

Priority knowledge gaps for Pacific Small Island Developing States

LIMA ADAPTATION KNOWLEDGE INITIATIVE (LAKI)

(Outcomes of the LAKI Priority setting workshop held between 23-26 February 2021)

Knowledge gaps in the LAKI refer to the following:

- A deficit of accessible data in the needed form in the context of a specific subregion or thematic domain (e.g. sectors or area of vulnerabilities, such as water and food security, or coastal zones).
- A deficit of information and knowledge in the needed form in the context of a specific subregion or thematic domain (e.g. information on techniques or technologies that could assist adaptation in the sectors or area of vulnerabilities).
- Lack of access to existing data, information and/or knowledge
- Lack of or an insufficiency of data requiring new research or generation/collection of new data

Clusters of knowledge gaps:

- [1] Lack of data (or limited data);
- [2] Lack of access to existing knowledge;
- [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);
- [4] Lack of tools and methods to process knowledge into actionable form

Priority Knowledge Gaps for Pacific SIDS

Ranking	Thematic area	Title	Description (including the reasons why it is considered a gap)	Cluster	Target Knowledge User
1	Social Protection and Gender (marginalized/vulnerable groups)	Lack of knowledge to include women, girls, people with disabilities in designing and implementing adaptation plans and policies	Lack of knowledge – as agents of change and contribution to adaptation	[2] Lack of access to existing knowledge; [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge)	Project designers and implementers, policy makers, decision makers communities, NGOs, CSOs
2	Infrastructure and human settlements	Lack of capacity to support climate proofing infrastructure	Lack of capacity to develop/review building codes, zoning and minimum standards for the construction and management to be considered in designing and developing infrastructure. Lack of capability to implement building codes once reviewed.	[2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form;	Civil engineers, town and country planners, construction companies, building material suppliers, private sector, local communities
3	Institutional Strengthening	Lack of knowledge to access climate change adaptation funds	Lack of capacity to enable direct access to climate finance such as gaining National Designated	[2] Lack of access to existing knowledge;	Climate change officers, finance officers, relevant

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			<p>Authority for the Green Climate Fund and accreditation with other financing facilities</p> <p>Lack of knowledge to ensure sufficient funds are available for on ground project implementation and meeting obligations to UNFCCC</p> <p>Lack of awareness amongst agencies and communities on climate change finance</p>	<p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form</p>	sector officers, NGOs, CSOs, faith based organisations, local communities
4	Health	Inadequate Early Warning System for health	<p>Insufficient information dissemination to prepare against water bourne diseases, vector bourne diseases and malnutrition.</p> <p>Inadequate early warning system limiting timely interventions for disease control that is site specific and takes into account local climate and health relationships and local cultural factors.</p>	[4] Lack of tools and methods to process knowledge into actionable form;	Environmental health officers, epidemiologist, health inspectors, water officers, local communities, schools, NGOs, CSOs, faith based organisations

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			Inadequate early warning system limiting rapid and accurate disease notification;		
5	Social Protection and Gender (marginalized/vulnerable groups)	Lack of data on Gender	Lack of sex disaggregated data, climate change and other sectors	[1] Lack of data (or limited data);	Project designers and implementers, policy makers, decision makers
6	Human health	Lack of information to understand the impacts of climate change on food security and health (i.e. nexus of Climate change, food security and health)	Lack on data on climate change and impacts on malnutrition in all of its forms, including obesity, undernutrition, and other dietary risks. Limited assessment on the impact on vulnerable groups in particular, including babies, children, and pregnant women	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form	Health professionals, Food nutritionists, food security officials, communities
7	Infrastructure and human settlements	Lack of knowledge of climate change impacts on human settlements	Lack of a comprehensive study and hazard mapping of climate-change implications for human settlements Coastal communities and urban centres (including capital cities) are prone to natural hazards such as cyclones, storm surges, coastal and riverine erosion,	[1] Lack of data (or limited data)	Civil engineers, town and country planners, construction companies, building material suppliers, private sector, local communities

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			<p>landslides, floods and sea level rise.</p> <p>Landslides are pose a significant threat to lives and infrastructure. The occurrence and impacts are difficult to quantify due to limited data.</p> <p>Insufficient data to determine if there has been a trend in frequency or intensity of cyclones over the past few decades.</p> <p>Lack of data to quantify the frequency and impacts of landslides</p>		
8	Social Protection and Gender (marginalized/vulnerable groups)	Lack of access to Early Warning System by youth and remote communities	Youth and remote communities have differing access rates to information and early warning systems	<p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge</p>	Social workers, local government, town and country planning, natural disaster management officers, NGOs, CSOs, faith based organisations, youth groups, remote communities

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				into actionable form;	
9	Water resources	Lack of tools and methods to assess climate change impacts on water resources for water conservation and management (link to fisheries, agriculture and health)	Lack of tools and methods to assess impact, vulnerability of shoreline erosion and impact on groundwater sources, design water resources supply during drought and floods, and water use in agriculture activities (reword)	[2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form;	Water experts, town and country planners
10	Institutional strengthening	Lack of tools to integrate traditional knowledge for adaptation and disaster risk reduction	Establish a special program to promote, strengthen and coordinate the use of traditional knowledge and technology for adaptation and disaster risk reduction	[4] Lack of tools and methods to process knowledge into actionable form;	Climate change officers, environment officers, local communities, NGOs, CSOs
11	Human health	Lack of information and tools to assess impact of climate change on mental/psychosocial health, particularly mental/psychosocial health from a Pacific perspective.	Lack of information and tools to assess impact of climate change on mental/psychosocial health	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form	Health professionals Psychologists, social health staff, counsellors, health inspectors, post disaster assessment officers

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12	Institutional strengthening	Lack of data to assess impacts of climate change and to develop cost-effective solutions	<p>Lack of data to assess the impact of climate change and in identifying a cost-effective response is the uncertainty surrounding estimates of the time and magnitude of the changes to be expected.</p> <p>Difficulty lies in the complexity of predicting the changes, uncertainty over future global emission pathways, the short history and variability of the historical data, and the problem of clearly distinguishing between cyclical effects (climate variability) and long-run climate change impacts.</p>	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Climate change officers, bank officers, insurance officers, town and country planners, finance officers
13	Water resources	Lack of knowledge and tools for monitoring water sources	Lack of capacity to identify water sources and their volume, map groundwater flows	<p>[2] Lack of access to existing knowledge;</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Water experts, agriculture officers, health officers, town and country planners

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14	Information and Communications Technology	Lack of access to meteorological data in climate change decision making	The use of existing meteorological information is limited to specific agencies, and this information needs to be tailored to decision makers across a wider series of sectors.	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	All relevant sectors
15	Information and Communications Technology	Lack of access to climate risks information to inform policy and planning	Inaccessibility of information such as hazard mapping, socioeconomic data and season and climate projections by development planners, communities and private sector to enhance their understanding of climate risks	<p>[1] Lack of data (or limited data);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Policy developers, town and country planning, environment officers, fisheries officers, agriculture officers

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			<p>Lack of access to relevant climate data and information to enhance understanding by policy developers and planners of climate risk. Such climate data include hazard maps, socioeconomic data and season and climate projections.</p> <p>Modelling of storm-surge zones, taking into consideration possible sea-level rise. Planning mechanisms can subsequently be used to direct all new investments in infrastructure, housing construction, and agriculture outside this zone to minimize vulnerability, reduce repair costs and decrease disruption to economic activities.</p>		
16	Coastal and marine ecosystems	Lack of knowledge to monitor coastal and marine ecosystems	<p>Insufficient technical capacity for monitoring ecosystems to protect natural resources from coastal development pressures and overexploitation coupled by climate change.</p> <p>Insufficient use of high-resolution satellite imagery and</p>	<p>[2] Lack of access to existing knowledge;</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Fisheries officers, environment officers, NGOs, CSOs, faith based organisations, local communities

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			<p>Global Positioning Satellite (GPS) technology to detect harmful algal blooms that can smother reefs and to monitor elevated sea surface temperatures, which can cause coral bleaching</p> <p>Insufficient system and information for monitoring and mapping of coastal habitat specifically seaweeds, sea grass etc.</p>		
17	Water resources	Lack of methods and tools for analyzing water quality and quantity due to impacts of climate change	<p>Lack of understanding on how water supplies will be impacted by rising temperatures and climate change, particularly in the smaller atoll nations that are dependent on rainwater</p> <p>Software for analysing hydrological data</p> <p>Tools/technology/equipment needed to analyse/test/monitor water quality/quantity. (this is hardware unless they lack capacity to use these tools?)</p>	<p>[1] Lack of data (or limited data);</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Water experts, agriculture officers, health officers, country and town planners

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18	Institutional Strengthening	Lack of knowledge to conduct Technology Needs Assessment	<p>Insufficient capacity to conduct Technology Needs Assessments & Technology Transfer</p> <p>Insufficient information on technology transfer</p> <p>Lack of qualified staff in transferring technology</p>	<p>[2] Lack of access to existing knowledge;</p> <p>[4] Lack of tools and methods to process knowledge into actionable form</p>	Climate change officers, energy officers, fisheries officers, agriculture officers, water experts
19	Institutional Strengthening	Lack of knowledge to assess climate change vulnerability and adaptation (V &A)	<p>Lack of adequate information to support vulnerability and adaptation assessments</p> <p>Lack of knowledge of V&A toolkits, community planning, GIS, community engagement</p> <p>Limited capacity for integrated assessments of risks, including gaps in enforcement of environmental impact assessments, cost benefit analyses and feasibility studies</p>	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Climate change officers, environment officers
20	Human health	Lack of data on health system to monitor	Lack of or incomplete disease surveillance or health data and	[1] Lack of data (or limited data);	Environmental health officers,

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		impacts of climate change against climate sensitive diseases	<p>data collection systems on monitoring of climate change against climate-sensitive infectious vector borne and water bourne diseases such as malaria, leptospirosis and typhoid fever. To include the use of GIS.</p> <p>Lack of knowledge on links between incidence of vector-born and water-borne diseases and climatic parameters such as rainfall and temperature.</p> <p>Lack of data to predict disease outbreaks</p>	[4] Lack of tools and methods to process knowledge into actionable form	epidemiologist, health inspectors, water officers
21	Social protection and gender (marginalized and vulnerable groups)	Lack of integrated Early Warning System to facilitate information flow before and after events	<p>Lack of integrated Early Warning System to facilitate information flow before and after events to include people with disabilities.</p> <p>Improvement is required to ensure it reaches vulnerable communities in time and in a language they can understand.</p>	<p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Social workers, local government, town and country planning, natural disaster management officers, NGOs, CSOs, faith based organisations

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22	Infrastructure and human settlements	Lack of monitoring tools to identify hazard areas in order to mitigate flooding	<p>Lack of monitoring tools to identify hazard areas in the country for flooding in highlands, coastal regions and islands</p> <p>Mapping and planning to mitigate flooding is needed using a blended approach of traditional knowledge and modern infrastructure tools and methods</p> <p>Promote the use of drone GIS mapping, artificial intelligence (AI) and internet of things (IoT) technology to mitigate flooding, both inland and islands.</p> <p>GIS and Remote Sensing Tools could be used to ensure connectivity and linkages between landslides and rainfall patterns and intensity</p>	[4] Lack of tools and methods to process knowledge into actionable form;	<p>Civil engineers, town and country planners, construction companies, building material suppliers, private sector, local communities</p> <p>Water experts, agricultural officers, health inspectors</p>
23	Water resources	Lack of effective awareness raising activities for water and public health	Lack of community education, awareness and participation in freshwater management, conservation and protection.	[3] Lack of actionable knowledge (e.g., in need of repackaging	NGOs, CSOs, faith based organisations, local communities

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			<p>Lack of awareness on the various other water sources such as rainwater harvesting and desalination.</p> <p>Communication strategy and tools to promote health and sanitation</p>	<p>existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	
24	Agriculture, fisheries, livestock and forestry	Lack of access to information on sustainable agricultural practices	<p>Farmers lack of access to information and knowledge of cropping systems in order to adjust agriculture practices to prepare for climate change such as mixed cropping, mulching, composting.</p> <p>Farmers lack of information/understanding of the impacts of climate change on their cropping systems.</p>	<p>[3] Lack of actionable knowledge (e.g in need of repackaging existing knowledge)</p> <p>[4] Lack of tools and methods to process knowledge into actionable form</p>	Subsistence and commercial farmers, local communities
25	Infrastructure and human settlements	Lack of data knowledge to mainstream climate change into infrastructure and settlement plans	<p>Lack of policies, legislation and enforcement (policy gap not K gap)</p> <p>Lack of knowledge, information and capacity to mainstream climate change into</p>	[2] Lack of access to existing knowledge;	Urban Planners, utilities, decision makers

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			<p>infrastructure and settlement plans</p> <p>across the region there are many examples of new housing types being built after cyclones, associated with resettlement projects, and just because. Some use imported materials, some use local materials, there are different designs and standards, and associated technologies for water, power, and sewerage (Ok, the latter are common). A database of types, their performance, who provides them, and their costs and benefits would be really helpful.</p>		
26	Institutional Strengthening	Lack of tools and methods to mainstream climate change in various development planning and processes	<p>Lack of environmental and climate risk in development planning processes. Need to improve capacity to lead mainstreaming process.</p> <p>Need for tools such as strategic environment assessment, multi-criteria analysis, integrated vulnerability assessments, as well as gender analysis and action plans to support</p>	[4] Lack of tools and methods to process knowledge into actionable form;	All government ministries Ministry of Finance, Climate Change, Environment, Health, Agriculture, Fisheries, Infrastructure, Water

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			development planning and integration process.		
27	Institutional strengthening	Lack of knowledge on impacts of climate change on various sectors	<p>There is need to translate the climate science and predicted impacts into local language so all communities can prepare accordingly.</p> <p>Lack of awareness on climate change in general, and its impacts on the specific sectors in particular across all levels of the government and the public and even within the relevant sectors</p>	<p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	All sectors, private sector, NGOs, CSOs, faith based organisations
28	Information and communication technology	Lack of tools for information and knowledge sharing between government and stakeholders	<p>Lack of protocols for integrated data and information sharing and management</p> <p>Need for adaptation knowledge sharing, coordination and collaboration among ministries as well as with non-governmental organisations (NGOs), the private sector,</p>	<p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge</p>	All relevant government ministries, non-governmental organisations (NGOs), private sector, faith-based organisations and development partners

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			faith-based organisations and development partners	into actionable form;	
29	Human health	Lack of substantial evidence on impact of climate change on non-communicable diseases	No recent context-specific research on climate change and non-communicable diseases in the subregion, despite notable increase in rates of non-communicable diseases	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form	Environmental health officers, epidemiologist, health inspectors, water officers, local communities, schools, NGOs, CSOs, faith based organisations
30	Information and communication technology	Lack of a database of adaptation practices, classified by sector, with examples from across the region	Lack of data and information on adaptation activities and practices, lessons learnt	[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);	National government climate change officials, project developers, academia, regional organisations, communicators, project designers
31	Institutional strengthening	Lack of tools and methods to conduct risk assessment of climate change at sector level	Lack of understanding of climate change risks and risk assessments by various sectors in order to integrate climate risks into respective sectors	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge;	All relevant sectors, decision makers, town and country planners

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			Lack of specific information and data on current and future vulnerability and risks across the sectors is hindering meaningful action on climate change. This issue is exacerbated by the lack of sector specific information and data, or information and data management systems, in key sectors such as health and water	[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to process knowledge into actionable form;	
32	Agriculture, fisheries, livestock and forestry	Lack of tools and methods for understanding of future impacts of climate change on agriculture and food production	This gap has several components: <ul style="list-style-type: none"> Lack of agrometeorological data on climate change and variability in order to manage food production and supply. Lack of climate models and cropping calendars to be made available for future production and minimize food shortages. 	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to	Agriculture Extension Officers, subsistence and commercial farmers, health inspectors, water officers, land use planning officers

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			<ul style="list-style-type: none"> • Lack of Early warning and forecasting information/systems to all communities including information on disaster impacts on agriculture and water etc. • Lack of information on agriculture insurance, probing an indemnity insurance framework, weather index setup, linking with multi-hazard early warning systems, etc. for disaster risk management in agriculture • Lack of development and application of satellite forecasting for the planning and agriculture sectors 	process knowledge into actionable form	
33	Human health	Lack of knowledge on customary and modern strategies, tools and methods for monitoring	Modelling of changes in risk of transmission of mosquito-borne diseases	[1] Lack of data (or limited data);	Environmental health officers, epidemiologist, health inspectors,

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		and managing disease vectors such as mosquitos		<p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form</p>	water officers, local communities, schools, NGOs, CSOs, faith based organisations
34	Infrastructure and human settlements	Lack of knowledge on migration and displacement due to impacts of climate change	<p>Gaps contextualizing issues, community's movement, best practices and tools</p> <p>Additional policy examples, case studies</p> <p>Research underway/existing for migration and settlements</p> <p>Understanding from around the region regarding displacement eg Fiji Displacement guidelines</p>	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p>	Communities, policy makers, planners, immigration officers, social workers, utility service providers, DRM officers

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			Planned migration and ad hoc migration in response to disaster	[4] Lack of tools and methods to process knowledge into actionable form	
35	Social Protection and gender (marginalized and vulnerable groups)	Lack of knowledge to design/implement social protection initiatives (link to Gender)	Lack of information and knowledge on social protection	[2] Lack of access to existing knowledge;	communities, farmers, fishers, project designers
36	Institutional strengthening	Lack of knowledge of climate science and tools and methods to monitor impacts of climate change	<p>Lack of knowledge of basic climate science, competencies based on International Meteorological Service standards</p> <p>Specialized training for officers in forecasting, modelling, early warning systems, ocean monitoring, agro-meteorology and sea level monitoring</p> <p>Use of projections in adaptation planning needs a strong advocacy program to put it to use and for stakeholders to use them in everyday planning as a forward looking tool and adapting to climate change.</p>	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Meteorology officers

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			Climate projections should be used for conducting EIA and the Meteorological Service (projection scenarios) should be involved in the production of EIAs.		
37	Information and communication technology	Lack of tools and skills for downscaling climate scenarios	<p>Limited capacity, tools and local data to enable downscaling of climatic variations and impacts</p> <p>Downscaling of Global climate models is vital for developing more reliable localized projections. (find where suitable)</p>	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Climate change officers, agriculture officers, water experts, health officers, town and country planners, NGOs, CSOs, faith based organisations
38	Information and communication technology	Lack of use of communication tools (applications and social media) as a medium to	Lack of knowledge for developing climate change apps for specific audiences	[2] Lack of access to existing knowledge;	farmers, service providers (NGOs, govt agencies,

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		communicate climate change information		[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to process knowledge into actionable form	international partners)
39	Institutional strengthening	Lack of tools and methods for undertaking vulnerability mapping, adaptation planning and implementation of adaptation interventions,	Limited capacity at the community level to undertake local level vulnerability mapping, adaptation planning and the implementation of priority adaptation interventions.	[2] Lack of access to existing knowledge;	local communities, NGOs, CSOs
40	Coastal and marine ecosystem	Lack of scientific data and/access to data on coral reef monitoring	Lack of data and research into the adaptation of coral reefs to determine natural adaptive response to higher sea surface and air temperature. Clarity around applications to access to research for end users.	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [2] Lack of access to existing knowledge;	Fisheries officers, environment officers, NGOs, CSOs, faith based organisations, local communities

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			<p>Lack of research on nature-based solutions and hybrid technology?</p> <p>Lack of knowledge of sedimentation – coral reef dynamics in a changing climate</p>		
41	Agriculture, fisheries, livestock and forestry	Lack of access to knowledge of crop resilience skills	Lack of access to knowledge in crop adaptability, crop seasonal cycles, crop/food preservation skills, traditional skills, pest/weed control skills, traditional agri-forestry/agroforestry (to reduce deforestation)	<p>[2] Lack of access to existing knowledge</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to process knowledge into actionable form</p>	Subsistence and commercial farmers, local communities
42	Terrestrial ecosystems	Lack of data on erosion hotspots	Lack of data on erosion hotspots and the lands and seas around them, which is needed for modelling possible interventions before piloting them in the field		Agriculture officers, landuse planners, utility service providers, communities,

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			<p>(this is very relevant for nature-based solutions).</p> <p>Highlands have high erosion hotspots as a result of soil type, cropping practices used mono culture over a vast area of land.</p> <p>Research on rainfall erosivity (capacity of rain to produce erosion) and soil erodibility (susceptibility of the soil to be eroded).</p>		conservation officers, farmers
43	Agriculture, fisheries, livestock and forestry	Lack of data to assess the impacts of climate change on fisheries monitoring such as fish stocks (Fisheries off shore and near shore)	<p>Lack of data to assess the impacts of climate change on fisheries such as ocean observation and monitoring data such as wave, sea-level rise, ocean acidification, coral bleaching and geospatial information on climate and ocean processes which may impact tuna stocks, invasive fish species and ciguatera poisoning.</p> <p>A lack of understanding of actual fisheries stock that will make it more difficult to set foreign fishing fees for the future.</p>	<p>[1] Lack of data (or limited data);</p> <p>[2] Lack of access to existing knowledge;</p> <p>[3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);</p> <p>[4] Lack of tools and methods to</p>	Fisheries officers, commercial fishing companies, local communities

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			Insufficient evidence exists to conclusively assess climate change impact on fisheries.	process knowledge into actionable form	
44	Agriculture, fisheries, livestock and forestry	Lack of knowledge and tools for land use and land use management practices	Lack of Knowledge on mainstreaming climate change into agriculture land use planning Lack of actionable information on integrated land use planning – e.g. policies, strategies, legislation	[2] Lack of access to existing knowledge; [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to process knowledge into actionable form	Agriculture Extension Officers, subsistence and commercial farmers Planning officers (refine term)
45	Infrastructure and human settlements	Lack of data for understanding climate change impacts on public assets	Lack of data for climate change impacts on public assets such as power lines, telecommunications and government buildings	[1] Lack of data (or limited data); [4] Lack of tools and methods to process knowledge into actionable form;	Civil engineers, town and country planners, construction companies, building material suppliers, private sector, local communities

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46	Human health	Lack of information on impacts of climate change on health-related illness, morbidity, mortality, and productivity	Heatwaves in the Pacific region increase the risk of heat-related injuries and death, and dehydration. There is limited research in the Pacific about the impact of climate change on these particular health issues and their longer-term impacts	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form	Health professionals
47	Terrestrial ecosystem	Lack of tools (e.g. GIS) for land use and land use management (link to Human Settlement)	Insufficient use of GIS for land use planning	[4] Lack of tools and methods to process knowledge into actionable form;	Agricultural officers, forestry officers, town and country planning
48	Infrastructure and human settlements	Lack of knowledge to utilize information on climate change impacts to design climate-resilient infrastructure	Lack of capacity to develop certification standards for climate-proofing transport infrastructure and establishing enforcement measures to ensure compliance. Limited information on climate change impacts is available to engineers designing and constructing the infrastructures around the country	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge;	Civil engineers, town and country planners, construction companies, building material suppliers, private sector, local communities

Ranking	Thematic area	Title	Description (including the reasons why it is considered a gap)	Cluster	Target Knowledge User
			Negative impact of poorly designed infrastructure on the environment due to lack of capacity, understanding natural processes and resources; e.g. seawalls causing erosion or causeways harming marine habitats.		
49	Coastal and marine ecosystem	Lack of knowledge to integrate ecosystem-based adaptation into programme design and lack of knowledge of the limits to EBA in the face of future climate change.	<p>Lack of integration of EBA into development, climate change adaptation responses, natural resource management policy and planning processes, traditional conservation taboos, Marine Protected Areas</p> <p>Lack of awareness amongst private sector and NGOs to support the integration of EBA into programme design with a focus on the potential of green, nature-based, or hybrid infrastructure solutions in reducing vulnerability to environmental and climate risk .</p> <p>Lack of tools to document and share traditional knowledge for EBA</p>	<p>[2] Lack of access to existing knowledge;</p> <p>[4] Lack of tools and methods to process knowledge into actionable form;</p>	Fisheries officers, environment officers, NGOs, CSOs, faith based organisations, local communities

Ranking	Thematic area	Title	Description (including the reasons why it is considered a gap)	Cluster	Target Knowledge User
			Lack of community involvement		
50	Agriculture, fisheries, livestock and forestry	Lack of knowledge on soil health, soil fertility and water management in agriculture	Lack of knowledge on improved soil carbon, soil health, soil fertility and practices that maintain or enhance soil health. Knowledge and access to information and CSA practices on water management in agriculture	[2] Lack of access to existing knowledge; [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to process knowledge into actionable form	Agriculture Extension Officers, subsistence and commercial farmers
51	Coastal and marine ecosystems	Lack of knowledge on ocean acidification adaptation solutions	There is work being done but often technical and not actionable	[2] Lack of access to existing knowledge	coastal communities
52	Social protection and gender (marginalized and vulnerable groups)	Lack of knowledge of environmental and social safeguards	Lack of application of environmental and social safeguard screening and knowledge of processes relating to environmental and social safeguards	[4] Lack of tools and methods to process knowledge into actionable form;	Project developers, project managers, project beneficiaries
53	Human health	Lack of communication tools to raise awareness	Lack of education programmes/public awareness	[3] Lack of actionable	Local communities, schools, NGOs, CSOs,

Ranking	Thematic area	Title	Description (including the reasons why it is considered a gap)	Cluster	Target Knowledge User
		regarding impacts of climate change and extreme weather events on public health	of the impacts on climate change and extreme weather events such as droughts, flooding, temperature on human health and responses to aftermath	knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to process knowledge into actionable form	faith based organisations
54	Coastal and marine ecosystem	Lack of data to monitor mangroves	Absence of baseline data on mangrove position and parameters.	[1] Lack of data (or limited data);	Environment officers, fisheries officers
55	Human health	Lack of a systematic data collection and information systems for health and climate change data	Lack of functioning Health Information Systems and data collection systems Lack of capacity to management health information systems Information must be timely to ensure timely response such as the above early warning system.	[1] Lack of data (or limited data); [4] Lack of tools and methods to process	Environmental health officers, epidemiologist, health inspectors, water officers
56	Human health	Lack of understanding of climate change	Lack of data on the impacts on climate change and extreme weather events such as	[1] Lack of data (or limited data);	Environmental health officers, epidemiologist,

Ranking	Thematic area	Title	Description (including the reasons why it is considered a gap)	Cluster	Target Knowledge User
		impacts on the health sector	droughts, flooding, temperature change on human health Limited understanding of climate change within the health sector	[2] Lack of access to existing knowledge; [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge); [4] Lack of tools and methods to process knowledge into actionable form	health inspectors, water officers, local communities, schools, NGOs, CSOs, faith based organisations
57	Infrastructure and human settlements	Lack of knowledge of climate proofing of human settlements certification	Lack of knowledge on climate-resilient of climate proofing of human settlements certification to rebuild post natural disaster.	[2] Lack of access to existing knowledge; [4] Lack of tools and methods to process knowledge into actionable form;	Civil engineers, town and country planners, construction companies, building material suppliers, private sector, local communities
58	Institutional strengthening	Lack of access to national climate change	Lack of an information system to track climate related research	[1] Lack of data (or limited data);	Decision makers, climate change officers, environment

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		research data and information	and make it accessible to relevant stakeholders. Informed decision making requires accurate, consistent and timely provision of advices which should be based on factual, science-based and rigorous planning.	[2] Lack of access to existing knowledge;	officers, town and country planners, project/programme developers, academic researchers
59	Coastal and marine ecosystem	Lack of knowledge and tools for mangrove monitoring	Lack of capacity to produce maps of mangrove boundaries, topographic information, and locations of coastal roads and development, and use these products to assess site-specific mangrove vulnerability to projected sea level rise	[4] Lack of tools and methods to process knowledge into actionable form;	Environment officers, fisheries officers,
60	Agriculture, fisheries, livestock and forestry	Insufficient research data on climate resilient crops	This gap has several components: <ul style="list-style-type: none"> Lack of data and information of climate resilient crops that are able to survive extreme climate events such as flooding, droughts and high soil salinity Lack of adoption of SLM technologies due to 	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge;	Agriculture Extension Officers, subsistence and commercial farmers

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			<p>mismatch in agricultural priorities.</p> <ul style="list-style-type: none"> Lack of an agricultural gene bank in some countries <p>Lack of research to develop climate-adaptive crops/food supply in the islands and hinterland</p>		
61	Social protection and gender (marginalized and vulnerable groups)	Lack of tools to manage data and information for 'vulnerable' people	Lack of a registry for vulnerable people ascertained using a robust and common vulnerability framework as it would enhance efforts to support low-income and otherwise disadvantaged groups and support monitoring and evaluation of progress at national and sub-national level	[1] Lack of data (or limited data); [4] Lack of tools and methods to process knowledge into actionable form;	Social workers, local government, town and country planning, natural disaster management officers, NGOs, CSOs, faith based organisations
62	Agriculture, fisheries, livestock and forestry	Lack of information on Livestock Management	<p>Lack of data, data storage, and accessing existing information</p> <p>Lack of information on and/or access to information on proper animal husbandry and CSA management practices</p>	[1] Lack of data (or limited data); [2] Lack of access to existing knowledge; [3] Lack of actionable	Livestock farmers, small scale farmers

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			<p>Livestock feed formulation, use of legumes and other locally available alternatives</p> <p>Lack of knowledge and information on farm bio-security</p> <p>Lack of information available to farmers on impacts of climate change on livestock</p> <p>livestock practices to both resilient and mitigation efforts (even at small scale)</p>	knowledge (e.g., in need of repackaging existing knowledge);	
63	Information and communication technology	Lack of data to meet reporting obligations to UNFCCC	<p>Lack of accurate and reliable data for the national communication process and other UNFCCC reporting obligations</p> <p>Lack of systematic data collection and sharing between government agencies</p>	[1] Lack of data (or limited data);	Climate change officers, environment officers and all relevant ministries and offices involved in NC process
64	Coastal and marine ecosystem	Lack of Wave Modelling data for determining impact of climate change on coral reefs	Lack of wave modelling data to enhance understanding on the impact of waves on coral reefs and its significant relationship	[2] Lack of access to existing knowledge;	Fisheries officers, environment officers, NGOs, CSOs, faith

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			with the climate change and sea level rise. Lack of wave damage risk maps	[4] Lack of tools and methods to process knowledge into actionable form;	based organisations, local communities
65	Agriculture, fisheries, livestock and forestry	Lack of knowledge and/or access to information on nutrients use and manure management for climate resilient agriculture system	Lack of information and practices and access to information on nutrient use and manure management towards climate resilient agriculture systems	[2] Lack of access to existing knowledge; [3] Lack of actionable knowledge (e.g., in need of repackaging existing knowledge);	Farmers

