Annex 1.2: Roadmap Action Tables (PRSCS Implementation Plan)

Consolidated extraction of the 13 action tables (pages 56–67) from the Pacific Roadmap for Strengthened Climate Services baseline assessment commissioned by SPREP.

This document extracts the full set of Annex 1.2 Action Tables as presented on pages 56 to 67 of the Pacific Roadmap for Strengthened Climate Services 2024–2033. The original 2017–2026 Implementation Plan developed by the Pacific Island Climate Services (PICS) Panel established 157 discrete actions organized across the five Global Framework for Climate Services (GFCS) components—User Interface, CSIS, Observations & Monitoring, Research/Modeling, and Capacity Building—and eight priority thematic sectors (Agriculture, Disaster Risk Reduction, Energy, Health, Water, Fisheries & Aquaculture, Tourism, and National Climate Services).

Table A1.2.1(a): User Interface Actions – National (Page 56)

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Potential Partners	Time-frame	Key Performance Indicators
1	Develop mechanisms (e.g. social media analytics, surveys, face-to-face meetings) to collect feedback from users and clients to evaluate appropriateness of timing and content of information products.	National	NMHS	All PICTs	Media, CROP agencies		Collect input from stakeholders through ongoing dialogue, outreach, and feedback. Understand information needs and delivery preferences.
2	Engage at the community level to ensure effectiveness of information exchange.	National	NMHS, External	All PICTs	CROP agencies (SPREP, SPC), Red Cross, NGOs, Local Councils		Dialogue, outreach and community feedback.
3	Establish/formalise regular seasonal or bi-annual National Climate Outlook Forums (NCOF).	National	NMHS	All PICTs	SPREP, WMO, BoM, NIWA		Regular NCOF sessions convened with sectoral representatives.

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Potential Partners	Time-frame	Key Performance Indicators
4	Include representatives from relevant sectorial agencies in national climate outlook forums (NCOF).	National	NMHS	PNG, Solomon Is, Fiji, Vanuatu, Tonga...	SPREP, Sector Ministries		NMHS working in coordination with key sectors; formal agreements in place.
5	Develop and implement national climate services communication strategies.	National	NMHS	All PICTs	SPREP, Media agencies		Documented and active national communications plan.
6	Establish consultative processes for priority areas stakeholders (companies, ministries, development partners) and NMHS to identify, design and implement required climate services.	National	NMHS	All PICTs	Sectoral Ministries, Private Sector		Formal consultative mechanisms operationalized per sector.
7	Establish a scientifically-based quality control mechanism for the entire service production chain.	National	NMHS	All PICTs	WMO, BoM, NIWA		QMS operational across climate service generation.
8	Regular systematic review of user feedback of value and relevance of climate services.	National	NMHS	All PICTs	PICS Panel, SPREP		User survey reports and product refinement feedback loops.
9	Interact with key user communities on the best form of presentation and use of seasonal predictions.	National	NMHS	All PICTs	Extension agents, CSOs		Tailored seasonal advisories in accessible formats.
10	Establish MOUs or informal/formal working arrangements between Sectors and NMHS detailing roles and responsibilities.	National	NMHS, NDMO	All PICTs	Sector Ministries, Red Cross, CSOs		Formal MOUs and Service Level Agreements signed.

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Potential Partners	Time-frame	Key Performance Indicators
11	Ensure climate services are integrated into government policies at national and community level.	National	NMHS	All PICTs	National Planning, Climate Change Depts		Climate services referenced in NAPs and national sectoral policies.
12	Explore opportunities for the use of traditional knowledge and traditional calendar in sector advisories.	National	NMHS	All PICTs	SPREP, COSPPac, Cultural Groups		Integration of traditional climate indicators with scientific forecasts.
13	Issue seasonal predictions and advisories in local languages whenever possible.	National	NMHS	All PICTs	Local Media, Translators		Advisories produced and broadcast in vernacular languages.
14	Translating terms into local dialect for public dissemination.	National	NMHS	All PICTs	Linguists, Cultural leaders		Glossary of meteorological terms in local dialects.

Table A1.2.1(b): User Interface Actions – Regional and Regional/National (Page 57)

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
1	Support regional partnerships and climate outlook forums (PICOF) to exchange best practices and regional climate outlooks.	Regional	SPREP, WMO Pacific RCC-N	All PICTs		RCC-N members, NOAA and University of Hawaii	Biannual PICOF sessions held; regional consensus outlooks issued.
2	Provide technical guidance and standardized toolkits for	Regional	PICS Panel, SPREP	All PICTs		WMO, CROP partners	Standardized user survey

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	user engagement and feedback collection across PICTs.						templates deployed across NMHSs.
3	Develop regional communication channels and portals to amplify national climate advisories and extreme event watches.	Regional / National	SPREP, SPC	All PICTs		Regional Media, Donors	Regional climate portals actively updated and accessible.

Table A1.2.2: Climate Services Information System (CSIS) Actions (Page 58)

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
1	Develop guidelines and suites of standardised products for PICOFs.	Regional	PICS Panel	All PICTs		WMO, BoM, NIWA	Standardized PICOF product suite established.
2	Establish and sustain Pacific RCC Network.	Regional	SPREP, WMO	All PICTs		NOAA, University of Hawaii	WMO-designated Pacific Regional Climate Centre operational.
3	Establish agreements between RCC-Network and global information providers to sustain access to global data.	Regional	RCC Network	All PICTs		Global Producing Centres (GPCs)	Formal data access protocols in place.
4	Ensure RCC-Network has operational access to climate information produced at national level.	Regional	RCC, NMHSs	All PICTs		SPREP, SPC	Bi-directional data flow between NMHSs and RCC.

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
5	Develop guidelines and suites of standardised products for the Pacific RCC.	Regional	RCC Network	All PICTs		WMO, PICS Panel	RCC product catalogue published.
6	RCC Network to provide a range of regionally oriented Climate Services Products.	Regional	RCC Network	All PICTs		SREP, BoM, NIWA	Monthly/seasonal ocean and climate outlooks distributed.
7	Continue or support operational seasonal forecast and related resource tools, including web sites developed.	Regional	SPREP, BoM	All PICTs		COSPPac, Climate Futures	Web portals maintained with high uptime.
1	Develop or implement a range of routine climate monitoring tools and products encapsulating monthly, seasonal and long-term changes.	National / Regional	NMS, SPREP	All PICTs		Govt Agencies	Updated data portals and websites across all NMHSs.
2	Issue regular bulletins on the status of the varying climate, e.g. on seasonal or bi-annual and annual basis.	National	NMHS	All PICTs		Media, Sectors	Regular climate bulletins published and archived.
3	Apply best practice to the communication of NMHS information products.	Regional	PICS Panel	All PICTs		Media, NGOs	Two-way dialogue established to define best practice.
4	Define, build and make available a Pacific Climate Services Toolkit at regional and national levels.	National / Regional	SPREP, WMO	All PICTs		BoM, NIWA	Climate Services Toolkit deployed to NMHS climatologists.
5	Incorporate Traditional Knowledge, practices and	National /	NMHS, SPREP	All PICTs		COSPPac, Local Communities	Traditional knowledge

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	language in information / impact forecasts.	Regional					database merged with seasonal forecasting.
6	Establish as a matter of high priority the extent to which data resource tools and information web sites developed under project funding will continue to be supported.	National / Regional	NMS, SPREP	All PICTs		Donors, CROP	National policy on data exchange activated; long-term funding secured.

Table A1.2.3: Observation and Monitoring Actions (Page 59)

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
1	Establish a national policy on data exchange that will facilitate access to the data by intermediate and end users.	Regional / National	NMHS	All PICTs		NIWA, SPREP, UNDP, GEF	Regional collaboration on development of CREWS Platform/product generators.
1	Review the range of parameters and observing systems critical for monitoring local climate variability and change in atmosphere, land and ocean.	National / Regional	NMS, PICS	All PICTs		SPREP, BoM, NIWA, JICA, UNDP, NOAA, EU	Comprehensive report on observation system; regional assessment approved by PMC.
2	Ensure as far as possible that observing systems are optimised to meet standards	National / Regional	NMS, PICS	All PICTs		SPREP, BoM, NIWA, JICA, NOAA	Technical support or Engineering section established;

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	required for weather forecasting and climate needs.						regional maintenance support.
3	Develop a subset of guidelines using WMO/OSCAR as a base, in association with local organisations in key priority areas.	National / Regional	NMS, PICS	All PICTs		Sectors Users, WMO	Agreement with sectors on data sharing and joint collection.
4	Implement and sustain a suitable relational climate database system (e.g. CliDE).	National / Regional	NMS, SPREP	All PICTs		UNDP, GCF, WMO, BoM, NIWA	CliDE relational climate database updated and operational across all PICTs.
5	Secure continuing support for data portals.	National / Regional	NMS, SPREP	All PICTs		SPREP, Donors	Sustainability of national climate data portals ensured.
6	Increased spatial mapping of key variables utilising open source Geo-statistical tools.	National / Regional	NMS, SPC	All PICTs		NIWA, SPREP, WMO, FAO	Increased available spatial mapping of key climate variables utilising open source GIS.
7	Develop and submit proposals for funding to establish, restore or replace observing stations including appropriate data communication systems.	National / Regional	NMHS	All PICTs		CREWS, GCF, Donors	Funding proposals submitted and AWS telemetry upgraded.
8	Identify development of environmental databases and procedures for data collection.	National / Regional	NMHS, Environment	All PICTs		SPC, SPREP	Integrated environmental-climate database established.

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
9	Develop or implement routine climate monitoring tools encapsulating monthly, seasonal and long-term variations.	National / Regional	NMHS	All PICTs		WMO, RCC	Routine climate trend analyses generated automatically.
10	Explore use of modern data collection and analysis systems for routine climate monitoring (satellite, remote sensing, GIS).	National / Regional	NMHS, Land Dept	All PICTs		SPREP, WMO, FAO	Increased use of satellite and remote sensing GIS data in NMHSs and sector users.
11	Establish a climate reference station network.	National / Regional	NMS, JICA	All PICTs		NIWA, SPREP, BoM	Reference stations identified and supported in regional network.
1	Perform observing system gap analyses and prioritise options for network repair, expansion, and AWS installation.	National	NMS	All PICTs		SPREP, BoM, NIWA, JICA, UNDP	Gaps filled; outer island AWS stations fully functioning.
2	Establish a funded maintenance schedule for observing system equipment including AWSs.	National	NMS	All PICTs		NIWA, JICA, UNDP, NOAA	Funded maintenance schedule in place and operational.
4	Assess volume of paper climate records not digitised, develop data rescue and entry program.	National	NMS	All PICTs		SPREP, WMO, JICA	Provision of IT and data rescue expertise included in Maintenance Plan.

Table A1.2.4: Research, Modeling and Prediction Actions (Page 60)

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
1	Continue to support and foster research into sub-seasonal climate prediction in the Pacific region.	Regional	RCC, SPREP	All PICTs		BoM, NIWA, NOAA, APCC	Sub-seasonal to seasonal (S2S) forecast skill evaluated.
2	Provide research support to the development of a Pacific Climate Services Toolkit.	Regional	RCC, Universities	All PICTs		WMO, COSPPac	Research modules integrated into regional toolkit.
3	Develop decision-support data analysis that overlay multiple types of information (e.g. soil, climate projections, rain, temp).	Regional	RCC, SPC	All PICTs		FAO, USP, SPREP	Multi-criteria decision support overlays produced for agriculture & health.
4	Establish an optimum space scale for seasonal outlooks to inform island and community scale activities.	Regional	RCC Network	All PICTs		NIWA, BoM	Optimal spatial downscaling resolution defined.
1	Conduct or facilitate studies linking traditional climate and weather knowledge and science.	National / Regional	NMHS, SPREP	All PICTs		COSPPac, Communities	COSPPac project harness TK; transition plan to maintain TK database.
2	Identify and document systematic deficiencies in seasonal forecasting system (e.g. ENSO phase performance).	National / Regional	NMHS, RCC	All PICTs		BoM, NIWA	Systematic model bias reports compiled for Pacific sub-regions.
3	Support and foster research into impact-based forecast information for each sector.	National / Regional	NMHS	All PICTs		WMO, BoM, NIWA, NDMO	National disaster related database established (Impact database

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
							with NMS and NDMO).
4	Calculate and analyse statistical properties of extremes in weather and climate, including extreme event probabilities.	National / Regional	NMHS, RCC	All PICTs		PCCC, Universities	Extreme value frequency analyses published for rainfall and temperature.
5	Analyse probabilities of occurrence and intensity of extreme events from sub-seasonal to multi-annual ranges.	National / Regional	NMHS, RCC	All PICTs		BoM, NIWA	Probabilistic extreme event outlooks generated.
6	Modelling of hydrological cycles and impacts for agriculture, water and hydropower production.	National / Regional	NMHS, Water Dept	All PICTs		SPC, NIWA	Hydrological runoff models calibrated for major watersheds.
7	Promote and encourage cross-disciplinary research linking climate services, priority areas and gender.	National / Regional	NMHS, SPREP	All PICTs		USP, Gender Ministries	Gender-sensitive climate impact studies published.
8	Develop, implement and monitor accuracy and reliability of seasonal climate outlook/prediction service.	National / Regional	NMHS, RCC	All PICTs		WMO	Verification scorecards published regularly for seasonal outlooks.
1	To provide basis for strengthened support to NMHSs and PRSCS conduct assessments of value/economic benefit of climate services.	National	NMHS, SPREP	All PICTs		Economists, Donors	Socio-economic cost-benefit studies completed for select Pacific countries.

Table A1.2.5: Capacity Building Actions (Page 61)

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
1	Develop Regional Partnerships and Networks for Enhancing Climate Services Capacities including mentoring by established NMHSs.	Regional	SPREP, WMO	All PICTs		BoM, NIWA, MetService	Peer-to-peer mentoring agreements established.
2	Regularly review options for upgrading or introducing new methods for seasonal prediction and develop operational plans.	Regional	PICS Panel	All PICTs		RCC, APCC	Predictive tool upgrade strategy reviewed annually.
3	Establish Pacific Regional Climate and Meteorological Training Centre (RTC).	Regional	PMC, SPREP	All PICTs		WMO, USP	Pacific RTC concept approved and operationalized.
4	Establish a dedicated Help Desk to exchange information on best practice and facilitate inter-regional cooperation.	Regional	SPREP	All PICTs		Caribbean CCCCC, WMO	Regional climate helpdesk functional.
5	Engage with and monitor outcomes of various PMC panels, in particular the PICS Panel.	Regional	PMC	All PICTs		CROP, Donors	Annual PMC panel progress tracking reports.
6	Transfer knowledge of adaptation options between countries with similar climate/priority areas concerns.	Regional	SPREP, SPC	All PICTs		NGOs, Local Councils	South-South technical knowledge exchange workshops.
7	Encourage NMHSs to develop education and outreach programmes with particular	Regional	SPREP, UNESCO	All PICTs		Education Ministries	Gender-inclusive STEM climate outreach

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	emphasis on science education for girls.						materials deployed.
1	Provide training of Met technicians, Met observers and calibration of AWS.	National / Regional	NMS, PICI	All PICTs		SPREP, BoM, NIWA, JICA, UNDP, NOAA, EU	All operational staff attended at least 1 training; regional training programs for Met technicians.
2	Install technological tools and processes to improve capability of national climate services.	National / Regional	NMS, SPREP	All PICTs		SPREP, BoM, NIWA, JICA, NOAA, EU, PSC, MOF	Guidelines for Staff Competency and staff number for provision of Climate Services.
3	Identify where IT expertise can be sourced to assist with maintenance of data management computing systems.	National / Regional	NMS, BoM	All PICTs		UNDP, GCF, WMO, SPREP, NIWA	Functional database and significant deficiencies rectified.
4	Train NMHS staff in communicating effectively with media, communities and users.	National / Regional	NMHS	All PICTs		Media Trainers, SPREP	Communications training delivered to NMHS spokespersons.
5	Conduct capacity building and training programs on the use of existing and new products and services.	National / Regional	NMHS	All PICTs		Users, Extension Staff	Stakeholder training workshops held on interpreting advisories.
6	Facilitate or provide training for NMHS on observing practices, database management, prediction, and climate variability.	National / Regional	NMHS, SPREP	All PICTs		WMO, RTC	Technical competency certificates awarded to staff.

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
7	Use WMO Competency Framework for climate services in developing, maintaining and improving staff skills.	National / Regional	NMHS	All PICTs		WMO	Staff competencies mapped against WMO climate standards.
8	Conduct training of personnel in priority sectors on how to interpret meteorological/climate information.	National / Regional	NMHS, Sectors	All PICTs		Sector Ministries	Increased sectoral literacy in applying climate advisories.
9	Establish collaboration with regional/international academic institutions for research and fellowship awards.	National / Regional	NMHS, Universities	All PICTs		USP, SPREP, Donors	Fellowships awarded to Pacific climatologists.
10	Advocate for need for scholarships for climatology studies at undergraduate and postgraduate level.	National / Regional	NMHS	All PICTs		Education Ministries, Donors	Dedicated climate scholarship slots secured.
11	Build capacity by participating in formal arrangements for knowledge sharing at national, regional and international levels.	National / Regional	NMHS	All PICTs		WMO, SPREP	Participation in COP, WMO Congress, and RCOFs.
12	Conduct training programs on resource mobilisation that address both local and international opportunities.	National / Regional	NMHS	All PICTs		Donors, GCF	Improved NMHS capacity to draft climate finance proposals.
13	Provide training on Pacific Climate Futures and other similar tools.	National / Regional	NMHS	All PICTs		CSIRO, BoM, SPREP	Staff trained in generating national climate change projections.
1	Enhance capacity of service-delivery sectors to use	National	NMHS	All PICTs		Sectors, CSOs	Tailored climate products

#	Action / Activity Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	tailored weather/climate info for informed decision-making.						integrated into sectoral workflows.
2	Develop national capacity development strategies.	National	NMHS	All PICTs		National Planning	National NMHS Capacity Development Plan endorsed.
3	Develop in-house social media / media liaison / communication expertise.	National	NMHS	All PICTs		Media Agencies	Dedicated communication officer or unit active in NMHS.

Table A1.2.6: Priority (Thematic) Actions – Agriculture (Page 62)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	With agriculture advisers/extension officers, develop drought management plans for different subsistence and cash crops.	National	NMHS, National Ag Agencies	All PICTs		USP, SPC, FAO, NIWA, SPREP, WMO	Drought management plans are developed.
CSIS	Map Normalised Differential Vegetation Index (NDVI) estimates from satellites.	Regional	SPC, SPREP	All PICTs		FAO, NOAA	Regional NDVI vegetation monitoring maps available.
CSIS	Prepare agro-meteorological advisories, crop calendars, crop models,	National / Regional	NMHS?, National Ag Agencies	All PICTs		NMHS, USP, SPC, FAO, NIWA, SPREP, WMO	Agro met advisories, seasonal calendars and

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	seasonal outlooks for crop yield forecasts.						seasonal outlooks are in place.
CSIS	Provide drought, irrigation and seasonal climate advisories to assist farmers.	National	NMHS	All PICTs		MAFF, NMS, National Agencies	Drought and irrigation advice and/or products available.
Obs & Mon	Explore the use of agricultural extension officers as a resource for collecting routine meteorological and agricultural data.	National	NMHS, National Ag Agencies	All PICTs		USP, SPC, FAO, NIWA, SPREP, WMO	Routine meteorological and agricultural data are available and utilised.
Research	Source estimations of (potential) evapotranspiration from climate models.	National / Regional	WMO, NMHS	All PICTs		BoM, NIWA	National evapotranspiration data are available.
Research	Explore the impacts of climate change and changing seasonality on agriculture (eg salt water intrusion etc).	National / Regional	NMHS, National Ag Agencies	All PICTs		USP, SPC, FAO, NIWA, SPREP, WMO	Increased understanding of climate change and changing seasonality impacts on agriculture; sharing of examples of impacts.
Capacity	Increase the capacity of Agro-meteorology personnel.	National / Regional	NMS, Min Agriculture, SPREP	All PICTs		USP, SPC, FAO, NIWA, SPREP, WMO	Established Agro-met positions in NMHSs.

Table A1.2.7: Priority (Thematic) Actions – Disaster Risk Reduction (Page 63)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	Improve the communication of seasonal forecasts as a risk management tool (simplify language, identify possible impacts).	National	NMHS, NDMO	All PICTs		Red Cross, Media	Simplified seasonal climate risk bulletins published.
User Interface	Collaborate with NDMO on awareness training out in the community.	National	NMHS	All PICTs		WMO, SPREP, SPC	1. Number of joint awareness training. 2. Number of training complete. 3. Number of material produced. 4. National disaster awareness week done.
CSIS	Integrate climate analyses and forecasts into general and sector specific disaster risk reduction and response systems.	National / Regional	NMHS, NDMO	All PICTs		SPREP, SPC, WMO	Different sectors including impacts. 2. Sector driver sub-seasonal forecast; methodology for sub-seasonal forecasting.
CSIS	Assess on an ongoing basis the risks of Tropical cyclone, flood and drought.	National / Regional	NMHS, NDMO, RCC, RSMC	All PICTs		Sectors, SPC, SPREP, Red Cross, NMHS, SPTO	1. Number of sub-national level risk assessment completed. 2. Tropical cyclone seasonal outlook downscaled to

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
							provincial level. 3. TC data portal hosted.
CSIS	Risk analysis, e.g., flood risk maps, drought risk maps.	National	NMHS, NDMO	All PICTs		SPC, SPREP	Hazard risk maps generated for vulnerable districts.
CSIS	Establish and/or strengthen a national Climate Risk Early Warning System (CREWS).	National	NMHS, NDMO	All PICTs		WMO, CREWS Trustee	National CREWS early warning system fully operational.
CSIS	Develop a national drought response plan and institute a national drought monitoring and early warning system.	National	NMHS, NDMO	All PICTs		WMO, SPREP, SPC	1. Develop National disaster preparedness and response plans e.g. Hydrology and agricultural Drought.
Obs & Mon	Collect historical disaster-related data, including loss and damage assessments and statistics (Hotspots).	National / Regional	NDMO, Appropriate Ministry, NMHS	All PICTs		SPC, SPREP, Sectors, Clusters	National disaster related database established (Impact database with NMS and NDMO). Mechanism in place using info from NMS.
Research	Convene a regional group of experts to review projects and activities related to coastal flooding	Regional	SPREP, SPC	All PICTs		BoM, NIWA, NOAA	Regional coastal inundation expert panel established.

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	including sea level rise and extremes.						
Research	Calculate and analyse statistical properties of extremes in weather and climate, including extreme event probabilities.	National / Regional	NMHS, RCC	Countries with required capacity / ALL		WMO, BoM, NIWA, NOAA, RCC, PCCC	1. Climate change data portal hosted within NMS. 2. Technical or scientific papers published. 3. Number of trainings. 4. Number of regional papers.
Research	Analyse probabilities of occurrence of extreme events from sub-seasonal to multi-annual ranges.	National / Regional	NMHS, RCC, NIWA, BoM	All PICTs		WMO, BoM, NIWA, NOAA	1. Tailored made probability products for different sectors including impacts. 2. Sub-seasonal forecasting methodology developed.
Research	Develop systems for the early warning of severe weather events and climate extremes with different lead times (heat waves, dust storms).	National / Regional	NMHS, BoM, RCC	All PICTs		WMO, BoM, NIWA, NOAA	1. Develop or improve current early warning systems. 2. Develop SOP for early warning. Expand climate database e.g. CliDE.

Table A1.2.8: Priority (Thematic) Actions – Energy (Page 64)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	Engage with national energy utilities and authorities to identify climate information requirements for solar, hydro, and wind power.	National	NMHS, Energy Dept	All PICTs		PPA, SPC, SPREP	Regular consultation meetings held with energy sector operators.
CSIS	Provide tailored climate outlooks for solar radiation, cloud cover, and rainfall to assist renewable energy management.	National / Regional	NMHS, RCC	All PICTs		BoM, NIWA, PPA	Energy-specific climate bulletins and solar/hydro outlooks distributed.
Obs & Mon	Expand monitoring of solar radiation, wind speed/direction, and streamflow at key renewable energy generation sites.	National	NMHS, Energy Utilities	All PICTs		JICA, IRENA, SPC	Observational networks upgraded at renewable energy plant locations.
Research	Assess climate change impacts and variability on renewable energy potential (hydro reliability, solar fluctuations).	National / Regional	NMHS, Universities	All PICTs		SPREP, IRENA, PPA	Research reports published on climate risk to national grid transitions.

Table A1.2.9: Priority (Thematic) Actions – Health (Page 65)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	Enhance community awareness of potential impacts on human health of climate variability and change.	National / Regional	NMHS, MOH, SPREP, RCC, WMO, WHO	All PICTs / Reps		NGOs, PMC, RCC, SPREP, WHO	1. Developing integrated and tailored climate info for health sector. 2. Tailored climate & health products. 3. Regional training through PICOFs.
User Interface	Contribute to advisories on threats to health associated with weather and climate variability such as heatwaves and water-borne disease.	National / Regional	NMHS, MOHs	All PICTs		WHO, WMO, All NMHSs & MOHs	1. Advisories are issued through multiple networks and all relevant health channels.
CSIS	Develop disease specific early warning systems, e.g. MalaClim (malaria climate EWS), for local implementation.	National	NIWA, BoM, NMHSs, MOHs	All PICTs		WHO, WMO, All NMHSs & MOHs	1. Extend MalaClim from Solomon Islands to other PICs. 2. Extend MalaClim or other similar health tools.
CSIS	Issue early warning bulletins of conditions conducive to disease vectors and pests.	National	NMHS, MOH	All PICTs		WHO, SPC	Regular health-climate bulletins issued prior to peak vector seasons.
Obs & Mon	Address data needs, including collection of valid and comprehensive health statistics at appropriate local, regional, temporal scales.	National / Regional	NMHS, MOH, BoM, SPREP, RCC, Environment	All PICTs		NGOs, PMC, WHO, WMO	1. Establishing MOUs for data sharing between NMHS and MOH. 2. Improving health data sets

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
							and long term collection.
Obs & Mon	Where appropriate monitor air quality and urban heat stress indices.	National / Regional	NMHS, Environment	All PICTs		WHO, WMO	1. Investigate data collection and data storage processes for air/heat monitoring.
Obs & Mon	Monitor sea temperatures for conditions conducive to Ciguatera fish poisoning.	National / Regional	SPC, BoM, NMHS, MOH	All PICTs		WHO, WMO, All NMHSs & MOHs	1. Information for the health sector is included in ocean bulletins. 2. Trainings conducted.
Research	Develop models that combine climate parameters with disease vectors and support research expanding knowledge of climate sensitive diseases.	National / Regional	Universities, Health Research, NMHS	All PICTs		WHO, WMO, All NMHSs & MOHs	1. Climate and health research projects operating in PICs. 2. Research papers co-authored in peer reviewed journals.

Table A1.2.10: Priority (Thematic) Actions – Water (Page 65)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	Establish cooperative interactions between NMHSs and water authorities/organisations on weather and climate	National / Regional	NMHS, Water Authorities	All PICTs		SPC, SPREP, Pacific Water & Wastewater Assoc	Joint water-climate working groups established.

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	related water management.						
CSIS	Predictions of seasonal flow for major rivers and reservoir catchment inflows.	National / Regional	NMHS, Hydrology Dept	All PICTs		BoM, NIWA, SPC	Seasonal streamflow and catchment yield forecasts generated.
CSIS	Development of drought management plans including strategies for rainwater, surface water and groundwater.	National	NMHS, Water Dept, NDMO	All PICTs		SPC, SPREP, UNICEF	Integrated water drought response plans published.
Obs & Mon	Implement hydrological/hydro-meteorological monitoring systems (rain gauges, stream gauges, groundwater monitoring).	National	NMHS, Water Resources	All PICTs		WMO, WMO HydroHub, SPC	Hydro-met telemetry network expanded and operational.
Obs & Mon	Database for hydrological data storage integrated with climate data management systems.	National	NMS, Water Dept	All PICTs		BoM, WMO, NIWA, SPREP	Centralized hydrological database established with QC.
Obs & Mon	Incorporate water quality measures in monitoring tools and systems.	National	Water Dept, NMHS, MOH	All PICTs		WHO, WMO, All NMHSs & MOHs	1. Investigate data collection and data storage processes. 2. Water quality monitoring tools are produced and used.

Table A1.2.11: Priority (Thematic) Actions – Fisheries and Aquaculture (Page 66)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	Encourage collaborative efforts between meteorological, oceanographic, biological and fisheries researchers to monitor ocean impacts.	Regional	FFA, SPC, RCC, Fisheries, PNA, WCPFC	All PICTs		CROP agencies, WCPFC	Inter-agency ocean-fisheries climate working group active.
User Interface	Develop a fisheries Climate Early Warning System (EWS).	National / Regional	NMHS, Fisheries, SPC, FFA, SPREP	All PICTs / Priority PICTs		RCC, BoM, NIWA, CSIRO	1. Assess ocean data usefulness. 2. Provide improved met/hydro/ocean services to local fisheries. 3. Track pelagic fish (tuna). 4. ENSO actions.
User Interface	Identify risk assessment or management evaluation tools that incorporate climate variability to improve ecosystem-approach.	National / Regional	NMHS, Fisheries	All PICTs		SPC, FFA, FAO	Ecosystem-based fisheries climate risk assessment tools deployed.
User Interface	Identify how weather and climate tools can inform integrated coastal zone management relevant to coastal fisheries and aquaculture.	National / Regional	NMHS, Fisheries	All PICTs		SPC, SPREP	Coastal climate advisories integrated into aquaculture plans.
CSIS	Provide downscaled coastal information for use in Fish Aggregation Device (FAD) programs.	Regional	SPC, SPREP	All PICTs		NMHSs, Fisheries	Downscaled ocean current and SST advisories issued for FAD locations.

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
CSIS	Develop national ocean services portal (can be done by national tailoring of a regional portal such as COSPPac Ocean Portal).	National	NMHS, SPC	All PICTs		COSPPac, BoM	National ocean portals and virtual stations linked to regional portals.
Obs & Mon	Oceanic and coastal fisheries management organisations to inform members about advantages of ocean observations to WMO/IOC systems.	National / Regional	NMHS, Maritime Transport, SPC	All PICTs		WMO/IOC, IMO	X% inter-island shipping collecting data; strategy for vessels meeting SOLAS weather obs.
Obs & Mon	Ensure long-term commitments to monitoring systems for assessing fish stock status and routine integrated ecosystem assessments.	National / Regional	Fisheries (not NMHS), SPC	All PICTs		FFA, WCPFC	Sustained oceanographic monitoring of pelagic & reef fish habitats.
Obs & Mon	Undertake lagoon monitoring for aquaculture (temperature, salinity, acidification).	National	Fisheries, NMHS	All PICTs		SPC, SPREP	Lagoon water quality and SST monitoring stations established.
Research	Improve understanding of sensitivity of pearl and seaweed industries to rising sea temperatures.	National / Regional	Fisheries, Universities	All PICTs		SPC, USP	Research published on thermal thresholds for pearl oysters and seaweed.
Research	Contribute to the understanding of the impacts of climate	National / Regional	Fisheries, NMHS, SPC	All PICTs		WCPFC, FFA, SPREP	Regional climate impact assessments for

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
	change on fisheries and aquaculture.						tuna distribution updated.
Research	Crown of Thorns starfish outbreaks and linkages to climate information.	National / Regional	Fisheries, SPREP	All PICTs		SPC, Universities	Early warning indicators for COTS outbreaks developed based on SST/nutrients.
Research	Conduct climate and sea-surge modelling for areas at risk and to inform new coastal development.	National / Regional	NMHS, SPC	All PICTs		NIWA, BoM, SPREP	High-resolution coastal inundation and surge models produced.

Table A1.2.12: Priority (Thematic) Actions – Tourism (Page 67)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
User Interface	Establish a consultative process for tourism stakeholders (companies, ministries, development partners) and NMHS to identify required climate services.	National / Regional	NMHS, Tourism Dept	All PICTs		SPTO, PICS Panel, RCC	1. Identify focal points. 2. Service agreements developed. 3. Joint annual business plans between tourism & NMHSs.
User Interface	Include representatives from tourism agencies in national climate outlook forums and regular briefings.	National	NMHS, Tourism	All PICTs		SPTO, Hotel Associations	Tourism sector active in NCOFs.

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
CSIS	Establish a Climate EWS for tourism (UV warnings, tropical cyclone advisories, heat indices).	National	NMHS, Tourism Dept	All PICTs		SPTO, SPREP	Tailored climate early warning bulletins for tourism operators.
Capacity	Identify through workshops and other consultative processes climate/ocean services addressing specific needs of Pacific tourism sector.	National / Regional	NMHS, Tourism Dept	All PICTs		SPTO, SPREP	1. Host several workshops and consultations. 2. Integrate climate services into tourism sector plans.

Table A1.2.13: Priority (Thematic) Actions – National Climate Services (Page 67)

Pillar	Sector Action Description	Scope	Lead Agency	Priority PICTs	Time-frame	Potential Partners	Key Performance Indicators
Core Roadmap	Support the development of implementation plans for climate services at the national level.	Regional and National	NMHS, SPREP, PICS Panel	All PICTs		WMO, Donors	National Climate Services Implementation Plans drafted and endorsed across all 14 Pacific Island countries.