

EIGHTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL

PMC-8

Nuku'alofa, Tonga • 10, 11, 14 September 2026

Eighth Meeting of the Pacific Meteorological Council (PMC-8)

Weather Ready for a Secured and Sustainable Pacific

10, 11, 14 September 2026 | Nuku'alofa, Tonga

Agenda Item 9: Pacific Regional Hydro-met and MHEWS Sustainable Maintenance Facility

Purpose:

- To seek PMC endorsement for the establishment of the Pacific Regional Hydro-met and MHEWS Sustainable Maintenance Facility for the sustainable maintenance of ringfenced Hydro-Met and MHEWS infrastructure and assets.
- To note the Financing Options Paper (Annex A) identified an Endowment Structure as a suitable primary financing mechanism for a permanent solution to the operations and maintenance funding gap.
- To note the Endowment Structure is complimentary to Pacific Resilience Facility and SOFF compliance phase.

Objectives:

1. Provide a Pacific-led mechanism to finance long-term operations, maintenance and replacement of hydro-met and MHEWS assets.
2. Support lifecycle sustainability by holding funds across financial years, enabling regional procurement and disbursing against agreed asset management schedules.

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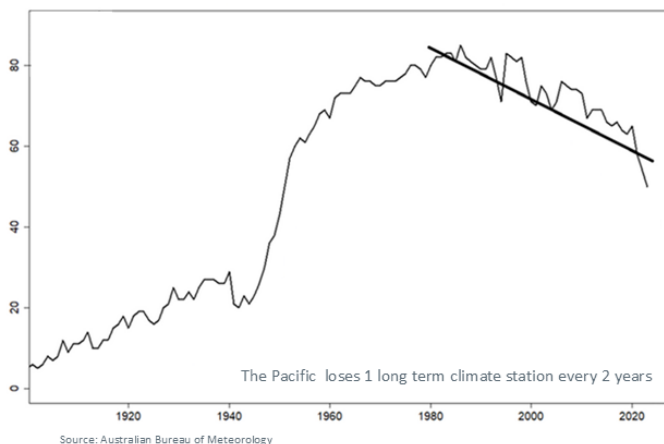
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Background:

The Climate Data Crisis in the Pacific

MAINTENANCE PRESSURE OVER TIME



SEVEN RECURRING SUSTAINABILITY DRIVERS

- 1 High cost of maintenance and replacement
- 2 Donor funding focuses on capital investment, not long-term operations
- 3 Limited technical workforce capacity
- 4 Geographic isolation and logistics
- 5 Fragmented regional support systems
- 6 Weak asset lifecycle planning
- 7 Growing dependence on digital systems

Figure 1. The Pacific has lost 1 long term dataset every 2 years and the trend continued downward since 1980 despite the huge investments that have gone into climate monitoring and MHEWS capacity development in recent decades (Source Australian Bureau Meteorology).

The Pacific Islands have lost on average 1 long term dataset every 2 years and the trend continued downward since 1980 despite the huge investments that have gone into climate monitoring and MHEWS capacity development in recent decades. This is due to a number of factors including:

- High cost of maintenance and replacement of monitoring infrastructure
- Donor funding focuses on capital investment, not long-term operations
- Limited technical workforce capacity
- Geographic isolation and logistics
- Fragmented regional support systems
- Weak asset lifecycle planning and support
- Growing dependence on Digital systems

The World Bank identifies the same regional problem: Pacific monitoring networks suffer from unavailable funding for spare parts, insufficient repair and calibration capacity and equipment obsolescence. The Systematic Observations Financing Facility (SOFF) reports that a failed Pacific weather station can sometimes wait up to 3 months for a spare part.

While the cost of maintenance of the Pacific Network is currently being assessed by the Weather Ready Pacific Program it is estimated that USD15-20M of investments into climate monitoring is lost annually due to the lack of maintenance.

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Case for Pacific Regional Hydro-met and MHEWS Sustainable Maintenance Facility

Weather Ready Pacific is designed to strengthen hydrometeorological and multi-hazard early warning systems across the Pacific. Significant capital investment has already been made in observing networks, forecasting systems, communications, data platforms and related disaster risk reduction infrastructure. However, these assets require predictable long-term financing for operations, maintenance, technical support and replacement. Without a dedicated maintenance mechanism, the region risks a repeating cycle of building, under-maintaining and rebuilding essential public-good infrastructure.

The attached Financing Options Paper assesses seven possible financing approaches for a Pacific Regional Hydro-met and MHEWS Sustainable Maintenance Facility.

It identifies an endowment or perpetual capital vehicle as the leading long-term option because it can create a permanent, ring-fenced capital base, with investment returns used to fund annual operations, maintenance and asset replacement. This would reduce reliance on repeated short-term grant replenishments and better match the long lifecycle of Hydro-Met and MHEWS assets. See Figure 1 below for an example of the endowment structure.

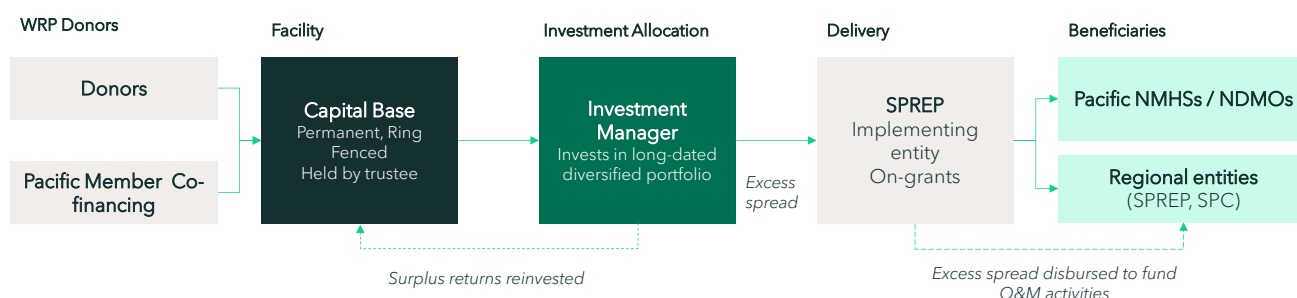


Figure 2: Endowment structure for the Pacific Hydro-met and MHEWS Sustainable Maintenance Facility

As depicted in figure 1 above, the Maintenance Facility could be capitalized once as a permanent, ring-fenced capital base, with only investment returns, not principal, used to finance annual operations, maintenance, and asset replacement.

Unlike a pooled trust fund, which depends on periodic donor replenishments, an endowment converts a recurring funding requirement into a one-off capitalization exercise, providing a permanent solution to the Operations & Maintenance (O&M) funding gap.

The capital base would be professionally managed under a defined investment policy, invested in a diversified long-dated portfolio, and drawn down at a rate calibrated to preserve real value over time. Investment returns would fund annual disbursements, net of capital costs, administration and fees, with any surplus reinvested to protect the vehicle's real value against inflation.

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Annual disbursements from the endowment's investment returns could be transferred to SPREP acting as the implementing agency, drawing on its status as an accredited Green Climate Fund entity, to on-grant funding to beneficiaries. Beneficiaries could include national accounts, funding National Meteorological and Hydrological Services (NMHSs) and National disaster management office (NDMOs) directly, as well as regional entities such as SPREP and The Pacific Community (SPC), to support regional coordination, technical and monitoring functions (e.g. SPC's Geoscience, Energy and Maritime Division).

The endowment option should be understood as the preferred direction for further design work, not as a final decision on the financing and legal structure, hosting arrangements or capitalisation.

Additional analysis is required to confirm the true cost of long-term maintenance, establish the financial facility detailed design, test donor and partner appetite, assess ODA compatibility, define investment governance, and determine how the Facility would sit within or alongside SPREP, the WRP governance framework and other Regional and Global initiatives e.g. PRF, GCF-SAP, SOFF, CREWs etc.

Pacific Financing Ecosystem

As established in the Options Paper (see Annex, section 1), the endowment represents the most suitable option for sustainably addressing the O&M financing gap. Unlike funding structures that depend on periodic replenishments, an endowment can provide a long-term and predictable source of financing while also offering flexibility to incorporate additional financing mechanisms over time (see Figure 2). It can also operate alongside and complement existing regional financing initiatives, including the Pacific Resilience Facility (PRF) and the Systematic Observations Financing Facility (SOFF). Figure 2 below illustrates how the endowment could fit within the broader regional financing ecosystem, including its potential interaction with complementary financing mechanisms and additional revenue streams.

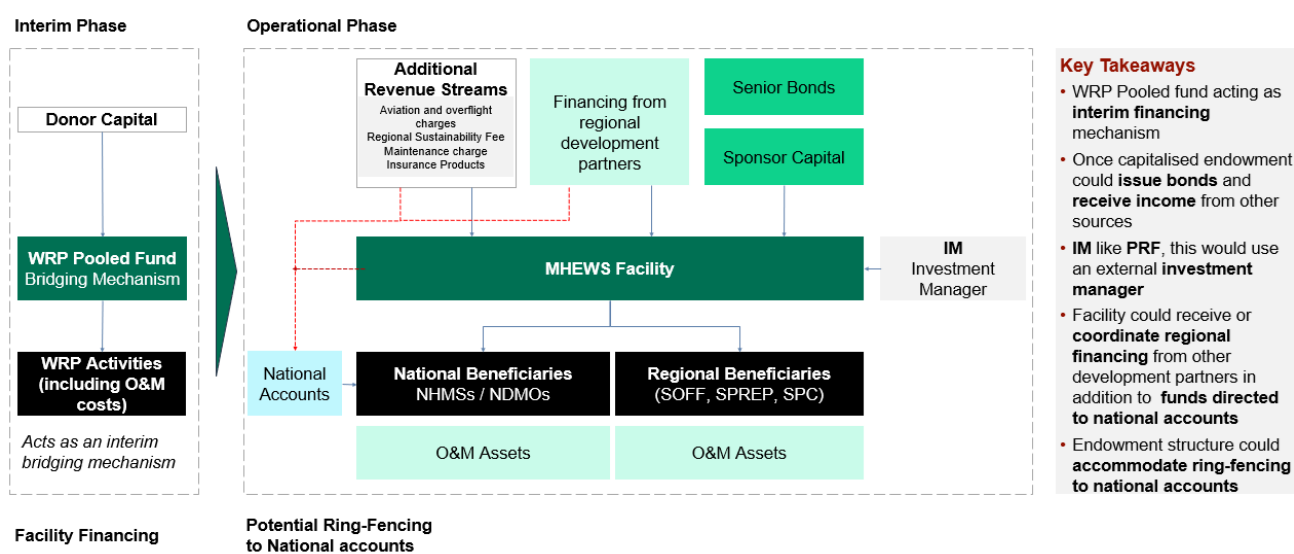


Figure 2: Pacific Financing Ecosystem

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As seen in Figure 2, the WRP Pooled Fund could act as an interim financing mechanism to fund O&M whilst the Maintenance Facility is being established, given its mandate already extends to this activity. Once capitalized, the endowment could leverage its sponsor capital base to issue bonds, subject to the entity obtaining an appropriate credit rating, as well as receiving income from other revenue-generating sources.

Other revenue sources being explored include charges for non-core data generated by the MHEWS observation assets and aviation sector cost recovery for aviation forecasting and warning services.

Development projects have a level of O&M contributions already (typically covering the first 1-3 years costs, SOFF is unique in proposing to fund full lifecycle cost) and WRP is looking at introducing a maintenance charge to development projects in the region to contribute further O&M and direct it into this facility.

A further consideration in favour of the endowment structure is its ability to accommodate the ring-fencing of nationally generated revenues to national accounts, particularly the alternative revenue streams considered (see Annex section 6) such as aviation and overflight charges. As these revenues would generally be raised within individual country jurisdictions, Pacific member countries may prefer that some of the proceeds remain attributable to national priorities rather than being fully pooled at the regional level. The endowment could potentially accommodate this through country-specific sub-accounts or notional allocations within the wider capital structure, while retaining the benefits of pooled investment management and portfolio diversification. This would, however, require balancing national preferences for retaining and tracking domestically generated resources against the benefits of pooling capital for regional allocation.

The appropriate balance, including the treatment of country-specific contributions within the endowment's investment and disbursement framework, would need to be determined through consultation with Pacific member countries and donors during the next stage of design and structuring.

The Facility would also complement the **Pacific Resilience Facility (PRF)** as they could act as the Pacific-led Investment Manager and establish investment policy. The PRF supports broader community resilience and downstream climate and disaster resilience outcomes. The proposed Sustainable Maintenance Facility is focussed on the upstream hydro-met and MHEWS assets, systems and technical functions that generate and sustain warning services to the community. The two mechanisms therefore operate at different points in the resilience value chain.

SOFF and WRP has separately identified an opportunity to link future **SOFF Compliance Phase support** with this Facility, particularly pooling support for agreed regional maintenance and operations functions that country GBON compliance depends upon. The detailed SOFF proposal is being considered through a separate decision paper. For this paper, the key point is that the Facility should be designed flexibly enough with appropriate ring-fencing, to receive or coordinate regional SOFF Compliance Phase support where countries agree, in addition to

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SOFF funds directed to national accounts, and to strengthen the link between SOFF investments and their long-term operation, maintenance and sustained compliance.

Weather Ready Pacific Liaison Platform

The Inaugural Meeting of the Weather Ready Pacific Liaison Platform soon place in Nuku'alofa, Tonga from 8-9 September 2026. The Platform representation included almost 100 participants including PMC Members, Directors and Representative from the Regional NDMOs, Various UN Agencies including WMO, UNDRR and the WFP, IFRC, the Private Sector, Academia etc.

During the Liaison Platform, a half day consultation process supported the establishment of a Pacific Regional Hydro-met and MHEWS Sustainable Maintenance Facility.

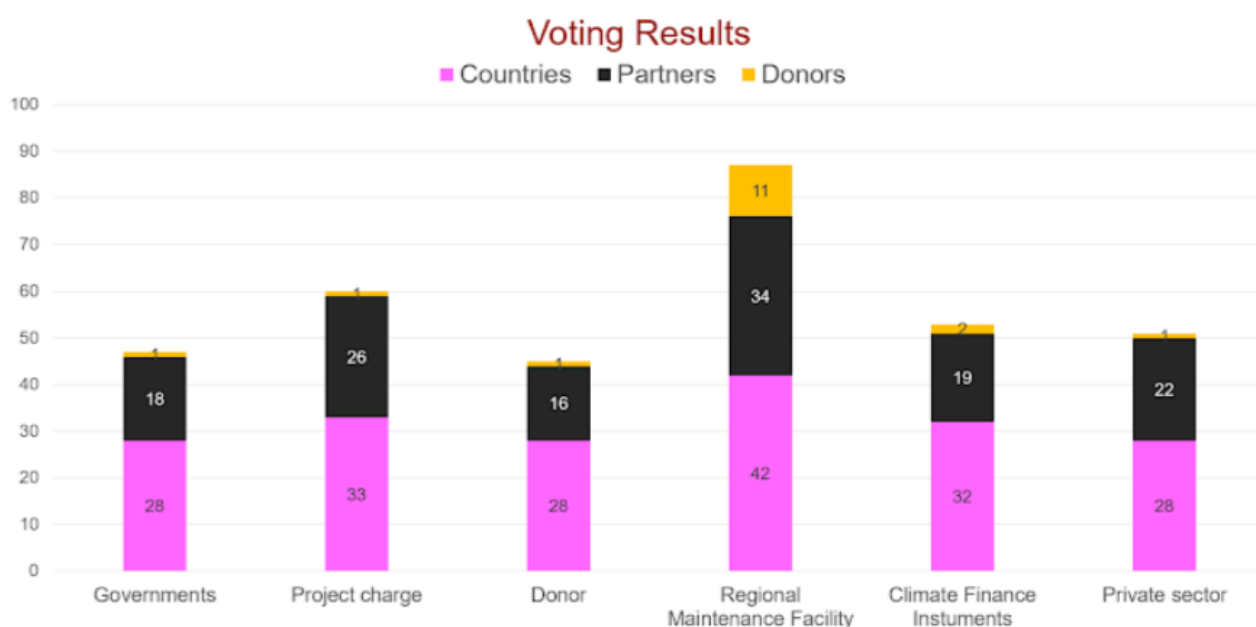


Figure 3: WRP Liaison platform supported the establishment of a sustainable maintenance facility

The Liaison platform also identified Infrastructure maintenance can account for up to 70% of full life-cycle costs, and is consistently unfunded. The Platform agreed the gap cannot be addressed through any single funding source and supported the establishment of a Pacific Hydro-met MHEWS sustainable maintenance facility as one component of this financing mix, providing coordinated support where regional solutions offer greater efficiency and sustainability.

The Platform noted that relatively modest investment in Hydro-Met systems delivers catalytic returns on benefits for lives, livelihoods, resilience and economic development.

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Next Steps

Once endorsement has been secured for the establishment of the Pacific Regional Hydro-met and MHEWS Sustainable Maintenance Facility, the initiative would move into a subsequent structuring phase. This phase would focus on refining the legal, governance and financial arrangements, alongside further donor engagement, to ensure that the final financing mechanism is financially viable, responsive to regional needs, and appropriately aligned with the existing SPREP and WRP architecture.

The proposed next steps would include: (i) engaging prospective donors to test political and financial appetite for the proposed structure and identify any key requirements or constraints; (ii) assessing the legal and governance options for establishing a financially viable facility that is appropriately integrated within the existing SPREP and WRP architecture or otherwise; and

(iii) undertaking detailed financial modelling, building on the existing assessment of O&M financing needs, to determine the facility's capitalisation requirements, investment return assumptions, spending and drawdown parameters, and long-term financial sustainability.

Recommendations:

The Meeting is invited to:

- I. **Note** the Financing Options Paper (Annex A) identified an Endowment Structure as a suitable primary financing mechanism for a permanent solution to the operations and maintenance funding gap.
- II. **Note** an Endowment Structure is complimentary to Pacific Resilience Facility and SOFF compliance phase.
- III. **Note** that the Inaugural Weather Ready Liaison Platform took place from 8-9 September 2026 at the Nuku'alofa, Tonga, identified Infrastructure maintenance can account for up to 70% of full life-cycle costs, and is consistently unfunded. The Platform agreed the gap cannot be addressed through any single funding source and support the establishment of a Pacific Hydro-met MHEWS sustainable maintenance facility as one component of this financing mix, providing coordinated support where regional solutions offer greater efficiency and sustainability. The Platform noted that relatively modest investment in Hydro-Met systems delivers catalytic returns on benefits for lives, livelihoods, resilience and economic development.
- IV. **Further Note** the Liaison Platform calls for future investments to be anchored in a single Pacific-owned infrastructure pipeline, built from nationally identified priorities, coordinated regionally through leaders-endorsed Weather Ready Pacific Programme, financed across the full lifecycle, and measured by the sustainable capability it leaves behind.
- V. **Endorse** the establishment of the Pacific Hydro-Met MHEWS Sustainable Maintenance Facility and to continue to the design phase.
- VI. **Request** SPREP and Weather Ready Pacific, in collaboration with Members and Development Partners, to support continue design and development of the Facility framework.

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- VII. **Request** the PMMM4 to endorse in principle the establishment of the Pacific Regional Hydro-Met and MHEWS Sustainable Maintenance Facility for the sustainability of reliable Hydro-Met and MHEWS monitoring and warning systems, infrastructure and assets.
- VIII. **Request** for the following to be considered for inclusion in the draft Ministerial Declaration

“We recognize the critical need to sustainably maintain Pacific Hydro-Met and MHEWS infrastructure and support the establishment of a Pacific Hydro-Met & MHEWS Sustainable Maintenance Facility, alongside a single Pacific-owned investment pipeline under the Weather Ready Pacific Programme, built on national priorities, coordinated regionally and financed across the full lifecycle”

Annex A – Financing Options

Several issues relevant to the Options paper have already been considered in earlier WRP Programme work undertaken by MDY Legal.

MDY Legal's Stage 1 report considered the core funding architecture for the WRP Programme. It assessed a no-change option, a fully pooled fund and a hybrid model. The preferred approach was a hybrid model under which the WRP Programme would be financed principally through the WRP Pooled Fund, while retaining flexibility to accommodate exceptional ringfenced contributions and other support under a unified governance and reporting framework.

MDY's Stage 2 work operationalised the WRP Pooled Fund architecture through the Charter and the Operations Manual. Stage 2 also left room for a future Sustainable Maintenance and Replacement Fund or equivalent mechanism, while making clear that any such mechanism would require further governance and policy approval under the WRP governance framework.

The options considered below are not alternatives to the WRP Pooled Fund. They are potential complementary financing structures for a specific sustainability problem: how to finance long-term MHEWS operations, maintenance and asset replacement in a way that is durable, Pacific-owned, donor-compatible and capable of mobilising capital beyond short-term grant replenishments.

In assessing these options, the paper assumes that the WRP Pooled Fund remains the principal SPREP-hosted funding mechanism for WRP Programme delivery. The question is whether additional financing architecture is needed to support lifecycle sustainability, and, if so, which option or combination of options should be developed further. This section assesses seven financing options in turn, considering for each its mechanism, precedent and alignment with Weather Ready Pacific's requirements. Following this section, section 5 positions the MHEWS facility against the Pacific Resilience Facility, and section 6 highlights key recommendations and suggested next steps as well as outlines some design considerations for setup of the facility. Annex 1 provides a summary of the benefits and drawbacks of each option, while Annex 2 provides a high-level assessment of the cost and sizing considerations.

1. Endowment / Perpetual Capital Vehicle

Mechanism: The MHEWS Facility could be capitalised once as a permanent, ring-fenced capital base, with only investment returns, not principal, used to finance annual operations, maintenance, and asset replacement. Unlike a pooled trust fund, which depends on periodic donor replenishments, an endowment converts a recurring funding requirement into a one-off capitalisation exercise, providing a permanent solution to the O&M funding gap.

The capital base would be professionally managed under a defined investment policy, invested in a diversified long-dated portfolio, and drawn down at a rate calibrated to preserve real value over time. Investment returns would fund annual disbursements, net of capital costs, administration and fees, with any surplus reinvested to protect the vehicle's real value against inflation.

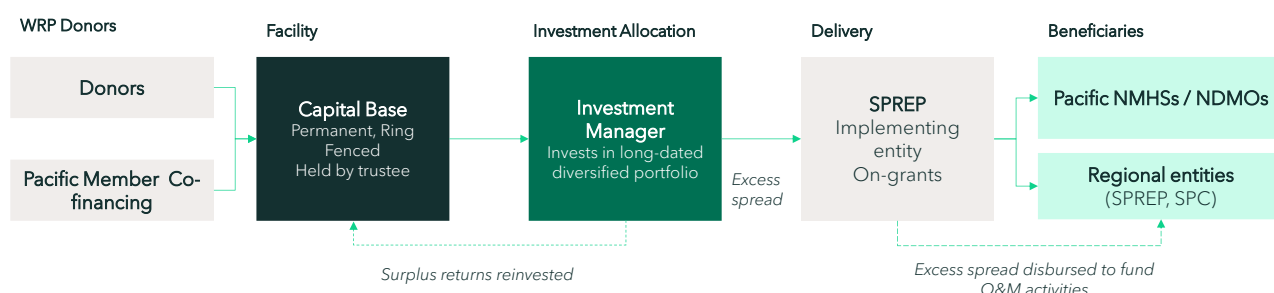
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Annual disbursements from the endowment's investment returns could be transferred to SPREP acting as the implementing agency, drawing on its status as an accredited Green Climate Fund entity, to on-grant funding to beneficiaries. Beneficiaries could include national accounts, funding national NMHSs and NDMOs directly, as well as regional entities such as SPREP and The Pacific Community (SPC), to support regional coordination, technical and monitoring functions (e.g. SPC's Geoscience, Energy and Maritime Division).

Figure 4: Endowment Structure¹



Precedent: There are many precedents for a WRP Programme endowment. This is how nearly all universities fund all or part of their expenditure and is the basis for the Australian Future Fund (See Annex 3, Box 1) and its sibling policy-purpose funds. Management of these funds mirrors a classic pension fund such as the Australian and New Zealand superannuation funds. A variant of this model has been developed for the Tropical Rainforests, which has been capitalised by returnable capital from sponsors as opposed to grants - the Tropical Forest Forever Facility (TFFF), launched at the 30th Conference of the Parties (COP30) to the United Nations Framework Convention on Climate Change (UNFCCC), held in November 2025 (see Annex 3, Box 1). An endowment matches MHEWS' structural situation on the axes that matter: capitalised through a blend of external sponsor capital and lead beneficiary co-financing; financing a global public good delivered to third-party beneficiary countries and governed by a sponsor–beneficiary board². The mechanics of professionally managed, mandate-driven public capital are also institutionally familiar to the WRP Programme's anchor donors from their own domestic sovereign vehicles, notably.

WRP Programme Alignment: For the WRP Programme, the endowment model offers a genuinely permanent solution and access to capital pools that annual grant financing cannot achieve. The model is used by sovereign wealth funds, superannuation and provident funds, philanthropic foundations, and impact investors. Once capitalised, the vehicle generates a stable, inflation-linked income stream that directly addresses the "build–neglect–rebuild" cycle at its structural root. Four constraints, however, are decisive at design stage. First, endowments require a substantial capitalisation floor before annual yield becomes meaningful, and would need to be paired with a complementary funding stream to close the estimated O&M gap in full.

¹ Governance to be determined in later stages

² Two design features are directly transferable to WRP: the World Bank's role as Trustee, Treasury Manager and Secretariat host during an initial three-year incubation period, offering a template for standing up a complex vehicle without building institutional infrastructure from scratch; and the legal separation of the Facility from the underlying investment fund, which insulates the payment mechanism from the demands of managing a large portfolio.

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Second, capitalisation lead times run to several years even with strong sponsorship, meaning the endowment is not a near-term instrument and requires a bridging mechanism in the interim. Third, managing a permanent capital vehicle at the scale required, which calls for a defined investment policy, a professional external asset manager, an appropriate legal structure and specialist board oversight, is a materially different function from SPREP's current Treasury role for the WRP Pooled Fund. The Pooled Fund is a SPREP Special Account, and its treasury management is oriented toward short-term cash and deposit management under SPREP Financial Regulation 24, not toward long-horizon portfolio management under a defined investment mandate. Fourth, for some donors historically they have not found the capitalisation of an endowment as attractive, as highlighted in section 3, as ODA rules have not been clear on the contribution of capital that is itself not used for programmatic use³.

³ (NB the Organisation for Economic Co-operation and Development (OECD) has indicated a changed position with the TFFF serving as the precedent

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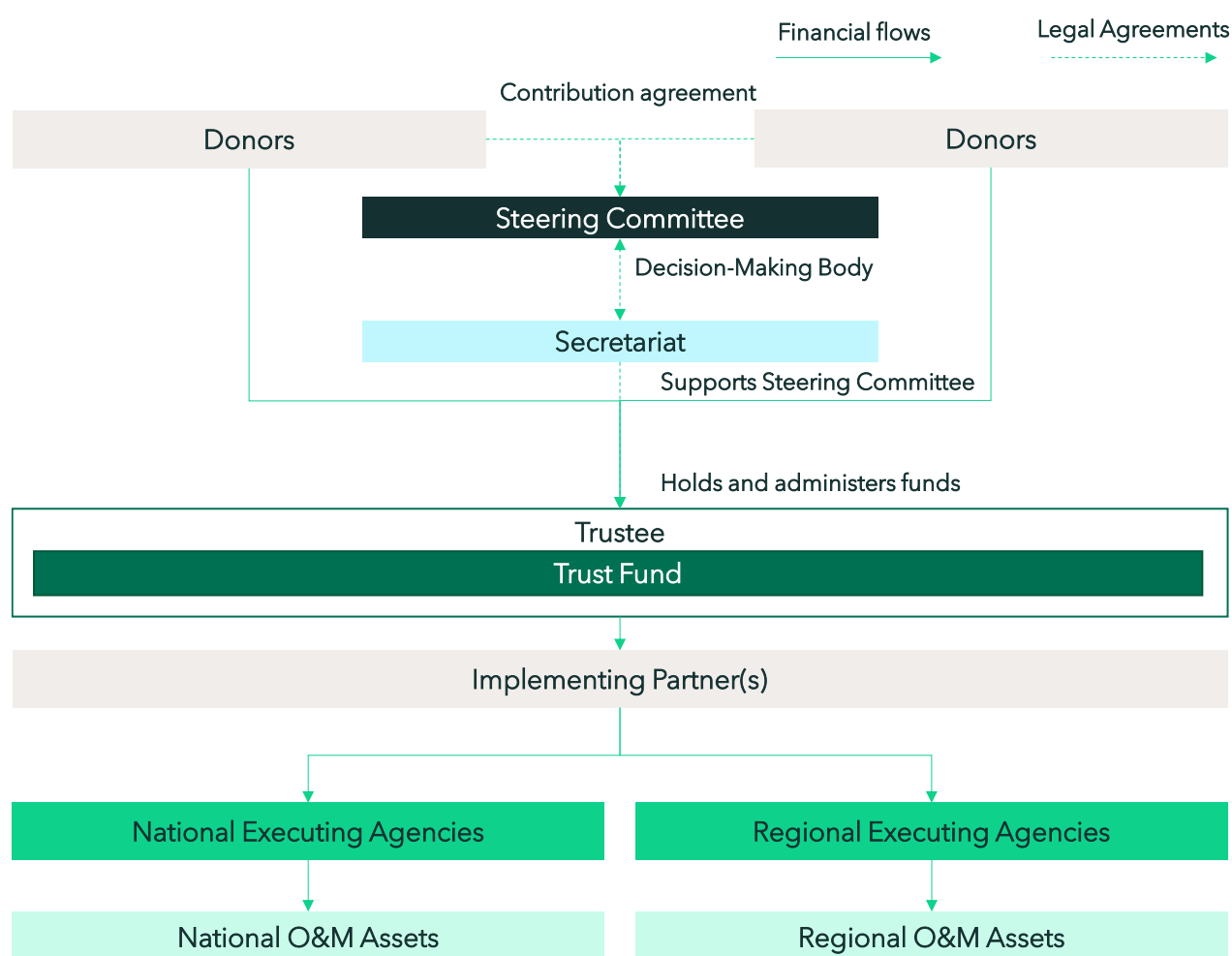
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2. Multi – Donor Trust Fund

Mechanism: The Facility is established as a pooled trust fund administered by an external trustee, typically a multilateral development bank or UN agency. Donor contributions are pooled under a common framework, drawn down over time, and replenished periodically. Strategic oversight rests with a Steering Committee of contributing donors above an agreed threshold; a Secretariat (a role well suited to SPREP given its existing WRP Programme stewardship) coordinates day-to-day; and the Trustee manages funds and disburses to implementing partners. See Figure 2 for an example of how a MHEWS Trust Fund could operate.

Figure 5: MHEWS Trust Fund Model



The pools sitting in the trust would be invested by the trustee's treasury function in short-term, , high-quality fixed income portfolio in order to optimize investment returns, preserve capital, offset trustee and administration fees and maintaining adequate liquidity to meet cash flow needs. SPREP could serve as a implementing entity directing funding towards national and regional partners.

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Precedent: The closest operational precedent is the Climate Risk and Early Warning Systems (CREWS) Initiative, established at COP21 in 2015 and operational since 2016 (See Annex 3 Box 2). CREWS supports MHEWS investments across Least Developed Countries and Small Island Developing States and, by end-2025, had mobilised US\$142.4 million from 12 donors while approving US\$128.6 million in funding, 80 per cent of which supports multi-year programmes. Two features are especially relevant for the WRP Programme. The first is its donor base, which closely mirrors that of the WRP Programme and includes Australia, Canada, France, Germany, New Zealand's closest partners, Norway, Switzerland and the United Kingdom. This demonstrates strong donor familiarity with the model. The second is its governance approach, whereby Steering Committee membership is linked to contribution levels⁴, providing a practical mechanism for balancing donor incentives with institutional representation and one that could be adapted to strengthen Pacific participation.

WRP Programme Alignment: The trust fund's strengths are simplicity, MDB/UN fiduciary credibility, compatibility with existing ODA channels for all three anchor donors, and the transfer of financial-management burden from SPREP to the trustee. The transfer of these responsibilities addresses a key institutional constraint identified in Section 4.1. SPREP's Treasury Function operates under Regulation 24, which permits only non-speculative investments of surplus funds in interest-bearing bank deposits only, a framework designed for parking operational cash between disbursements, not for managing large, pooled balances across multiple asset classes. Under a trust fund structure, undisbursed balances would be managed by the Trustee's dedicated treasury function, applying a conservative investment framework extending across various instrument types – a materially different approach to the cash-management function that SPREP currently operates. The structure therefore provides the required financial management capacity without requiring SPREP to develop it internally. Its weaknesses are the mirror image: strategic priorities, country allocations and the results framework are ultimately determined by a donor-led Steering Committee, risking regional priorities becoming secondary unless SPREP and Pacific Countries secures a formal governance role from the outset. More fundamentally, the model does not eliminate the underlying financing challenge, it relies on periodic replenishment, replacing one funding cycle with the next every five to ten years. It is a credible medium-term and bridging solution, not a permanent one.

3. Impact-Linked Bonds

Mechanism: An impact-linked bond front-loads capital by borrowing against future donor commitments: investors accept part of the delivery risk, receiving full returns if predefined asset-performance targets are met and forgoing part of interest or principal if they are missed, while donors commit a fixed contribution plus a performance-based top-up released on independent verification. MHEWS performance can be measured objectively, station reporting rates against World Meteorological Organization (WMO) standards, asset uptime, warning delivery times, and proceeds ring-fenced within a use-of-proceeds framework aligned with green and blue bond principles.

⁴ CREWS Governance Document, September 2025

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Precedent: Systematic Observations Financing Facility (SOFF) is the closest precedent in the meteorological sector for a bond built around independently verifiable asset performance, an MDB arranger, a UN trust fund as intermediary, and an independent technical verifier, with the World Bank confirmed as prospective arranger and issuance not yet taken place. SOFF is itself considering two structures: a market issuance in which guarantees cover non-delivery, and an impact-linked arrangement in which investors accept part of the delivery risk⁵. The model was arguably first used for immunisation with the International Financing Facility for Immunisation which was developed for Gavi in 2006. Other variants include Fiji's 2017 sovereign green bond (US\$49 million) and Seychelles' 2018 blue bond (US\$15 million, credit-enhanced by a US\$5 million World Bank guarantee and a US\$5 million Global Environment Facility (GEF) concessional loan) show how credit enhancement makes small issuances viable⁶. See Annex 3, Box 3.

WRP Programme alignment: This is a scaling mechanism rather than a standalone solution. It addresses the challenge of upfront capitalisation by mobilising capital that is repaid over time, while also broadening the investor base beyond the WRP Programme's traditional donors to include institutional and impact investors. In doing so, it diversifies the funding base rather than competing for the same pool of grant finance. As SPREP has no sovereign credit, it could not issue directly. Instead, the endowment or special purpose vehicle (SPV) proposed elsewhere in this paper could serve as the issuing entity, with its sponsor-funded corpus providing a junior capital layer that de-risks a senior tranche placed with institutional investors, following the approach adopted by the TFFF.

Two important qualifications should be noted. First, the private capital mobilisation potential remains prospective rather than proven: no impact-linked bond has yet been issued for meteorological infrastructure, so this should be viewed as a design objective rather than an established source of demand. Second, investors will price the delivery risk they assume, meaning an impact-linked structure is likely to be more expensive per dollar raised than a conventional guaranteed issuance. In addition, the multi-year structuring process means it cannot provide a near-term solution to the WRP Programme's financing needs.

4. Debt-for-Resilience Swaps

Mechanism: A debt-for-resilience swap refinances a member state's existing higher-cost sovereign debt using MDB or guarantor credit enhancement, and ring-fences the resulting interest savings for a defined resilience purpose, capitalising a permanent vehicle or funding MHEWS O&M. The saving comes from replacing expensive debt with cheaper, credit-enhanced debt, so the mechanism generates fresh fiscal space from a government's own balance sheet rather than from new donor money. The structure can embed natural-disaster and pandemic deferral clauses that suspend debt service after a qualifying event, aligning repayment obligations with the periods when a state is least able to pay.

⁵ SOFF Secretariat (June 2025), *SOFF Impact Bond: Catalyzing Innovative Finance for Global Resilience*.

⁶ Reserve Bank of Fiji (2017), *Fiji Sovereign Green Bond*; World Bank (2018), *Sovereign Blue Bond Issuance FAQ* (Seychelles).

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Precedent: The 2022 Barbados transaction is the closest precedent. Approximately US\$ 146.5 million of new financing was raised through a dual-currency blue loan, guaranteed US\$ 100 million by the Inter-American Development Bank and US\$ 50 million by The Nature Conservancy, and used to repurchase higher-cost sovereign debt. The resulting debt-service savings, of the order of US\$ 40 million over 15 years, were directed into a domestic conservation fund (the Barbados Environmental Sustainability Fund) and an endowment; including projected endowment returns, total conservation funding is estimated at around US\$ 50 million. See Annex 3, Box 4.

WRP Programme Alignment: Like an impact-linked bond in section 4.3, a debt-for-resilience swap stands as a scaling mechanism that provides additional capital rather than a standalone O&M solution. It can only operate through a sovereign, and as the WRP Programme has no debt of its own to refinance it would operate through a member state, Fiji being the most plausible counterparty, with an MDB such as ADB providing credit enhancement, and the savings contractually directed into the Facility. Three constraints must be designed around: transaction costs are high relative to the relief achieved; the conservation- and performance-metrics used in prior deals have been criticised as weak, which a SPREP (as host of the WRP Programme) application would need to strengthen; and governance is complex where the special-purpose vehicle sits outside the country's core public financial management. The precondition is also material, it works only where a member state holds refinanceable debt on terms poor enough that credit-enhanced refinancing yields a meaningful saving, and has the debt-sustainability headroom to proceed.

5. Insurance-Linked Premium Efficiencies

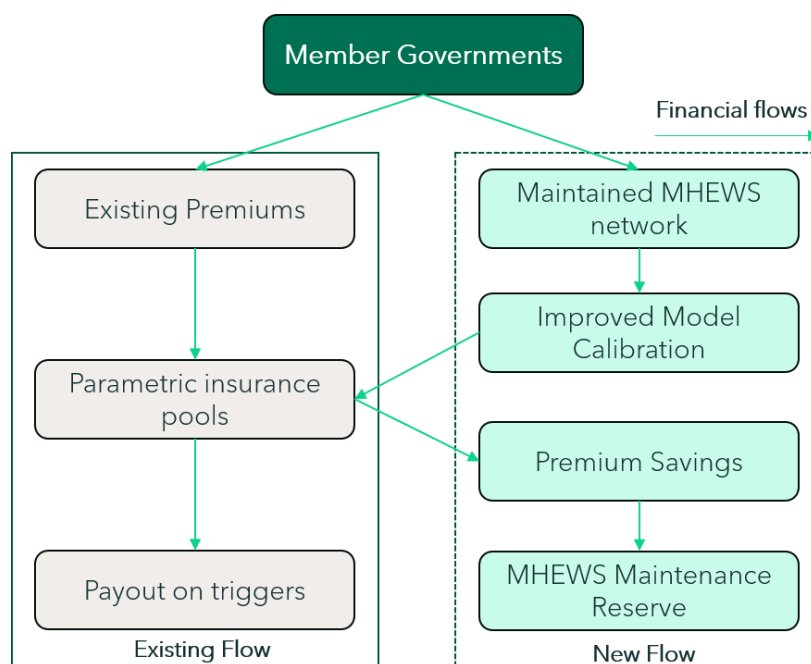
Mechanism: Insurance-Linked Premium Efficiencies, also known as Resilience Rebate, is a financing mechanism in which reduced insurance premiums, arising from demonstrably lower disaster risk following investment in resilient infrastructure, are captured and redirected to fund the maintenance of that same infrastructure. Applied to the WRP Programme, data from a maintained MHEWS network would be submitted as an input to the catastrophe models used to price the reinsurance of the region's parametric insurer, Pacific Catastrophe Risk Insurance Company (PCRIC)'s reinsurance. The premise is that improved calibration reduces the uncertainty loading reinsurers apply to their pricing, producing a premium saving. If agreed with PCRIC or its reinsurers, the resulting saving would be ring-fenced into the maintenance reserve rather than returned to member governments as a reduced premium. The mechanism could be implemented within PCRIC's existing annual reinsurance cycle, without requiring a new facility or structure. Willis Towers Watson (WTW), PCRIC's broker, would play the structuring role; and Reask, Temblor or JBA Risk Management, PCRIC's existing peril modellers, would supply the certified loss estimate the mechanism requires (See Figure 3).

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Figure 6: Insurance-Linked Premium Efficiencies Mechanism



Precedent: The rebate concept is not new. Risk Management Solutions (RMS), and re:focus partners formalised the same logic in 2015 as part of the Resilience Bond model, and it saw limited commercial uptake, principally because verifying the counterfactual, the loss that would have occurred without the resilience investment, proved difficult in practice. (see Annex 3, Box 5)

The obstacle is the design of parametric cover itself. Parametric insurance pays against a modelled loss derived from measured event parameters, not against assessed damage. In PCRIC products, tropical cyclone cover is calculated from storm position and wind speed, and earthquake cover from magnitude, with payment made within 10 days precisely because no on-the-ground assessment is required. Because the payout does not depend on realised damage, effective warning and evacuation do not by themselves reduce the payout, and therefore do not by themselves reduce the premium.

WRP Programme Alignment: The premium savings effect is real but indirect: it operates only through the exposure and vulnerability assumptions embedded in the catastrophe model, and only to the extent the modelling itself improves, not to the extent any individual asset is maintained. The rebate mechanism should accordingly be treated as an aspirational extension of the trust structure, worth a technical conversation with PCRIC's modellers once the trust is operating.

6. Trust with Alternative Revenue Streams

Mechanism: A defined and durable revenue stream, such as the sustainability fee or aviation cost-recovery mechanisms, can be channelled to capitalise an operations and maintenance trust. The trust could apply that income to two linked purposes rather than one: a portion would pay the recurring premium for parametric insurance cover on the MHEWS network, and the remainder would fund routine maintenance and minor repair. Under this structure, the parametric insurance component supplies rapid, pre-agreed payouts following a defined trigger event, such as a cyclone of a specified intensity, while the maintenance component addresses the ordinary wear and lower-severity damage that falls below the insurance trigger.

Precedent: The precedent for this pairing already exists and operates today: the Coastal Zone Management Trust in Quintana Roo, Mexico (See Annex 3, Box 6). The trust funds parametric windstorm insurance on a stretch of the Mesoamerican reef and a standing maintenance team, the Reef Brigades, from a single dedicated hotel tax levied on beachfront tourism properties. The revenue stream and the insured asset are, in that model, drawn from the same sector: tourism depends on the reef, and the tax on tourism funds the reef's protection and repair.

The candidate revenue streams below should be assessed against that same logic, not simply as sources of yield, but as streams with a direct relationship to the asset the Trust protects, since that relationship is what gave the Quintana Roo model its durability and its political acceptability to those who pay the levy.

Potential Revenue Streams

- **Marine and ocean temperature products:** These have the clearest commercial demand, from shipping and routing, fisheries, marine insurance and offshore operations, and the demand is for processed, timely and specific products rather than for raw observations. The commercial case is therefore aligned with the legal constraint: what buyers want is the value-added layer. The classification of the underlying marine data must nonetheless be established first against the WMO Unified Data Policy and Technical Regulations. Core data must be exchanged freely and without restriction, being defined as necessary for the provision of services supporting the protection of life and property and the well-being of all nations. As a result, monetisation must be confined to derived and value-added products and cannot extend to core observations.
- **Aviation and overflight charges:** Charging for aeronautical meteorological services is long-established internationally, and the French Polynesia arrangement offers a regional reference point. The resource mobilisation chapter of the Operations Manual already contemplates regional cost recovery from commercial activities including aviation services. A precedent exists here in the health sector with the financing of Unitaid from air ticket tax levies, that was pioneered by the French Government in 2006 and has been operational since that time. A variant of this – a green levy, is charged by Papua New Guinea to all departing flight passengers.

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- **A regional sustainability fee:** The same chapter contemplates a maintenance or sustainability fee charged to regional projects. A directly comparable mechanism already operates at Pan American Health Organization (PAHO): for every vaccine dose purchased through its Revolving Fund, member countries pay an additional 4.25%, of which 1.75% is capitalised into the Fund and the remaining 2.5% covers the Fund's administrative costs⁷. The yield is modest and the incidence falls on the development portfolio rather than on third parties, but the administrative path is short and the principle is already accepted within the programme. This is the stream requiring the least new institutional design.
- **Sector-linked contributions:** Tourism and other exposed sectors benefit directly from warning services and could contribute through a levy. This is politically sensitive, varies by member state, and should be presented as a national option rather than as a regional mechanism, but it is worth flagging as the stream with the strongest structural resemblance to the Quintana Roo's own funding source: a tourism-linked levy funding the protection of infrastructure the tourism sector itself depends on for safety and continuity of operations.

WRP Programme Alignment: The Quintana Roo trust functions because maintenance and insurance premium draw on the same beneficiary base, which gives the arrangement political coherence: those who pay the levy are also those protected by the asset it maintains. Aviation charges and sector-linked tourism contributions preserve that logic for the WRP Programme; the regional sustainability fee is administratively simplest but weakens it; and marine data revenue, while commercially the most promising in scale, departs from it furthest, since the payer is a data buyer rather than a protected beneficiary. This should inform which stream is prioritised for the Trust's initial capitalisation, rather than treating all four as equivalent sources of yield.

7. Concessional Loan Facility

Concessional lending to the Pacific grew by 47 per cent in 2024, while grant financing fell slightly, making lending an increasingly significant component of the region's overall development finance mix⁸. Concessional lending is an existing, well-established instrument in Pacific development finance. This section considers how it could apply to the WRP Programme's operations and maintenance requirement specifically.

Mechanism: A sovereign or regional borrower draws long-tenor concessional debt to fund asset replacement and major overhauls, repaying over the life of the asset. The instrument matches long-lived capital items with long-dated liabilities. Disaster prevention and reduction, together with global environmental and climate change issues, are expressly named among the eligible sectors. For instance, Japan International Cooperation Agency (JICA) offers a contingent instrument structured for disaster recovery, which applies preferential terms of as low as 0.01 per cent interest, over a repayment period of up to 40 years including up to a 10-year grace period.

⁷ PAHO, *Strengthening and Alignment of the Regional Revolving Funds of the Pan American Health Organization*, Document CE178/18, 178th Session of the Executive Committee, paragraph 15(d). 2026.

⁸ Lowy Institute. 2026. 2026 Pacific Aid Map Report. Sydney.

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Precedent: Concessional lending in the region runs primarily through bilateral and MDB channels, with Japan, Australian, New Zealand and the multilateral development banks as the principal lenders in the region. Australia's DFAT has partnered with ADB to establish the Australian Climate Finance Partnership (ACFP) in 2019, a concessional financing facility funded by a DFAT grant contribution of up to US\$99 million (AUD 140 million), which catalyses financing for private sector climate adaptation and mitigation projects in eligible countries across the Pacific and Southeast Asia⁹. In terms of donor alignment, contributions through ACFP are treated as ODA, whereas treatment of permanent endowment capital remains uncertain. There are several additional precedents of usage of donor funds to bring down the cost of traditional MDB financing to terms more similar to those offered by groups such as International Development Association (IDA).

WRP Programme Alignment: Applying debt to recurring operating costs does not close a funding gap; it defers the gap and adds a servicing obligation. If maintenance is a permanent obligation, then funding it with debt simply converts a maintenance liability into a debt liability, and the region has limited fiscal space to absorb either. The resolution is to confine concessional debt to the components of the requirement that are genuinely capital in character: asset replacement and major overhauls, which produce a long-lived asset and therefore justify a long-dated liability. Routine maintenance should not be debt-funded. Debt sustainability must be assessed for each participating member state before this option is presented as available.

8. Summary of Financing Options

The paper presents seven financing options, ranging from fund structures to additional revenue streams. The figures below illustrate how these options could be combined under two potential financing structures.

Option A illustrates a trust fund structure supplemented by additional revenue streams. As described in Section 4.2, a trust fund typically pools donor contributions, primarily from sovereign donors, within a single funding vehicle. Additional revenue streams could complement the trust fund in subsequent phases; however, the trust fund itself would generally not be structured to directly receive or generate revenues from alternative financing sources. A separate SPV would therefore need to be established to receive and manage these revenues, with proceeds subsequently channeled to the implementing agency or other designated recipients.

Bond issuance is less directly compatible with a conventional trust fund structure. To incorporate this option, a separate, appropriately structured and credit-rated entity would likely need to be established to issue the bonds, hold and deploy the proceeds, and meet repayment obligations to investors. See figure 4 below for an overview of Option A.

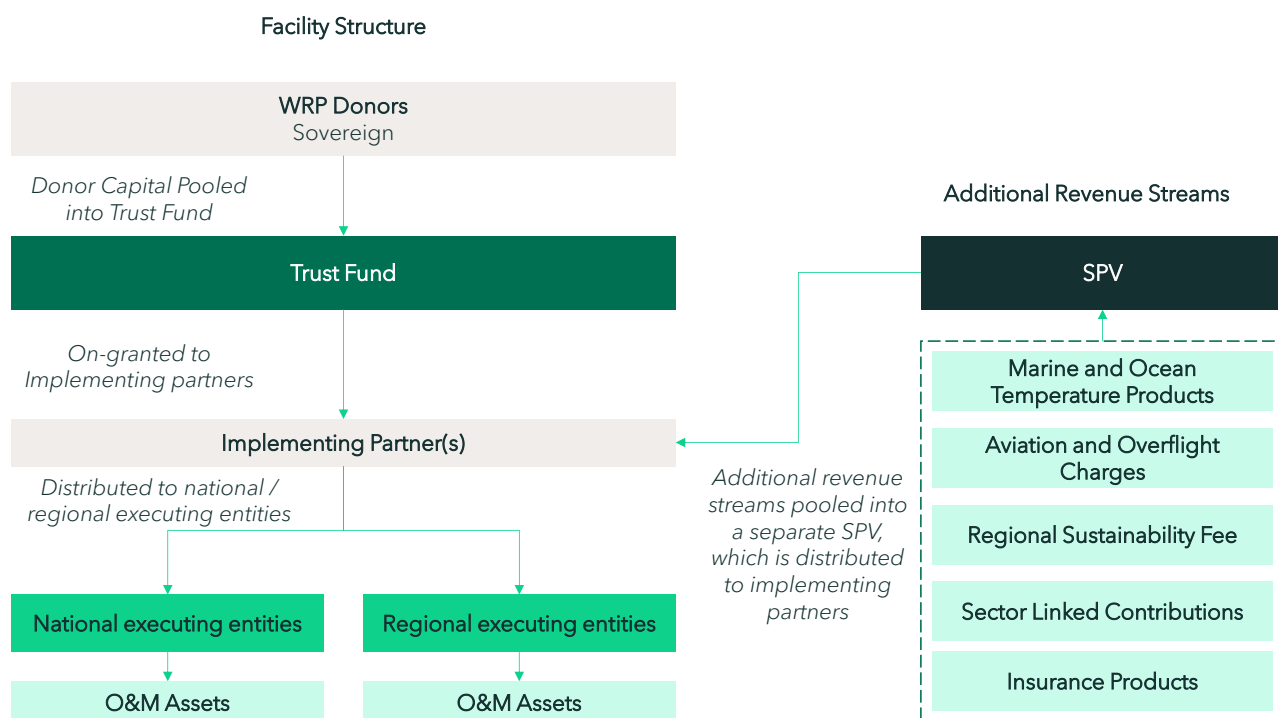
⁹ Asian Development Bank. 2021. Establishment of the Australian Climate Finance Partnership. Manila.

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Figure 7: Option A – Trust Fund with Additional Revenue Streams



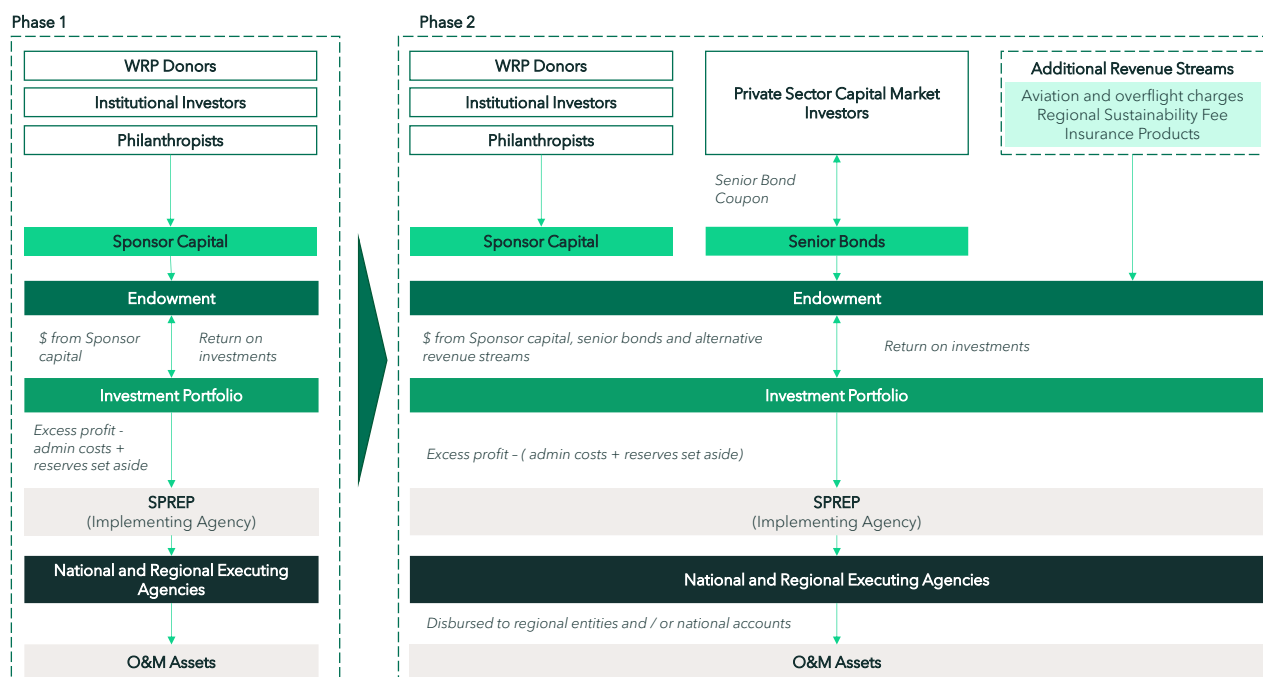
Option B illustrates an endowment structure. Once capitalised, the endowment could provide a platform through which a broader range of financing sources and revenue streams could be incorporated. This could include leveraging the endowment's capital base to issue bonds, subject to the entity obtaining an appropriate credit rating, as well as receiving income from other revenue-generating sources. The endowment could also deploy capital through long-dated concessional loans, generating repayment flows that could contribute towards servicing obligations to bondholders. See figure 5 for an overview of Option B.

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Figure 8: Option B – Endowment with Additional Revenue Streams and Bond Issuance



Bond issuance is less directly compatible with a conventional trust fund structure. To incorporate this option, a separate, appropriately structured and credit-rated entity would likely need to be established to issue the bonds, hold and deploy the proceeds, and meet repayment obligations to investors.

A further consideration in favour of the endowment structure is its ability to accommodate the ring-fencing of nationally generated revenues, particularly the alternative revenue streams considered in Section 4.6, such as aviation and overflight charges. As these revenues would generally be raised within individual country jurisdictions, Pacific member countries may prefer that some or all of the proceeds remain attributable to national priorities rather than being fully pooled at the regional level. The endowment could potentially accommodate this through country-specific sub-accounts or notional allocations within the wider capital structure, while retaining the benefits of pooled investment management and portfolio diversification. This would, however, require balancing national preferences for retaining and tracking domestically generated resources against the benefits of pooling capital for regional allocation. The appropriate balance, including the treatment of country-specific contributions within the endowment's investment and disbursement framework, would need to be determined through consultation with Pacific member countries and donors during the Stage 3 structuring phase.

The figures above are illustrative rather than exhaustive and are intended to demonstrate the range of financing options that could be incorporated under each fund structure. In particular, they highlight that Option B, the endowment structure, provides greater flexibility to incorporate additional revenue streams over time, including through capital market instruments and other income-generating mechanisms.