise and scale up four toolset modules under MECDM leadership (Phase 3); and (3.1.1.5) train Ward, Province and national stakeholders in effective use of community-based inputs for data-driven planning decision-making and resource allocation for community-based climate adaptation.

These activities will result in the following deliverables: Technical Working Groups formed and operational (50% M; 50% W; 5% PWD); three digital toolset modules to support community-based adaptation are developed (Phase 1), piloted in 17 targeted communities (Phase 2), refined and deployed to 130 targeted communities, evaluated and revised as needed (Phase 3); and one digital toolset (Community-climate program management module) is developed and refined for use in project monitoring, reporting, planning and decision-making; and at least 70 officials and stakeholders (50% M; 50% W) in 26 targeted Wards across 6 provinces and 5 key national institutions are trained in data-driven decision making for community-based climate change adaptation.

Activity 3.1.2: Co-develop and deploy Climate Resilience Information Management digital toolsets for data-driven school-based climate adaptation planning and decision-making

This activity will help strengthen capacity within MEHRD for ownership and leadership of participatory school-based safety and resilience (for disaster risk management and climate change adaptation). An ongoing School Safety Technical Working Group formed during the design phase of this project, under the guidance of MEHRD Education Management Information Services, will provide oversight and validation for the development, piloting, refinement, deployment, evaluation, and scaling up of school focused toolsets. Two digital toolsets for assessing and planning for climate change adaptation planning and decision-making will be co-developed, piloted and refined during the first 18 months of the project (Phase 1) in 10% of targeted schools. The tools are:

- A. School Climate and Disaster Risk Assessment (aka School Safety Self-Assessment)
- B. School Climate Resilience Planning

These toolsets will be conceived of to complement the emerging UNESCO-sponsored "Open MS" Education Management Information Systems.

During the next 12 months of the project (Phase 2), the toolsets will be deployed and evaluated by both local school community end-users in 75% of targeted schools, with

stakeholders from across 52 Wards, and provincial stakeholders across 6 provinces, and national level stakeholders using the data for planning and decision-making. During years 4 and 5 (Phase 3), based on this evaluation, the two toolset modules will be revised for scaling up across 90% of targeted schools, and beyond to additional schools in targeted provinces.

These activities will result in the following deliverables: capacity building of School Safety Technical Working Group members to provide effective oversight (50% M; 50% W; 5% PWD); two digital toolset modules for school safety assessment and planning are contextualized, developed and piloted in 10 targeted schools (Phase 1); refined and deployed and evaluated, in 90 targeted schools (Phase 2); and officials and stakeholders in 52 Wards and 6 provinces and 5 key national institutions are trained in data-driven decision making for school safety and resilience.

Activity 3.1.3: Utilize project experience developing/deploying digital toolsets to inform future locally-led adaptation

Project experience utilizing digital toolsets to capture and analyze climate risk and action data is captured and helps inform future locally-led adaptation initiatives in Solomon Islands and beyond (supporting scaling of project activities to further communities). This will be achieved via, (3.1.3.1) Aggregated climate risk and adaptation action data from targeted communities and schools are utilized to identify common challenges and trends to inform government/donor supported planning and action in targeted and non-targeted communities; (3.1.3.2) Aggregated data on climate risk assessment and adaptation planning process for communities and schools, will inform locally-led adaptation globally via development of knowledge products and engagement in key forums; and (3.1.3.3) Open source digital toolset suite materials are made available for adaptation and use in other projects/contexts (including future Save the Children projects).

These activities will result in the following deliverables: Common challenges and trends report produced; 10 knowledge products and forums developed/engaged in to highlight utility of digitized climate risk assessment and adaptation planning process; and Publication of open-source digital toolset resources with Creative Commons Share Alike license for iterative development and use in other projects.

Activities under output 3.1 will result in:

- At least 75% target communities utilising Climate Resilience Information Management System for adaptation planning
- At least 75% target schools utilising Climate Resilience Information Management System for adaptation planning
- At least 70 officials and stakeholders (50%M; 50% W) in 50% of targeted Wards across 6 provinces and 5 key national institutions are trained in data-driven decision making for community-based climate change adaptation
- 10 knowledge products and forums developed/engaged in to highlight utility of digitized climate risk assessment and adaptation planning process
- Publication of open-source digital toolset resources with Creative Commons Share Alike license for iterative development and use in other projects.

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

This output addresses all of the aforementioned climate drivers by improving data and information management and availability, which will enhance all of the other outputs. The activities associated with output are also important for scaling the project to other communities in the Solomon Islands, where they will further contribute to reducing vulnerability to climate drivers throughout the entire archipelago.

The output will also result in improved capacities at MHERD and MECDM to collaborate and to build the physical resilience of the country's educational infrastructure, as well as to provide better learning environments and to ensure the safety of school children. This will help to address the impacts of floods, heat waves, stronger cyclones, droughts, and other climate shocks and stressors. The improved data and information management systems and capabilities will also feed into community adaptation and disaster risk reduction planning processes, thereby helping communities better target their own actions to directly address the aforementioned climate drivers more effectively.

Output 3.2. Ward institutions have knowledge and skills to support to community adaptation

Output 3.2 will focus on Ward level capacity building to facilitate effective ongoing support for local level adaptation actions (including via supporting ongoing utilization of the digital toolsets for planning and decision-making) and building capacity to access and effectively utilize future flows of climate (and other) finance. This will include strengthening the capacity of local authorities (including Ward Offices, DRCs and Ward level MEHRD staff) to carry out inclusive and effective adaptation planning at the local level. Ongoing technical support will be provided to local authorities to support the inclusion of sustainable budgeting for DRCs and school resilience as a component of Ward development and school-based management plans.

Output 3.2 Activity descriptions

Activity 3.2.1: Support targeted Wards to adopt adaptive governance systems and develop adaptation plans

This activity will support targeted Ward governments to build their capacity to develop higher level adaptation plans (synthesizing information and data captured via community level planning processes), to integrate climate risk and adaptation actions into Ward planning and budgeting processes and to support ongoing adaptation at the local level. This will be achieved via, (3.2.1.1) consolidating and synthesising community analyses (from activities 1.2.1 and 1.2.2) to develop Ward level vulnerability mapping to inform planning and adaptation action; (3.2.1.2) identifying and addressing gaps in the integration of climate risks and adaptation actions into Ward planning and budgeting processes; (3.2.1.3) providing training and capacity building to Ward representatives and technical advisory groups on the integration of climate change risks and adaptation actions into planning and budgeting processes (including gender-

based risks of climate change); (3.2.1.4) providing technical assistance/ resources to Ward officials to undertake new/ updated assessments of climate and disaster risk to inform Ward development plans and budgets; (3.2.1.5) facilitating linkages between Ward development plans and Community Resilience Plans to avoid duplication or contradictions, and ensure consistent planning and budgeting; and (3.2.1.6) providing technical assistance/resources to local and Ward government to assess gender gaps through gender-responsive and inclusive climate change budgeting and planning.

These activities will result in the following deliverables: vulnerability maps developed for at least 47 targeted Wards; analysis of Ward gaps undertaken; Capacity building trainings on integration of climate risk analysis into planning and budgeting processes delivered in 47 targeted Wards; budget processes established to fund Ward adaptation activities that consider climate and disaster risk in 40 targeted Wards; at least 30 targeted Wards operationalize gender-responsive budgeting practices.

Activity 3.2.2: Ongoing stakeholder engagement

This activity will ensure continued engagement of key stakeholders at national, province and Ward levels and cross-fertilisation of project supported approaches via annual workshops (supporting scaling of project activities to further communities). This will be achieved via, annual project workshops at national and provincial level and delivery of safeguarding training.

Activity 3.2.3: Capture lessons learned, emerging themes and best practices at the community level to ensure sub-national and national planning processes are informed by local needs and that local actions support national objectives.

Promote national and sub-national planning processes that are informed by community level experiences and that community-level actions are in support of national public policy objectives. Bespoke knowledge management products and resources will be produced and disseminated. Participation of community champions in national and regional forums (supporting scaling of project activities to further communities). This will be achieved via, (3.2.3.1) Produce knowledge management products that capture and emphasise local needs of diverse groups including for women/men/youth/persons with disabilities etc. to national stakeholders directly involved in the production of high-level adaptation planning processes (Updated NDC, NAP development, UNFCCC reporting); (3.2.3.2) Facilitate participation of communities and Wards in national and regional forums (Pacific Resilience Partnership, PIFS side events, national climate change conferences/events, other CBA/GCF project meetings) supported by governments and development partners; (3.2.3.3) Facilitate visibility and engagement of senior officials through project site visits; (3.2.3.4) Disseminate knowledge management products (participatory tools, videos, project reports, technical toolkits) that are translated in all three national languages to encourage meaningful consideration and usage at local level; and (3.2.3.5) Increase the global adaptation knowledge base by linking project outcomes to national, regional and global processes.

These activities will result in the following deliverables: 30 annual knowledge management products produced; 18 annual national, regional and/or international forums participated in to disseminate local CBA knowledge; 80% of knowledge management products are translated into national languages; and Progress on gender equality, disability inclusion and youth participation included in annual knowledge management products.

Activities under output 3.2 will result in:

- At least 47 target Wards have integrated climate risks and adaptation measures into development plans

- Vulnerability maps developed for at least 47 targeted Wards
- Budget processes established to fund Ward adaptation activities that consider climate and disaster risk in 40 targeted Wards
- At least 30 targeted Wards operationalize gender-responsive budgeting practices
- 30 annual knowledge management products produced
- 18 annual national, regional and/or international forums participated in to disseminate local CBA knowledge

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

This output addresses the climate drivers by improving the capacity of local authorities to support village DRCs by providing them adequate resources. It also addresses the climate drivers by facilitating the capture of lessons learned from successful implementation and disseminating them to additional communities.

Output 3.3. Private sector partnerships are facilitating youth engagement in sustainable, resilient livelihoods.

Output 3.3 will support selected youth resilient livelihood ideas developed under the incubator (output 2.3) to scale via facilitation of appropriate private sector partnerships and access to broader markets (supporting project co-benefit 2).

Output 3.3 Activity descriptions

Activity 3.3.1: Youth-private sector matchmaking

This activity will ensure that youth climate resilient entrepreneurship ideas respond to market demand opportunities and that the private sector in Solomon Islands provides opportunities to youth entrepreneurs. Building on the private sector assessment, the Entrepreneurship Coordinator, in coordination with Ministry of Commerce, Industry, Labor, and Migration (MCILI) and Solomon Island Chamber of Commerce (SICCI)/YECSI, among others, will engage with potential private sector partners in Solomon Islands to gauge their interest in exploring business models where rural youth act as either suppliers or buyers. Together with potential youth incubator partners, the Entrepreneurship Coordinator will work with interested private sector partners to fine-tune their business models, supply chain or distribution, to facilitate youth and women entrepreneur inclusion. These opportunities are shared with youth entrepreneurs throughout the incubator program, however at this stage the project will link relevant “challenge” finalists and the private sector partners and facilitate business relationships. This will be achieved via, (3.2.1.1) engaging with private sector partners interested in engaging with Incubator on sector challenge areas as buyers or suppliers as identified in 1.3.2.1; (3.2.1.2) supporting private sector partners in fine-tuning their business models, supply chain or distribution, to facilitate youth and women entrepreneur inclusion; and

(3.2.1.3) matching incubator-supported youth with viable resilient livelihoods ideas with potential private sector partners to establish/scale.

These activities will result in the following deliverables: At least 30 private sector partners identified to connect with youth entrepreneurs; and at least 250 incubator graduates linked to private sector partners.

Activity 3.3.2: Seeding support to scale up incubated ideas

This activity will provide seeding support to the best ideas (including best women-led entrepreneur) from the youth incubator entrepreneurs, and support 30 entrepreneurs to become incubator champions who will actively contribute to the youth entrepreneur space through public communication channels. Youth entrepreneur finalists will “pitch” their ideas to a panel of mock “investors” including a mix of individuals representing participating businesses, project staff, government representatives, co-financiers and the GCF. The pitch winners receive “seeding” support in the form of mentoring and supporting enhanced connections with local businesses. This will be achieved via, (3.2.2.1) identify most viable livelihood ideas under each challenge and provide further seeding support to scale up businesses; and (3.2.2.2) support most viable livelihood generators to engage with other youth by becoming Incubator Champions and mentors.

These activities will result in the following deliverables: further support (training, mentoring, facilitation, participation) provided to at least 100 youth entrepreneurs; and at least 30 Incubator Champions (50% W, 50% M) identified.

Activities under output 3.3 will result in:

- At least 30 private sector partners identified to connect with youth entrepreneurs
- At least 250 incubator graduates linked to private sector partners
- Further support (training, mentoring, facilitation, participation) provided to at least 100 youth entrepreneurs
- At least 30 Incubator Champions identified (50% W, 50% M).

Specific drivers to be addressed:

- Increasingly severe tropical cyclones
- Droughts and extreme rainfall events
- Increasing atmospheric temperatures
- Heat waves of increasing severity, frequency, and duration
- Increasing sea surface temperatures
- Sea level rise (including higher storm surges and king tides)

Climate rationale narrative:

This output, working in concert with Outputs 1.3 and 2.3, addresses the key climate drivers by helping youth adopt climate resilient approaches to livelihoods in the primary sector that are currently highly vulnerable to the impacts of climate change. The Output will also help livelihood diversification and to open up new opportunities in vocations that are less vulnerable to climate change.

The project will work with four cohorts of participants: school-aged children, youth (defined as ages 15-34 in Solomon Islands), communities and government at all levels. Each cohort will

engage with activities that sit within or across each of the project’s outcome areas. The flow of project activities across components and cohorts is shown in Figure 14, below.

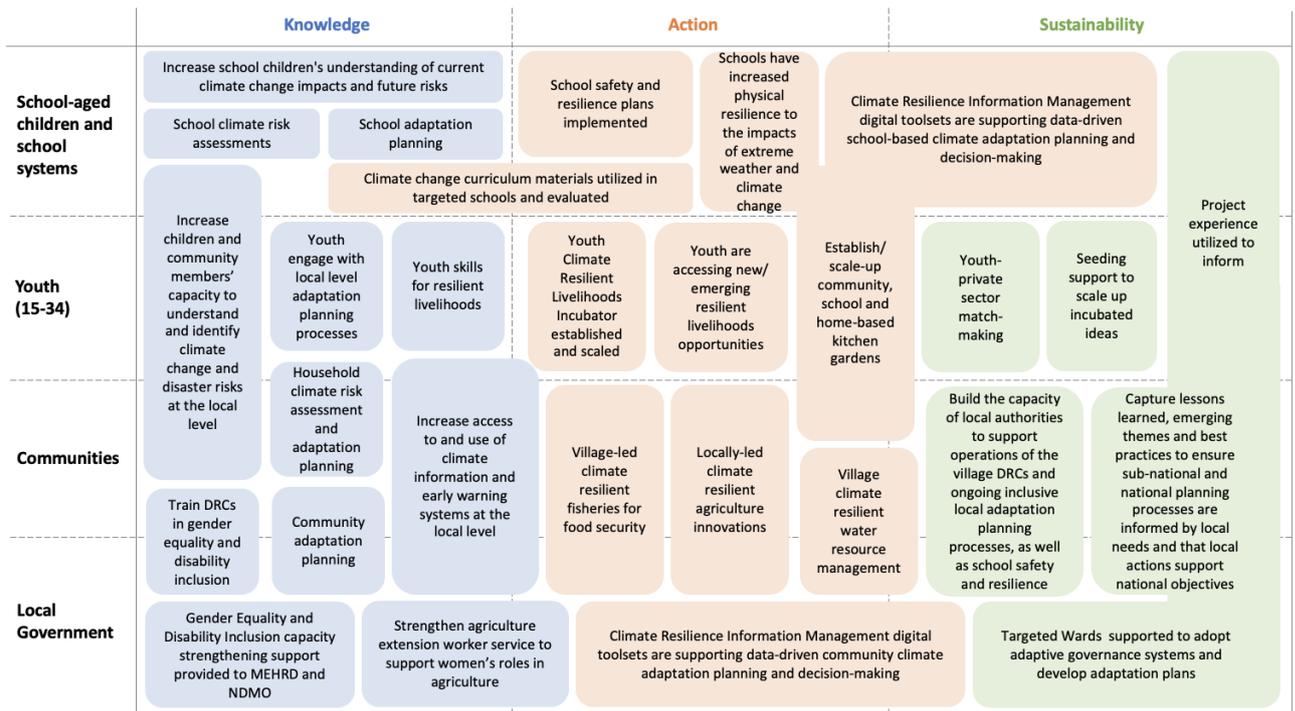


Figure 14. SOLKAS activities across components and cohorts

6.3. Project Logical Framework

The project’s logical framework provides a comprehensive overview of the activities, sub-activities and deliverables under each outcome area. The logical framework is at Annex 2a.

6.4. Project Implementation Timetable

The project’s Implementation Timetable is at Annex 2b.

6.5. Beneficiary selection

Based on the top 52 most vulnerable Wards the project will target 185,102 direct beneficiaries (49% W, 51%M, 50% under 18yrs) in six Provinces. This represents 25.7% of the total population and 32% of the population outside the capital, Honiara

The project’s targeting was based on a collaborative process with key stakeholders across government, guided by a the first ever national level vulnerability assessment which utilized available published data, government statistics and local knowledge to assess the current climate vulnerability of all 183 Wards in the Solomon Islands. A vulnerability metric was then used to quantify results so that components are systematically ranked based on their relative vulnerability at a national level. This provided a ranking of all Wards’ relative vulnerability from highest to lowest, enabling the project to target the most vulnerable areas.

A breakdown of direct beneficiaries by province is provided in Table 6, below. Further information on the project’s targeting approach is in section 4.4.1, above, and in the national vulnerability assessment at **Annex 23**.

Table 6. SOLKAS direct beneficiaries by Province and Ward

Province	# Targeted Wards	# Targeted villages ²²	Population (2019 provisional)	# Households (2009)
Isabel	3	9	6,442	1,052
Central	5	15	13,064	2,026
Guadalcanal	10	30	46,871	6,330
Malaita	19	64	93,354	14,739
Makira-Ulawa	6	25	14,418	1,978
Temotu	9	27	10,954	2,117
Total	52	170	185,102	28,242

While direct beneficiaries will be the primary focus of support to implement adaptation actions, the capacity building in sub-national and national government and the systems established will enable scaling-up of the project’s adaptation responses and resources to many more indirect beneficiaries. The indirect beneficiaries will be up to 277,797 people (49% W, 51%M) (40% of the national population, 60% of the population of the six targeted provinces). These indirect beneficiaries will be reached via scale up of some project activities by provincial and local authorities and further outreach via project supported information, education and communications (IEC) materials – including extended distribution of IEC materials across the targeted provinces via radio, social media and text messaging. This is likely to be a conservative estimate of the project’s total indirect reach as the Ministry of Education has committed to rolling out project-supported climate change curriculum materials and teacher training nationwide, and the Ministry of Climate Change has committed to utilising information from the project supported database to drive decision-making on local adaptation nationwide. These calculations are based on Save the Children’s approach to determining project reach, which for indirect beneficiaries includes “a person is reached indirectly through communications, IEC, campaigning and/or awareness raising efforts or events conducted or supported by Save the Children or one of its implementing partners.”

²² There are an average of 3-5 villages per Ward. For project implementation, some smaller villages that are proximate to each will be treated as a single community.

7. Assessment

7.1. Technical assessment of proposed activities

This section provides a technical assessment of a range of activities under the project, finding that the selected activities and implementation modalities are fit for the context and follow international best practice. All project activities also have strong government buy-in, critical for sustainability and the paradigm shift.

7.1.1. Integration of climate change into school curriculum

Integration of climate change into school curriculum has been shown to have significant impacts on children's lifetime resilience. In a study of 125 countries, researchers found that the death toll caused by floods, droughts, wildfires, extreme temperature events, and extreme weather events could be 60% lower by 2050 if 70% of women were able to achieve a lower-secondary-school education (Lutz and Patt, 2013). In a recent systematic review of climate change curriculum and education programs researchers found that climate change education programs **achieve a variety of positive outcomes**. Most commonly, programs **increase climate knowledge**, but they also can impact learners' level of concern about climate change, their **problem-solving skills**, and behaviours. Effective climate change education programs are personally relevant and meaningful, use engaging teaching strategies, encourage deliberative discussion to explore and navigate disagreements and controversial issues, engage participants in the **scientific process**, **address misconceptions**, and/or incorporate **school or community projects** for participants to take action (Monore et al, 2019). Increasing access to climate change education is embedded in the Paris Agreement (Article 12). The Solomon Islands has committed to integrating climate change into the national curriculum, including as an objective in the Education Strategic Framework 2016-2030 where the curriculum should raise "awareness about climate, environmental, disaster, social cohesion and social protection risk management to promote adaptation, sustainability, resilience and inclusion/equity" (GoSI, 2016). SOLKAS will work directly with MEHRD, building on a strong relationship between Save the Children, MECDM and MEHRD, to support MEHRD to embed climate change into the national curriculum. The project's investments in climate change learning materials and teacher training, will support MEHRD to roll out climate change learning nationwide.

7.1.2. Increasing community understanding of climate change

Building community resilience to the current and projected impacts of climate change requires behaviour transformation. Research has shown that developing awareness and understanding is key to behaviour change. This understanding holds true for climate change (see Whitmarsh et al, 2021; Iturriza et al, 2020). In the IPCC's Sixth Assessment Report (Begum et al, 2022), knowledge is considered as a key enabler for adaptation action (p.124), noting that knowledge, skills and learning are keys components required to shift from incremental to transformational adaptation (p.125) and notes the critical importance of including local and indigenous knowledge in developing and implementing adaptation actions (p.148). SOLKAS will support communities to increase their understanding of climate change to inform local climate risk assessments and adaptation planning. Combined with local and traditional knowledge, improved understanding of climate change processes and impacts, will help catalyse sustainable adaptation action.

7.1.3. Increasing local level access to early warnings and climate information

The IPCC's Sixth Assessment Report contribution from Working Group II (IPCC, 2022) notes that early warning systems have contributed to savings lives (particularly when combined with physical resilience measures) (p.21), and that "adaptation options, such as disaster risk reduction, early warning systems, climate services and risk spreading and sharing have broad applicability across sectors and provide greater benefits to other adaptation options when combined" (p.26). Further, the report notes that "climate services that are inclusive of different users and providers can improve agricultural practices, inform better water use and efficiency, and enable resilient infrastructure planning" (p.26). A 2019 report from the Global Commission on Adaptation found that investments in early warning systems have between a 5 and 10:1 benefit cost ratio globally (Global Commission on Adaptation, 2019). SOLKAS' approach to the provision of climate information services to communities, to connecting the last mile, will be intrinsically linked to capacity building and implementation support for agriculture, fisheries, nutrition, water management and resilient education infrastructure, helping ensure that communities have access to, and can utilise, climate information for adaptation planning and implementation. Improving local level connectivity will significantly improve access to timely early warnings, reducing the likelihood of loss of life and livelihoods during extreme weather events. Research has also shown that the effectiveness and sustainability of early warning systems is significantly enhanced when they are developed and deployed via participatory, bottom-up processes (Baudoin, 2016). This echoes the SOLKAS approach.

7.1.4. Micro-learning approaches

Micro-learning refers to the practice of reducing lessons into easily-absorbed bite-sized chunks. Micro-learning lessons typically take 1-10 minutes at a time. Knowledge is more easily absorbed in small amounts, when the learner "pulls" what they are ready for, rather than being pushed with hours and hours or days and days of information that learners are not ready to absorb, apply or integrate into their knowledge and practice.

Unlike early e-learning linear delivery of one-size fits-all content, micro-learning is learner-driven, allowing learners to seek and access what they want, when they need it. It applies answers and solutions to address specific problems. They are low-effort, fast, easy, quick to apply and useful.

Professional instructional design for project micro-learning inputs will utilize subject-matter experts for content and add value to micro-learning content by making the acquisition of knowledge and skill more efficient, effective, and appealing. Production costs for conversion of content to micro-learning are relatively low. Must-learn, performance-focused content, key principles, objectives and ideas are centre stage (90% of focus) and references, guides and detailed resources are available as and when needed. Talking heads, page-turners, lectures, and powerpoints are abandoned for stories, real life examples, in situ photos, close-up 'how to' videos, infographics and examples. The learner can easily repeat and review content as often as they like. Every 3-5 minutes a knowledge check confirms learning. Micro-learning is typically delivered on a mobile-focused Learning Management System (LMS) which enables easy distribution, multi-media formats, and tracking of use and learning.

Key benefits of this approach include:

- Micro-learning is uniquely suited to on-the-job learning needs and outcomes for work and livelihood environments, as opposed to classroom and traditional online learning modalities.
- The practice of reducing lessons into small, easily-absorbed, bite-sized chunks. Complex topics can be broken down into multiple courses and lessons so that progress can be assured one "chunk" at a time. Long-term retention is improved through repetition of content.

- Micro-learning content can easily be delivered with audio track in local language, and visual supports and does not need to rely on advanced reading skills and stamina.
- Micro-learning materials make extensive use of multi-media and video as well as interactivity and gamification, to make lesson content engaging, and to apply and reinforce learning.
- Micro-learning is delivered on mobile devices, and once downloaded lessons can be completed any time, anywhere, and at the learner's own pace.
- Progress can be tracked and certificates issued e.g., using "open badges" which record learner achievements and provide vocational value in the job market, when added to digital portfolio or resume. Using this type of award/recognition system can also build motivation and determination.
- Analytics allow rapid observation of learning impacts and outcomes.
- With either occasional or regular internet connectivity and any type of mobile smart device or computer, this is accessible to all. The reach of micro-learning self-study modules is immediately scalable to the whole country, and beyond the boundaries of the project target communities and sites. Their impact in this way can be easily monitored and assessed.
- Micro-learning approaches are cost effective as they require expert inputs upfront but then can be utilized across time and space with no loss of integrity or need to maintain and deploy expertise across the range of sectors addressed through the training.

SOLKAS will utilize these approaches in youth and community training and skills building activities, as well as embedding them into curriculum development activities with MEHRD. One set of learning modules will be developed for teachers / students / community members to build climate change awareness and understanding, including family and school safety, risk reduction and adaptation measures with MEHRD and partners. A second set of learning modules will be developed to support livelihood adaptations and youth entrepreneurship. Available guidance materials for application of specific adaptation strategies will be adapted for micro-learning delivery, with MECDEM adapting existing and developing new materials.

7.1.5. Resilience retrofits for social infrastructure

There is a high need for social infrastructure in Solomon Islands to have increased resilience to the current and projected impacts of climate change. This is particularly the case for schools in remote and rural areas, where a 2022 analysis found "most schools don't have adequate access to water, sanitation or electricity. Those schools that do have access to water and sanitation facilities do not have sufficient ratios to meet the needs of the student population. There are some good school buildings and classrooms but poor maintenance and upkeep leads to facilities becoming rundown to a poor state" (Save the Children, 2022).

School infrastructure standards and policies

In November 2011, the Solomon Islands Cabinet ratified the Policy Statement and Guidelines for School Infrastructure in Solomon Islands, the governing instrument for the design, development, construction, rehabilitation, repair and maintenance of all school infrastructure. The policy applies to all existing and future school infrastructure in the sub-sectors of Early Childhood Education (ECE), Primary, Secondary and Technical Vocational Education and Training (TVET) and to all stakeholders undertaking school infrastructure development. In addition, MEHRD has the '6 Disaster resilient construction models/ typologies' and the School Establishment Policy, currently in draft.

National infrastructure minimum standards are currently in draft form, and have been since 2011. The standards will address types of buildings, size of buildings and what materials to use. The drafting of WASH minimum standards, which will form part of the overarching minimum standards document, is currently being prioritized in support of the national WASH policy being drafted by the Ministry of Health.

MEHRD should be the authority for physical developments in any school, but currently schools are taking on developments without consent or approval. Feedback from schools is that the process to obtain approval takes too long, so they are acting directly.

School retrofits

Under the *School Infrastructure Policy*, financing is to be consistent with the principles of partnership, meaning that finance will come from varying sources including the Solomon Islands Government, Provincial Government, Education Authorities, development partners, school fees, contributions and fundraising from local communities. MEHRD is to set guidelines for medium term recurrent budget allocation for the *National School Infrastructure Development Plan*, and build on this to develop annual budgets for new construction and rehabilitation to be determined as part of the national budgeting process.

Under the *School Infrastructure Policy*, the Infrastructure Coordination Unit (ICU) is responsible for providing professional engineering and architectural guidance and coordination of all school infrastructure development. More specifically, the ICU houses, approves and authorizes all school infrastructure design, specifications, minimum standards and contract documents and acts in the capacity of superintendent for all school infrastructure construction and rehabilitation. The policy does not provide operational guidance on how to undertake retrofit, rehabilitation or replacement works. The drafting of minimum standards to guide construction, rehabilitation, quality and safety is incomplete. In reality, often the school and community themselves undertake the retrofitting or rehabilitation of facilities.

There are no known policies or norms in relation to non-structural mitigation or safe access for fire, earthquake and flood. Most schools do not have fire safety equipment. No specific guidance on non-structural mitigation measures that can be taken in relation to earthquake, flood or other hazards is given to schools. Schools do not have emergency signage, emergency exits, etc.

According to the *School Infrastructure Policy*, the school committee or board is responsible for maintenance. This includes planning, selection and appointment of staff members for monitoring and effective management of school assets. School committees and boards are also responsible for financing small repair and maintenance programmes. DRR is to be incorporated into ongoing maintenance of school infrastructure. SOLKAS will support this integration process.

10% of a school grant is earmarked for use in funding maintenance, but there are no policies or guidelines on how to use those funds. Additional infrastructure development contributions come from students' families to supplement school grants. Contribution amounts differ from one school to another.

Physical and environmental risk reduction in schools

Schools are encouraged to identify environmental problems/issues within the school environment and priorities these for action. This should be included in development of an annual work program covering environmental activities and maintenance/upkeep of school grounds.

Schools are encouraged to have school food gardens to contribute to skill development and learning outcomes for children. There are 651 roof tanks for rainwater harvesting around the country, 72% of which are in poor condition or unusable. Information about mitigation measures including non-structural, flood and cyclone is not routinely documented and not available.

In this context, SOLKAS will support both MEHRD and schools to increase the physical resilience of school infrastructure and to implement resilience-focused systems and processes, including guidance for ongoing maintenance of resilience improvements. The inclusion of schools in the project's Climate Resilience Information Management System will ensure that all school-based planned retrofits are assessed through MEHRD systems and approved for investment.

7.1.6. Climate resilient local agriculture and kitchen gardens for food security and nutrition

Climate change is affecting the success of traditional planting methods and ways of growing crops due to changes in local weather and climate, pests and disease. As climate change impacts escalate, food insecurity will increase. Building the resilience of local agriculture practice is critical to preventing further compromises to food security.

Climate change is affecting the success of traditional planting methods and ways of growing crops due to changes in local weather and climate, pests and disease. Some traditional planting and harvest methods are no longer suitable to the changing conditions. Thus, introducing climate-resilient traditional methods for planting and harvest, coupled with the use of local plants to control pests, and selecting crop varieties which tolerate extreme conditions such as heatwaves, droughts and floods are options that can minimize the impacts of climate change on food security. Such practices include planting to suit seasonal calendars, use of natural compost and mulch.

Agricultural production in Solomon Islands is overwhelmingly rainfed. Thus, most crop production relies on rainfall in order to sustain growth and produce high yield. Projected increases in rainfall variability, and changing rainfall extremes, including drought caused by El Nino events, are expected to affect many agricultural crops, and will be exacerbated by other climate change impacts, such as increasing temperatures. Climate change is already negatively affecting many local crop varieties due to changing rainfall, temperature and weather patterns. Introducing climate-resilient native food and cash crops is one of the best options for food systems to adapt to the changing climate thus supporting food security and income generation for vulnerable communities.

As with remote and rural communities across the Pacific, education, training and capacity building on climate-resilient agricultural practices and techniques is lacking in many remote communities of Solomon Islands. This is due to lack of government services in rural communities and poor communication infrastructure (e.g. network coverage). Community training on climate-resilient practices to promote healthy food systems and crop production will support kitchen gardens in schools and households and provide enhanced nutrition in target communities.

A comprehensive assessment of climate resilient food security in the context of rural agriculture was undertaken as part of the SOLKAS design process. The full report is available at **Annex 25**.

7.1.7. Climate resilient local scale fisheries

Coastal, reef, and lagoon fishing activities provide 50 to 90% of animal protein in the diet of Pacific Islanders, and the first or second source of income for 50% of coastal households (World Bank, 2022a). Coastal and reef fisheries in Solomon Islands are already impacted by current climate-related threats such as marine heatwave events, cyclones and terrestrial runoff. As climate change impacts escalate communities will see a significant reduction in the productivity of coastal resources, reducing fish populations and the catches needed to nourish households. Supporting communities to better manage the coastal zone and diversify their fish catch will help reduce pressure on coastal and reef ecosystems and supporting increased food security. Analysis that projected declines in coastal fish catch will result in shortages in Solomon Islands by 2035 (Johnson et al 2018; Hanich et al, 2017; World Bank, 2022).

Helping communities better manage their existing coastal fisheries resources is of critical importance to ensuring the sustainability of this vital protein source. The development of locally-led and owned coastal resource management plans (as part of broader community level climate risk assessment and adaptation planning processes) and supporting communities to implement them is a key component of sustainability. A second key action is supporting communities to diversify their fish protein sources. SOLKAS will do this via facilitating community access to near shore (inshore) fishing equipment, including fish aggregating devices (FADs), which are a well-established and locally managed technology supported by MFMR in Solomon Islands (Albert et al, 2015 and Albert et al, 2014), with established designs appropriate to the context (see Sokimi et al, 2020). All FADs deployed under SOLKAS will be in line with MFMR policies and regional best practice.

7.1.8. Building the climate resilience of rural economies and businesses

Based on the information from the field study conducted in support of this project, the *development of business models and/or products/services that respond to, and/or innovate within, the context of a changing climate and the challenges climate change brings about*, the project will focus on business owners and/or entrepreneurs who:

1. Respond to the negative impacts of climate change;
 - a. Farmers and other value chain actors
 - i. Soil erosion (due to flooding)
 - ii. Decreasing yields due to pests/insects and variable weather patterns, including drought
 - b. Fisherfolk and other value chain actors
 - i. Risk stock decline (due to overfishing, logging pollution, and fish migration)
 - c. Local traders and other value chain actors
 - i. Shipping delays (due to bad weather)
2. Practice any livelihood activity which is NOT impacted by the typical climate shocks/stresses in Solomon Islands; and/or
3. Establish or practice a livelihood activity with “increased knowledge/understanding (Outcome 1 of Logframe) of climate change implications, improved resilience knowledge, and strengthened adaptation planning capacity.

Opportunities and needs of rural youth entrepreneurs

Roughly 70% of the population in Solomon Islands is 34 years or younger²³. The Solomon Islands National Youth Policy 2017-2030²⁴, highlights the fact that employment is the most important challenge identified by youth. While around 16-18,000 youth enter the labour market every year, the Solomon Islands Central Bank estimates that the economy will create roughly 4,000 jobs annually at most. The current unemployment rate for youth is around 75-80%.

In addition to the general business operational and start-up obstacles faced by business owners and entrepreneurs in the Solomon Islands described in the above sections, youth lack exposure to new ideas or innovations, access to finance, and business skills. A UNCDF report

²³ <https://dpa.bellschool.anu.edu.au/experts-publications/publications/6627/ib-201901-youth-inclusive-development-challenges-and>

²⁴ <http://www.mwycfa.gov.sb/resources-2/strategic-plans-policies/youth-development-empowerment/6-solomon-islands-national-youth-policy-2017-2030/file.html#:~:text=Solomon%20Islands%20is%20a%20youthful,below%2034%20years%20of%20age3.>

also found that entrepreneurship was not seen in a positive light or as aspirational; entrepreneurship is traditionally associated with school leavers and those who cannot get or secure jobs (UNCDF, 2021). Activities to support to youth-owned businesses and start-ups will address the following issues:

- Market linkages;
- Market demand;
- New business ideas and access to information;
- Business management skills;
- Access to finance, especially start-up funding;
- Access to new products/services;
- Peer support networks; and
- Start-up support and mentorship.

While there are few new opportunities for Solomon Islands' youth, especially rural youth, the growing population does represent a growing market for new businesses and the improved online connectivity (for some rural areas) presents a new trend that youth are especially well-placed to benefit from. Based on the results of the survey, there also seems to be demand for better agricultural practices to increase and sustain yields, improved inputs and improved climate resilient agricultural practices; though the question would be how to commercialise this potential demand.

A market analysis undertaken to support the SOLKAS design process recommended that, in the short-term, 1) the entrepreneurship ecosystem should be supported by leveraging existing actors and strengthening the connections between them, and 2) incubators should consider integrating support to start-ups in the social business, technology, and digital space. In the medium-term, the report recommended considering 1) integrating entrepreneurship in school and university curricula for skills building and awareness raising, 2) leveraging successful incubator alumni to share experiences, best practices and become mentors, and 3) eventually create a network of start-up executives, venture capitalists and industry specialists to offer financial and mentorship support to youth entrepreneurs. The full analysis is at **Annex 26**.

7.1.9. Non-Technical Digital Toolsets for Planning, Decision-Making, and Guidance

The project will work to digitise community and school level climate and disaster risk assessment and adaptation planning processes, utilising non-technical digital toolsets to be developed specifically for the project – but open source and available for deployment in other projects and contexts. The development of the toolset responds to constraints in the traditional 'paper-based' approach to community climate risk assessments and adaptation planning.

The current most common approach to data collection, program delivery and program monitoring for risk assessment and risk reduction are highly extractive in conception and suffer from three major failings:

1. Paper-based data collection systems flounder when the agencies collecting data have neither the time nor capacity to analyze the data nor can recommend how to put it to use, in a timely manner.
2. Even when digitized, the systems demand inputs from end-users at school or community level, but provide nothing in return. The quality of data yielded is often poor. End users speculate that if they say that things are bad they might get help – or they might get into trouble. They wonder if they say that things are good, they will be

appreciated – or perhaps they won't get any help. These systems are not empowering.

3. Even a small army of intermediary social-mobilizers cannot embody the expertise to translate the findings into actionable recommendations with any level of fidelity. The guidance they provide is based only on what they can recall, rather than the data.

While this approach to local level risk assessment and adaptation planning can and frequently does support effective programming, it requires substantial human resources, which is an impediment to scale and efficiency.

The approach proposed by SOLKAS is innovative and will shift the paradigm. Key changes are that:

1. The data is immediately and automatically analyzed using algorithms agreed upon ahead of time to provide ratings, rankings, and recommendations;
2. The provision of the information immediately returns actionable steps and links to guidance materials so that communities and schools are empowered to take immediate action; and
3. Change detection allows end-users to see their own trajectory.

The immediate benefits flow to both communities and centralised decision-makers. Communities benefit from an easier input process through a guided risk assessment and planning process which is intuitive and designed from an end-user perspective. Communities also benefit from immediate responses to the issues/needs they identify via the provision of practical information and actionable strategies to facilitate adaptation (including links to online micro-learning modules). Decision-makers benefit from access to real-time information from communities on current risks and adaptation needs. The data can be amalgamated at various levels (Ward, Province, national) for meta-analysis and individual community inputs can be viewed. Reports based on a range of metrics can be automated for ease of analysis and as an input into decision-making processes at various levels.

These apps, while highly innovative, are based on existing work, particularly within the school safety (DRR) community. RiskRApps Non-technical Toolsets were first developed in the context of the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector, as part of the Comprehensive School Safety Assessment Suite. The five different tools developed share the same principles and architecture, consisting of three components:

1. **Mobile Apps** to collect data and educate
2. **The Portal** for data management, reporting, and survey administration
3. **Automated Reports** that provide ratings, rankings, change detection, recommendations, and links to guidance materials

Development of the app suite for SOLKAS will be anchored in the [Principles for Digital Development](#), which incorporate best practices and ethics of the design, ownership and implementation of these tools. These principles will guide the co-development, piloting, refinement, deployment and evaluation of the toolsets. Further, the guiding principles for UNDP's digital strategy are applicable to this effort. These include:

- Putting human rights at the centre
- Protecting inclusive and gender-sensitive approaches that leave no one behind
- Contributing to shared global standards and frameworks that protect people's rights
- Advocates for open digital standards and open data
- Works to strengthen local digital ecosystems

- Leverages strategic partnership to catalyse inclusive approaches to digital development.

These toolsets will generate a paradigm shift so that with a smart-device and even occasional internet access, schools, communities and families can access user-friendly, self-assessment tools, that provide ratings, rankings, and immediate actionable recommendations for planning, decision-making and improved safety and resilience – with links to relevant guidance materials based on their responses.

The School and Community Climate Resilience Information Management Suite will consist of 6 modules in total (one for household use, two for community use, two for school use, and one back end management module):

- E. Family Safety and Resilience Planning
- F. Community Climate and Disaster Risk Assessment
- G. Community Adaptation Planning
- H. Community Climate Program Management Modules
- I. School Climate and Disaster Risk Assessment (aka School Safety Self-Assessment)
- J. School Climate Resilience Planning

The Family Safety and Resilience plan toolset is based on “must do” messages drawn from IFRC and Save the Children (2018) *Public Awareness and Public Education: Action-Oriented Key Messages for Households and Schools*, which has been adapted and adopted in Solomon Islands and is being updated in 2022. It applies two types of evidence for best practices in promoting behavior change for risk reduction. One concerns the effectiveness of the messages themselves, the trust they engender because they represent a consensus of experts (including local knowledge), and are validated and co-logoed by in-country expert institutions. The second is that the conception of the app, the engagement of children and youth as catalysts for family action is based on behavioral insights research on the importance of building self-efficacy, the importance of social proof, the value of making a commitment to action, leveraging existing behavior and ‘habit stacking’, and children’s roles as catalysis in risk reduction and resilience at the household level (Save the Children, 2018). The Family Safety Plan digital toolset is being piloted in 2022 in Fiji, and brings with it, Island graphics also suitable for use in Solomon Islands.

The school-based non-technical digital toolsets are based on current best practices in *all-hazards* risk assessment, as well as school-site planning for school safety and educational continuity management launched by the *Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector* as part of the *Comprehensive School Safety Assessment Suite*. These tools have been piloted in Lao PDR and China, introduced at scale in the Philippines, and being developed for implementation in both Solomon Islands and Tonga in 2023. The School Climate and Disaster Risk Assessment and School Climate Resilience Planning modules are based on current best practices in all-of-school participatory school safety and educational continuity management. They enable collection of key indicators important to the implementation.

The community level apps are based on the best practices and experience with school level deployment and build on the years of experience in the community-based adaptation community in facilitating participatory and inclusive local level climate and disaster risk assessment and adaptation planning processes globally.

7.2. Environment and Social Safeguards

During project planning, the eight Performance Standards of the GCF Environmental and Social Policy (ESP) were assessed. It was determined that, in line with the SOLKAS Category C risk rating, only PS 1 has been triggered.

As part of SCA's Accredited Entity status, all project activities are assessed against the Program Environmental and Social Sustainability Management System (PESSMS) through a four-step screening and management process on which SCA's Category C GCF accreditation was based. To ensure that all ongoing environmental and social screening of SOLKAS activities are further developed and continue to capture all potential impacts that are outside the Category C rating, the risk categorisation table within the SCA PESSMS has been tailored to SOLKAS and includes expanded aspects of the applicable GCF PSs.

In addition to tailoring the PESSMS specifically to the SOLKAS using the GCF SAP, the Residual Risk Management Plan (RRMP) also includes a Gender Equity and Human Rights checklist as part of the screening. The GCF ESP requires every project, regardless of category, screens to ensure compliance with these standards.

The Environmental and Social Safeguards (ESS) RRMP includes mitigations for the following project activities. ESS-related risks for each of these activities is rated as 'low'.

- Small-scale production and use of concrete for school retrofit upgrades and installation solar array footings leading, etc to localised contamination or soils from concrete slurry or wastewater.
- Small-scale production and use of concrete for school retrofit upgrades and installation solar array footings leading, etc poses a health and safety risk to workers.
- Dislodged FADs have the potential to become an entanglement risk for marine mammals and turtles.
- Safety risk to small scale fishers not used to FAD fishing methods.
- If not designed in an inclusive and participatory way, management measures to improve natural resources and their habitats have the potential to disrupt access to natural resources for subsistence or livelihood activities for individuals or groups within the community
- Potential soil and water pollution by chemical fertilizers and pesticides

Annex 12 further describes the process the project management unit will use to assess ESS risks over the course of the project, integrate ESS into project management systems, and implement a robust grievance redress mechanism (GRM) that is culturally appropriate and upholds the Project's social and environmental safeguards performance.

7.3. Financing options, reasoning for the concessionality requested, capex and opex (O&M) description

There is a separate Operation and Maintenance (O&M) plan – see annex 16.

The O&M plan has been developed with the community-based approach of the project, ensuring ownership and the mainstreaming of climate-resilient best practices within the local community. Accordingly, O&M for the project will be carried out through a predominantly community-centred system, with support from the Solomon Islands Government.

During the procurement process, O&M will be addressed through exploring extended warranties and including O&M as part of the procurement specifications for individual project inputs. The ongoing management of O&M will be tailored to each specific location in consultation with the schools and communities and included in the adaptation plans

(component 1 activity 1.2.2) and planning for the handover of project equipment to the project beneficiaries for long-term sustainability.

7.4. Economic and/or financial viability

While a full economic and financial analysis has not been completed for this project, projects undertaking related work have seen high internal economic rates of return. The recently approved World Bank IEDCRP, for example, found strong returns on investment for activities in agriculture (+20%), WASH (+49%) and education (+27%) (World Bank, 2022b). An earlier project, Community Resilience to Climate and Disaster Risk in Solomon Islands (CRISP), found that undertaking retrofits of community infrastructure up to 50% of the replacement cost resulted in a positive return on investment and a strong cost/benefit (World Bank, 2014). A large scale investment to increase the climate and disaster resilience of schools in Tonga and increase teacher effectiveness (via training and integration of climate change and DRR into the curriculum) found that the retrofit/construction component had a positive rate of return (between 6.4 and 10.5%) and that the teacher training/curriculum development would result in an increase in the human capital index and a 4.7% increase in average yearly earnings for graduating students (World Bank, 2021b). SCA's Vanuatu Community-based Climate Resilience Project (GCF FP184) has some activities in common with SOLKAS. FP184 was subject to a full economic and financial analysis. The rates of return on investments in common with SOLKAS were all strongly positive, including the installation of satellite internet communications for provision of climate information and early warnings (+111%), and implementation of climate resilient agriculture techniques (+19-27%).

Based on the above, we are confident SOLKAS will provide a strong return on investment and has a strongly positive cost/benefit.

7.4.1. Use of adaptation technologies

The project will deploy a range of context-appropriate technological solutions to adaptation challenges – principally related increasing access to information and facilitating adaptation planning and governance processes, as well as increasing food security. These technologies are outlined below based on category:

Communications and information access

- *Satellite based communications systems* will be deployed to village disaster committees across 170 communities to increase access to up-to-date climate information and timely early warnings, as well as to download and upload resources and information via the Climate Resilience Information Management digital toolsets. These systems are cost effective and resilient to the conditions. Mobile data access is minimal in targeted communities so satellite is the most effective data delivery mechanism.
- *Solar PV systems* will be deployed to village disaster committees across 170 communities to increase access to sustainable energy and provide power for communications systems and utilisation of the Climate Resilience Information Management digital toolsets. Solar systems will be procured in line with Save the Children's approved Procurement and Consultant Guidelines (and associated Procurement Manual). Please see **Annex 8** for additional detail. This includes addressing the risk of forced and child labour. Suppliers are assessed against set criteria and as Save the Children are committed to the sustainability of our supply chain, sustainability assessment criteria (including modern day slavery) are included in the supplier selection process.

- *Solar PV systems* will be deployed to 100 schools across the targeted communities to increase access to energy for improved learning environments and to provide power for use of the Climate Resilience Information Management digital toolsets and micro-learning modules.
- *Automatic Weather Stations* are an integral component of the Solomon Islands Meteorological Service's (SIMS) ability to provide communities with weather and climate information for use in decision making processes. With only 7 stations spread across the country, SIMS' access to data is limited. Provision of an additional 3 stations will significantly increase SIMS' access to weather and climate data which will be of direct benefit to project participants.

Adaptation planning and governance

- The *Climate Resilience Information Management digital toolsets* are a cutting edge solution to the highly labour intensive participatory approaches utilised in community-based and locally-led adaptation. Once embedded in community and school processes, the toolsets will reduce the need for expert inputs to climate and disaster risk assessments and adaptation planning processes. The toolsets will be developed through user-focused participatory processes to ensure they are fit for purpose and respond to community needs.
- *Tablets* are the preferred input/output device for use with the Climate Resilience Information Management digital toolsets. Tablets procured for use in the project will include protective and waterproof cases to minimise the likelihood of accidental damage.

Food and water security

- *Fish aggregating devices (FADs)* will be deployed to communities where they are environmentally and contextually appropriate (based on assessments undertaken by the Solomon Islands Ministry of Fisheries and Marine Resources (MFMR)). There are two general categories of FADs used in the Pacific region, industrial offshore and artisanal nearshore. This project considers artisanal FADs set in nearshore (surface and subsurface) and lagoon environments as suitable to support food security in some contexts. It does not support industrial FADs. FADs were considered as part of this project as they offer the benefits of increased catch rate and improved access to species of oceanic/pelagic fish and distribution of fishing effort, which in turn reduces the cost of fishing and offers increased food security and protection of coral reef ecosystems. MFMR has considerable experience in supporting the deployment of artisanal FADs across the country. When deployed effectively in contextually appropriate locations, FADs have proven to be beneficial to the food security of Solomon Islands' communities (see Albert et al, 2015 and Albert et al, 2014). A World Bank economic analysis of community level FAD deployment found that "expected benefits include improving the quantity and quality of fish and shellfish landed by local communities ... leading to reduced post-harvest losses, improved local market provision, increased incomes, and improved nutrition" (World Bank, 2022a). Considerations when using FADs include the potential for user conflict due to overcrowding around the FAD, access for communities without powered boats, and lifespan and maintenance issues. It is recommended that the use of FADs is implemented in conjunction with the community and a public awareness campaign and aligned with the national network that includes a code of conduct to explain the benefits of FADs and their use. Any FAD deployment will include an assessment of the

cost/benefit and will align with the larger scale regional off-shore fishing project currently under development by Conservation International.

- *Non-mechanical agricultural tools* will be provided to communities to help improve agricultural productivity. The tools will be simple and robust (including garden forks and rakes, yam spades, hoes, watering cans and wheelbarrows) to ensure they require minimal to no servicing and maintenance and that they last well beyond the project's implementation period. As far as possible, tools will be sourced locally.
- *Off-shore fishing equipment* will support diversification and sustainability of fisheries resources and help alleviate pressures on inshore fisheries. Gear will be, as far as possible, sourced locally, and will be robust and appropriate to the context in which it will be deployed.
- *Water tanks* provided by the project will help increase access to potable water in schools to improve WASH practices. They will also be utilised at community level to enhance rainwater harvesting for use in community gardens (including the project-supported demonstration plots).
- *Climate-resilient plant material* – seeds, varieties, cuttings, multiplication – including drought or heat tolerant varieties, can provide reliable food and cash crops during increasing periods of climate variability and change. Crop varieties, cuttings and multiplication that are climate-resilient are on the Government list of endorsed inputs. The distribution of seeds and plant materials is achievable to large portions of the targeted population and can help increase food and income security with minimal training or equipment. The distribution of climate-resilient plant materials (seeds and cuttings) was assessed as being suitable to the local conditions in remote and rural communities of Solomon Islands. However, the use of GMOs is not allowed under government regulations. Introduction of any exotic crops or crops not approved by the Government of Solomon Islands are not within scope.

7.5. Exit strategy and sustainability

Ensuring the sustainability of project outcomes is a key component of the design of this project. Key project elements to ensure sustainability include:

- Embedding the project's learning and awareness raising activities at the community level into the schools and school system linking them to the existing MEHRD commitment to the national rollout of the Comprehensive School Safety Framework;
- Building capacity of provincial governments, including provincial MEHRD offices and local communities, to access and efficiently utilize finance for resilience building through embedding local level school- and community-based adaptation planning processes with provincial and national planning and funding processes;
- Establishing, or strengthening existing, village-level DRC's and local government institutions to maintain investments and guide future investment decisions;
- Ensuring provincial and Ward governments have the capacity to effectively provide ongoing support to local level adaptation actions, via training, capacity building, technical support and government adoption of project-supported staff at national, province and Ward levels into permanent roles; and
- Linking the youth incubator activities to the private sector and value chain opportunities ensuring a small but steady supply of income to the youth to support income generation activities over the long term.

The project's outcomes will continue to provide benefits well beyond the life of the project, making this an enduring investment. It is anticipated that MPGIS will replicate the approach to formalizing DRCs in all villages throughout the archipelago. Prior to the close of the project, the implementation team will identify institutional "homes" (schools, government agencies or NGOs) for all capacity development materials produced for the project, digital and paper-based, and will set up the digital training-of-trainers activities for these agencies so that they can continue to utilize the materials with no loss of integrity over time (building on the evidence-base of successfully using this approach in other countries such as the Philippines). In addition, the improved institutional arrangements will continue to provide benefits by providing a more efficient mechanism for supporting adaptation planning and implementation at sub-national levels; and it is expected that this will benefit future government and development partner funded activities and may even attract additional finance well beyond the close of the project.

An additional factor that will contribute to sustainability of outcomes is the fact that the village and school committees, institutional arrangements, and activities to strengthen coordination between village, ward, and provincial levels are completely aligned with SIG's plans for sub-national governance for disaster management and climate risk reduction as detailed in the NDMP. Therefore, the project's interventions will be mainstreamed into the country's formal institutional and administrative structure.

All activities implemented at the school and community level will be based on locally developed risk analyses, inclusive of diverse groups, combined with up-to-date climate impact information and supported by tried and tested digital platforms. Schools and communities will determine which adaptation actions are urgent and should be resourced by the project. This ownership over project activities at the community level will increase the likelihood that activity outputs and outcomes will be sustained beyond the life of the project. Our previous experience in developing and implementing community-based adaptation activities has shown that the more engaged and in control communities are over the kinds of activities that are implemented and the means of their implementation, the more likely the outcomes are to be sustained and replicated.

Integrating climate change risks and adaptation actions into local planning processes will help ensure that priority adaptation actions can be developed and costed for inclusion in provincial budgeting processes. The project's support to communities to develop inclusive local-level resilience plans will help embed longer term planning processes (incorporating climate information) into local governance process. The development of adaptation investment plans and implementation capacity will also help reduce the barriers to future flows of climate finance reaching the local level and addressing community adaptation priorities. At the local level, the project's results in household resilience skills (e.g., climate-resilient agriculture, fisheries, improved rainwater harvesting, etc.) are expected to provide benefits in the short term, which will demonstrate the usefulness of these innovations, and so they will diffuse to other villagers and villages.

In addition, as a highly aid dependent LDC/SIDS with constrained economic potential, it is likely that the Solomon Islands will continue to have at least some level of dependency on external assistance into the future. The vertical institutional arrangements and formalized village-level planning process put in place by the project will improve the efficiency of future projects, and so their utility in efficiently communicating local-level needs and priorities to the national level combined with their effectiveness in channelling financial resources and technical support to sub-national levels will contribute to the sustainability of the project's outcomes.

Lastly, Save the Children has a permanent presence in the Solomon Islands. Future activities supported by Save the Children will build on this project, and we will work to ensure continued promotion and uptake of the project's innovations throughout the country.

8. Implementation arrangements

8.1. Stakeholder consultations during design

Consultation with stakeholders has been conducted at various stages during project development and is key to the design. The designated government authorities were important actors in the whole process ensuring that the initiative was fully supported and aligned to the country priorities. Throughout the process other stakeholders were approached through one-on-one meetings and a joint stakeholders mapping exercise. Consultation itself for the design and project implementation is an ongoing process that all parties are informed of for their involvement and agreement of how they will contribute meaningfully to the project initiative.

The earliest consultation undertaken with NGOs and government stakeholders to develop the project concept commenced in 2017 with several concept development meetings held over 2017-2019. The period from 2019 – 2021 included a range of ongoing consultations at the national level, including a project theory of change developed and validated in a workshop in 2021. Continued consultation during the design phase with government and other relevant stakeholders further progressed the project intent and development included:

- Initial information correspondence about the project concept and details of design process and timelines (November 2020 – February 2021);
- Bilateral meetings with relevant personnel to discuss the project concept and details of design process and timelines (November 2020 – February 2021);
- Community consultation surveys (December 2020 – January 2021), including community profiling, agriculture assessments, fish catch surveys and women's focus groups;
- Establishment and representation of the project Reference Group during design; and
- Participation in a validation workshop to validate the project design before submission to GCF (10 March 2021) (Attendees and outcomes listed in Annex 24 – Summary of consultations).

In identifying stakeholders, particular attention has been given to ensuring vulnerable and marginalised groups within civil society, including women, children and people with disabilities, are included in the engagement plan to ensure effective engagement that is socially inclusive, has taken place. Stakeholder consultations are also an important part of the environmental and social, gender and vulnerable people safeguards and inputs from engagement will be incorporated into the Environmental and Social Safeguards Plan and the Gender Equity and Social Inclusion Plan.

Direct beneficiaries include communities, schools, and civil society organisations (CSO) and networks that represent communities and are included in the engagement plan with some CSOs and networks being an important focus for meaningful participation.

A representative sample of direct beneficiaries was consulted during the design phase to capture their needs and inputs to the project activities and incorporated in the design of the project. The design community consultation was done with five Provinces with teams deployed and meeting with Provincial authorities and community leaders including men, women, youth and children. At the same time during the consultations, surveys were conducted to gather information that are significant to the design. Five Provinces were visited: Western, Isable, Malaita, Choiseul, and Makira Provinces. Across the five Provinces, 22 wards and 66 villages were reached. The reach reflects good representation especially with the information collected to inform the issues the project intends to address. The Provincial authorities, Ward representatives and community leaders appreciated the process, especially enabling them to contribute to project development. Additional details on the engagement strategies, proposed

role in the project, and stakeholder interests can be found in Annex 24 – Summary of Consultations.

A validation of the Vulnerability Assessment was held in Honiara on 28th April 2022 to finalise the selection of Provinces and Wards that will be targeted by SOLKAS project activities. This was completed in conjunction with the project ***National Steering group (committee)***, established during the design phase with representatives invited from primary stakeholders that will be involved in implementation. A key part of the workshop was gaining an understanding of vulnerable and high-risk Provinces and Wards and complementary projects to avoid duplication. An overview of the national vulnerability assessment results was presented and were well-received, with input from participants on how the results be used.

Additional details can be found in Annex 24 – Summary of Consultations.

8.2. Stakeholder engagement during implementation

8.2.1. National level

The Project Management Unit (PMU) will be responsible for this procedure and is responsible for ensuring its implementation, either directly or through delegation. The Gender and Social Inclusion Advisor will ensure that gender and social inclusion sensitive approach is achieved throughout the implementation of this procedure and should ensure culturally appropriate strategies are used. To achieve this, application of methodologies such as focus group discussion (FGD), key informant through formal systems and socially established groups are conducted. Separate meetings for males and females or targeting females through women's groups including people with disabilities for input. Data generated required by this procedure (e.g., consultation, implementation and actions planning, etc.) are recorded and managed by the PMU.

Relevant stakeholders who are part of the project implementation are consulted and part of the project development and ongoing activities planning and implementation.

The following section outlines the six steps in the stakeholder engagement process to be employed by Save the Children during the SOLKAS project. This process is applicable to planned activities.

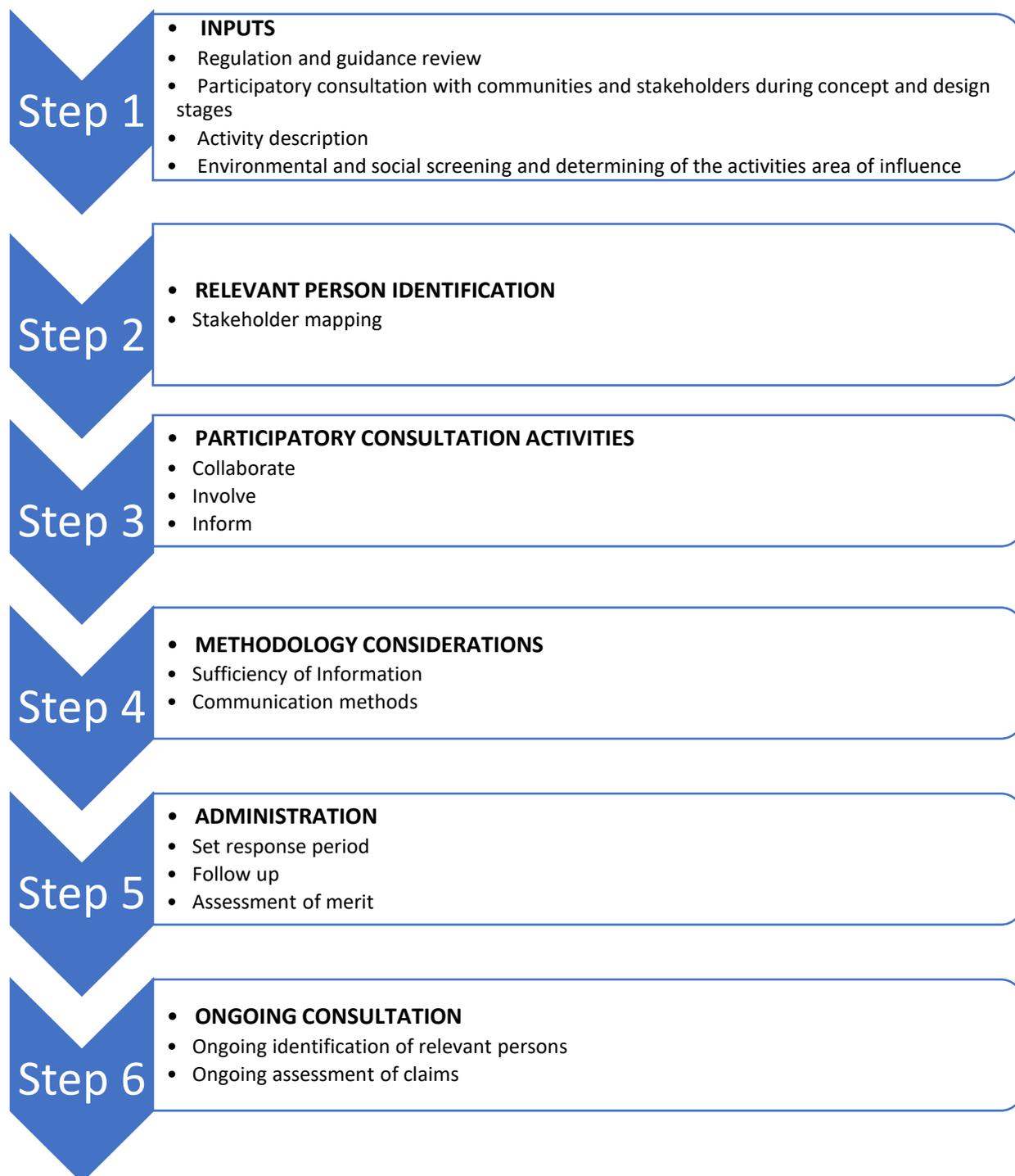


Figure 15. Stakeholder engagement process steps

8.2.2. Step 1: Inputs

To identify relevant persons the following inputs are required:

1. Regulation and guidance review
2. Participatory consultation with communities and stakeholders during concept and design stages

3. Description of the activities to be undertaken
4. Environmental and Social Safeguards (ESS) Risk assessment – identification of potential impacts that may arise during the activity. The result of stakeholder engagement during the design phase will help to inform the environmental and social screening for impact and risk using the process described in the SOLKAS Residual Risk Management Plan (RRMP)
5. Area of influence of the activities.

8.2.3. Step 2: Stakeholder Identification

A standardised stakeholder mapping identification method will be utilised to compile a list of potentially relevant persons. This will build on the process completed in the concept and design phase of the SOLKAS (See Annex 24 – Summary of Consultations).

Stakeholder engagement during implementation will allow for local tailoring of the implementation and sustainability approach in each targeted province, ward, and community. During implementation detailed community stakeholder engagement in each targeted Provinces, wards and community will be undertaken to identify the most appropriate ways for local level implementation to take place building on a range of existing analyses and assessments undertaken by government and previous projects.

Implementation arrangements should engage stakeholders with a track record of working with communities in each province. Expertise in gender equality and disability inclusion may need to be accessed and centralised through organisations such as PWDSI (disability inclusion) and gender experts within country teams (gender inclusion).

8.2.4. List of stakeholders

A list of stakeholders involved in implementation is detailed in Table 10

Table 7. List of stakeholders

Stakeholder Group	Interest and Influence Relevant to the Project	Proposed Role in Project	Engagement Strategy
<p>Ministry of Environment Climate Change, Disaster Management and Meteorology</p> <p>(Including Department of environment, Climate Change, NDMO, SIMS)</p>	<p>MECDM has a critical interest in the project as the lead Ministry for climate change projects and related activities;</p> <p>Under this Ministry, the Dept of CC is responsible for delivering CCA, DRR. SIMS responsible for early warning, meteorology data information management and weather monitoring. NDMO responsible for disaster risk management and environment for water resources, conservation, and biodiversity.</p>	<p>NDA / part of advisory to the project management unit (PMU)</p> <p>Executing entity those relates to CIS (output 1.1), (output 2.2) action to implement resilient plans and (output 3.2) enhanced governance from national to local level leadership.</p> <p>Chair of the project national steering committee</p>	<p>Engagement through:</p> <p>(i) project planning and design</p> <p>(ii) participation in project implementation including awareness raising, access to CIS, climate risk and vulnerability assessment, development and implementation of action plan and enhancing local-provincial-national linkages;</p> <p>(iii) Chair of the project national steering committee that meets quarterly during implementation to provide oversight and guidance to the project.</p>
Ministry of Finance	<p>MoF has an interest in the project as a delivering mechanism for reaching a substantial portion of Solomon Islands rural and remote communities to promote CCA, DRR and as a result, greater community well-being. Also has interest in enhanced institutional and governance systems and linkages between all levels of government.</p>	<p>Co-Executing Entity; member of the project national steering committee; oversight and management of funds going through government systems for project activities.</p>	<p>Engagement through:</p> <p>(i) oversight of government project budget management and procurement;</p> <p>(ii) representation on the project national steering committee that meets quarterly during implementation to provide oversight and guidance to the project.</p>
Ministry of Agriculture and livestock	<p>Interest and influence on impact of climate change to food security and livelihood. Activities relevant to this</p>	<p>The ministry is part of the executing entity; member of the project national steering committee; execution of</p>	<p>Engagement through:</p>

Stakeholder Group	Interest and Influence Relevant to the Project	Proposed Role in Project	Engagement Strategy
	<p>project will promote adaptive agriculture practices, food security and diversified livelihood.</p>	<p>project activities, those relates to climate-resilient agriculture food systems and livelihood. Outputs relevant to the stakeholders includes; (output 2.2) action to increase community resilience. (Output 2.3) application of resilience skills to create sustainable livelihood options. (Output 3.2) ward, provincial and national system supports sustainability, locally led adaptation action with institutional support. Given the reach of the ministry with extension services in all provinces down to local level, the project has greater role to support the implementation of most of the outcome areas.</p>	<p>(i) participation in project planning, implementation including awareness raising, consultations on community management plans, technical assessment on agriculture, food security and livelihood opportunities. Support training to local extension services and beneficiaries</p> <p>(ii) representation on the project national steering committee that meets quarterly during implementation to provide oversight and guidance to the project.</p>
<p>Ministry of Provincial Govt and institutional strengthening</p>	<p>Interest and influence in sustainable project activities that promotes provincial, ward and community development. Given 80% of the population a in rural communities, the provincial system is the agent of service deliveries. The project has a lot of interaction with the provincial system on its planning and design given its target at provincial, ward and community level.</p>	<p>The Provincial system will be part of the executing entity in project implementation, monitoring, evaluation, and sustainability planning as the project will phase out. Outputs relevant to the stakeholder includes; (output 1.1) supporting development of climate change curriculum through the provincial education authority, training of teachers, trialling the module and dissemination of Climate change information to communities. (output 2.2) actions to implement resilience</p>	<p>Engagement through;</p> <p>(i). Engage in project planning and design</p> <p>(ii) Oversight at provincial and ward level on project implementation through the provincial planning unit, provincial disaster office and departmental authority such as education and agriculture extension service. Also engage in ongoing monitoring from the start to end of the project</p>

Stakeholder Group	Interest and Influence Relevant to the Project	Proposed Role in Project	Engagement Strategy
		priorities through the provincial planning unit and monitoring of implementation. (Output 3.2) ward, provincial and national have establish clear links and sustainable implementation.	(iii) At national level member of the national steering committee (iv) Mainstream the implementation of the project sustainable plans
Ministry of Education and Human resource development	Interest in project activities that promote education, curriculum development and dissemination of information to children, youth, and communities. Given the reach of education services to far remote villages and climate change now being a focus of the education system to be included, they have greater interest on the project for support to achieve curriculum development and mainstream into classroom education services.	The ministry and their provincial, private, and church education authority will have key role in the knowledge component of the project, (output 1.1) children, youth and communities have increased understanding on climate change implication, improved resilience knowledge and strengthen adaptation planning, (output 1.2) Schools and communities have developed inclusive adaptation plans (output 2.1) Schools and communities develop and implement resilient adaptation plans. Given children and youth focus of the project.	Engagement through: (i) development and formalising of the climate change curriculum (ii) Teacher training and mainstreaming of climate change curriculum into classroom and community education service (iii) implementation of adaptation and resilient plans in schools in and communities. (iv) support monitoring and implementation of sustainability plans (iv) representation to the national steering committee for project oversights and progression
Local NGOs	Interest in project activities that promote local development and increase community food security and DRR. Many local non-governmental organizations work on agriculture and fisheries issues,	Execution of specific climate-resilient agriculture and fisheries interventions (to be decided at project onset for each site) and training/awareness-raising for communities.	Engagement through: (i) participation in awareness raising; (ii) consultation on the design of community management plans and,

Stakeholder Group	Interest and Influence Relevant to the Project	Proposed Role in Project	Engagement Strategy
	<p>DRR awareness and training, and are well-known and trusted by local communities.</p>		<p>in some areas, implementation of management plans; (iii) DRR technical support and training.</p>
<p>CSOs and community networks</p>	<p>CSOs and community networks will be consulted during the implementation of the project. They have established networks into communities, particularly working on agriculture and fisheries issues, DRR awareness and training, and are well-known and trusted by local communities.</p>	<p>Execution of specific climate-resilient agriculture and fisheries interventions (to be decided at project onset for each site). CSOs and community networks are also indirect beneficiaries who will collaborate with communities to support implementation of management plans and conduct awareness raising activities.</p>	<p>Engagement through: (i) participation in awareness raising; (ii) consultation on the design of community management plans and, in some areas, implementation of management plans; (iii) DRR technical support and training</p>
<p>Smallholder communities</p>	<p>Communities have been identified as extremely vulnerable to climate variability and extremes. They receive limited training and support to develop climate-resilient food systems. As a result of climate change and unsustainable management, the productivity of agricultural lands and fisheries are decreasing. This group has a great interest in accessing knowledge and information to foster climate-resilient food systems and enhanced DRR</p>	<p>Direct beneficiaries of project. They will significantly contribute to the design of climate-resilient agriculture and fisheries that are suited to their local environmental and socioeconomic conditions through participatory methods to ensure that all proposed activities are entered into voluntarily and with broad community support.</p> <p>Smallholders will drive the identification and implementation of sustainable management of natural resources and be part of enhanced community DRR committees.</p>	<p>Engagement through: (i) surveys to identify key natural resources and climate impacts; (ii) consultations to develop/revise community management plans with adaptations for climate-resilient food systems; (iii) establish and train community management committees to enforce management plans; (iv) training and access to CIS;</p>

Stakeholder Group	Interest and Influence Relevant to the Project	Proposed Role in Project	Engagement Strategy
			(v) train community DRR committees to enact disaster response; (vi) awareness-raising on the benefits of sustainable management practices.
Traditional Chiefs	Provide a voice for their community and kastom laws. Interest is aligned with the project's output 1.2, 1.3, 2.2 improve food security, support community level implementation of resilient action plans, enhanced DRR, and community level governance.	The Chiefs in the representative sub-set of communities will be involved in the project design, particularly identifying community needs, local laws and willingness to participate. This is likely to be communities in wards that are rural and vulnerable to climate change impacts.	Engagement through: (i) surveys to identify key natural resources and climate impacts; (ii) consultations to develop/revise community management plans with adaptations for climate-resilient food systems; (iii) establish and train community management committees to enforce management plans; (iv) training and access to CIS; (v) train community DRC committees on roles and responsibilities and community level governance (vi) awareness-raising on the benefits of sustainable management practices.
Heads of community committees, e.g., women's, youth, people with disabilities and local	Provide a voice for their group. Interest is aligned with the project's output 1.2, 1.3, 2.3 and 3.1 to engage in community level participatory vulnerability	Heads of community committees and groups in the representative sub-set of communities will be involved in the project design, particularly identifying community needs, local laws and	Engagement through: (i) surveys to identify key natural resources and climate impacts;

Stakeholder Group	Interest and Influence Relevant to the Project	Proposed Role in Project	Engagement Strategy
community organised groups	assessment, dissemination of CIS, prioritise and implement resilience adaptation plans, especially youth engaging in entrepreneur initiative improve food security, enhanced DRR and included in community level governance and decision making	willingness to participate. This is likely to be communities in three Area Councils that are rural and remote, considered to be the most vulnerable communities in Vanuatu.	(ii) consultations to develop/revise community resilience and adaptation plans climate-resilient food systems; (iii) establish and train community management committees to enforce adaptation plans; (iv) training and access to CIS; (v) train community DRC on governance and community level governance (vi) awareness-raising on the benefits of sustainable management practices.
Development partners	Interest in synergies between relevant projects and ensuring project design considers existing and future activities and outputs. Potential opportunities for value-adding activities and co-financing.	Potential for co-financing, parallel support in project activities targeting same provinces. Share lessons and good practices in climate resilience practices and joint monitoring	Invited during project consultation, project visits and monitoring. Discussion and engagement with them will continue during project implementation
Private sector (e.g. SI chamber of commerce, Young Entrepreneurs Council of the Solomon Islands (YECSI))	Interest in promoting the development of skills and businesses. Especially YECSI. Private sector firms will be sued for procurement of goods and services	Private sector organisations and industry will help to validate relevant national and local skills and capacity building mechanisms and provide options for potential youth incubator initiative especially YECSI that may have to role on youth incubator initiatives in output 2.3	Engage in consultation with them during project planning and design. Further consultation will be done with them when the project is implemented to establish partnership for implementation of relevant outcome and output areas.

8.2.5. Step 3: Consultation Activities

Engagement Methods

The mode of consultation will vary according to the participants, but in all cases will promote participation by ensuring that the venue is culturally appropriate and accessible for all groups, the timing convenient and the manner of conduct of the consultation socially and culturally appropriate. Where required separate consultations will be held for women, people with disability and youth. Consultations will be announced to give sufficient notice for participants to prepare and provide input to the project.

Table 10 describes planned consultations with stakeholders during the implementation phase, including proposed implementation engagement strategies and community engagement; and the kind and extent of consultations that will be conducted with direct beneficiaries during the implementation phase.

Several communication methods may be used to exchange information during consultation. Regardless of the method applied, the information provided needs to be as targeted as possible to reduce the information burden on the person, to reduce the possibility of confusion or misinformation, and to improve the likelihood of receiving valuable feedback from the consultation process.

Participatory methods will be a key driver for consultation during implementation.

Methods could include:

- Focus Group Discussions;
- Community mapping;
- Representation from other communities who have lessons learnt to share;
- Novel approaches e.g., using video; and,
- Engagement of consultant to do specific assessment and options for entrepreneur targeting youth component, development of formal climate change curriculum for schools, innovative apps will be introduced as part of the project plans for school and community safety and early warning planning and other structural planning as per project design.

Mainstreaming of consultation during project implementation will include:

- Gender balance and participation of people with disability;
- All project staff trained in gender equality, child protection and social inclusion;
- Train-the-trainer targeting youth, teachers, DRC and relevant stakeholders identified during project implementation
- At least one full time gender equity, disability, and social inclusion (GEDSI) technical adviser and additional technical support on disability inclusion, with experience in analysis, planning and monitoring. The adviser must be able to mentor and train government counterparts at MECDM, MAL, Education, Provincial and ward authorities
- Project communications should be designed to challenge social norms. For example, by using appropriate language; and showing women, people with disability in active leadership roles.

Community consultations will focus on range of approaches such as train-the-trainer at ward level and through provincial education authority, provincial disaster management and planning units which are described below.

8.2.6. Train the trainer

Education and training are a key component of project activities. One of the main ways that education and training will be undertaken during implementation is via Train-the-trainer sessions of the Ward committees. The provincial education authorities through teachers training will also incubate. The provincial disaster and planning units will also play key role to facilitate community level engagement and training. Government staff will require training and mentoring in this approach. During implementation it is important to identify and support people with disability to be trainers and champions to increase disability inclusion.

At the Ward, village, and household level the project will be gender sensitive in project planning and implementation. It will engage with male and female heads of household including youth and children through the school component. The gendered role, implication and approach for inclusive planning implementation will be integral part in implementing all components of the project. The gender and social inclusion advisor will ensure that modules and approaches using best practices will be used to also create opportunities to address social norms and create transformational changes in equality and greater engagement in governance and decision making.

National, Provincial Government/ ward committees, community liaison and staff who work with communities will be trained and mentored on gender and social inclusion approaches

8.2.7. Step 4: Methodology Considerations

Sufficiency of information and Communication Methods

Sufficiency of information will be ensured by using targeted information and language that is easily understood. Where possible information will be provided in Solomon Pidgin. A mix of communications will be used to account for illiteracy, for example videos and other novel approaches can be used to convey information.

8.2.8. Step 5: Administration

Record Keeping

Records generated during a consultation process will be saved in a stakeholder database and kept on file for the duration of the project.

The following information is required to be logged in the database:

- Stakeholder contact details (email addresses, phone numbers and mail addresses where applicable);
- Engagement activity undertaken (e.g., face-to-face meeting, email, fact sheet);
- Date of the engagement activity;
- Summary of correspondence/engagement; and
- An assessment of the merit of comments or claims (if applicable).

Any question-and-answer sessions will be minuted, and all sessions will have a report written highlighting the issues raised and how those issues have either been integrated into the project or how they have been managed.

Target beneficiaries/Communities will receive feedback on issues they have raised via ward committees, DRC, partner authorities, project officer or the most appropriate team member.

8.2.9. Step 6: Ongoing Consultation

While meaningful two-way consultation and engagement with communities and stakeholders during the activity development phases and prior to commencement of an activity is extremely important, ongoing consultation during the activity and potentially after the activity is equally as important. Ongoing consultation serves several purposes:

- Provisions of updates on activity progress;
- Close out of communication commitments made during initial consultation;
- A platform to notify relevant persons of any deviations to the activity details originally provided during initial consultation and highlight if the plan is no longer appropriate or effective; and
- Development of open communication channels with key relevant persons.

While ongoing consultation with relevant persons and other stakeholders can be beneficial it is important not to overwhelm with too much information creating stakeholder fatigue. This Implementation Stakeholder Engagement Plan has been designed to minimise any fatigue while still maintaining the level of engagement needed.

Ongoing Identification of Relevant Stakeholders

Over the duration of implementation, changes in relevant stakeholders may occur. New interest groups may emerge, requiring adjustments to the stakeholder mapping. New stakeholders may be identified during the project's implementation resulting from on-going consultations and communication. As part of project implementation, the list of relevant persons will be reviewed and updated as new groups are identified.

8.3. Accredited Entity capacity: experience and track record

Save the Children is the world's leading independent organization for children, with 30 national organizations working together to deliver programs in more than 120 countries. In 2019, Save the Children delivered programs worth over USD 2.2 billion across 117 countries and directly reached over 38.7 million children. Our vision is a world in which every child attains the right to survival, protection, development and participation. Our mission is to inspire breakthroughs in the way the world treats children, and to achieve immediate and lasting change in their lives. Globally, Save the Children is implementing a portfolio of 100+ resilience-related projects and programmes valued at more than USD 200 million, including those with explicit objectives to reduce climate and disaster risks, as well as to increase adaptive capacity and speed recovery from shocks and stresses, as well as those which seek the social and economic empowerment of women and youth and the amplification of the voices of the most marginalized.

Save the Children Australia (SCA) was accredited to the GCF in November 2019 on behalf of the global Save the Children movement. SCA were chosen to lead on the GCF for Save the Children due to our longstanding leadership role in climate change and Disaster Risk Reduction. The Accreditation Master Agreement (AMA) was made effective in May 2020.

SCA has extensive experience of designing, delivering, evaluating and documenting approaches to community-based adaptation in a wide range of countries, including in Solomon Islands, where we have worked for more than 30 years on a wide range of issues (including in education programming, community-based DRR and, in recent years, community-based adaptation). Our approach is to support governments to deliver against their adaptation policy objectives and needs bringing a consultative approach to engaging a broad range of stakeholders, including communities, in the design of climate change interventions.

8.4. Executing Entities capacity: experience and track record

8.4.1. Save the Children Solomon Islands

Save the Children Solomon Islands (SCSI) has expertise in managing country-wide community-based projects at scale and has implemented a range of community-based projects which have increased the resilience of children, communities, and government stakeholders to better anticipate the impacts of, and respond to climate variability and change, and to support children and communities in implementing priority adaptation actions. This project will incorporate the lessons learned from these previous projects and build on current and previous adaptation projects delivered by a range of partners. SCSI has strong partnerships with government and a deep understanding of the institutional and governance context. SCSI has significant experience in effectively implementing projects in rural areas, including efficient logistics and communication, working with local norms and values, ensuring gender equity in planning and implementation processes, and ensuring transparency and accountability in decentralized project implementation. The depth of experience in the Solomon Islands enables SCSI to anticipate and mitigate a wide range of context specific operational risks.

SCSI currently implements a portfolio of projects with a budget of USD 5.8M. Projects over the last five years have been in similar sectors including WASH, education, food security and livelihoods, climate change resilience and humanitarian response. The Australian Government through the Australian NGO Cooperation Program (ANCP) and other programs have funded SCSI implemented projects for over 10 years. The current ANCP project has an expected funding of AUD 5.4M and is implementing activities for child protection, strengthening national systems and policies, climate change resilience and school safety.

Current projects in similar sectors and activities include:

- New Zealand Government aid programme Protektim Pikinini Moa (PPM) – strengthening child protection systems, school safety, prevention of violence in schools.
- UNDP Climate and Disaster Resilient WASH in schools – upgrades to facilities in schools, integrating public health promotion and sanitation into disaster management planning
- Australian Government Disaster Ready – climate change adaptation, capacity building, strengthening national and sub-national planning and systems.
- Australian Government and World Wildlife Fund Nature Based Solutions – protect and rehabilitate biodiverse ecosystems, climate resilient livelihoods, capacity building for women’s economic empowerment and youth skills.

SCSI maintains close ties and frequently collaborates with other international NGOs, local civil society organizations and faith-based organizations, as well as bilateral and multilateral aid agencies and government departments. This enables collaboration in project design and implementation to avoid duplication, and partnerships with other organizations to leverage expertise. A range of agencies have provided input into, and feedback on, the SOLKAS project design, and they will continue to be an integral part of the project implementation. In addition, SCSI closely tracks other development and resilience building projects that are under implementation or in the pipeline, and often plays a formal or informal advisory role on projects implemented by other partners. This will allow the design and implementation of this project to coordinate with the activities and build on the successes of other projects.

8.4.2. Ministry of Environment, Climate Change, Disaster Management and Meteorology

MECDM is the lead government agency for both climate change and disaster risk reduction, and as co-EE will be responsible for the day-to-day execution and technical supervision of the project's activities along with SCSl.

MECDM's organisational structure recognises the country's vulnerability to climate change and natural hazards. The establishment of the joint Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) exemplifies this recognition. The Ministry is responsible for sustainable environmental management, climate change adaptation and mitigation, disaster risk management and meteorological services. It has four divisions that look after each of the technical areas including environment and conservation, climate change, disaster management and meteorology. The ministry has a dedicated Climate Change Division and a National Disaster Management Office, both managed by directors and deputy directors.

Established within the MECDM, the Programme Management and Coordination Unit (PMCU) is responsible for ensuring the effective and efficient management of donor and government funded projects and programmes. The PMCU works directly with implementation officers within the MECDM and other stakeholders. There is good understanding and experience in climate finance, including with projects funded by the GCF, the Global Environmental Facility and the Adaptation Fund.

MECDM is currently overseeing four projects funded by the Global Environment Facility (GEF) with a total of USD 14.6M plus co-finance USD 54.7M implementing over 3-6 years. Another project concept has also been approved by GEF for USD 7.8M over 6 years. Other projects of a similar size budget include:

- USAID funded Strengthening Competitiveness, Agriculture, Livelihoods and Environment (SCALE) project, USD 24.9M implementing in 2021-2023
- Australian Government funded Climate Ocean Support Program in the Pacific phase 2 (COSPPac2), AUD 23M in 2018-2022
- Asian Development Bank funded Strengthening Coastal & Marine Resources Management in the Coral Triangle, USD 18.5M in 2012-2015
- GEF and FAO funded Integrated Forest Management in the Solomon Islands, USD 19M in 2015-2020
- PRIF funded Tina Hydro project, USD 120-140M in 2010-2018.

Recent projects in similar sectors and activities include:

- GEF Pacific Islands Ridge to Reef – coastal resource management, sustainable livelihoods and climate resilience.
- USAID Strengthening Competitiveness, Agriculture, Livelihoods and Environment (SCALE) – livelihoods, development of agribusiness.
- USAID Equipping Vulnerable Communities in the Solomon Islands – building community awareness, capacity building, training and policy and planning.
- SPREP Pacific Ecosystem-based Adaptation for Climate Change – ecosystem-based adaptation and planning.

-
- World Bank Community Resilience to Climate and Disaster Risk in Solomon Islands Project (CRISP) - integrate climate change adaptation and disaster risk reduction in government policies and operations; strengthen climate and disaster risk information and early warning systems; support structural and non-structural disaster risk and adaptation investments at community and provincial levels.

The SOLKAS project will support with increasing MECDM's programming capacity and experience in overseeing and managing community-based adaptation projects by embedding staff across the arms of government involved in the delivery. More broadly, staff engagement in the management and delivery of the project will help prepare MECDM to manage future climate finance funding flows to the Solomon Islands.

8.5. Implementation arrangements and governance structure

The legal agreement between the GCF and Save the Children Australia (SCA) as Accredited Entity (AE) will be a grant agreement through a funded activity agreement (FAA). SCA, as the AE, will enter into legally binding Subsidiary Agreements with the Co-Executing Entities – the Government of Solomon Islands, acting through MECDM, and SCSi – to deliver the agreed project activities. MECDM will enter into Memorandum of Agreements (MoAs) with other Government ministries including the Ministry of Rural Development (MRD), the Ministry of Education and Human Resources Development (MEHRD), the Ministry of Agriculture and Livestock (MAL), Ministry of Fisheries and Marine Resources (MFMR), the Ministry of Women, Youth, Children, and Family Affairs (MWYCFA), and the Ministry of Provincial Government and Institutional Strengthening (MPGIS); as well as with departments within MECDM, including Climate Change Division (CCD), the National Disaster Management Office (NDMO) and the Solomon Islands Meteorological Service (SIMS). Formal project agreements with other ministries will be managed through established government systems, as well as intergovernmental MoAs between MECDM and other government ministries and departments.

Project funds will be managed by a Project Management Unit (PMU), established and co-managed by MECDM and SCSi. The PMU lead (Project Manager) will report to the Project Steering Committee, co-chaired by the Director MECDM and SCSi Country Director and including senior representation from implementing ministries.

The majority of project activities will be delivered by the relevant government department, with Save the Children Solomon Islands delivering some activities directly and working in collaboration with government departments on other activities. The Youth Entrepreneurs Council of Solomon Islands and Regional Training Centres will also support implementation of some activities. The project will support implementing partners to build the capacity required to effectively support the local level adaptation actions and the Project Management Unit will house and deploy technical support across activities.

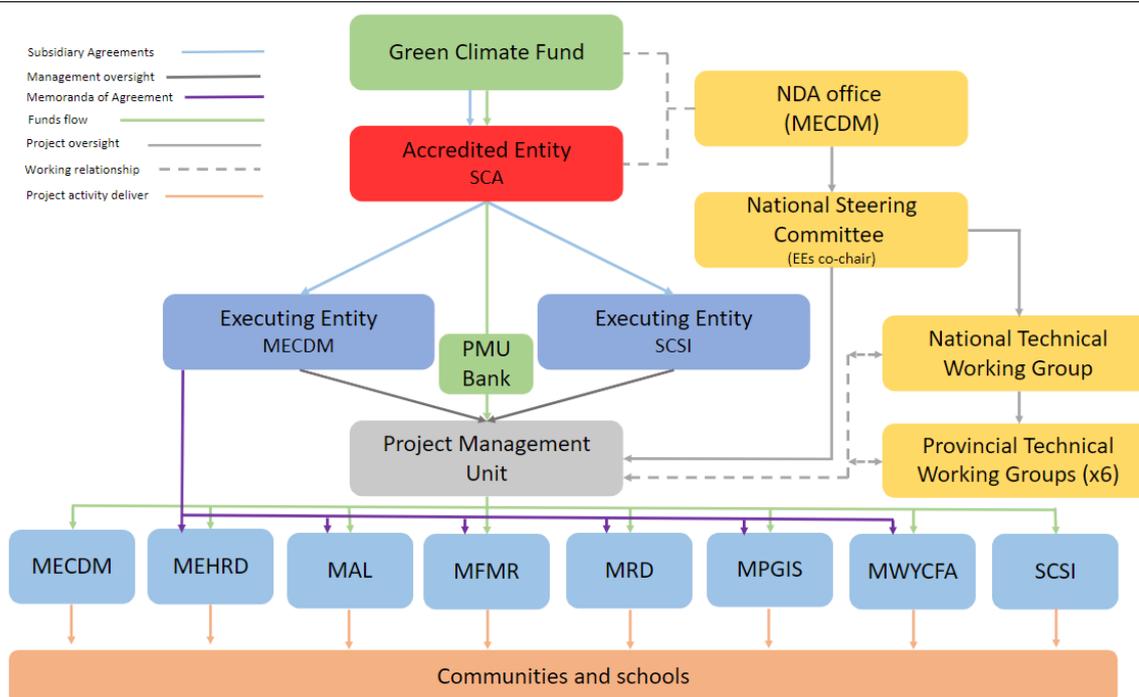


Figure 16. SOLKAS project implementation arrangements

8.6. Institutional and programme/project level grievance redress mechanism(s)

The SOLKAS Grievance Redress Mechanism (GRM) is included in the project Environmental and Social Assessment and Residual Risk Management Plan – Annex 12.

Any parties wishing to raise grievances caused by or associated with the Project will be able to do so. In the first instance grievances will be managed by the SOLKAS PMU. The PMU will inform the communities about this GRM early in the stakeholder engagement process and in an understandable format and in the relevant language. This notification will include details of where and how to direct complaints.

The purpose of the GRM is to record and address any complaints that may arise during the implementation phase of the Project and/or any future operational issues that have the potential to be designed out during implementation phase. It should address concerns and complaints promptly and transparently with no impacts (cost, discrimination) for any reports made by project affected people (AP). The GRM works within existing legal and cultural frameworks, providing an additional opportunity to resolve grievances at the local, project level.

The key objectives of the GRM are:

- Record, categorize and prioritize the grievances;
- Provide a survivor centred approach to instances of SEAH;
- Settle the grievances via consultation with all stakeholders (and inform those stakeholders of the solutions);
- Forward any unresolved cases to the relevant authority.

In addition to the project-based GRM, SCA will also maintain an email-based grievance mechanism, so that the public can also lodge grievances directly to SCA, should they wish to do so. Contact details for this GRM will be available to all project stakeholders and included on project websites and materials as appropriate.

The SOLKAS GRM does not prevent any affected person from accessing the GCF Independent Redress Mechanism.

Additional details on the GRM can be found in Annex 12, Section 4.

9. Recommendations

Based on the desk research, national vulnerability assessment, field study, and evaluation of alternative approaches conducted for this feasibility study, the following recommendations have emerged:

Community-based adaptation focus

As noted in the feasibility study, few donors have made significant funding available for the delivery of community-based adaptation projects in the Solomon Islands. Given that the geographic and socio-cultural profile characteristics prevalent in the Solomon Islands frustrate efforts to implement top-down uniform approaches, the most appropriate approach in the Solomon Islands is to work through communities, empowering them to identify their own vulnerabilities and adaptation measures. Further to this point, the cultural heterogeneity of the Solomon Islands requires a community-centric approach. Hence SOKAS has been designed to put communities at the centre of adaptation and resilience building.

Alignment with the National Disaster Management Plan 2018

The 2018 National Disaster Management Plan details institutional arrangements and responsibilities for disaster risk reduction and climate change adaptation from the central level down to the village. In addition to roles and responsibilities, the NDMP mandates that village and Ward DRCs work through existing community organizations and decision-making structures, and that they are consistent with *kastom*. The NDMP, which represents SIG's vision for decentralized service provision in the DRR and adaptation spheres, envisages a leading role for villages and Wards. However, across much of the country, DRCs do not currently exist at the village and Ward level, or they are not ready and capable to perform the functions described in the NDMP. The feasibility study found that village organizations, such as churches, are not currently engaged in resilience building activities, nor do most villages have climate resilience plans (or the capability/tools to formulate them). This creates an ideal opportunity for the project to work with the legal and institutional grain in the Solomon Islands and provide support to establish the mechanisms that are needed for NDMP implementation. This will strengthen country ownership over the project and will increase the likelihood that the project will be replicated in the Provinces, Wards, and villages where it is not active.

Focus on Children and Youth

The feasibility study has found that the most effective channel for building community resilience and adaptive capacity is to work through the educational system, which provides a basic structure through which all villages and Wards can be reached and through which impact can be maximized. Currently there are significant deficits in the educational system in the Solomon Islands, and although SIG has prioritized reforming the education sector, the country lacks the budgetary resources to implement its plans. At the same time, climate change is becoming a more immediate and visible threat to educational infrastructure in rural areas, while schools and training facilities have not adequately incorporated climate change into curricula in meaningful and locally relevant ways. In addition, the Solomon Islands faces very high population growth, and without proactive measures to create a trajectory of job creation and livelihood diversification, the country risks crossing a tipping point whereby rural poverty will increase, while rural-to-urban migration pressures may lead to the concentration of more vulnerability in informal settlements. Together these dynamics would likely increase instability and push the Solomon Islands towards a state of greater fragility. All of these risks are enhanced by climate change. Hence the project has been designed as a comprehensive investment in increasing the resilience of the educational sector, and enhancing the ability of that sector to contribute to the development of a climate resilient population with diversified livelihood strategies that will ultimately accelerate the long-term socio-economic development of the country.

Focus on context appropriate information and skills

The feasibility study found that there is a generally lack of awareness, knowledge, and information which serves to undermine potential interest and engagement in disaster management and climate risk reduction activities at the community level. This includes the aforementioned lack of knowledge about climate change and climate resilient livelihoods among children and youth, as well as a general lack of information about climate risks, vulnerabilities, and adaptation measures among occupational groups that are prevalent across rural areas of the Solomon Islands. Hence the feasibility study recommends an approach that starts with the provision of locally appropriate and context specific information climate change risks and vulnerabilities, with a progression towards training programs that help to equip farmers and fishers with knowledge of adaptation approaches and technologies, and steps to facilitate uptake of these approaches and technologies.

Channel financing to local communities

The feasibility study also found that communities lack necessary institutions, tools, and resources to implement locally-led adaptation and resilience building initiatives, and that there currently are no efficient mechanisms to channel financial resources to communities for resilience building. Hence the feasibility study recommends adopting an approach that channels funding directly to communities to support small-scale investments in adaptation that they themselves have identified through a rigorous risk and vulnerability assessment process. This approach can subsequently be scaled and replicated, both through government programming and through engagements with other climate finance projects that are currently in the design phase.

10. References

- ABM and CSIRO. 2014. Climate Variability, Extremes, and Change in the Western Tropical Pacific: New Science and Updated Country Reports. Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, Australian Bureau of Meteorology (ABM) and Commonwealth Scientific and Industrial Research Organization (CSIRO), Melbourne, Australia. 372pp.
- Albert, S et al. 2016. Interactions between sea-level rise and wave exposure on reef island dynamics in the Solomon Islands. *Environmental Research Letters* 11.
- Albert, J, Albert, S. Andrew, N. Blanc, M. Carlos, A. Luda, L. Tofuakalo, F. Masu, R. Oengpepa, C. Oeta, J. Posala, R. Schwarz, A. Sibiti, S. Siota, F. Sokimi, W. Tan, S. Tawaki, A. Teri, J. and Warren, R. 2015. Nearshore fish aggregating devices (FADs) for food security in Solomon Islands. *WorldFish*.
- Albert, J. Beare, D. Schwarz, A. Albert, S. Warren, R. Teri, J. Siota, F. and Andrew, N. 2014. The Contribution of Nearshore Fish Aggregating Devices (FADs) to Food Security and Livelihoods in Solomon Islands. *PlosOne*.
<https://doi.org/10.1371/journal.pone.0115386>
- Arena M., Wini L., Salcone J., Pascal N., Fernandes L., Brander L. and Wendt H. 2015. Economic assessment and valuation of marine ecosystem services: Solomon Islands. Suva, Fiji: MACBIO GIZ/IUCN/SPREP.
- Asian Development Bank. 2015. Solomon Islands gender assessment.
- Basel, B., Goby, G., Johnson, J.E. (2020) Community-based adaptation to climate change in remote villages of Western Province, Solomon Islands. *Marine Pollution Bulletin*, 156, 111266
- Baudoin, MA., Henly-Shepard, S., Fernando, N. *et al.* 2016. From Top-Down to “Community-Centric” Approaches to Early Warning Systems: Exploring Pathways to Improve Disaster Risk Reduction Through Community Participation. *Int J Disaster Risk Sci* 7, 163–174 (2016). <https://doi.org/10.1007/s13753-016-0085-6>
- Becker, M, Meyssignac B., C. Letetrel, W. Llovel, A Cazenave, and T Delacroix. 2012. Sea Level variation at tropical Pacific islands since 1950. *Global and Planetary Change* 80-81, pp85-98.
- Begum et al. 2022. Point of departure and key concepts, in *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*.
- Bell, J.D., Johnson, J.E., Hobday, A.J. (2011) Vulnerability of tropical Pacific fisheries and aquaculture to climate change, Secretariat of the Pacific Community, Noumea, New Caledonia
- Bell J., Kronen M., Vunisea A., Nash W. J., Keeble G., Demmke D. and Andréfouët S. 2009. Planning the use of fish for food security in the Pacific. *Marine Policy* 33:64–76.
- Bird, Zina, Viliamu Iese, Helene Jacot Des Combes, Morgan Wairiu, and Linda B.K. Yuen. 2022. Assessing the Impacts of Climate Change on Domestic Crop Production: Experience and Perception of Local Farmers in North Malaita, Solomon Islands. *Pacific Dynamics* 6:1. Pp77-98.
- Brokovich, Eran, Anne-Maree Schwarz, and Janet Oeta. 2012. Building Social and Ecological Resilience to Climate Change in Roviana, Solomon Islands: PASAP Country Activity for the Solomon Islands. *WorldFish Center*. 27pp.

-
- Chan, T., M.C. MacDonald, A. Kearton, M. Elliott, K.F. Shields, B. Powell, J.K. Bartram, and W.L. Hadwen. 2020. Climate Adaptation for Rural Water and Sanitation Systems in the Solomon Islands: A Community Sale Systems Model for Decision Support. *Science of the Total Environment* 714. 13pp.
- CSIRO and SPREP. 2021. 'NextGen' Projections for the Western Tropical Pacific: Current and Future Climate for Solomon Islands. Final report to the Australia-Pacific Climate Partnership for the Next Generation Climate Projections for the Western Tropical Pacific project. Commonwealth Scientific and Industrial Research Organization (CSIRO) and Secretariat of the Pacific Regional Environment Programme (SPREP), CSIRO Technical Report, Melbourne, Australia. 40pp.
- Doverella, Noella, Hilda Waqa Sakiti, and Tammy Tabe. 2021. Climate Change Adaptation Programs on Water Security in the Pacific: A Focus on the Solomon Islands. *Pacific Dynamics* 5:1. 17pp.
- Dey, Madan Mohan, Kamal Gosh, Rowena Valmonte-Santos, Mark W. Rosegrant, and Oai Li Chen. 2016. Economic Impact of Climate Change and Climate Change Adaptation Strategies for Fisheries Sector in Solomon Islands: Implications for Food Security. *Marine Policy* 67. Pp 171-178.
- Ensor, Jonathan Edward, Kirsten Elizabeth Abernathy, Eric Timothy Hoddy, Shankar Aswani, Simon Albert, Ismael Vaccaro, Jason Jon Benedict, and Douglas James Beare. 2018. Variation in Perception of Environmental Change in Nine Solomon Islands Communities: Implications for securing Fairness in Community-Based Adaptation. *Regional Environmental Change* 18. pp1131-1143.
- Filho, Walter Leal, Michael Otoara Ha'apio, Johannes M. Lutz, and Chunlan Li. 2020. Climate Change Adaptation as a Development Challenge to Small Island State: A Case Study from the Solomon Islands. *Environmental Science and Policy* 107. Pp179-187.
- Fleming, Lisa, Carmen Anthnoj, Mamita Bora Thakkar, Waquairapoa M. Tikoisuva, Musa Manga, Guy Howard, Katherine F. Shields, Emma Kelly, Mark Overmars, and Jamie Bartram. 2019. Urban and Rural Sanitation in the Solomon Islands: How Resilient are these to Extreme Weather Events? *Science of the Total Environment* 683. Pp331-340.
- Gaines, S, Costello, C, Owashi, B, Mangin, T, Bone, J, García Molinos, J, Burden, M, Dennis, H, Halpern, B, Kappel, C, Kleisner, K And Ovando, D (2018) *Improved fisheries management could offset many negative effects of climate change*. *Science Advances* 29 Aug 2018: Vol. 4, no. 8, eaao1378 DOI: 10.1126/sciadv.aao1378
- Gillett R. 2016. Fisheries in the economies of the Pacific Island Countries and Territories. Noumea: SPC.
- Global Commission on Adaptation. 2019. Adapt now: A global call for leadership on climate resilience < https://gca.org/wp-content/uploads/2019/09/GlobalCommission_Report_FINAL.pdf
- Govan H. 2015. Area-based management tools for coastal resources in Fiji, Kiribati, Solomon Islands, Tonga and Vanuatu. Marine and Coastal Biodiversity Management in Pacific Island Countries (MACBIO) project, Suva, Fiji. Volume 2: Country reports.
- Govan H. 2017. Sea cucumber fisheries and management in Melanesia: Review and policy briefs. Pacific Regional Oceanscape Programme. Government of the Solomon Islands (GoSI). 2017. Solomon Islands Second National Communication to the UNFCCC. 173pp.

-
- GoSI (Government of Solomon Islands). 2016. Education Strategic Framework 2016-2030. Available [here](#).
- Hanich, Q, Wabnitz, C, Ota, Y, Amos, M, Donato-Hunt, C and Hunt, A. 2017. Small-scale fisheries under climate change in the Pacific Islands region. *Marine Policy* 88(2018), pp.279-284
- Higgins, Kate, and Josiah Maesua. 2019. Climate Change, Conflict and Peacebuilding in the Solomon Islands. Toda Peace Institute Policy Brief 36.
- Hobbis, Stephanie Ketterer. 2019. A Road to Development? Rural Perspectives on Infrastructure Maintenance in the Solomon Islands. *Development in Practice* 29:6. Pp748-759.
- Iese, Viliamu, Elisabeth Holland, Joseph Maeke, Morgan Wairiu, and Sumeet Naidu. 2015. Farming Adaptation to the Impacts of Climate Change and Extreme Events in Pacific Island Countries: Case Study of Bellona Atoll, Solomon Islands. In: *Impacts of Climate Change on Food Security in Small Island Developing States*. IGI Global, USA. Pp166-194.
- IPCC. 2022. Summary for policy makers, in *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*.
- Iturriza, M, Labaka, L, Ormazabal, M and Borges, M. 2020. Awareness-development in the context of climate change resilience. *Urban Climate*, Volume 32, 2020, <https://doi.org/10.1016/j.uclim.2020.100613>
- Johnson, J, Bertram, I, Chin, A, Moore, B, Pratchett, M, Welch, D, Williams, A and Bell, J. 2018. Effects of Climate Change on Fish and Shellfish Relevant to Pacific Islands, and the Coastal Fisheries they Support. *Science Review* 2018, pp.74-98
- Johnson, J.E., Welch, D.J. (2016) Climate change implications for Torres Strait fisheries: Assessing vulnerability to inform adaptation. *Climatic Change*, 135(3), 611-624. DOI: 10.1007/s10584-015-1583-z
- Johnson, J.E. and Marshall, P.A. (Editors) (2007) *Climate change and the Great Barrier Reef: a vulnerability assessment*. Great Barrier Reef Marine Park Authority, Australian Government
- Johnson JE, Welch DJ, van Hooidonk R, Tracey, D (2021) Assessing the vulnerability of the Arafura and Timor Seas region to climate change. Report to the Arafura and Timor Seas Ecosystem Action Program (Phase 2). C₂O Consulting, Australia (111pp.).
- Keremama, Milton, Elisabeth Holland, MGM Khan, David Hirasia, and Lloyd Tahani. 2019. Air Temperature Trends, Variability, and Extremes Across the Solomon Islands 1951-2011. *Pacific Dynamics: Journal of Interdisciplinary Research*. 3:1. Pp15-32.
- Lee, Dongyeol, Huan Zhang, and Chau Nguyen. 2018. The Economic Impact of Natural Disasters in Pacific Island Countries: Adaptation and Preparedness. IMF Working Paper 18/108. IMF: Washington, D.C. 37pp.
- Lutz, E. and Patt, A. 2013. Effects of educational attainment on climate risk vulnerability. *Ecology and Society* 18(1): 16. <http://dx.doi.org/10.5751/ES-05252-180116>
- Malherbe, Willem, Warwick Sauer, and Shankar Aswani. 2020. Social Capital Reduces Vulnerability in Rural Coastal Communities of Solomon Islands. *Ocean and Coastal Management* 191. 9pp.

-
- Maru, Edward, Taiga Shibata, and Kosuke Ito. 2018. Statistical Analysis of Tropical Cyclones in the Solomon Islands. *Atmosphere*. 9:6. 13pp
- Mataki, Melchior, Gideon Solo, Paul Donohoe, Davis Alele, and Lisa Sikajajaka. 2013. Choiseul Province Climate Change Vulnerability and Adaptation Assessment Report. SPC, SPREP, USAID, and GIZ. 80pp.
- McGree, Simon, Nicholas Herold, Lisa Alexander, Sergei Schreider, Yuriy Kuleshov, Elifaleti Ene, Selu Finaulahi, Kasis Inape, Boyd Mackenzie, Hans Malala, Arona Ngari, Bipendra Prakash, and Lloyd Tahani. 2019. Recent Change in Mean and Extreme Temperature and Precipitation in the Western Pacific Islands. *Journal of Climate* 32:16 pp4919-4941.
- McNaught, Rebecca, Cameron Vudi Ngatulu, George Tego, and Tim Lewis-Nicholson. 2011. The Adaptive Capacity of Pileni Island Community, Viakau Ward, Temotu Province, Solomon Islands. Australia Aid and Red Cross.
- Monroe, M, Plate, R, Oxarart, A, Bowers, A and Chaves, W (2019) Identifying effective climate change education strategies: a systematic review of the research, *Environmental Education Research*, 25:6,791-812, DOI: [10.1080/13504622.2017.1360842](https://doi.org/10.1080/13504622.2017.1360842)
- Pacific-Australia Climate Change Science and Adaptation Planning Program (PACCSAPP). 2015. Current and Future Climate of the Solomon Islands. Australian Aid. 11pp.
- Remussen, Kjeld, T. Birk, W. May, Ole Mertz, T.B. Bruun, J. Agergaard, D. Yee an M. Mataki. 2009. Adaptation to Climate Change on Three Small Polynesian Outliers in the Solomon Islands. IOP Conference Series: Earth and Environmental Science 6.
- Rhodes K. and Tua P.J 2016. Preliminary report on inshore fisheries resources marketed in Honiara, Solomon Islands. Honiara, Solomon Islands: Ministry of Fisheries and Marine Resources.
- Rosegrant, M.W., R. Valmonte-Santos, T. Thomas, L. You, and C. Chiang. 2015. Climate Change, Food Security, and Socioeconomic Livelihood in Pacific Islands. Asian Development Bank. Mandaluyong City, Philippines. 367pp.
- van der Ploeg, Jan, Meshach Sukulu, Hugh Govan, Tessa Minter and Hampus Eriksson. 2020. Sinking Islands, Drowned Logic; Climate Change and Community-Based Adaptation Discourses in Solomon Islands. *Sustainability* 12. 23pp.
- Save the Children. 2022. School safety context analysis: Solomon Islands (draft).
- Sokimi, W. Blanc, M. Colas, B. Bertram, I and Albert, J. 2020. *Manual on acchoed fish aggregating devices (FADs): An update on FAD gear technology, designs and deployment methods for the Pacific Island region*. SPC.
- Syddall, Victoria Margaret, Karen Fisher, and Simon Thrush. 2022. Collaboration a Solution for Small Island Developing States to Address Food Security and Economic Development in the Face of Climate Change. *Ocean and Coastal Management* 221. 12pp.
- Thiault, L., Jupiter, S.D., Johnson, J.E., Cinner, J.E., Jarvis, R.M., Heron, S.F., Maina, J.M., Marshall, N.A., Marshall, P.A., Claudet, J. (2021) Harnessing the potential of vulnerability assessments for managing social-ecological systems. *Ecology and Society*, 26, (2):1. URL: <https://www.ecologyandsociety.org/vol26/iss2/art1/>
- United Nations Capacity Development Fund (UNCDF). 2021. *Entrepreneurship ecosystem in the Pacific: Network analysis and mapping of institutions supporting entrepreneurship – Fiji, Samoa, Solomon Islands, Timor-Leste, Tonga, Vanuatu, and Papua New*

-
- Guinea. https://unctad.org/system/files/information-document/UNCDF_Entrepreneurship-Ecosystem-Pacific-Report.pdf
- United Nations Development Programme (UNDP). N.D. Solomon Islands: Pacific Adaptation to Climate Change Country Brief. UNDP. 2pp.
- United Nations Environment Programme (UNEP). 2019. Solomon Islands State of Environment Report 2019. UNEP. 156pp.
- Warren-Rhodes K., Schwarz, A.-M., Boyle, N. L., Albert, J., Agalo, S. S. et al. 2011. Mangrove ecosystem services and the potential for carbon revenue in Solomon Islands. *Environmental Conservation* 38(4):485–496. DOI: 10.1017/s0376892911000373.
- WaterAid. 2016. Solomon Islands WASH Sector Analysis. WaterAid. 53pp.
- Whitmarsh, L, Poortinga, W and Capstick, S. 2021. Behaviour change to address climate change. *Current Opinion in Psychology* 42, pp.76- 81.
- World Bank. 2022a. Project appraisal for Pacific Islands regional oceanscape program – second phase for economic resilience
- World Bank. 2022b. Project Appraisal for Integrated Economic Development and Community Resilience Project
- World Bank Group. 2021a. Climate Risk Country Profile: Solomon Islands. World Bank. 32pp.
- World Bank. 2021b. Project Appraisal for Tonga Safe and Resilient Schools Project
- World Bank Group. 2018. Solomon Islands Roads and Aviation Project, Project Information Document
<https://documents1.worldbank.org/curated/en/927421529622229948/pdf/Concept-Project-Information-Documents-Integrated-Safeguards-Data-Sheet-Solomon-Islands-Roads-and-Aviation-Project-P166622.pdf>
- World Bank. 2014. Project Appraisal for Community Resilience to Climate and Disaster Risk in Solomon Islands Project
- World Health Organization and United Nations Framework Convention on Climate Change (WHO & UNFCCC) 2020. Solomon Islands Health and Climate Change Country Profile. Small Island Developing States Initiatives. 16pp.
- World Risk Report (2021) <https://reliefweb.int/sites/reliefweb.int/files/resources/2021-world-risk-report.pdf>