Fred Jockley (Acting Director)

fjockley@meteo.gov.vu

VANUATU METEOROLOGY AND GEO-HAZARDS DEPARTMENT COUNTRY REPORT

Reporting on National Priority Actions of the Pacific Islands Meteorological Strategy (PIMS) 2017-2026

This Report is presented to the Seventh Pacific Meteorological Council (PMC-7) Meeting held in Vanuatu from the 17-19 September 2024.

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# 1.0 Summary

*Between 2019 and 2024, the Vanuatu Meteorology and Geo-Hazards Department witnessed significant advancements and improvements in various aspects of its operations. The department, responsible for monitoring and mitigating weather- related hazards and geological risks in Vanuatu, made notable progress in the following areas:*

1. **Modernisation of infrastructure**: The department invested in upgrading its technological infrastructure, incorporating advanced weather monitoring system and equipment. This allowed for more accurate and timely data collection and analysis, leading to better for more accurate and timely data collection and analysis, leading to better forecasting and early warning systems.
2. **Enhance Weather Forecasting**: With the upgraded infrastructure, the department was able to provide more reliable and precise weather forecasts. Improve data modelling and analytical tools contributed to better predictions of cyclones, storms, and other severe weather events, enabling residents to be better prepared.
3. **Strengthened Geo-Hazards Monitoring**: Vanuatu is prone to both land and underwater volcanic eruptions, earthquakes, and tsunamis. During this period, the department strengthened its geo-hazards monitoring capacities, deploying additional monitoring stations and improving data interpretation. This helped in early detection and warning dissemination in the events of geological hazards.
4. **Public Awareness and Education**: The department launched extensive public awareness campaigns to educate communities about weather and climate- related risks and geo-hazards. This outreach aimed to enhance community preparedness and responses, reducing the impact of disasters.
5. **International Collaboration**: The department fostered partnerships and collaborations with international meteorological agencies and geo-hazards monitoring organizations. This facilitated the exchange of knowledge, expertise, and technology, further enhancing Vanuatu’s Capacity to deal with natural disasters.
6. **Emergency Response Planning**: The department worked closely with local authorities and emergency response agencies to develop comprehensive disasters response plans. These plans streamlined coordination and ensured a more effective response to emergencies, minimizing loss of life and property.

The challenges the department encountered during these years are few to mention as: insufficient funding, limited infrastructure, data gaps and inadequate coverage, human resource constraints, changing climate change impacts, limited public awareness, technologies challenges, disaster preparedness and response and long-term sustainability.

The department appreciates assistance and collaboration working together with the PMC, SPREP, WMO and other regional and international development partnerships and donors, and looks forward to strengthening this partnership to achieve its ambitious aspiration in the coming years.

Vanuatu Meteorology and Geo-Hazards Department envisions further potential improvement in the coming years (2024-2026):

* **Technology Upgrade**: Continue investing in modern weather monitoring systems and geo-hazards detection equipment. Upgrading technology will lead to more accurate and timely data collection, which is crucial for better forecasting and early warning systems.
* **Capacity Building**: Focus on training and developing the skills of staff members. Enhancing the knowledge and expertise of the department’s personnel will strengthen their ability to interpret data, analyse trends, and respond effectively to weather and climate-related and geological hazards.
* **Community Engagement**: Work on further engaging with local communities to raise awareness about weather and climate risks and geo-hazards. Educating residents about preparedness measures and response strategies will improve the overall resilience of the population.
* **Climate Change Adaptation**: Integrated climate change adaptation measures into the department’s strategies and plans. As climate change impacts become more pronounced, understanding and adapting to changing weather patterns will be critical.
* **Strengthening Partnerships**: Foster collaboration with regional and international meteorological agencies, disaster management organizations, and research institutions. Collaboration efforts can lead to the exchange of knowledge, resources, and best practices
* **Data Sharing and Accessibility**: Ensure that meteorological, climatological and geo-hazards data is shared and accessible to relevant stakeholders, including government agencies, private sectors, and the public. Open data policies can lead to better decision-making and innovative solutions.
* **Disaster Response Planning**: Continuously review and update disaster response plans, considering lessons learned from past events. Preparedness measures should be regularly tested through drills and simulations
* **Early Warning Systems**: Enhance the dissemination of early warnings through multiple communication channels, including mobile apps, social media, and traditional media outlets, to reach a wider audience.
* **Public-Private Partnership**: Consider forming partnerships with private sector entities, especially in telecommunications and transportation, to improve data transmission and response during emergencies.
* **Research and Innovation**: Invest in research and innovation to stay at the forefront of meteorological, climatological and geo-hazards sciences. Exploring new technologies and methodologies can lead to more efficient and accurate forecasting and monitoring.

|  |  |  |
| --- | --- | --- |
| *Divisions* | *Contact for Heads of Division within VMGD* | *Alternate Contact* |
| Administration | Name: Mr. Fred Jockley  Division Title: Director (Acting)  Address: Vanuatu Meteorology and Geo-Hazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: [fjockley@meteo.gov.vu](mailto:fjockley@meteo.gov.vu) or frjockley@vanuatu.gov.vu  Work Tel: (+678) 24686, 33630 VOIP 5493  Mobile: (+678) 7502225/5501002  Fax: (+678) 22310 | Name: Mr. William Worwor  Division Title: Principal Scientific Officer (Training & Community Liaison)  Address: Vanuatu Meteorology and Geo-Hazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  Email: [wbworwor@meteo.gov.vu](mailto:wbworwor@meteo.gov.vu)  Work Tel: (+678) 24686, 33630 VOIP: 5493  Mobile: (+678) 7793697  Fax: (+678) 22310 |
| Observation/Radiosonde | Name: Ms. Grace Sharon Johnolson  Division Title: Acting Manager  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: sjohnolson@meteo.gov.vu  Work Tel: (+678) 22433, VOIP 5304  Mobile: (+678) 7748570  Fax: (+678) 22310 | Name: Mr. Nigel David  Division Title: Senior Weather Observer  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: dnigel@meteo.gov.vu  Work Tel: (+678) 22433, VOIP 5304  Mobile: (+678)7310603, 5724642  Fax: (+678) 22310 |
| Forecast | Name: Mr. Jerry Timothy  Division Title: Acting Manager  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: jtimothy@meteo.gov.vu  Work Tel: (+678) 24686, 33630 VOIP 5493  Mobile: (+678) 7502225/5501002  Fax: (+678) 22310 | Name: Ms. Ellen Luke Solomon  Division Title: Principal Scientific Officer, Marine  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: eluke@meteo.gov.vu  Work Tel: (+678) 22932, 33632 VOIP 5392  Mobile: (+678) 5667883, 7735818  Fax: (+678) 22310 |
| Climate | Name: Ms. Glenda Pakoa  Division Title: Acting Manager  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: gpakoa@meteo.gov.vu  Work Tel: (+678) 23866, VOIP 5298  Mobile: (+678) 7778710, 7685081  Fax: (+678) 22310 | Name: Mr. John Ruben  Division Title: Principal Scientific Officer, Research and Development  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: jruben@meteo.gov.vu  Work Tel: (+678) 23866, VOIP 5298  Mobile: (+678) 7778710, 7685081  Fax: (+678) 22310 |
| Geo-Hazards | Name: Mr. Junior John Niroa  Division Title: Manager  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: jniroa@meteo.gov.vu  Work Tel: (+678) 24686, 33630 VOIP 5287  Mobile: (+678) 7364197  Fax: (+678) 22310 | Name: Ms. Sandrine Cevuard  Division Title: Scientific Officer, Volcanology  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: secvuard@meteo.gov.vu  Work Tel: (+678) 24686, 33632 VOIP 5411  Mobile: (+678) 7714086, 5455860  Fax: (+678) 22310 |
| ICT/ Engineering | Name: Ms. Esther Saul  Division Title: Manager  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: esaul@meteo.gov.vu  Work Tel: (+678) 24437, VOIP 5361  Mobile: (+678) 7742685  Fax: (+678) 22310 | Name: Mr. Jino Moli  Division Title: Principal Scientific Officer, Engineering  Address: Vanuatu Meteorology and Geohazards Department. PMB 9054, Lini Highway, Port Vila, Vanuatu  E-mail: mjino@vanuatu.gov.vu  Work Tel: (+678) 24437, VOIP 5393  Mobile: (+678) 7758705/5279123  Fax: (+678) 22310 |

# 2.0 Background Information

## 2.1 Institutional Setup

## The Vanuatu Meteorology and Geo-Hazards Department (VMGD) is one of the five (5) Departments operating under the Ministry of Climate Change and Adaptation (MoCCA) which was established in 2014. The department oversees vital tasks such as weather, climate and geo-hazards monitoring as well as carrying out meteorological, climatological and geological hazard assessments. It provides timely information and warnings to safeguard the nation’s communities and environment from potential risks and disasters. The current organizational structure is intricately linked through legislative ties established by the VMGD Act No 25 of 2016. This act formally designates the department as a key component of the ministry, outlining its responsibilities, functions, and cooperation with the other four (4) departments within the ministry.

The legislation empowers the department to effectively carry out its critical role in weather, climate, and geological monitoring and assessment, and providing essential early warnings, ensuring the nation’s preparedness and resilience in the face of natural disasters and climate challenges.

Vanuatu Meteorology and Geo-Hazards Department Organisational Structure

Honorable Minister - CABINET

Director General - CSU

Department of Meteorology & Geohazards

Director

PTO Training and Community Liaison Officer

Receptionist

Clerical Librarian Officer

Cleaner

Driver

Communication & Public Relations Officer

Finance Administration Officer

Executive Assistant

Deputy Director

Manager Forecast

Forecast Division X 12

Manager Observation

Observation Division X 18

Outer Island Stations X 6

Manager Climate

Climate Division X 7

Vanuatu Rainfall Network X 84

Manager Geo-Hazards

Geo-Hazards Division X 13

Manager ICT/Engineering

ICT Division X 10

National Disaster Management Office

Department of Climate Change

Department of Environment

Department of Energy

|  |  |
| --- | --- |
| **Governance** | **Description** |
| MET LEGISLATION: Update on whether or not your country has a stand-alone Meteorology Act or equivalent or is it part of other government’s legislations to guide the NMHS to perform its role and responsibility? Briefly describe it. | The VMGD Act was first developed in 1989 which was then Vanuatu Meteorological Services. As the demand of weather and climate information increases so its growth which eventuated to the establishment of the VMGD Act No 25 of 2016 which came into law in 2017.In the same year, the order of regulation No 80 of 2017 was also enacted which focused not only on the services provided to the aviation sector, but also covering products and services provided to the education & research, marine and geo-hazards while guiding the department’s role and responsibility. |
| Do you require for your Act to be reviewed? If it is already reviewed, what is the current status of your Act | The Act consolidates the Meteorology Department Act, Geological Hazards Department Act, Climate Change Department Act, and National Advisory Board into a unified legislative framework. The Act is over seven (7) years of its implementation by end of 2023 and it demands a thorough review as well as to separate each Act accordingly to address demand and current drastic growth of respective department’s roles and responsibility with potential prospect into the future. |
| **Strategic Planning** |  |
| Describe how meteorology (weather) and climatology (climate variability and climate change) are featured in the current national development plan, government ministries corporate and implementation/operational plans. | The corporate plan for 2022-2026 effectively integrates both the strategic plan (2024-2029) and the peoples plan 2022-2030.It emphasises the department’s key priorities for the next five (5) years. These priorities serve as the foundation for the department’s annual activity work plans. Moreover, the VMGD activities and priorities are in perfect harmony with the Environmental pillar of the people’s plan, encompassing the pillar’s policy objective 3 (Env 3.1, 3.2, 3.3, 3.4, 3.5). |
| Describe the process if your NMHSs is reporting against the SDG or its national equivalent | The Department of Strategic Policy, Planning & Aid Coordination, operating under the Prime Minister’s office, assumes the responsibility of coordinating the annual reporting of VMGD’s progress through the Corporate Service Unit (MoCC) which subsequently consolidates all department reports and forwards them to the Public Service Commission and the Prime Minister’s Office. These reports are thoroughly evaluated under the National Sustainable Development Plan (NSDP) Monitoring and Evaluation (M & E) Framework 2017. |
| Does your NMHS have a strategic plan, implementation/operational plan or equivalent(s)? | The department has been operating under its Strategic Development Plan (SDP 2014- 2023) which was streamlined with Ministry’s Corporate Plan 2022-2026 which align with the Peoples Plan 2016-2030. Through the support from the CREWS-WMO, Tonkin + Taylor New Zealand with VMGD been able to review and updated its SDP into what is now termed as the National Strategy and Frameworks for Weather, Climate, Hydrometeorology, and Ocean Services (NSFWCHOS) which is reduced to five years 2024-2029. |
| Describe how meteorology (weather), climatology (climate variability and climate change), disaster management and early warning systems are feature in your NMHS strategic plan, implementation/operational plan or equivalent(s). | The Vanuatu Meteorology and Geo-Hazards Department (VMGD) operates with its own strategic plan (NSFWCHOS 2024-2029) while aligning with the Ministries corporate plan, and subsequently formulates an annual plan annually based on these strategic guidelines. |

## 2.2 Staffing

### 2.2.1 Staff Qualification

The Ministry of Climate Change Adaptation, under which VMGD operates, has its own dedicated human resource strategy, which serves as a guiding framework for human resource development across all five departments, including VMGD. This is an updated record of VMGD Staff’s drastic increase from 2020 – 2024.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Staff | Qualification | Division/Section | No. Professional Staff | | Total |
| *Staff Name* | *(Description the qualification under each division) Example; WMO Class 1-4 or other qualification or professional training, education and research)* | *Responsibility of Staff*  *(Forecast, Climate, Observation, Administration, etc)* | *Male* | *Female* | *Total Number of Staff* |
| *ADMINISTRATION DIVISION* |  |  |  |  |  |
| Fred Jockley | BEd, WMO Class 1 (Graduate Diploma) | Acting Director | M |  |  |
| William B. Worwor | WMO Class III & II, certificate in management | PSO (Training and Community Liaison Officer) | M |  |  |
| Rebecca Nihapi | Certificate | Finance and Administration |  | F |  |
| Juanita Kota | Certificate | Cleaner |  | F |  |
|  | Certificate | Driver | M |  |  |
| Octavie Meltenoven |  | Clerical Librarian: Acting Secretary |  | F |  |
| Suzane Boevilvil | Certificate | Receptionist |  | F |  |
| *Total* |  |  | ***3*** | ***4*** | ***7*** |
| *WEATHER FORECAST DIVISION* |  |  |  |  |  |
| Jerry Timothy | BEd, Graduate Dip (Mathematics), WMO Class 1 | Forecast-PSO, Aviation | M |  |  |
| Ellen Luke | BEd, WMO Class 1 | Forecast-PSO, Marine |  | F |  |
| Levu B Antfalo | BEd, WMO Class 1, MSc | Forecast – Forecaster | M |  |  |
| Iuma Bani | BEd, MSc | PSO Public and Commercial Services | M |  |  |
| Franky Peter | BSc | Forecast – Forecaster | M |  |  |
| Ian Nelson | WMO Class IV, INTV Certificate | Forecast – Forecaster | M |  |  |
| Tom Natick | WMO Class 1 (Graduate Diploma), BSc | Forecast – Forecaster | M |  |  |
| Patterson Malsale | WMO class IV | Forecast – Forecaster | M |  |  |
| McGregor Toaliu | BSc | Forecast – Forecaster | M |  |  |
| Angas Bani | BSc | Forecast – Forecaster | M |  |  |
| Anthony Wong | BSc | Forecast – Forecaster | M |  |  |
| *Total* |  |  | ***11*** | ***1*** | ***12*** |
|  |  |  |  |  |  |
| *CLIMATE SERVICES DIVISION* |  |  |  |  |  |
| Allan Rarai | WMO class II, BA, MSc | Manager Climate  (Study Leave) | M |  |  |
| Glenda Pakoa | BSc | PSO Seasonal Forecast |  | F |  |
| John Ruben | BSc, PGS, MSc | PSO Research & Development | M |  |  |
| Kalo Abel | WMO Class IV | Senior Climatologist – Data Management | M |  |  |
| Kalsuak Gordon | WMO Class IV | Climatologist Vanuatu Rainfall network | M |  |  |
| John Mangau | BSc | Climatologist Assistant Seasonal Forecaster | M |  |  |
| Lucy Janet Obed | BSc, PGS | Outreach Officer ( Vankirap Project) | M |  |  |
| Neil Malosu | BSc | Data Archive ( VanKIRAP Project) | M |  |  |
| Rainfall Network Collectors |  |  | M (X 32) | F (X 15) | 47 |
| *Total* |  |  | ***8*** | ***1*** | ***9*** |
| *WEATHER OBSERVATION DIVISION* |  |  |  |  |  |
| Grace Johnolson | BSc | Principal Scientific Officer (PSO) – Acting Manager |  | F |  |
| Joseph Laan Worwor | BSc | Observation-Weather Observer (Acting climate data analyst) | M |  |  |
| David Nigel | WMO class IV | Senor Met Officer (SMO) | M |  |  |
| Hilton Henry | WMO class IV | Senor Met Officer (SMO) | M |  |  |
| Tom Kaio | WMO class IV | Senor Met Officer (SMO) | M |  |  |
| Bradley Bani | WMO class IV | Observation- Weather Observer | M |  |  |
| Joseph Nishina | WMO class IV | Observation-Weather Observer | M |  |  |
| Alvin Wotlolan | WMO class IV | Senor Met Officer (SMO) |  | F |  |
| Willie Molisa | WMO class IV | Observation-Weather Observer | M |  |  |
| Arnaud Yakelo | WMO class IV | Observation-Weather Observer | M |  |  |
| Tensley Tambeana | Certificate | Observation-Weather Observer | M |  |  |
| Shina Mala | Certificate | Observation-Weather Observer |  | F |  |
| Richie Francois | Certificate | Observation-Weather Observer | M |  |  |
| Erica Loli | Certificate | Observation-Weather Observer |  | F |  |
| Frederick Vuti | Certificate | Observation-Weather Observer | M |  |  |
| Tom Kalo | certificate | Observation-Weather Observer | M |  |  |
| Nickson Koah Iata | Certificate | Observation-Weather Observer | M |  |  |
| *Total* |  |  | ***13*** | ***4*** | ***17*** |
|  |  |  |  |  |  |
| *GEO-HAZARDS DIVISION* |  |  |  |  |  |
|  |  |  |  |  |  |
| John Junior Niroa | BSc, PGS, MSc | Manager | M |  |  |
| Melinda Aru | BSc | Volcano Data Analyst |  | F |  |
| Dan Tari | BSc | Senior Officer Seismology | M |  |  |
| Rerena Vaut | BSc, PGS | Volcano Data Analyst |  | F |  |
| Estonia M | BSc | Volcano Data Analyst |  | F |  |
| Ricardo Williams | BSc | Scientific Geo-Chemistry Officer | M |  |  |
| Sandrine Cevuard | Dip | Senior Officer Volcanology & Seismology (study leave) |  | F |  |
| Juanita Laga | Dip | Earthquake data analyst |  | F |  |
|  |  |  |  |  |  |
| Esther Peter | BSc, PGS | Volcanology (Internship) |  | F |  |
| Willie Toka | Dip | Assistant Seismology Technician | M |  |  |
| *Total* |  |  | ***5*** | ***6*** | ***11*** |
|  |  |  |  |  |  |
| *ICT/ENGINEERING* |  |  |  |  |  |
| Esther Saul | BSc | Manager |  | F |  |
| Severing Langon | WMO class IV, BSc | IT Officer Help Desk |  | F |  |
| Jino Moli | Diplomat Engineering | PSO Meteo & Geo hazards systems | M |  |  |
| Igor Miche | Dip | IT officer | M |  |  |
| Patterson Nautt | Electrical Certificate, INTV | ICT/Engineering - IT | M |  |  |
| Jerry Bani | WMO class IV, Certificate in Maintenance and Calibration | Observation-Technician, Instruments | M |  |  |
| Athanas Worwor | Certificate 12 e anne'e Electrotechnique, INTV, 2006 | Senior technician Seismology | M |  |  |
| Janvion Cevuard | Electrotechnical HVC 1, VIT, 2007 | Senior Technician Volcanology | M |  |  |
| Hilory Samuel | Certificate Electronic and IT Technician | ICT/Engineering - IT | M |  |  |
| Loic Jimmy | Electrical Certificate, INTV | ICT/Engineering - Electrician | M |  |  |
| *Total* |  |  | ***8*** | ***2*** | ***10*** |
|  |  |  |  |  |  |
| *Project Management Unit* |  |  |  |  |  |
| Moirah Yerta | BSc, MSc | VANKIRAP project Manager |  | F |  |
| Sunny Seuseu |  | VANKIRAP Project Climate Service Information Officer- SPREP | M |  |  |
| Connie Sewere |  | VAN-REDI Project Finance and Admin - SPREP |  | F |  |
| Lydvina Karia | Dip | VAKIRAP Finance Officer |  | F |  |
| Vanessa Sandy | Dip, BCom | Administration Officer () |  | F |  |
|  |  |  |  |  |  |
| *Total* |  |  | ***1*** | ***5*** | ***6*** |
| *GRAND TOTAL* |  |  |  |  | ***119*** |

## 2.3 Finance

Presented below are the financial statements for the Vanuatu Meteorology and Geo-Hazards Department, for the years 2021 to 2023.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description** | **USD** | **VUV** | | **Total VUV** |
|  | **Total Budget (USD)** | **Administration (USD)** | **Operation (USD)** |  |
| ***Government Support*** |  |  |  |  |
| **2021 Funds in Vatu** | USD1,568,781 | 151,151,672 VT | 27,909,000 VT | 179,060,672 VT |
| **2022 Funds in Vatu** | USD 1,568,781 | 151,151,672 VT | 27,909,000 VT | 179,060,672 VT |
| **2023 Funds in Vatu** | USD 1,568,781 | 151,151,672 VT | 27,909,000 VT | 179,060,672 VT |
| ***Total (USD)*** | *USD 6,275,124* | *VT 604,606,688* | *111,636,000 VT* | *716,242,688 VT* |
|  |  |  |  |  |

Extra financial support is required to fund for Impact -Base Forecast assessment. The impact-based forecast is essential for the entire process from data collection and analysis to model development, communication, validation, and continuous improvement. Without sufficient funding, the accuracy and effectiveness of impact-based forecasts would be compromised, potentially leading to inadequate preparedness and response to various events. This will enable VMGD to contribute to the Post-Disaster Needs Assessment and Recovery Framework (PDNA/RF).

#### 2.3.1 Projects supporting the NMHSs

The number of significant projects offered through VMGD from 2021 to 2023.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Project** | **Total Project Budget made available to SPREP for delivery of the Project** | **Percentage of how much is provided to the VMGD** | **Summary of VMGD activities covered by the project** |
| Climate Information Services for Resilient Development Planning in Vanuatu (VANKIRAP Project) – GCF funded project through SPREP | USD 18,106,905 | 80% | The project has a focus on addressing information gaps and priority needs of target beneficiaries at national, provincial and local levels across five priority sectors that include water, tourism, agriculture, fisheries and infrastructure. |
| Regional Disaster Resilience for Pacific SIDS Russan funding through RESPAC/UNDP | USD 232,830 | 31% | Digitizing historical climate data and enhance climate services for the health sector |
| Enhancing the Capacity of issue Earthquake, Tsunami and storm Surge (VANREDI Project) – funded by JICA | USD 50,000 | 35% | This project focuses on capacity development, as VMGD is dedicated to conducting training programs for strengthening Geo-hazards, weather forecasting, weather observation, ICT & Engineering, including specialized training in tide, observation, seismology, and tsunami early warning systems. |
| Joint Ocean Observatory Automatic Tidal Gauge & Station – Funded by China Government through China -Vanuatu bilateral agreement | USD 400,000 | 63% | Scale up the coastal disaster response capacity and establishment of joint marine observation stations |
| Adaptation to Climate Change in the Coastal Zone of Vanuatu – funded by various GEF Trust Funds under UNDP | USD 63,402,117 | 20% | The Adaptation to Climate Change in the Coastal Zone of Vanuatu – Phase II ( V-CAP II) will improve the resilience of the vulnerable areas and communities therein to the impacts of climate change through the conservation of biodiversity and natural ecosystems and the implementation of integrated approaches in order to sustain livelihoods, food production and ensure biodiversity conservation and reduce land degradation by building on the lessons learned form the first phase project. |
| ***Total (USD)*** | ***83,181,803*** |  |  |

#### 2.3.1 Potential Collaboration on project proposals

VMGD will collaborate with other development partners on potential projects outline below

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Project** | **Total Project Budget made available to SPREP for delivery of the Project** | **Percentage of how much is provided to the VMGD** | **Summary of VMGD activities covered by the project** |
| Climate Ocean and Services Program for Pacific countries ( COSPPAC) |  |  |  |
| Climate Services and Related Application (ClimSA) |  |  | Hydrometeorology landscape and multi-hazard early warning systems in collaboration with NDMO to preparation, responses and recovery approaches to save lives and reduce damage to infrastructures pertain to social and economic development |
| Enhancing Research and Innovation Ecosystems to address the impact of climate change in the Pacific (RERIPA Project) funded by EU |  | 25% | The overall objective (OG) is the consolidation of Research and Innovation (R&I) ecosystems in the Pacific through multi-stakeholder approaches and the mobilization of knowledge on climate issues for the deployment of R&I networks and sustainable solutions, with three specific objectives (SO): |
| The SMART submarine cable Project- Grant from Cordon and Betty Moore Foundation |  | 40% | The SMART (Science Monitoring And Reliable Telecommunications) subsea cables, is working to |
| Science and Technology Research Partnership for Sustainable Development (SATREPS) – funded by JICA |  | 30% | Joint research on Disaster Risk Reduction for widespread volcano hazards in Southwest Pacific countries counter parts ( Fiji, Tonga, Vanuatu) |

## 2.4 Development

This update reflects some development from 2021 to 2024 which are reflected in certain PKO(s) as outlined below.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| 1 | Install extra 8 automatic weather stations (AWSs) and 8 Automatic Rain Gauges (ARGs) funded by the VanKIRAP Project |  |  |  | x | x | x | x | x | x |  |  |
| 2 | Continue to improve and update VMGD website for automated products uploads and warning dissemination | x | x | x | x | x | x | x | x | x | x | x |
| 3 | Installation of 1 Automatic Weather Observatory System (AWOS) in Luganville, Santo |  |  | x |  |  |  |  |  |  |  |  |
| 4 | Renovate 2 observation weather stations and upgrade their communication systems, desktops and displays for the provinces |  |  |  |  |  |  | x | x | x | x |  |
| 5 | Re-open Lamap Observation Weather Stations |  |  |  |  |  | x |  |  |  |  |  |
| 6 | Conduct National Climate outlook forum for VMGD and its climate stakeholders |  |  |  |  |  |  |  |  |  | x |  |
| 7 | Established Toll Free Number (pre-record) for daily weather forecasting information platform |  |  |  | x |  |  |  |  |  |  |  |
| 8 | Established of weather observation laboratory for calibration of monitoring sensors |  |  |  |  |  |  |  | x |  |  |  |
| 9 | Building capacity of Weather forecasters and Weather observers through cohort training |  |  |  | x |  | x |  | x |  |  |  |
| 10 | Continue to conduct tsunami drill among the communities during world tsunami day | x | x | x | x | x | x | x | x | x | x | x |
| 11 | Carry out 2 audit surveillances report on QMS Part 174 |  |  | x |  |  |  |  |  |  |  | x |
| 12 | Managed to monitored two cyclones simultaneous entering Vanuatu area of responsible | x | x | x | x |  |  |  |  |  |  | x |
| 13 | Continue to Sustained 24/7 weather forecasting operations and services | x | x | x | x | x | x | x | x | x | x | x |
| 14 | Managed to remotely monitored weather forecasting remotely during Covid-19 pandemic crisis |  |  | x | x | x | x | x | x |  |  |  |
| 15 | Training undertaken for Tailored System of Climate Services for Agriculture (OSCAR) applications with stakeholders |  |  |  |  |  |  | x |  |  |  |  |
| 16 | Endorsement of Vanuatu Rainfall Network budget to VMGD payroll for rainfall collectors throughout Vanuatu |  |  |  |  | x |  |  |  |  |  |  |
| 17 | Established over 20 additional Tsunami signages to Anietyum |  |  |  | x |  |  |  |  |  |  |  |
| 18 | Four (4) cyclones have been tracked in 2021 and 2022 while 3 cyclones in 2023 including the twin cyclones | x | x | x | x |  |  |  |  |  |  | x |
| 19 | Managed to inform the general public through text messages during the submarine volcano erupted in Tonga on 15th January 2022 | x |  |  |  |  |  |  |  |  |  |  |
| 20 | Tsunami Warnings and Advisories were disseminated to general public during the Hunga Tonga-Hunga Ha’apai submarine volcano eruption | x |  |  |  |  |  |  |  |  |  |  |
| 21 | Continue with the maintenance of the integrated weather forecasting systems and warning dissemination | x | x | x | x | x | x | x | x | x | x | x |
| 22 | Strengthened weather, water, ocean, climate change and climate vulnerability knowledge base with productive sectors (water, agriculture, tourism, infrastructure and fisheries) | x | x | x | x | x | x | x | x | x | x |  |
| 23 | Provide collaboration with line departments and miniseries on data sharing and information through project engagement | x | x | x | x | x | x | x | x | x | x | x |
| 24 | Continue to build capacity on tide observation, seismology and tsunami early warning with the support of JICA |  |  |  |  | x | x | x |  |  |  |  |
| 25 | Installed ocean buoy and river gauges in hydro dumps |  |  | x | x |  |  |  |  | x |  |  |
| 26 | Established VMGD Research and Development Committee |  | x |  |  |  |  |  |  |  |  |  |
| 27 | Conducted the National -Level Stakeholders Consultation workshop on VMGD development strategic plan 2024 -2034 in collaboration with Tonkin + Taylor consultation from New Zealand |  |  |  |  |  |  |  | x |  |  |  |
| 28 | Engaged in the consultation on VMGD Data Policy Management and Governance developed with support from the VanKIRAP Project |  |  |  |  |  |  | x |  |  |  |  |
| 29 | Early retirement of 1 staff, 2 deceased, 2 promotion, 10 new staff, and 47 rainfall collectors scattered in the six provinces of Vanuatu. |  |  |  | x |  |  |  | x |  |  | x |
| 30 | Maintain the activities of the Vanuatu rainfall network data collection all throughout Vanuatu and seeking to increase another 37 to 84 rainfall collectors in total | x | x | x | x | x | x | x | x | x | x | x |
| 31 | Issuance of Aviation weather forecasts | x | x | x | x | x | x | x | x | x | x | x |
| 32 | Issuance of Marine weather forecasts, and marine weather warnings | x | x | x | x | x | x | x | x | x | x | x |
| 33 | Agrometeorology Bulletin co-developed with the department of Agriculture and Rural Development. |  |  | x |  |  | x |  |  | x |  |  |
| 34 | Issuance of Vanuatu Monthly Climate Summary for schools and stakeholder | x | x | x | x | x | x | x | x | x | x | x |
| 35 | Issuance of volcano monthly bulletin for all active volcano throughout Vanuatu | x | x | x | x | x | x | x | x | x | x | x |
| 36 | Issuance of Public weather forecasts and ocean tides | x | x | x | x | x | x | x | x | x | x | x |
| 37 | Issuance of Early Alert Rainfall (EAR) Watch for disaster managers |  |  | x | x |  |  |  |  |  |  |  |
| 38 | Issuance of El Nino Press release |  |  |  |  | x |  | x |  |  |  |  |
| 39 | Develop climate information services action and communication strategy with sector partners for climate information services, namely Agriculture, Fisheries, Infrastructure, Tourism and Water. |  | x | x | x | x | x | x |  |  |  |  |
| 40 | Participate in RAV, Bali Indonesia |  |  |  |  |  |  |  |  |  |  | x |
| 41 | Participated in COP meetings |  |  |  |  |  |  |  |  |  |  | x |
| 42 | Participated in Vanuatu Resolution to the UN on loss and damage for climate Justice |  |  |  |  | x |  |  |  |  |  |  |
| 43 | Participated in IPCC in Kenya |  |  |  |  |  |  | x |  |  |  |  |
| 44 | Participated in ORSNET 7th Meeting in Tonga |  | x |  |  |  |  |  |  |  |  |  |
| 45 | Participated in 1st National Summit for Vanuatu NSDP 2016-2030 |  |  |  |  |  | x |  |  |  |  |  |
| 46 | Participated in WMO trainings and Workshop virtually and face to face | x | x | x | x |  | x |  | x | x | x | x |
| 47 | Carry out community-level consultation on VMGD Strategic Development Plan 2-24-2034 |  |  | x |  |  |  |  |  |  |  |  |
| 48 | Government support of 16.2 million vatu toward the establishment of C-band weather doppler radar through VanKIRAP project |  |  |  |  | x |  |  |  |  |  |  |
| 49 | July 2024 resurrected the weather balloon – not yet launched – waiting for the hydrogen supplier from the US to come and do a commissioning and carry out testing prior to its launch – scheduled for September-October 2024 |  |  |  |  |  |  |  |  |  |  |  |
| 50 | Developed 679 historical climate maps for Vanuatu on rainfall, temperature and ENSO, including Climate Atlas for all six provinces through support from the VanKIRAP project. |  | x | x | x | x | x | x | x |  |  |  |
| 51 | Established an ocean monitoring network of spotter wave buoys in all six provinces in Vanuatu through a partnership with Fisheries Department and VanKIRAP Project |  |  |  |  | x |  |  |  |  |  |  |
| 55 | Developed a National Traditional Knowledge Indicators Booklet, six seasonal TK calendars for each province. |  | x | x | x | x | x | x | x |  |  |  |
| 56 | Launch the Vanuatu Climate Futures Portal and sector case studies |  | x | x | x | x | x | x | x |  |  |  |
| 57 | ClimateWatch App for the monitoring and collection of traditional knowledge indicators and guides. |  | x | x | x | x | x | x | x |  |  |  |
| 58 | Update the sub-regional climatology of Vanuatu – Northern, Central and Southern |  | x | x | x | x | x | x | x |  |  |  |
| 59 | Rapid Climate Risk Assessment Framework for Vanuatu and Methodology for Tourism sector (VanKIRAP Project) |  | x | x | x | x | x | x | x |  |  |  |
| 60 | Vanuatu Road Design Guide for Infrastructure sector (VanKIRAP Project) |  | x | x | x | x | x | x | x |  |  |  |
| 61 | Sarakata Catchment Flood Management Plan and Standard Operating Procedure (VanKIRAP Project) |  | x | x | x | x | x | x | x |  |  |  |

#### 2.4.1 Buildings Infrastructure

* VMGD Infrastructure development of the NMHSs since 2019.
* 7 weather stations
* 16 AWSs funded by the GCF VanKIRAP project.
* 8 new ocean buoys installed in all provinces donated by the GCF VanKIRAP project.
* New river monitoring gauge and spare parts installed in the Sarakata river catchment in Luganville, Santo, Sanma Province. System fully funded by the GCF VanKIRAP project.
* Four (4) new groundwater monitoring sensors installed within the Sarakata river catchment in Luganville, Santo, Sanma Province funded by the VanKIRAP project.
* A new warning centre under construction funded by the UNDP VCAP2 project.
* July 2024 resurrected the weather balloon – not yet launched – waiting for the hydrogen supplier from the US to come and do a commissioning and carry out testing prior to its launch – scheduled for September-October 2024 (ACHIEVEMENT)
* Upcoming – Installation of 4 AWOSs throughout the country with the assistance of BoM, funded by the Australian Government (supplied by Weather Ready Pacific).
* Upcoming – C-band Doppler Weather radar system funded by the Van-KIRAP – the groundwork is starting – will be ready by mid-2025.
  + Gap: Capacity building for the technical team to maintain the radar and weather forecasters who will be using, processing, analysing, and communicating the data.

#### 2.4.3 Update on Communications Infrastructure (to support current and future development)

|  |  |
| --- | --- |
|  | **Details** |
| What is the mode of communication for transmitting oceanographic and hydro-meteorological data from remote stations? | [e.g. Satellite DCP/ HF/VHF/Internet/RANET ( Chatty Beetle)/Telephone/and or fax, and add descriptions] |
| What is the Mode of transmitting data to the Global Data Network? | [eg. GTS, e-mail and to whom, etc.] |
| What is your Current Internet Speed, and is your main office connected to a secure national Government provided IT network (inbound and outbound)? |  |
| Does your NMHS have access to SATAID information? | Yes. |
| Which geostationary satellite(s) do you utilize, and which product(s)  do you rely upon and how do you obtain it? | Himawari 9  Rely on data from the cast station at the MET office and can download data using website images. |
| How many Upper Air Station does your NMHSs operate and what is their status?  Do you have access to Lightning data, and do you use in in your forecasts? | Commissioned September-October before being used.  Lightning instrument installed at the airport.  Lightning data accessed via public forecasting websites and used in forecasting. |
| What is the scope and extent of marine weather services provided by your NMHSs and describe your NMHSs interaction with your national marine/port authorities and the marine user communities? | Radio product sent to the national radio stations.  Free toll number – 116.  Website and email to those who have subscribed.  Marine forecasts cover all waters – separated into four different areas.  Looking at reducing the forecast areas.  Good collaborations with the marine regulator – have requirements for boat and ship waters, one which is getting weather updates before boats leave ports. |
| What type of marine weather products, warnings, advisories do you provide? | 4-day marine forecast bulletin.  Marine warning.  3-day severe weather outlook (marine, heavy rainfall, strong inland winds).  Upcoming goals: swell warning bulletin. |
| Does your NMHS have a Port Meteorological Officer and are they involved in the WMO VOS Programme? | No PMO but currently involved in the WMO VOS Programme. |

#### 2.4.4 Training

**List any international, regional or national training, educational or research related events or workshops in which the NMHS has participated in the last 5 years (2019-2024) by using the table below;**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Training or Workshop Title attended by NMHS staff from 2019-2024*** | ***Start and End dates*** | ***Donor*** | ***Number of Participants from the NMS*** |
| *CAP training (international)* | *Dec 2023* |  |  |
| *IBFWS training (national)* | *2024-ongoing* |  |  |
| *PMO (Port-Meteorology Officer VOS) training* | *2023* |  |  |
| *Tropical cyclone training (regional)* | *Annual* | *WMO* |  |
| *National tropic cyclone and tsunami refresher trainings* | *Annual* |  |  |
| *Ocean observation training* | *2024* |  |  |
| *Tropical Cyclone Portal Training* | *2022* | *BoM* | *7* |
| *UNFCCC COP27 Meeting* | *2022* | *UNFCCC* | *2* |
| *Regional ROK PI CliPS Training* | *2023* | *APCC and SPREP* | *1* |
| *Sub-Regional ROK PI CliPS Training* | *2023* | *SPREP and APCC* | *1* |
| *OSCAR Intensive Training* | *2023* | *APCC* | *12* |
| *UNFCCC SB58 Meeting* | *2023* | *UNFCCC* | *1* |
| *59th IPCC Meeting* | *2023* | *IPCC* | *1* |
| *CliDE Refresher Training* | *2023* | *BoM* | *7* |
| *COP Negotiation Training* | *2023* | *SPREP* |  |
| *Vanuatu Climate Futures Portal Intensive Training* | *2023* | *CSIRO* | *7* |
| *UNFCCC COP28 Meeting* | *2023* | *UNFCCC* | *1* |
| *ClimateWatch Intensive Training* | *2024* | *EarthWatch Australia* | *8* |

#### 2.4.5 Update on Climate Services (to support current and future development)

|  |  |
| --- | --- |
| **Questions** | **Details** |
| What level is your climate services according to WMO standard? (Class 1-4) |  |
| Do you have an update climate science publication for your country? If not, when is the last one and how often do you want to have climate science published? | Lately, through the Van-KIRAP project, CSIRO have published several climate science case studies targeting five key sectors of Vanuatu.  A publication is also done in 2021 through the ‘NextGen’ project regarding the latest country report on Current and Future Climate of Vanuatu. |
| List the qualification obtained by climate officers (do not specify names) | MSc, Postgraduate Diploma, BSc, BCom, Diploma, WMO class IV |
| List the types of training needed by you to enhance the generation and production of climate services | Climate Modelling Training, Climate Analysis, Scientific Assessments and COMs training |
| What tools do you use to provide seasonal forecast? (please select from SCOPIC, POAMA, METPI, CLIKP, PEAC) | SCOPIC, CLIKP, Access-s2 Model, Traditional Knowledge Indicators |
| What model(s) do your use to provide seasonal forecasts on monthly basis? | Access-s2 Model |
| What are the climate variables you are forecasting? | Rainfall, Air Temperature, SSTs, Coral Bleaching, tides, Moon phases and Chlorophyll |
| What are some variables you would like to forecast in the future to meet needs of your client? | Ocean Acidification and Marine Heatwaves |
| How many AWS do you have that feed into the database you are using? |  |
| List in order of importance some sectors you engage with? List what products you issue for these sectors? | Agriculture – Agromet Bulletin  Fisheries – Fisheries Climate Outlook, Vanuatu Ocean Outlook  Tourism – Tourism Climate Outlook  Infrastructure – Vanuatu Climate Update, EAR Watch  Water Sector – Vanuatu Climate Update, EAR Watch  Energy Sector – Climate Energy Reports  Health – Climate Health Reports, Vanuatu Climate Update, EAR Watch |
| List 5 most important mode of communication of seasonal forecasts in your country. | Email, Zoom calls, Facebook, Television, Radio, SMS |
| Do you have any early warning system (EWS) for climate extreme events? | ENSO Early Warning System, Drought Monitoring Early Warning System, Coral Bleaching Alerts |
| What are some climate extreme events that you want to be included in your EWS? | Marine Heatwaves, |
| What are some challenges that you have in climate division that you want to address with climate science and climate change mitigation and adaptation issues | * + - 1. Limited Scientific research and case studies in the area of Climate Science       2. We have a young team with very limited capacity especially when it comes to climate modelling and analysis |
| What are some priority needs for your services that you want to achieve in the next 5 years? | More scientific publications  More university graduates joining the team  Have a downscale/national climate model for Vanuatu  Develop more sectoral climate products for Vanuatu |

# 3.0 Progress of the NMHS

## 3.1. UPDATE on Achievements of the NMHS from 2019-2024

[This can reflect new activities, programs, services implemented by the NMHSs. Under each of the activities, indicate which PKO(s) this activity has achieved. One Activity can contribute to more than 1 PKO]

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Achievements (Activities) of the NMHS (2015-2017)** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| 1 | *Example activity - aviation training and forecasting* | x |  |  | x |  |  | x |  |  |  |  |
| 2 | July 2024 resurrected the weather balloon – not yet launched – waiting for the hydrogen supplier to arrive from the US and then commissioning and carry out testing prior to its launch – scheduled for September-October 2024 |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Ground-breaking ceremony of the C-Band Weather Radar in July 2024. Shipment and Installation of the radar will be ready by mid-2025. The Radar is funded through GCF-SPREP/VanKIRAP project |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

## 3.2. Proposed Activities to be Carried out in the Future (2024 Onwards)

Here are some indicative priorities for VMGD to achieve goals embedded in the auspicious NSDP 2016-2030.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Proposed Activities to be carried out between 2019-2023** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| 1 | Increase collaboration on research and development with both national and international partners and academic institutions. | x | x | x | x | x | x | x | x | x | x | x |
| 2 | Certification of Quality Management System under part 174 for the entire Meteorology products and services |  |  |  | x |  |  |  | x |  |  |  |
| 3 | Establish Seismic Monitoring station near Lake Letes (Gaua Island) and Yellow stone (Vanua Lava Island) in Torba Province |  |  | x |  |  |  | x |  |  |  |  |
| 4 | Endorsement of 37 rainfall collectors by Public Service Commission to the government payroll |  |  |  | x |  |  |  |  |  |  |  |
| 5 | Development of the Carrier path |  | x |  |  |  |  |  |  |  |  |  |
| 6 | Establish Weather Observation Station at Norsup update airport |  |  |  |  |  | x | x | x |  |  |  |
| 7 | Establish VMGD Ocean Forecast Station – White grass, Tanna |  |  |  | x | x |  |  |  |  |  |  |
| 8 | Establishment of VMGD Marine Observatory Station - Luganville |  |  |  |  |  |  | x | x | x |  |  |
| 9 | Installation of 8 AWS and 8 ARG through Vanuatu |  |  | x | x | x | x | x | x |  |  |  |
| 10 | Establishment of C-Band weather doppler radar system |  |  | x | x |  | x | x | x |  |  |  |
| 11 | Install High Frequency (HF) Radio in all outer island weather observation stations (Sola, Lamap, Norsup, Saratamata, White grass, Anietyum, Pekoa and Bauerfied) including both offices (Backup center-Luganville, and VMGD Head office- Port Vila). |  | x | x | x | x | x |  |  |  |  |  |
| 12 | Continue to build human resource capacity through further studies, training/workshop/seminars etc.. | x | x | x | x | x | x | x | x | x | x |  |
| 13 | Review Vanuatu upper air and implement the program |  |  |  |  |  |  | x | x | x |  |  |
| 14 | Continue to provide climate outlook Forum on yearly basis |  |  |  |  |  |  |  |  |  | x |  |
| 15 | Strengthen Vanuatu Rainfall Network Services and Products through year meetings (Forum/symposium) with 84 rainfall collectors | x | x | x | x | x | x | x | x | x | x | x |
| 16 | Implement decentralization Act (office and staff) in the six provinces throughout Vanuatu |  |  | x | x | x | x |  |  |  |  |  |
| 17 | Implement data and management policy and governance | x | x | x | x | x | x | x | x | x | x |  |
| 18 | Improve collection of revenue from international aircrafts landing fees, maritime navigation etc. |  |  | x | x | x | x | x | x | x | x |  |
| 19 | Improve climate data for Environment (Clide) | x | x | x | x | x | x | x | x | x | x | x |
| 20 | Establishment of Laboratories (weather monitoring sensors calibration, ICT and Chromatography) |  |  |  | x | x | x |  |  |  |  |  |
| 21 | Transition of tsunami roles and responsibilities from weather forecast Division to Geo-Hazards Division |  |  |  |  |  |  |  | x | x | x | x |
| 22 | Strengthen collaboration between NDMO through harmonization of SOP | x | x | x | x | x | x | x | x | x | x | x |
| 23 | Continue to work on the separation of VMGD Act 25 of 2016 |  |  | x | x | x | x |  |  |  |  |  |
| 24 | Review new proposed organizational structure with their Job description and implement Government Renumeration Tribunal (GRT) to higher salary scale for all positions in the new structure. |  |  | x |  |  |  |  | x |  | x |  |
| 25 | Improve quality and real-time data information for early warning information |  | x | x | x | x | x | x | x | x | x |  |
| 26 | Shorten the time laps for early warning information dissemination to general public | x | x | x | x | x | x | x | x | x | x |  |
| 27 | Installation of 4 AWOSs throughout the country with the assistance of BoM, funded by the Australian Government to be supplied by WRP. |  |  |  |  |  |  |  |  |  |  |  |

# [4.0. Identify Gaps and Future Needs that would Improve the National Meteorological and Hydrological Services](#_heading=h.35nkun2)

The following are Gaps and Needs being identified to improve VMGD’s aspirations:

* Identify appropriate flood forecasting systems to improve services in flood forecasting
* Provide appropriate training for all staff in relevant field to boost capacity, motivation and knowledge in weather, climate and Geo-Hazards
* All weather forecasters to be certified with WMO Class I and relevant meteorology certification
* Linux training is a requirement these days to be able to run latest observations and forecasting systems for weather climate and Geohazards
* Provide opportunity for specific technical training is required not only for technicians but also for senior staffs to better understand the tools used for analysis so that they could better supervise, mentor, and coach the junior staffs under their supervision. This would help to ensure consistent data availability, quality and quantity at all times
* Establish Information Technology plate form to sustain dissemination of early warning information simultaneously to end users without both internet and without internet connection.
* Project management and leadership training for both junior and senior staff members
* Provision of staff well-being that directly and indirectly affects work performances
* Address challenges that require imminent action as matter of urgency
* Strengthen Administration human resource capacity for effective and efficient management of VMGD attainment to achieving productive goals
* Strengthening of legal framework to better manage VMGD data, assets and resources for effective services
* Capacity gap analysis is required to develop the human resource development and succession planning for the Department.
* Capacity building for the technical team to maintain the incoming weather radar and weather forecasters who will be using, processing, analysing, and communicating the data.