



# Weather Ready Pacific Program

Preparing for Extreme Events in a  
Climate Change World

Pacific Met Desk Partnership  
SPREP

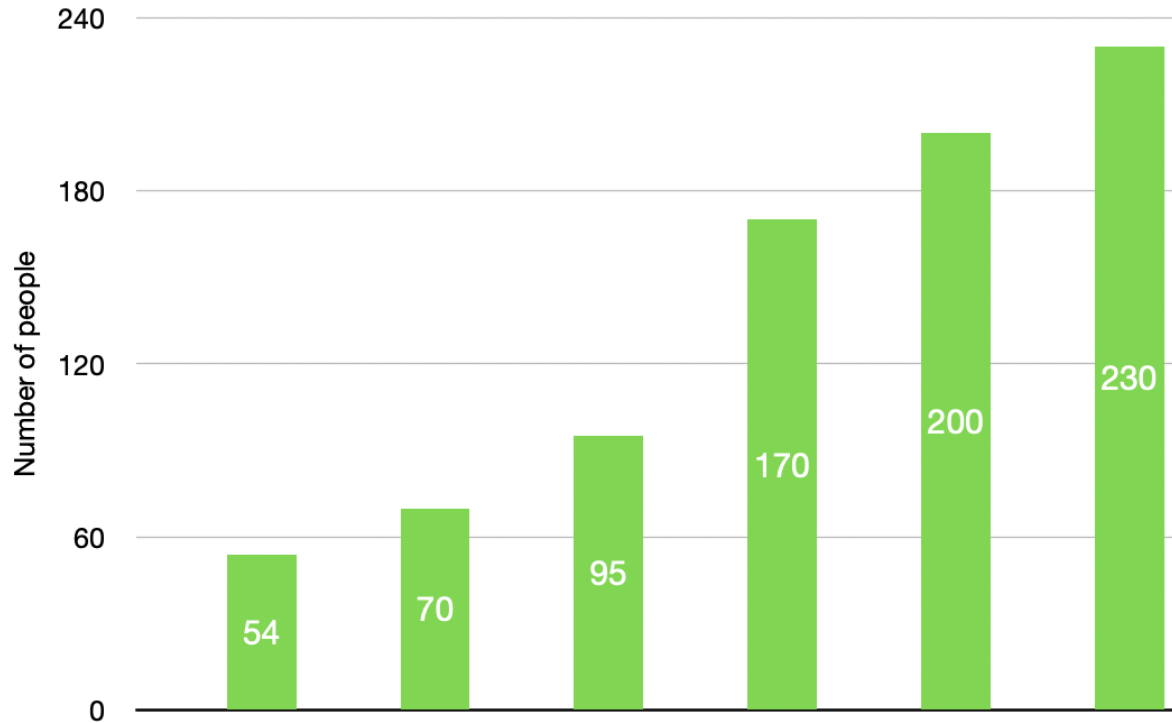


## Our Journey .....

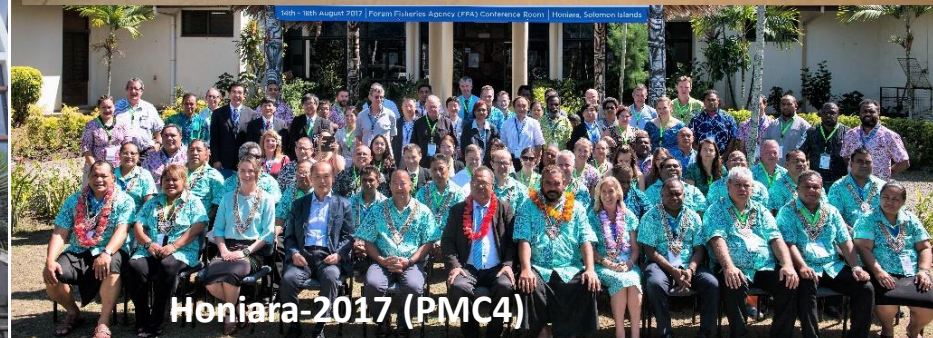
- *The Changing Climate in Paradise: Feasibility Study on Climate Monitoring and impacts in the SW Pacific, 1991*
- *“the climate monitoring system in the South-West Pacific is minimal to meet the challenge faced and is in jeopardy of failing”*
- First Regional Meteorological Services Directors (RMSD) Meeting started in 1993 convened by SPREP
- At the 14<sup>th</sup> RMSD in 2011 in Majuro, the first PMC-1 was held



### PMC Engagement 2011-2023



PMC Meetings





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# Key Strategic Direction

## IMPROVED WEATHER SERVICES

- PKO1:** Improved aviation weather services
- PKO2:** Improved public weather services
- PKO3:** Improved marine weather services and establishment of ocean services

## DISASTER RISK REDUCTION

- PKO4:** Strengthened NHMS capacity to implement Multi-Hazard Early Warning Systems (MHEWS) for tropical cyclones, coastal inundation and tsunamis
- PKO5:** NHMS contribution to climate change activities

## CLIMATE AND HYDROLOGICAL SERVICES

- PKO6:** Strengthen collaboration between meteorological and hydrological services
- PKO7:** Improved climate information and prediction services through the implementation of the Pacific Roadmap for Strengthened Climate Services

## INTEGRATED OBSERVING AND COMMUNICATION SYSTEMS

- PKO8:** Integrated observing and communication systems

## COORDINATED SUPPORT FOR NMHSs AND PMC

- PKO9:** NMHSs institutional strengthening and capacity development
- PKO10:** PMC is an efficient and effective body
- PKO11:** Support to NHMSs is coordinated

Pacific Roadmap for  
Strengthened Climate  
Services  
2017 – 2026

Pacific Islands  
Meteorological Strategy  
2017–2026

Sustaining Weather, Climate, Water and  
Ocean Services in Pacific Island Countries  
and Territories

Pacific Climate Change Science and  
Services Research Roadmap

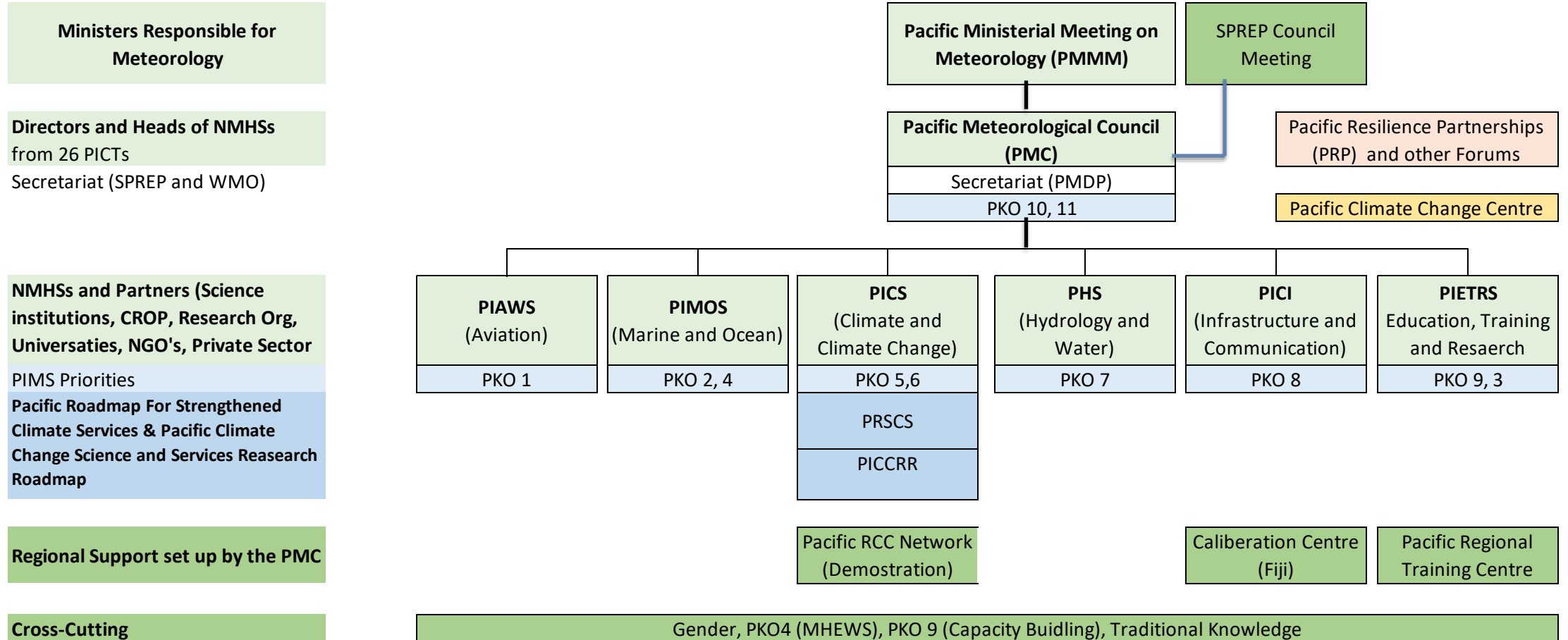


# Pacific Ministerial Meeting on Meteorology (PMMM)

- PMMM-1 (2015): Nuku'alofa Ministerial Declaration
- PMMM-2 (2017): Honiara Ministerial Statement
- PMMM-3 (2023): Namaka Ministerial Declaration



# Coordination: Arrangements under the PMC



- PRSCS- Pacific Roadmap for Strengthened Climate Services
- PICCRR- Pacific Island Climate Change Science Research Roadmap



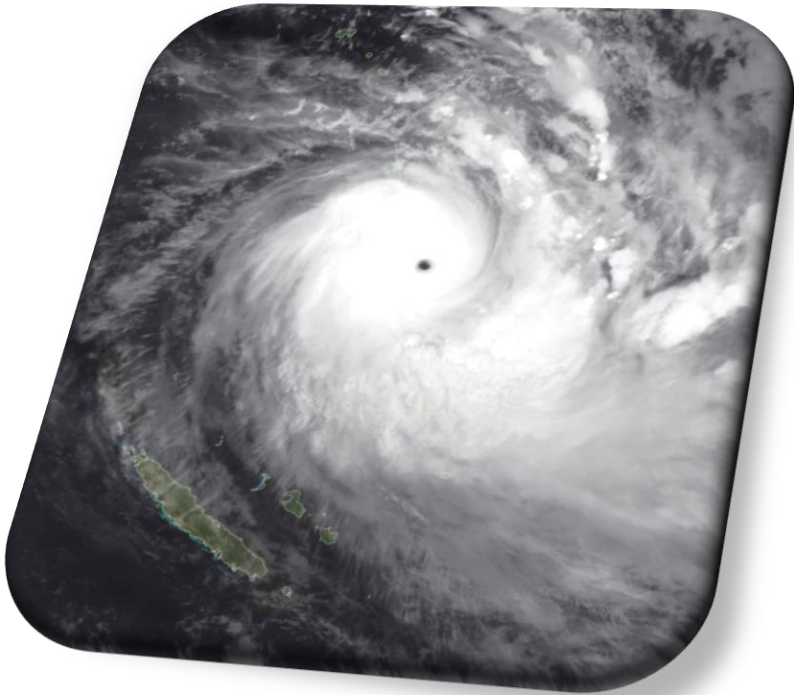
# PMC-5 Decision 2019

## Building the capacity of Pacific Island States to respond to Extreme, Weather, Water, and Ocean events

### The Meeting:

- **Noted** the importance of ensuring information to **support preparedness** and response to extreme weather events, water and ocean risks;
- **Noted** the need for **long-term strategic investment** in capability that supports critical gaps in preparedness and response at short time scales;
- **Agreed to commission** through SPREP, in cooperation with members, WMO and other CROP agency partners to undertake a study to scope a decadal Pacific regional extreme weather, water and ocean response program initiative; and
- **Agreed** to use the outcomes of the scoping study to inform deliberations at the next PMC Ministerial Meeting.

# Context



**Pacific Islands are highly vulnerable** to extreme weather, hydrological and ocean events

**Economic losses** from cyclones and flooding in the South Pacific region in 2020 were around \$1 billion with at least 71 lives lost. Annual average losses are around \$500M

**Climate change** will exacerbate extreme events

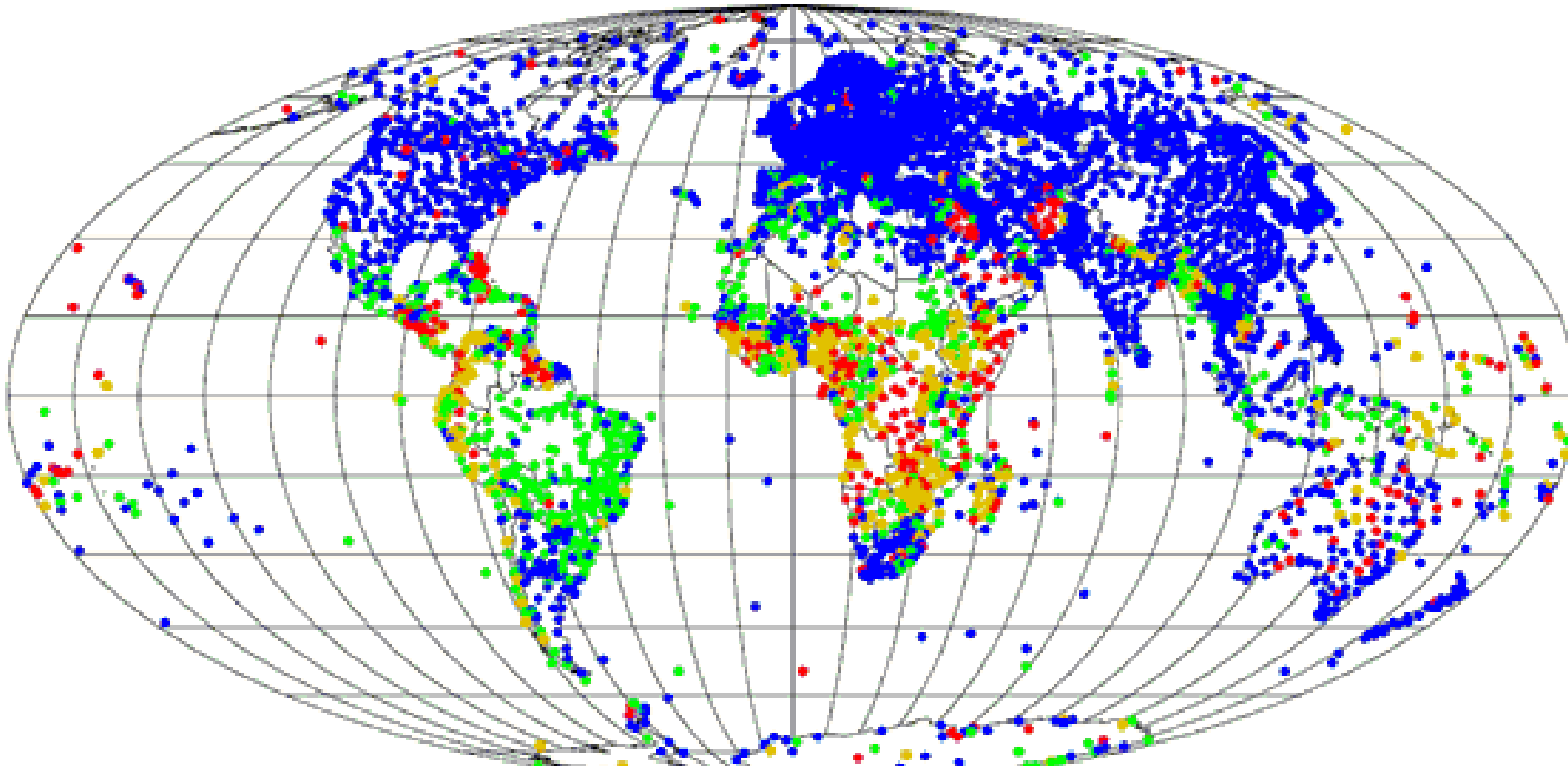
**Meteorological and Hydrological services in the region face some critical gaps** in governance, observation networks, forecasting, delivering impact-based messages to communities, capacity and training

**Long Term Coordination** -Many programs ongoing in the Pacific, especially in relation to climate (e.g. COSSPac, PREP, GCF, RESPAC), but a regional, long-term approach to building NMHS capacity in extreme events is needed.

**PMC Commissioned a scoping study** to scope a decadal Pacific regional extreme weather, water and ocean response program initiative



# Weather Observations Stations Around the World



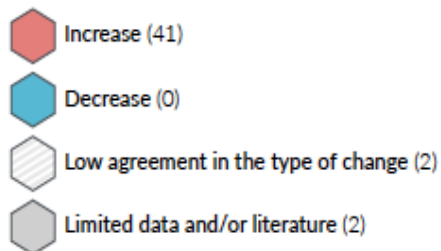
- Showing global weather stations reporting to the World Meteorological Organisation.
- In **blue** are stations for which 90% of reports are received, in **green** 45-90%, in **yellow** less than 45% and in **red** are silent stations.

Source:

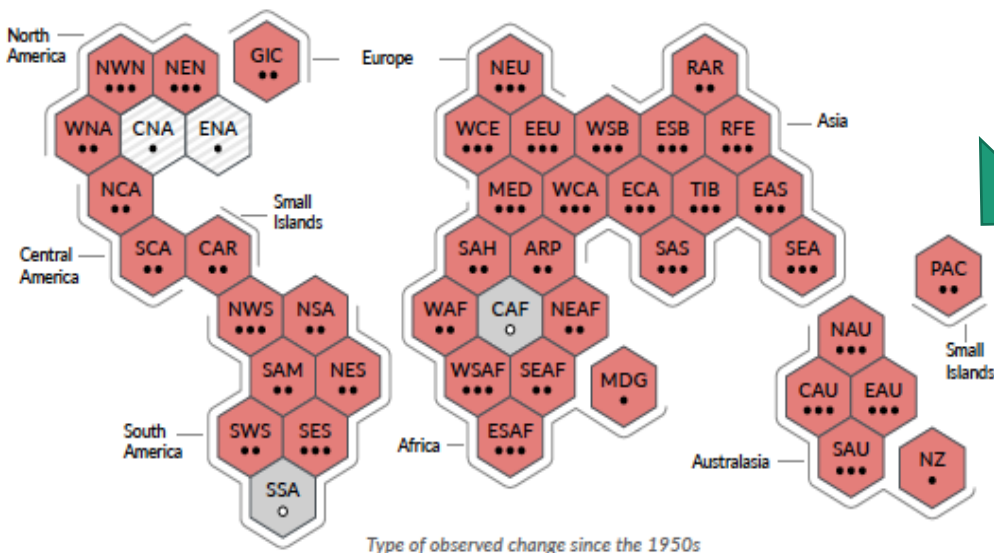
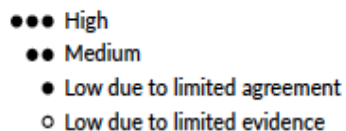
World Meteorological Organisation (WMO)

a) Synthesis of assessment of observed change in hot extremes and confidence in human contribution to the observed changes in the world's regions

Type of observed change in hot extremes



Confidence in human contribution to the observed change



WEATHER AND CLIMATE EXTREMES AUGUST 2021 1

# Weather and Climate Extremes

A Summary of key findings from the United Nations Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) on the Physical Science Basis

Pacific will face fewer but **more intense tropical cyclones**

The Pacific will face **INCREASED HEAT STRESS**

Less frequent in the western and eastern North Pacific

More frequent in the subtropical Central Pacific

with an increased number of days where combined heat and humidity are harmful to human health

**Extreme**

rainfall storm surges heat stress

will become **more frequent, more intense and more widespread**

**1 in 2 chance** of drought conditions increasing in the Pacific

Extreme rainfall events could intensify by about **7%** per degree of warming

**Sea level rise will lead to**

increased frequency and intensity of storm surge events

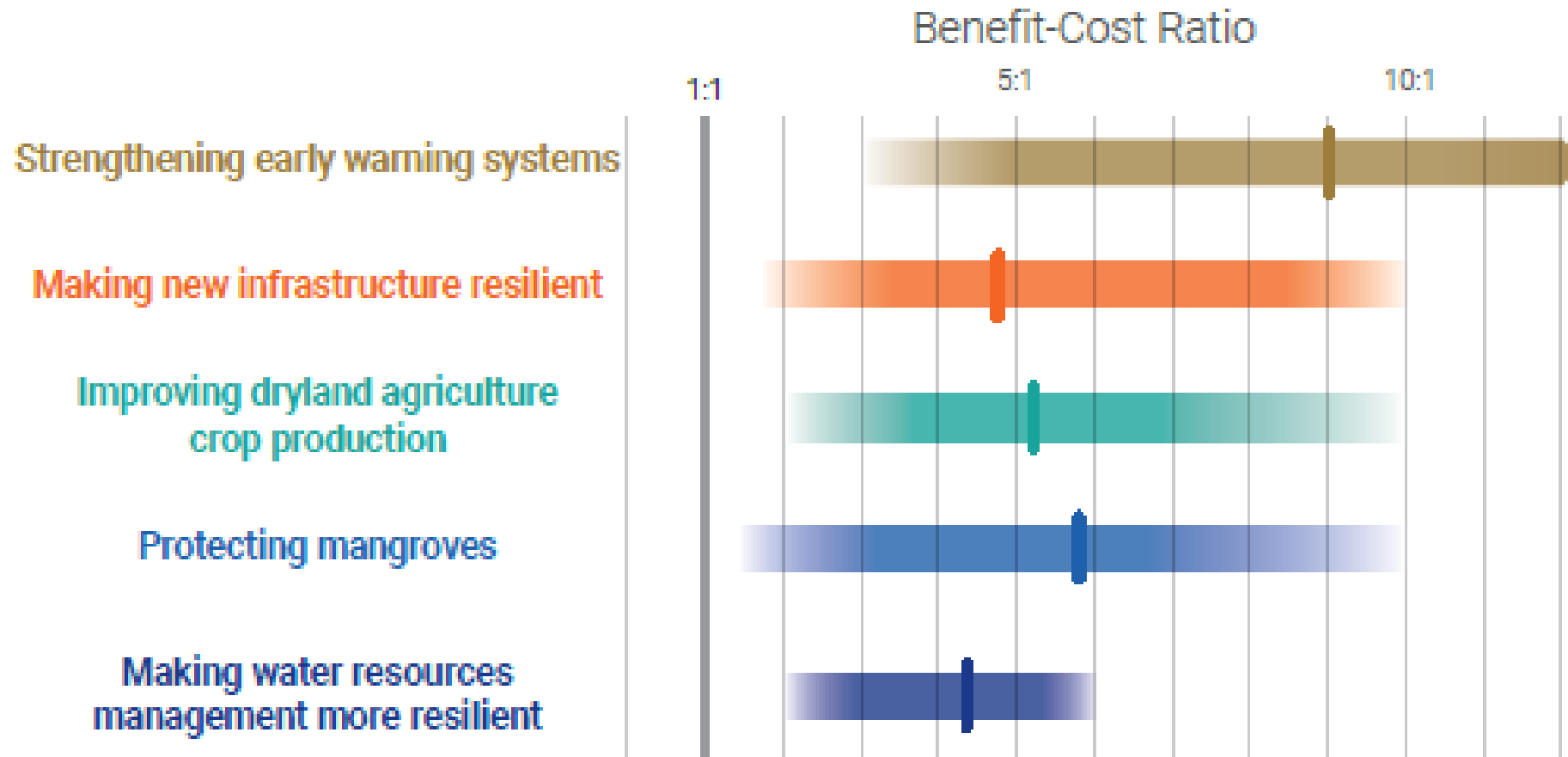
increased coastal inundation

ocean water intrusion into freshwater supplies

Temperature and rainfall are changing across the Pacific region, and extreme weather and climate events are getting worse due to human influence:

- **Warming** observed over the last decades will continue in the future, including more frequent **warm extremes** for the Western Pacific islands.
- **Rainfall** varies by region, with increases in some, decreases in other regions of the Pacific. **Heavy rainfall** and associated **flooding** events will become more intense and occur more often in the Pacific Islands.
- There have been more major **tropical cyclones** (Category 3-5) globally over the last four decades, which now can be linked to human influence. With more warming, more intense tropical cyclones (Category 4-5) will occur.

# Investing in meteorological, hydrological and ocean services pays off as a climate adaptation strategy





# Weather Ready Pacific

USD167Mill for 10 years

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sil



**Protecting communities:**  
Communities will be able to make decisions based on knowing more, earlier, about conditions in their particular location. They will understand what the weather will *do* rather than what the weather will *be*.



**Strengthening security:**  
Better access to reliable weather information will support the region's maritime surveillance and fisheries management initiatives, and enable better preparedness for events that could lead to political and/or social destabilisation – eg energy management, food and water security.



**Strengthening the region's resilience to the impacts of severe weather events – tropical cyclones, tsunamis, droughts, storm surges, flash floods.**



**Supporting economies:**  
improved forecasts and warnings will support timely and targeted preparedness measures, limiting the economic impact of severe weather events (securing infrastructure, relocating stock and supplies etc); for some countries, strengthened industry engagement will leverage enhanced productivity (agriculture, energy etc).



**Enhancing connectivity:**  
by strengthening the Pacific's integration into the global meteorological system, the region will be less vulnerable to peaks and troughs in resourcing and support, and have a stronger voice internationally.

# Summary Investment Priorities Areas

1

## Governance and leadership

- (a) Establish a Pacific Meteorological Leadership Program
- (b) Establish Management and Advisor Team for Program who sit with PMDP and help coordinate across many donor programs and with PMC and its Panels

2

## Infrastructure

Investment in observational infrastructure targeted to local needs:

- (a) Weather radars
- (b) Flood gauges
- (c) Upper air measurement
- (d) Ocean observations
- (e) Equipment long-term maintenance schedule
- (f) Investment and upgrade of ICT equipment, bandwidth and data

3

## Forecast and warning production

- (a) Investment in use of NWP and satellite products in a cascading forecast process
- (b) Strengthening RSMCs
- (c) Develop Pacific Weather Exchange
- (d) Investment in ensuring observations are delivered to GBON

4

## Communication and delivery

- (a) End-user workshops
- (b) Developing and communicating impact-based warnings
- (c) Enhanced NMHS/NDMO collaboration

5

## Capacity

- (a) RTC established for BIP-MT training program
- (b) Establish a hybrid BIP-M training program
- (c) Training for hydrologists & hydrographers
- (d) Professional development workshops
- (e) Twinning program to mentor NMHS staff

# Country Paper by the Government of Tonga to present the WRP on behalf of the PMC to the Pacific Leaders Forum: RECOMMENDATIONS

20. Tonga presented paper on strengthening disaster readiness to severe weather, water and ocean events across the Pacific.

## 21. Forum Foreign Ministers:

(i) **endorsed** the Weather Ready Pacific Decadal Programme of Investment, which seeks to reduce the human and economic cost of severe weather, water and ocean events across Pacific Island communities, by strengthening national meteorological and hydrological organisations and their partnerships with national disaster management organisations;

(ii) **recognised** that the Decadal Programme of Investment is a comprehensive approach and responds to the needs of the Pacific region;

(iii) **directed the Secretariat** to bring the Decadal Programme of Investment to the attention of Leaders for their endorsement, and for sharing with Forum Dialogue Partners; and

(iv) **requested SPREP** as the secretariat of PMC to continue to seek funding for the Weather Ready Pacific Decadal Programme of Investment, and report back to FOC on progress.

**On 6 August 2021**

**Leaders endorsed the Weather Ready Pacific Decadal Programme of Investment, which seeks to reduce the human and economic cost of severe weather, water and ocean events across Pacific Island communities, by strengthening national meteorological and hydrological organisations and their partnerships with national disaster management organisations.**



Tonga's Chief Secretary and Secretary to Cabinet presenting the WRP to the FFMM, 27 July 2021



Tonga Head of Delegation presenting the WRP to the Pre-Forum Meeting 23 July 2021



SPREP participating at the Forum Foreign Ministers Meeting



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SIXTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-6) THIRD PACIFIC MINISTERIAL MEETING ON METEOROLOGY (PMMM-3)

Sustainable, transformative and resilient for a **Blue Pacific**

# Weather Ready Pacific in global and regional forums

- SPREP and all members of the Council supported to raise awareness on the initiative
- Presented at numerous forums including the;
  - SPREP Meeting in 2020, 2021 and 2022,
  - Project meetings
  - UNFCCC COP 26 and 27,
  - UN Ocean Conference,
  - Inaugural Pacific Ministerial for Disaster Risk Reduction,
  - Asia Pacific Ministerial Conference on DRR
- Discussed with Development Partners and Donors (Australian DFAT, New Zealand MFAT, UK, Irish, other Development Partners, Multilateral Donors and UN Agencies)
- Featured in numerous News articles

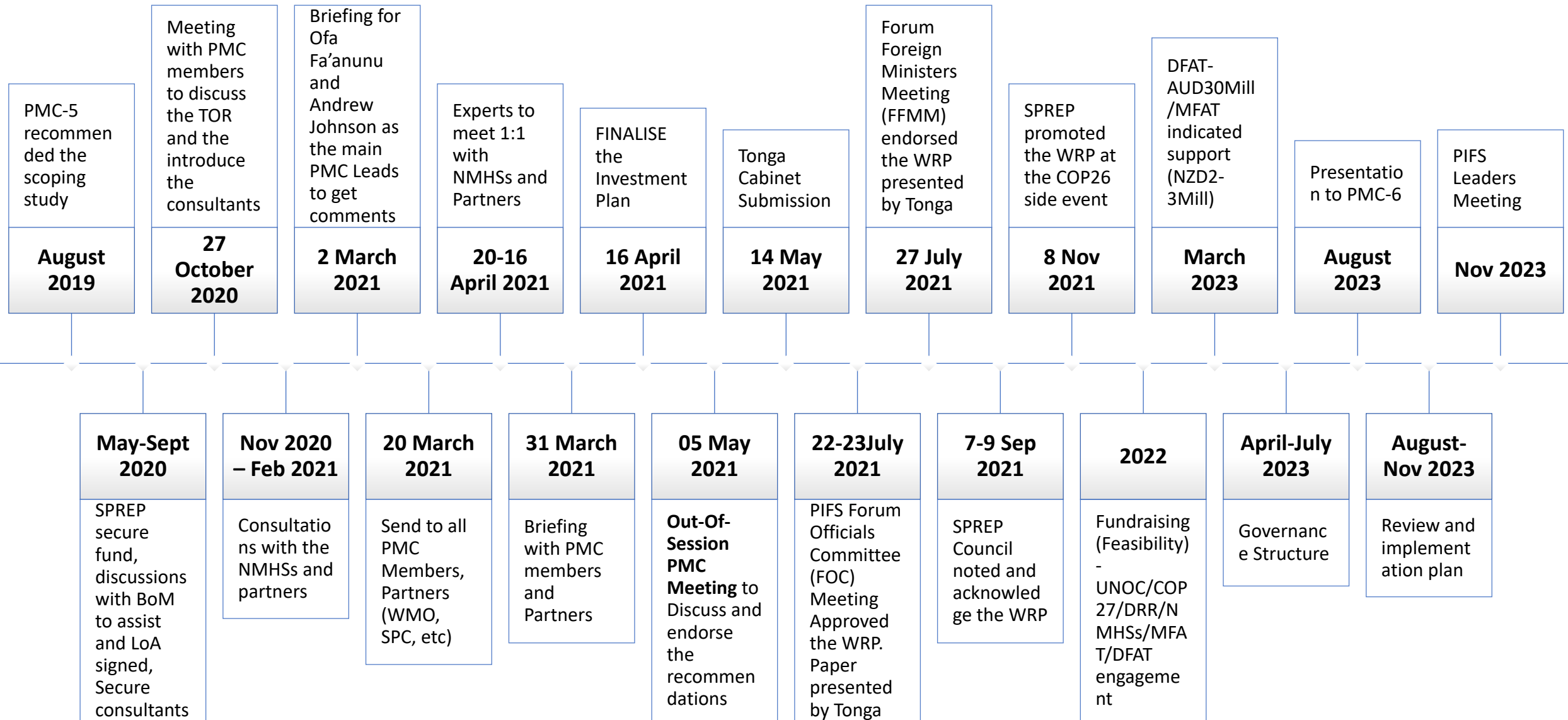
Our ocean is central to our Pacific lives.

When our ocean is out of balance, our lives become out of balance.

#PacificWeatherReady



# Approach and Progress





# A Pacific-led initiative

- WRP is **the** Vehicle to deliver **people-centered** end-to-end multi-hazard early warning systems for all Pacific island countries and territories
- Initial investment by Australia for AUD30 million and support from New Zealand
- The Governance Structure was presented at the PMC-6. Some work need to be done to finalise the structure
- Review the WRP and development of an implementation plan now underway





**PROE**  
Programme régional océanien  
de l'environnement

# Development Partners and Donors Engagement Meeting

**Multi-Lateral** (GCF, World Bank) **Donor Countries** (Australian DFAT, EU, New Zealand MFAT, USAID, JICA) **UN Organisations** (WMO, UNEP, UNDRR, UNOCHA, UNICEF, UNESCO, ICAO), **CROP** (SPREP, SPC, PIFS, PDF, PASO, USP), **Technical Orgs** (BOM, NOAA, CSIRO, APCC, NIWA, MetService, UKMO, KMI, UH) **Private Sector** (Varysian, Vaisala, Tomorrow.io, Weatherzone, OTT, NetVault, )

- a. Establishment of the Pacific Partnership Coordination Mechanism (PPCM) and this was also endorsed by the PMMM-3
- b. Launched the PPCM Dashboard for coordinating existing projects (Link)
- c. The discussion on opportunities by the Development Partners





## 3<sup>rd</sup> Pacific Ministerial Meeting on Meteorology (PMMM-3)

1. The 3<sup>rd</sup> Pacific Ministerial Meeting on Meteorology (PMMM-3) was held on the 18<sup>th</sup> August.
2. Government of Fiji through the Tui-Nadi gave a full Traditional Welcome Ceremony
3. Attended by 120 participants (10 Ministers, 3 Ambassadors, 5 Senior Government Officials, PIFS, SPC, SPREP, NMHSs)
4. The main outcome of the PMMM-3 is outlined in the **Namaka Ministerial Declaration for a Sustainable Weather, Climate, Ocean and Water Services for a Resilient Blue Pacific** . The Namaka Ministerial Declaration elevated some of the key recommendations of the PMC-6





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[HTTPS://WWW.PACIFICMET.NET/PMC-6-2023](https://www.pacificmet.net/PMC-6-2023)

## The PMC-6 Meeting in Nadi:

- **Noted** the significant progress made on the Weather Ready Pacific to date and encouraged members to continue working towards program implementation.
- **Acknowledged** the Government of Tonga for presenting the Weather Ready Pacific to the Leaders meeting in 2021.
- **Acknowledged** the effort and support of SPREP, Government of Australia including the Australian Bureau of Meteorology, Government of Tonga including the Tonga Meteorological Service, the Government of New Zealand, World Meteorological Organisation and Members of the Council for progressing the work of the Weather Ready Pacific Initiative.



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## The PMC-6 Meeting in Nadi:

- **Acknowledged** with appreciation the Government of Australia for providing the initial funding support of AUD30 million and invite development partners and donors to invest in this decadal programme.
- **Recognised** that the Infrastructure investment under the Weather Ready Pacific is the most critical infrastructure for addressing the climate emergency in the Pacific.
- **Recommended** for the Weather Ready Pacific to be established as a programme to coordinate the wider implementation of people-centred end-to-end multi-hazard early warning systems for all Pacific island countries and territories.



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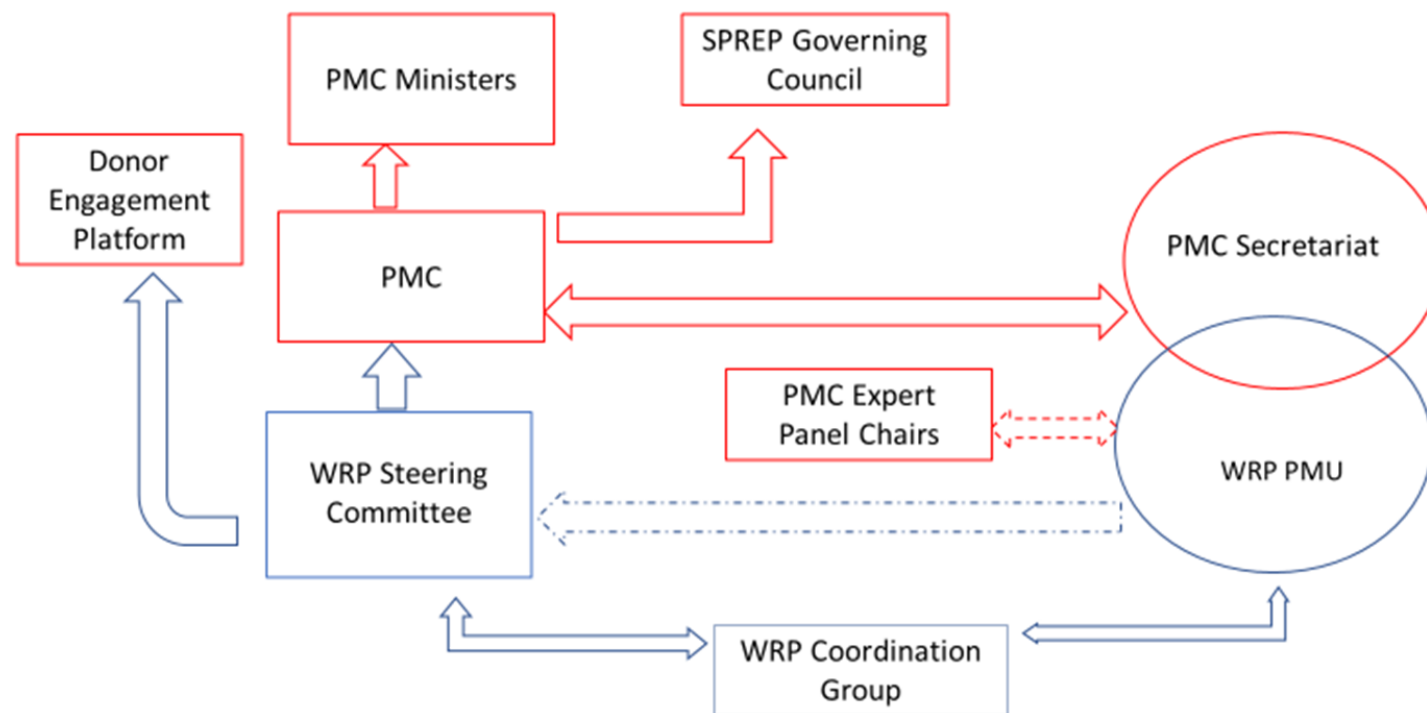
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# Ways forward

- **Agreed** to the Variation Option for Governance and requested SPREP to engage with donors and development partners to develop the mechanism to operationalise for pre-approval out of session by the PMC by the end of September, 2023.
- **Acknowledged** Australia and New Zealand's offer of support to assist SPREP to enable the way forward.





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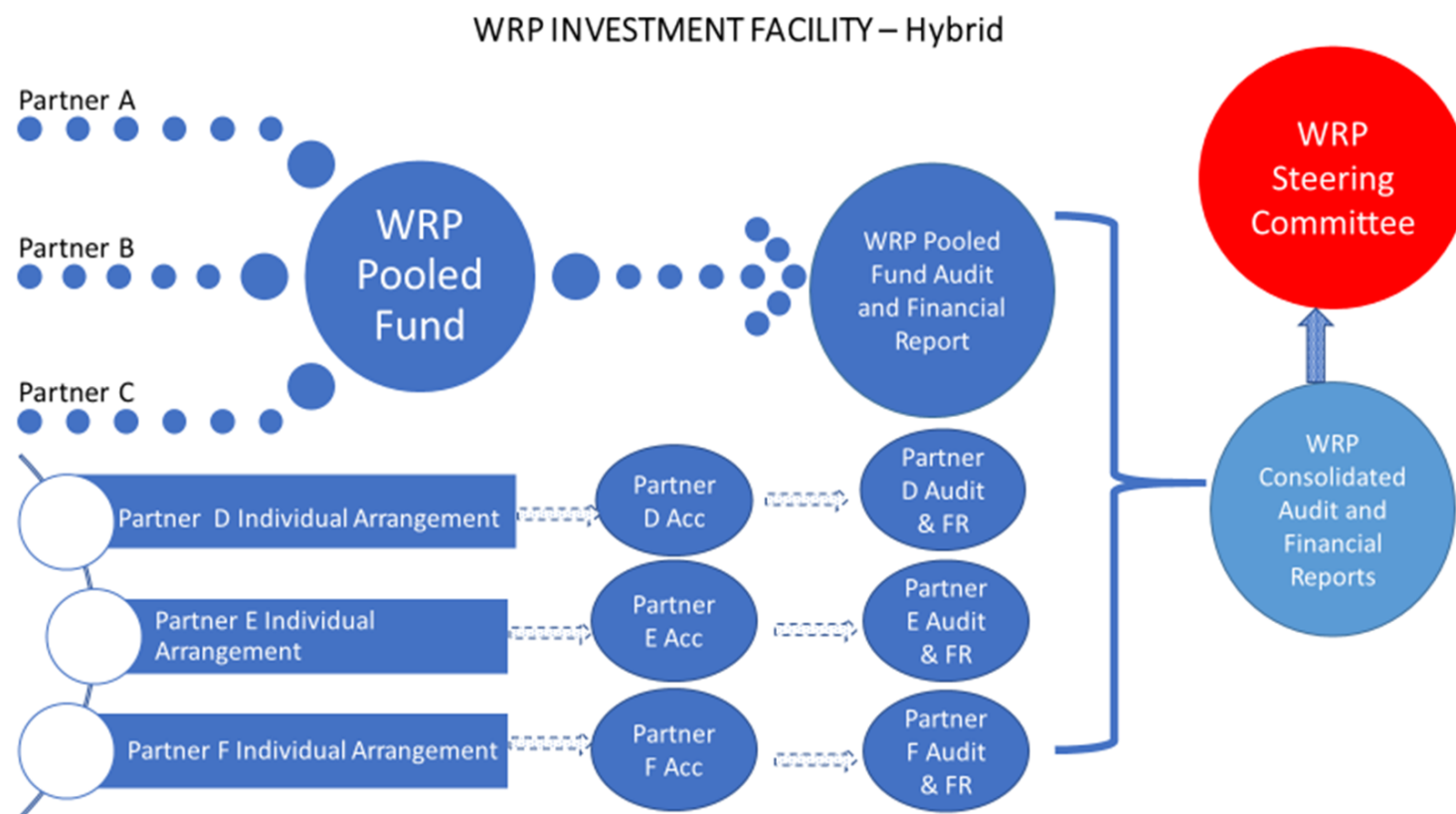
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# Ways forward

➤ **Agreed** to the Hybrid Investment Facility and request SPREP to engage with donors and development partners to develop the mechanism to operationalise for PMC approval out of session by end of September, 2023.





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## Ways forward

- **Requested** the SPREP to engage with donors and development partners to] develop the implementation plan that will outline the next steps to bring Weather Ready Pacific to fruition for approval by the PMC out of session by the end of October, 2023.
- **Agreed** that implementation to start with the key priority outcomes from the PMC Panels and urgent needs within the PIMS Framework.