ANNEX 1

Weather Ready Pacific and the Early Warnings for All Initiative: Options and Recommendations for Alignment

Background Paper for the Weather Ready Pacific Steering Committee

15 May 2025

List of Acronyms

Acronym	Description
CAP	Common Alerting Protocol
ICT	Information and Communications Technology
IFRC	International Federation of Red Cross and Red Crescent
IHO	International Hydrographic Association
IMO	International Maritime Organisation
IOM	International Organisation for Migration
JMA	Japan Meteorological Agency
LDC	Least Developing Countries
MetService	Meteorological Service of New Zealand
MFAT	Ministry of Foreign Affairs and Trade New Zealand
MHEWS	Multi-Hazard Early Warning System
NDC	Nationally Determined Contributions
NDMO	National Disaster Management Office
NGO	Non-Governmental Organisation
PICI	Pacific Island Communications and Infrastructure
PICS	Pacific Islands Climate Services
PIETR	Pacific Island Education, Training and Research
PIF	Pacific Island Forum
PIFS	Pacific Island Forum Secretariat
PIMOS	Pacific Island Marine and Oceans Services
PIMS	Pacific Islands Meteorological Strategy
PMC	Pacific Meteorological Council
PMLP	Pacific Meteorological Leadership Program
PNG	Papua New Guinea
PMDP	Pacific Meteorology Desk Partnership
PRP	Pacific Resilience Program
SOFF	Systematic Observations Financing Facility
SPC	Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
TMS	Tonga Meteorological Services
UKMO	United Kingdom Meteorological Office
UN RESPAC	United Nations Disaster Resilience for Pacific SIDS
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USP	University of the South Pacific
VMS	Vanuatu Meteorological Service
WFP	World Food Programme
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System

1.0 Introduction

Launched in 2022, the United Nations Early Warnings for All (EW4All) initiative aims to ensure that everyone, everywhere, is protected by life-saving early warning systems by 2027. The EW4All Initiative has 4 Pillars:

- Pillar 1: Disaster Risk Knowledge
- Pillar 2: Detection, Monitoring, Analysis, and Forecasting
- Pillar 3: Warning Dissemination, and Communication
- Pillar 4: Preparedness and Response Capabilities

In the Pacific, a key regional delivery vehicle for EW4All is the Weather Ready Pacific (WRP) program, as endorsed by the Third Pacific Ministerial Meeting on Meteorology (PMMM-3) in August 2023.[1]

Developed collaboratively by National Meteorological and Hydrological Services, WRP supports the delivery of weather, climate, water and ocean services for the benefit of peoples and communities in the Pacific.[2] The Implementation Plan for WRP has 5 Key Result Areas (KRAs):

- KRA 1: Management and Coordination
- KRA 2: Production of Forecasts and Warnings
- KRA 3: Communication and Delivery of Forecasts and Warnings to End-users
- KRA 4: Infrastructure
- KRA 5: Capacity and Training

In 2023, the Sixth Pacific Meteorological Council (PMC-6) recommended that the WRP Implementation Plan consider activities to support and improve capacities across all four Pillars of the EW4ALL Initiative.[3] The recommendation to align the WRP Program and the EW4ALL Initiative forms part of regional efforts to coordinate Multi-Hazard Early Warning Systems (MHEWS).

This report considers governance and institutional arrangements for the WRP Program to align with the EW4All Initiative. The recommendations include:

- Governance frameworks for WRP,
- Institutional mechanisms for WRP to coordinate with MHEWS stakeholders,
- Implementation planning for WRP (including its Key Result Areas), and

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[1] Third Pacific Ministerial Meeting on Meteorology (PMMM-3), see https://www.pacificmet.net/sites/default/files/inline-files/documents/PMMM-3-v2.pdf

[2] WRP was endorsed by Pacific Islands Leaders in 2021, and subsequently endorsed as one of only two *Pacific Partnerships for Prosperity* initiatives at the 52nd Pacific Islands Forum

[3] Sixth Pacific Meteorological Council (PMC-6) Meeting, https://www.pacificmet.net/sites/default/files/inline-files/documents/PMC-6%20ConceptPaper_05August2023.pdf.

- Hazards covered by WRP (as part of a multi-hazard approach).

1.1 Scope of Work

The report sets out options for aligning the WRP program with the EW4ALL Initiative. While the report considers arrangements for WRP to coordinate with partners and stakeholders, it does not provide governance or institutional recommendations for other EW4ALL actors in the Pacific. The focus is WRP rather than EW4ALL itself.

1.2 Structure and Approach

The report is structured as follows.

- Part 2 identifies key features of EW4ALL that affect WRP.
- Part 3 provides an overview of WRP – with a focus on governance arrangements.
- Part 4 considers governance changes for WRP align with EW4ALL (including Terms of Reference).
- Part 5 considers institutional frameworks for WRP to coordinate with other EW4ALL actors.
- Part 6 considers implementation plans for WRP – including whether to add or revise KRA under the current Implementation Plan.
- Part 7 considers hazards covered by WRP as part of alignment with EW4ALL.

1.3 Methodology

The report is based on a desk review of key WRP, EW4All, and MHEWS documentation.[4] The review includes national gap assessments for EW4All in the Pacific as well as regional programs in Africa and the Caribbean.[5] Preliminary report findings were presented at a regional MHEWS implementing partners coordination meeting in April 2025. Meeting participants included representatives from SPREP, SPC, UNDRR, WMO, BOM, IFRC, UNESCO IOC, IOM, PDF, and FBS.[6]

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[4] The materials covered are set out in the Bibliography and include assessment checklists, action/implementation plans, monitoring & evaluation (M&E) frameworks, national implementation roadmaps, and relevant Terms of Reference.

[5] Africa: *Africa Multi-Hazard Early Warning and Early Action System (AMHEWAS),* see https://www.unep.org/regions/africa/amhewass

Caribbean: *Caribbean Early Warning Systems Consortium (CEWSC)*, see https://cdema.org

[6] The meeting was convened in response to a request from the Seventh Pacific Meteorological Council (PMC-7.

2.0 The EW4ALL Initiative

This Part identifies key features of EW4ALL that affect WRP. It is not a comprehensive account, but rather focuses on three key issues: (1) governance, (2) funding, and (3) regional programming.

2.1 EW4ALL Governance

EW4ALL is a UN initiative launched by the UN Secretary-General in 2022 at COP27. The Initiative is built on four Pillars, each with its own lead. The global Pillar leads of EW4ALL are respectively UNDRR, WMO, ITU, and IFRC. International support partners include UNESCO, UNDP, UNEP, OCHA, FAO, WFP, REAP, and GCF.[7]

The EW4ALL Inter-Pillar Technical Coordination Group is made up of Pillar lead representatives. There is also a EW4ALL High-Level Advisory Panel that reports to the UN Secretary-General and provides strategic direction and advice for implementation of EW4ALL. The Advisory Panel includes Pillar lead representatives as well as technical experts, civil society, and officials from climate-vulnerable nations.[8]

2.2 EW4ALL Funding

EW4ALL does not act as a global financing facility. The core funding strategy is to leverage existing climate and disaster financing mechanisms. Key global financing mechanisms tailored toEW4ALL include:

- The Climate Risk and Early Warning System (CREWS) Initiative. CREWS is a multi-donor trust fund managed by France, Australia, Germany, Luxembourg, the Netherlands, Switzerland UK, and Canada. CREWS has adopted EW4ALL goals and supports a EW4ALL Accelerator project for LDCs and SIDS (including Kiribati, Solomon Islands and Tonga).
- The Systematic Observations Financing Facility (SOFF). SOFF is a multi-donor trust fund co-created by WMO, UNDP and UNEP. Focusing on Pillar 2, the Facility provides grants to improve weather and climate observation network in developing countries. SOFF has agreed a collaborative framework with the Adaptation Fund, GCF, GEF, and CREWS.

Both CREWS and SOFF provide pooled finance facilities that leverage donor contributions and allocate grants, typically through implementing agencies such as WMO, UNDRR, ADB, and the World Bank. Implementing agencies may co-

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[7] See further https://www.undrr.org/early-warnings-for-all
[8] EW4ALL Advisory Panel: https://www.un.org/en/climatechange/earlywarningsforall-advisory-panel

contribute through integration of EW4ALL goals into lending and grant portfolios.[9]

2.3 Regional EW4ALL Programming

Although national implementation is at the heart of EW4ALL, EW4ALL has adopted regional coordination mechanisms to support national programming. These regional mechanisms include:

- Regional Multi-Stakeholder Forums. Regional EW4ALL Multi-Stakeholder Forums have been held for the Asia-Pacific, Africa, Europe & Central Asia, and Latin America and the Caribbean. Support for the regional forums has been provided by regional offices of UN agencies, including UNDRR.[10]
- Regional MHEWS/EW4ALL Coordination Mechanisms. Regional MHEWS/EW4ALL coordination mechanism have been established in Africa (the EW4ALL Steering Committee for Africa) and the Caribbean (the Regional Early Warning Systems Consortium for the Caribbean).[11]

The focus on financing national implementation does not prevent regional platforms attracting bilateral funding and developing pooled finance facilities (as in the case of WRP). However, it does mean that governance and institutional arrangements for regional mechanisms should have a clear focus on (1) the added value of regional programming, and (2) the availability of support from financing facilities.

3.0 Weather Ready Pacific

In 2021, Pacific Leaders endorsed the Weather Ready Pacific (WRP) Decadal Program of Investment. The WRP Program aims to reduce the human and economic costs 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.

Pacific Island Forum Leaders endorsed a governance framework and implementation plan for WRP in November 2023.[12] The endorsed governance

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[9] An example is World Bank support for the Hydromet program: https://www.gfdrr.org/en/hydromet-services-and-early-warning-systems

[10] EW4ALL Multi Stakeholder Forum: https://globalplatform.undrr.org/2025/preparatory-days/global-ew4all-multi-stakeholder-forum

[11] Africa Action Plan EW4ALL: https://wmo.int/news/media-centre/early-warnings-all-action-plan-africa-launched ; Regional Early Warning Systems (EWS) Consortium Meeting: https://www.undrr.org/event/regional-early-warning-systems-ews-consortium-meeting#:~:text=The%20role%20of%20the%20Regional,realities%20of%20a%20changing%20climate.

[12] 52nd Pacific Forum Island leaders meeting, see https://forumsec.org/publications/factsheet-52nd-pacific-islands-forum-leaders-meeting

framework includes a Steering Committee, a Liaison Platform, and a Project Management Unit. Subsequent revisions to the WRP Implementation Plan have proposed a Donor Committee and a Technical Committee.

3.1 WRP and SPREP

Administratively, WRP is situated in the Regional Hub for Meteorological Services in the Pacific (also known as the Pacific Meteorological Desk) at SPREP. Established in 2011, the Regional Hub includes the Pacific Meteorological Council (PMC) and the Pacific Meteorological Desk Partnership (PMDP), both of which work under the guidance of the SPREP Director of Climate Change and Resilience.[13]

The following Figure locates WRP in PMC and PMDP structures at SPREP.

Figure 1: WRP Governance Arrangements
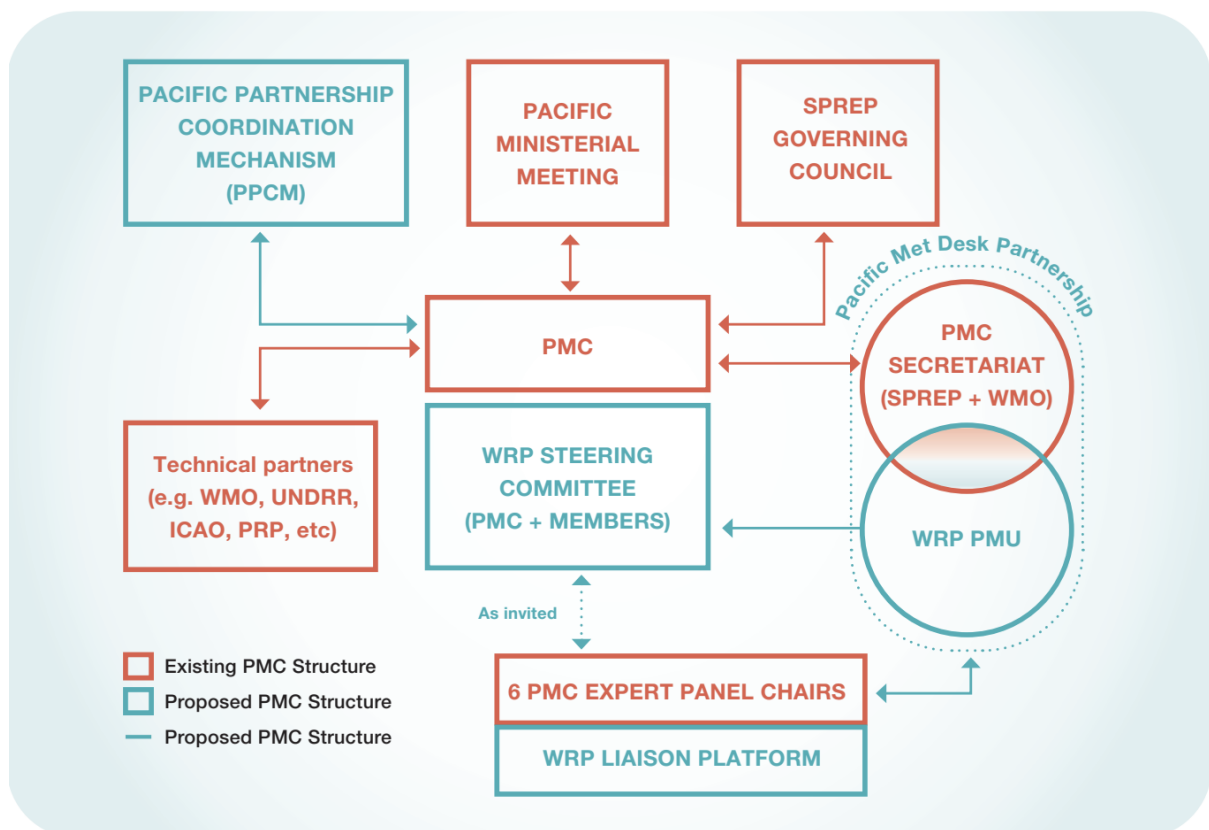
The WRP Steering Committee reports to the PMC, which reports to the Pacific Ministers Meeting on Meteorology (PMMM). The WRP Program Management Unit works closely with the PMC Secretariat. WRP also collaborates with expert panels established by the Pacific Meteorological Desk, including the:

1. Marine and Ocean Services (PIMOS) Panel

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[13]SPREP Weather Ready Pacific program, see https://www.sprep.org/news/weather-ready-pacific-a-pacific-led-solution-for-pacific-islands-resilience-designed-by-us-for-us

2. Climate Services (PICS) Panel

3. Education, Training and Research (PIETR) Panel

4. Aviation Weather Services (PIAWS) Panel

5. Communications and Infrastructure (PICI) Panel.

6. Pacific Hydrology Services (PHS) Panel

WRP partner institutions include the US NOAA, Australian Bureau of Meteorology, New Zealand MetService, NIWA, JMA, JICA, Meteo-France, APCC, KMA, and FMI.

3.2 The PMC

The PMC coordinates scientific and technical aspects of the Regional Hub for Meteorological Services. The PMC is made up of the Directors/Heads of NMHS IN SPREP Members. The Members of SPREP are defined as:

> the Parties to the Agreement establishing SPREP and, with the appropriate authorisation of the Party having responsibility for its international affairs, each of the following: American Samoa, Northern Mariana Islands French Polynesia, Tokelau, Guam, Wallis and Futuna, and New Caledonia.[14]

The responsibilities of the PMC include

- Developing strategies with associated goals and targets to support the advancement of meteorological and related services in the Pacific, in collaboration with WMO and relevant partner organizations; and
- Providing guidance to Members and the SPREP Secretariat and partner organizations with respect to programmes related to weather, climate and associated environmental matters in the Pacific.

It is notable, however, that the PMC Terms of Reference do not refer to oversight of programs such as WRP. Although this report is limited to governance recommendations for WRP (broadly defined to include institutional coordination and implementation), it is desirable that WRP oversight responsibilities be included in the PMC Terms of Reference. These oversight responsibilities could include:

- Powers to initiate and approve strategic reviews of WRP.
- Powers to appoint Steering Committee members (including provision for termination of membership).
- Responsibility to approve annual reports of WRP (including where necessary throughout-of-session meetings).

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[14] SPREP, Rules of Procedure of SPREP Meeting, 1995, https://www.sprep.org/attachments/Legal/RULESofProcedureoftheSPREPMeeting.pdf

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- Responsibility to approve WRP Investment Plans.
- Responsibility to approve on request from the WRP Steering Committee WRP activities outside the scope of the approved Implementation Plan or Investment Plan.

These oversight powers and responsibilities should be included (and expanded on) in a Delegations Policy for WRP.

3.3 WRP and EW4ALL

The Introduction noted that the Third Pacific Ministerial Meeting on Meteorology (PMMM-3) acknowledged WRP as the regional delivery vehicle for EW4All in August 2023. The Sixth Pacific Meteorological Council (PMC-6) also recommended that the WRP Implementation Plan consider activities to support and improve capacities across all four Pillars of the EW4ALL Initiative.[15]

These recommendations to align WRP with EW4ALL need to be understood as part of regional efforts to coordinate MHEWS in the Pacific.[16] For example:

- A Joint Pacific Meteorological Council and National Disasters Managers meeting in 2023 recommended that SPREP and SPC facilitate the establishment of a structured mechanism to foster collaboration between providers and users of early warning information in the Pacific.[17]
- A Pacific Disaster Risk Management Ministers Meeting in 2024 identified enhanced collaboration and coordination between meteorological services and disaster risk management as a regional MHEWS priority.[18]
- The Seventh Meeting of the PMC in 2024 recommended that WRP convene a meeting with SPC, UNDRR, WMO, IFRC, ITU and other relevant EW4All partners on how the region can better coordinate work around MHEWS.[19]

It is clear that EW4ALL requires a people-centred, multi-hazard approach that entails enhanced coordination with MHEWS actors in the Pacific. The following Parts provide options and recommendations for WRP to align with EW4ALL. The topics covered are:

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[15] Third Pacific Ministerial Meeting on Meteorology (PMMM-3), see https://www.pacificmet.net/sites/default/files/inline-files/documents/PMMM-3-v2.pdf

[16] Sixth Pacific Meteorological Council (PMC-6) Meeting, https://www.pacificmet.net/sites/default/files/inline-files/documents/PMC-6%20ConceptPaper_05August2023.pdf.

[17] The meeting recommended that SPREP and SPC work with WMO, UNDRR, the PDF and other regional actors to establish the collaborative EWS mechanism.

[18] See https://gem.spc.int/meetings/1st-intersessional-meeting-of-the-pacific-disaster-risk-management-ministers-13-14-october

[19] See https://www.pacificclimatechange.net/event/7th-meeting-pacific-meteorological-council-pmc-7#:~:text=The%20Government%20of%20Vanuatu%2C%20in,Le%20Lagon%2DVanuatu%20Resort%20in

- <u>Governance arrangements</u> for WRP – including recommendations for revised WRP Committee Terms of Reference.

- <u>Institutional relationships</u> for WRP – including liaison with key MHEWS partners such as the Pacific Resilience Partnership.

- <u>Implementation Plans</u> for WRP – including recommendations for revised Key Result Areas in the WRP Implementation Plan.

- <u>Hazards covered by WRP</u> – including whether WRP should include geo-hazards as part of a multi-hazards approach<u>.</u>

4.0 Governance Arrangements for WRP

The First Meeting of the WRP Steering Committee endorsed a request for the Second Meeting to consider amendments to the WRP Governance Structure for improved efficiencies and improving regional coordination on Multi-Hazard Early Warning Systems and EW4ALL.

This Part considers options for WRP governance arrangements to align with EW4ALL. The discussion focuses on Terms of Reference for the WRP Steering Committee, Project Management Unit, Donor Committee, and Technical Working Group. Issues canvassed include membership, responsibilities, and decision processes.

The status and role of a WRP Liaison Platform is considered in Part 5 below (Institutional Coordination).

4.1 The WRP Steering Committee

4.1.1 Membership of the Steering Committee

Currently, WRP Steering Committee membership consists of:

- All members of the PMC.
- The Regional Disaster Managers Meeting Chair and a second representative.
- Development Partners and Donors representatives.
- The WRP Program Manager.

As noted, the members of PMC are the Directors/Heads of Meteorological Services of SPREP Members.

There are two key governance questions relating to WRP Steering Committee membership:

- Should Steering Committee membership be expanded to include further MHEWS representation?

- Should Steering Committee membership be streamlined to enhance efficiency and efficacy (including potentially providing scope for future representation of MHEWS actors)?

This report makes the following findings for consideration by the WRP Steering Committee (noting that any changes to the Steering Committee membership require approval by the PMC).

<u>MHEWS Representation</u>

- The current WRP Steering Committee is too large to support greater representation of MHEWS actors in Steering Committee membership.
- The range of MHEWS actors potentially requiring representation is considerable and could include (1) National Disaster Management Offices (NDMO), (2) geo-technical, land administration and spatial data agencies, and (3) gender, disability, and social welfare agencies.
- Enhanced engagement by WRP with MHEWS stakeholders may take place through (1) the Technical Committee, and (2) WRP representation in MHEWS coordination bodies – including the proposed PRP MHEWS Technical Working Group (see Part 4.2 below).

<u>Streamlining Membership</u>

- There is unwarranted duplication of PMC and WRP Steering Committee membership. The WRP Steering Committee reports to the PMC. Yet, all members of PMC also sit on the Steering Committee.
- WRP Steering Committee membership may be streamlined through revolving NMHSO representation based either on ((1) appointment by the PMC or (2) sub-regional representation through the PMC.

Briefly stated, the options for revolving NMHSO representation on the Steering Committee numbers are:

- Appointment of NMHSO representatives. The PMC would appoint 5 NMHSO representatives to serve two-year terms.
- Sub-regional NMHSO representation. The Heads of SPREP member NMHSO would meet according to sub-regional groupings – Melanesia, Micronesia, and Polynesia – to appoint a Steering Committee representative for a 2-year term.

If revolving NMHSO representation were adopted, the Steering Committee Terms of Reference would require amendment in relation to (1) appointment procedures, (2) member duties (including conflicts of interest), (3) termination of membership, and (4) reporting obligations to the PMC. The PMC Terms of Reference should also be revised to strengthen the supervisory functions of the PMC in relation to the Steering Committee.

Note also that the reference to 'revolving' NMHSO representation does not preclude the extension of a 2-year term of membership on the Steering Committee through decision by the PMC.

The report recommends that:

- Membership of the WRP Steering Committee not be expanded to include greater representation of MHEWS actors.
- The WRP PMU to prepare an options paper on streamlining Steering Committee membership. The options paper may include, but is not limited to, (1) appointment of representative members by the PMC or (2) sub-regional representation through the PMC.
- If the Steering Committee were to endorse an option for streamlining Steering Committee membership, authorise the PMU to develop amendments to the Terms of Reference for out-of-session approval by the PMU.
- The Steering Committee approve an amendment to its Terms of Reference in order to clarify that the power to determine composition of the Steering Committee is held solely by the PMC.

4.2.2 Quorum for Steering Committee

The current Steering Committee Terms of Reference require a minimum of two-thirds of members for decision-making purposes. Experience suggests that this quorum rule may inhibit efficient decision-making, particularly given the current large numbers of Steering Committee membership.

This report proposes reducing the quorum for meetings from two-thirds of members to one-third of members, as follows.

A minimum of one-third of committee members is required for decision-making purposes.

Alternatively, the new quorum may be defined as a minimum of five members (including two members of the PMC).

The proposed quorum rule may need to be revisited if Steering Committee membership is streamlined by decision of the PMC in accordance with the process set out in 4.2.1 above.

4.2.3 Responsibilities of the Steering Committee

The Terms of Reference for the Steering Committee identify its purpose in the following terms:

The Steering Committee provides guidance, oversight, and strategic direction to ensure the successful implementation and achievement of program objectives and add value to the work of the key beneficiaries (i.e. NMHSs).

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The responsibilities of the Steering Committee as set out in the Terms of Reference include strategic oversight, program review, resource mobilisation, risk management, and reporting to the PMC. The responsibility to report to the PMC is stated as 'providing regular reports to the PMC and [on] issues that require decision and direction'.

This report recommends amendments to the Steering Committee Terms of Reference to clarify that the Steering Committee has power to approve annual work plans and budgets for WRP.

In the longer run, there is a need to clarify the respective roles and functions of the PMC and WRP Steering Committee as supervisory institutions for WRP. These roles and functions may differ according to whether the Steering Committee approves revolving NMHSO representation on the Steering Committee. In other words:

- If there is revolving NMHSO representation on the Steering Committee, the Terms of Reference should be amended to (1) clarify reporting obligations to the PMC, and (2) strengthen the supervisory functions of the PMC.
- If current membership of the Steering Committee is retained, the PMC should consider whether there is any need for (1) the Steering Committee to report to the PMC, or (2) the PMC to act as a supervisory institution for the Steering Committee. If the Steering Committee did not report to the PMC (because their membership is substantially the same), the Steering Committee could report directly to the Pacific Ministerial Meeting and/or the SPREP Governing Council.

4.3 Project Management Unit

The PMU is the secretariat to the Steering Committee, and provides coordination as well as day to day management of WRP activities. The PMU works closely with the PMC Secretariat. This report does not recommend changes to the responsibilities of the PMU as approved by the Steering Committee in 2023. It does, however, recommend that the Steering Committee endorse preparation of a Delegations Policy that would include functions of the PMU.

4.4 Technical Committee

The proposed Technical Committee provides (1) a forum for technical advice to the WRP program, and (2) a mechanism for WRP to engage with MHEWS technical experts outside of WRP. The materials accompanying SC2 Agenda Item 9.1 include Technical Committee Terms of Reference for endorsement by the Steering Committee.

The proposed Terms of Reference identify the primary role of the Technical Committee as providing advice and recommendations to the Steering

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Committee on technical aspects of the WRP program. Although the Technical Committee may recommend decisions for endorsement by the Steering Committee (e.g. as to measurements or specifications), the Terms of Reference do not (1) establish the Technical Committee as a decision-making body, or (2) vest coordination responsibilities in the Technical Committee.

The Steering Committee may delegate technical decision-making powers to the Technical Committee pursuant to an approved Delegations Policy.

4.5 Donor Committee

The proposed Donor Committee provides a forum for donors to the WRP program The materials accompanying SC2 Agenda Item 9.1 include Donor Committee Terms of Reference for endorsement by the Steering Committee.

5.0 Institutional Coordination

Part 2 identified institutional coordination as a central challenge for WRP to act as an implementing agency for EW4All. Coordination is required due to the number and range of MHEWS actors across the four Pillars of EW4All.

5.1 Findings on Institutional Coordination

This report makes the following findings on institutional coordination for the WRP Steering Committee to consider. The findings reflect the outcomes of a regional MHEWS implementing partners coordination meeting in April 2025. They are also confirmed by the comparison of WRP with the four Pillars of EW4All in Part 6 below.

- WRP as currently structured does not have the capacity to act as the overarching coordinating agency for MHEWS in the Pacific.

- WRP should leverage existing platforms for MHEWS coordination rather than attempt a new MHEWS coordination mechanism to act across all Pillars of EW4All.

- The WRP Liaison Platform Terms of Reference should not establish the Liaison Platform as a regional forum for MHEWS coordination, but should focus on coordination by WRP of MHEWS activities within the scope of the WRP Implementation Plan.

- The Pacific Resilience Partnership (PRP) MHEWS & Risk Information TWG may evolve as the primary regional coordination mechanism for MHEWS (see Box 1 below). The Steering Committee should authorise the WRP Program Manager to engage with development of the PRP MHEWS & Risk Information TWG.

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- The Terms of Reference for the PRP MHEWS & Risk Information TWG should incorporate EW4All Pillars 2 and 3 in order to strengthen WRP participation in MHEWS coordination.

- The Terms of Reference for the PRP MHEWS & Risk Information TWG should incorporate WRP contributions to EW4All Pillars 1 and 4, particularly in terms of (1) hazards and risks knowledge, and (2) hazards and disaster preparedness/response (see further Part 6 below).

The following Box provides a brief outline of the PRP TWG on MHEWS and Risk Information.

Box 1: The Pacific Resilience Partnership TWG on MHEWS and Risk Information

Established in 2017, the Pacific Resilience Partnership (PRP) is the umbrella implementation mechanism for the Framework for Resilience Development in the Pacific (FRDP). The PRP reports directly to the Pacific Islands Forum Leaders.

The PRP has Technical Working Groups for Disaster Risk Finance, Human Mobility, Risk Governance and Resilient Development, Localisation, Information Knowledge Management, Pacific Market Based Mechanisms to address Climate Change, Water Security, Resilient Infrastructure and Resilient Housing, and Gender and Social Inclusion.

The PRP is establishing a new TWG on MHEWS and Risk Information that provides the potential mechanism for MHEWS coordination in the Pacific. The advantages of coordinating MHEWS through the PRP TWG include (1) political support through direct lines of reporting to Pacific Island Forum Leaders, (2) links to disaster risk financing through FEMM, and (3) institutional capacity to respond rapidly to country requests.

5.2 Recommendations on Institutional Coordination

This report recommends that the Steering Committee:

- Endorse Terms of Reference for the WRP Liaison Platform as set out in materials accompanying SC2 Agenda Item 9.1.
- Authorise the WRP Program Manager to engage in further consultation on WRP participation in the PRP TWG on MHEWS and Risk Information, including development of the TWG Terms of Reference.

6.0 Implementation Plans for WRP

The Introduction noted the recommendation of PMC-6 that the WRP Implementation Plan consider activities to support and improve capacities across all four Pillars of the EW4ALL Initiative.[20]

The current WRP Implementation Plan was approved by the PMC in October 2023. Phase 1 includes preparation of a revised Implementation Plan with costed activities and a full risk evaluation matrix.

This Part develops options and recommendations for revisions to the WRP Implementation Plan in order to support the EW4ALL Initiative. The aim is to support preparation of a revised Implementation Plan and Investment Plan for WRP, particularly in terms of alignment with the EW4ALL Initiative.

6.1 Method and Approach

This Part proceeds by comparing the current WRP Implementation Plan against the four Pillars of EW4ALL. The following Table provides a simple side-by-side illustration.

Table 1: EW4ALL and WRP

EW4ALL Pillars	WRP Implementation Plan
Pillar 1: Disaster Risk Knowledge	KRA 1: Management and Coordination
Pillar 2: Detection, Monitoring, Analysis, and Forecasting	KRA 2: Production of Forecasts and Warnings
Pillar 3: Warning Dissemination, and Communication	KRA 3: Communication and Delivery of Forecasts and Warnings to End-users
Pillar 4: Preparedness and Response Capabilities	KRA 4: Infrastructure
Inter-Pillar Activities: Coordination, Resources, Planning, and Monitoring and Evaluation	KRA 5: Capacity and Training

- Endorse the need for amendments to the current WRP Implementation Plan and Investment Plan in order to align with the EW4ALL Initiative.

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[20] Sixth Pacific Meteorological Council (PMC-6) Meeting, https://www.pacificmet.net/sites/default/files/inline-files/documents/PMC-6%20ConceptPaper_05August2023.pdf.

The amendments would strengthen and broaden the scope of WRP through new and revised Key Result Areas.

- Authorise the PMU to incorporate proposals to align WRP and the EW4ALL Initiative, as set out in this Background Paper, into the revised Implementation Plan and Investment Plan, and the Monitoring, Evaluation, Research, and Learning Framework.

The following discussion proposes specific changes to the current Implementation Plan – including its KRA – in order to align WRP with EW4ALL. It is to be noted, however, that these proposals are indicative, and are subject to final formulation as part of a revised Implementation Plan and Investment Plan, and a Monitoring, Evaluation, Research, and Learning Framework.

6.2 EW4ALL Pillar 1 and WRP

Pillar 1 is concerned with disaster risk knowledge. GFDRR describes disaster risk as a function of hazard, exposure and vulnerability.

- Hazards include a process, phenomenon or human activity that may cause loss and damage.
- Vulnerability includes information on factors or processes which increase susceptibility to the impacts of climate or disaster hazards.
- Exposure includes information on people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas.[21]

The following Box illustrates the hazards, exposure, and vulnerability datasets that help to create risk knowledge.

Box 2: Datasets for Risk Information

Datasets for disaster risk include:

- Hazards: topography, hydrology, meteorology, agriculture, ecology, biodiversity, geomorphology, and epidemiology (including flood, landslide, drought, fire, and sealevel rise assessments).

- Exposure: topography and terrain, geology and soils, land cover and land use, settlements, heritage and planning, infrastructure, population distribution, waterways and water sources, marine and coasts, transport and utility networks, place names, addresses, and administrative units.

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[21] See UN Office for Disaster Risk Reduction, 'Terminology on Disaster Risk Reduction' (UNDRR 2020), https://www.undrr.org/terminology (last accessed 28 April 2025).

- Vulnerability: population density and demographics, poverty, income, education, health, inequality, discrimination, and public safety (including data disaggregated by age, gender, ethnicity, or disability).

These datasets need to be combined with community and traditional forms of risk knowledge in order to produce comprehensive risk assessments.

6.1.1 Pillar 1 Activities

Pillar 1 activities focus on risk information as an aggregation of hazards, exposure, and vulnerability datasets. In summary, Pillar 1 activities should seek to ensure that risk information is:

- standardized, interoperable, and consolidated

- national, sub/national, and local

- accessible and collaborative (including vulnerable groups)

- disaggregated according to vulnerability data (sex, age and disability)

Risk information with these characteristics should be incorporated into early warning systems, including in relation to safe areas, evacuation zones, and temporary shelters.

Pillar 1 activities also emphasise roles and responsibilities for risk knowledge, including:

- Defined roles and mandates

- Overarching responsibility assigned to one national organization

- Review by scientific and technical experts

- Community engagement (including vulnerable groups)

6.2.2 WRP and Pillar 1: Key Findings

WRP focuses on hazards rather than exposure and vulnerability. The key role for WRP in relation to EW4ALL Pillar 1 is to incorporate hazards information into risk knowledge products. This requires (1) standardised, interoperable, and consolidated data on hazards; (2) clear roles and responsibilities for hazard inputs, coordination, and review; and (3) inclusion of traditional knowledge into hazard datasets.

6.2.2 WRP and Pillar 1: Key Recommendations

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This report suggests a new WRP KRA on Hazards and Risk Information in order to align with EW4ALL Pillar 1. The new WRP KRA on Hazards and Risk Information could include the following activities:

- Preparation of standardised, interoperable, and consolidated hazards data suitable for incorporation into risk knowledge products.

- Establishment of roles and responsibilities for coordinating, updating, and reviewing hazard inputs into risk knowledge products.

- Inclusion of traditional knowledge into hazard datasets for incorporation into risk knowledge products.

- Participation in the WRP MHEWS and Risk Information TWG as the institutional means for WRP to incorporate hazards information and traditional knowledge into EW4ALL risk knowledge products.

- Support for common repository of data and risk information on request by national members.

6.3 EW4ALL Pillar 2 and WRP

EW4ALL Pillar 2 is concerned with detection, monitoring, analysis, and forecasting. WRP KRA 2 is concerned with production of forecasts and warnings. While there are some gaps set out below, there is clear and considerable overlap between Pillar 2 and KRA 2. This is particularly the case if WRP KRA 4 on Infrastructure is included in the comparison. The following Table illustrates.

Table 2: Comparison of EW4ALL Pillar 2 with WRP KRA 2 and 4

EW4All Pillar 2: Detection, Monitoring, Analysis, and Forecasting	WRP KRA 2: Production of Forecasts and Warnings and KRA 4: Infrastructure
Detection and Monitoring • Technical equipment and training • Measurement parameters/specifications • Data (interoperable, accessible, maintained, exchangeable) • Gap analysis	**Detection and Monitoring** National observations network plans Automated weather stations River, tide and rain gauges Automated meteorological balloon launching systems (7 countries) Data capture from aircraft observation Radar network plan and weather watch radar (5 countries) Wave rider buoys

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Forecasting and Warning	Forecasting
• Data products (accepted methodologies, international standards, upgradable) • Fail-safe systems (monitored, reviewed, tested) • Warning centres (operational, trained personnel) • Impact-based, risk-informed warnings	Open source forecasting platform (automated, integrated global/regional/national models) NHMS marine and aviation forecasting (including two-way WMO WIS) Coastal inundation forecasting (5 countries including river flood forecasting)
Roles and Responsibilities • Data exchange agreements and protocols • Warning agreements and protocols (including cross-border) • MHEWS coordination strategy • Technical capacity-building	**Resources and Capacity-Building** Additional ICT staff in 14 in NMHS and 2 additional in Fiji Ocean infrastructure staff resources (with SPC) Secure ICT Infrastructure Instrument Calibration Centre
Anticipatory Action • Coordinated action plans (including M&E metrics) • Financial resources (including ODA and climate finance, layered disaster risk financing strategies) • Mainstreamed (DRM, finance and delivery mechanisms, social protection) • Reporting (including Sendai Framework Target G)	

6.3.2 WRP and Pillar 2: Key Findings

Table 2 illustrates close alignment between EW4ALL Pillar 2 with WRP KRA 2 and 4**.** The key gaps relate to:

- Explicit reference to WRP's lead role in gap assessments and national roadmaps relating to Pillar 2.
- Establishment of warning centres with supporting agreements and protocols.
- Production of impact-based and risk-informed warnings.
- Anticipatory action plans and reporting.
- Data exchange agreements and protocols.
- Warning agreements and protocols (including cross-border).

6.3.3 WRP and Pillar 2: Key Recommendations

This report suggests revisions to KRA 2 (Forecasts and Warnings) in order to align with EW4ALL Pillar 2. The revisions could include the following activities:

- WRP participation in national and regional EW4ALL gap assessments and national roadmaps, including GBON gap analysis as well as other analysis relating to observations, infrastructure, and forecasting.

- Support for regional and national platforms to generate impact-based and risk-informed forecasts and warnings.

- Support for national adoption of the Unified Data Policy as well as data exchange infrastructure according to global standards.

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- Support for establishment of national (or where appropriate regional) warning centres with supporting agreements and protocols.

6.4 EW4ALL Pillar 3 and WRP

EW4ALL Pillar 3 is concerned with dissemination and communication of warnings. WRP KRA 3 is concerned with communication and delivery of forecasts and warnings to end-uses. While there are some gaps, there is considerable overlap between Pillar 3 and KRA 3. The following Table illustrates.

Table 3: Comparison of EW4ALL Pillar 3 with WRP KRA 3

EW4All Pillar 3: Warning Dissemination and Communication	WRP KRA 3: Communication and Delivery of Forecasts and Warnings to End-users
Alerts and Warnings • Community/indigenous inputs • Impact-based early warnings • Common Alerting Protocol/Help Desk • Dashboards (messages/alerts) • Information intermediaries (partnership and training) • Co-development of EWS messages (last mile users) • Multichannel dissemination (persons most at risk) • Geo-located mobile EWS services using SMS • Private sector support for mobile EWS • Collaboration with research community	**Alerts and Warnings** Traditional knowledge and GEDSI considerations Impact based, location specific warnings (including end users without Internet) Collaboration with partners Internet access equipment (selected NMHSs and NDMO)
Communication and Community Action • Communication and dissemination (specific groups, end-uses) • Multiple communication channels • Public awareness and trust	**Communication and Community Action** • Stakeholder workshops (warnings to end users) • Training on WMO common alerting protocol (CAP) • Review of end-user response to messaging
Roles and Responsibilities • Legislative/policy mandates • Standard operating procedures • Private-sector agreements	

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6.4.1 WRP and Pillar 3: Key Findings

Table 3 illustrates close alignment between EW4ALL Pillar 3 and WRP KRA 3**.** The key gaps relate to:

Alerts and Warnings

- • Common Alerting Protocol/Help Desk

- • Dashboards (messages/alerts)

- • Information intermediaries (partnership and training)

- • Geo-located mobile EWS services using SMS

- • Private sector support for mobile EWS

Roles and Responsibilities

- • Legislative/policy mandates

- • Standard operating procedures

- • Private sector agreements

There should also be explicit reference to WRP's lead role in gap assessments and national roadmaps relating to Pillar 3.

6.4.2 WRP and Pillar 3: Key Recommendations

This report suggests revisions to KRA 3 (Warnings Dissemination and Communication) in order to align with EW4ALL Pillar 2. The revisions could include the following activities:

- • WRP participation in national and regional EW4ALL gap assessments and national roadmaps, including in relation to warnings dissemination and communication.

- • Support for development of MOUs with SOPS on warning dissemination and communication.

- • Support for development of legislation and policy framework setting out functions, roles, and responsibilities in national warning dissemination and communication.

- • Support for development of MOUs and SOPS with mobile network operators.

- • Support for development of a national strategy and action plan for geo-located EWS (including through mobile broadcasts and location-based SMS).

- Support for MOUs between alerting authorities and key line ministries in charge of disseminating sector-based warnings/alerts.

- Support for development of last mile protocols and materials for planning, training and warning simulations.

- Establishing geo-referenced regional platform to display active early warnings and alerts.

6.5 EW4ALL Pillar 4 and WRP

EW4ALL Pillar 4 is concerned with disaster preparedness and response. Pillar 4 reflects contemporary global understanding that early warning is critical to save lives, assets, and livelihoods both before and after a disaster.

Key Pillar 4 activities include Plans and Procedures that are:

- Participatory, disseminated, and underpinned by legislation.

- Inclusive of early action/response across time and geographical scales

- Linked to funding mechanisms

- Inclusive of emergency and health services

- Incorporate strategies for cascading hazard events

- Based on assessments of vulnerability

Other Pillar 4 activities concern Public Awareness and Education campaigns that:

- Are incorporated into school curricula from primary through university

- Provide public education to recognize hazard signals and warnings

- Are tailored to vulnerable groups

- Are subject to regular review and lessons learnt

6.5.1 WRP and Pillar 4: Key Findings

WRP focuses on hazards rather than disaster preparedness and response. The key role for WRP in relation to EW4ALL Pillar 4 is to incorporate hazards information into preparedness and response planning. This requires (1) hazard information products suitable for use by DRM stakeholders; (2) clear roles and responsibilities for hazard inputs (including forecasts and warnings) into preparedness and response; and (3) inclusion of traditional knowledge into hazard datasets for use by DRM stakeholders.

6.5.2 WRP and Pillar 4: Key Recommendations

This report suggests a new WRP KRA on Hazards and Disaster Preparedness/Response in order to align with EW4ALL Pillar 4. The new WRP KRA on Hazards and Disaster Preparedness/Response could include the following activities:

- Preparation of standardised, accessible, and consolidated hazards data suitable for incorporation into national Plans and Procedures for disaster preparedness and response.

- Support for development of legislation and policy framework setting out functions, roles, and responsibilities for coordinating, updating, and reviewing hazard inputs into national Plans and Procedures for disaster preparedness and response.

- Support for inclusion of traditional knowledge into hazard datasets for incorporation into national Plans and Procedures for disaster preparedness and response.

- Participation in the WRP MHEWS and Risk Information TWG as the institutional means for WRP to incorporate hazards information and traditional knowledge into national Plans and Procedures for disaster preparedness and response.

6.6. WRP and Inter-Pillar Activities

This report has recommended EW4All-aligned revisions to KRA as part of a new Implementation Plan for WRP. A number of these revisions relate to inter-pillar activity set out in EW4All, including in relation to governance (policy and legislation), regional collaboration and institutional partnerships, and incorporation of hazards information into risk knowledge and disaster preparedness and response.

7.0 Hazards Covered by WRP

Hydrometeorological hazards have been the traditional focus of WRP. This focus is evident in the (1) origins of WRP in the SPREP Regional Hub for Meteorological Services, (2) the reporting requirements of WRP to the PMC, (3) the composition of the WRP Steering Committee, and (4) the priority actions set out in the WRP Decadal Program of Investment and Implementation Plan.

The WRP Decadal Program of Investment adopts a Strategic Objective for WRP that focuses on extreme weather events, as follows:

> Communities, government and industries having the systems, forecasts, warnings and information to enact response plans to extreme weather events and in a timely manner.

WMO has approved a Catalogue of Hazardous Events (CHE) that is set out in Annex 6 to the SC 2 Agenda Item 9.1 materials (of which this report forms Annex 1).[22]

This report makes the following findings on hazards covered by WRP for the Steering Committee to consider.

- EW4ALL calls for WRP to adopt a multi-hazard perspective. This is particularly required in order to facilitate coordination with other MHEWS actors.

- As part of a multi-hazard approach, the PMU should prepare a list of hazards covered by WRP based on the WMO Catalogue of Hazardous Events. The list will require adaptation to Pacific contexts.

- Adopting a multi-hazard perspective requires revisions to the WRP Implementation Plan. WRP should not exclude non-hydrometeorological hazard actors from requesting assistance within the scope of the Implementation Plan.

This report recommends that the WRP Steering Committee:

1. Authorise the PMU to prepare a list of hazards covered by WRP based on the WMO Catalogue of Hazardous Events (with appropriate adaptations for the Pacific).

2. Authorise the PMU to incorporate multi-hazard activities in the the revised Implementation Plan and Investment Plan, and the Monitoring, Evaluation, Research, and Learning Framework.

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[22] The Extraordinary Session of the Commission for Weather, Climate, Hydrological, Marine and Related Environmental Services and Applications (SERCOM-Ext(2025)) approved the Catalogue of Hazardous Events in March 2025: see https://wmo.int/media/update/sercom-extraordinary-session-approves-key-updates-hazardous-events-and-early-warnings.

ANNEX 6

WMO Catalogue of Hazardous Events

WMO CHE Events List update

Air Quality	Icing/Freezing rain/Frost	Swell/Waves
Avalanche	Landslide	Thunderstorm/Lightning
Cold	Mid/high latitude cyclonic storm	Tornado
Drought	Rain	Tsunami*
Earthquake*	Sand/Dust	UV radiation
Flooding**	Smoke	Volcanic ash
Fog	Snow	Volcanic eruption*
Hail	Space weather	Water quality
Haze	Squall	Wildfire
Heat (Terrestrial and Marine)	Storm surge	Wind
Ice flows/Icebergs	Subtropical/Tropical Cyclone*	

* These (multi-hazard) weather and geophysical systems/features whilst not strictly hazard event types, are included in the hazard event list for ease of reporting/cataloguing.

** sub-types of flooding events (e.g. "flash flood"; "coastal flood"; "riverine flood") can be specified under the attributes "Hazard Specification" or "Event Description"

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