PROJECT EVALUATION REPORT

Enhancing Weather and Climate Resilience in RIMES Member States through Capacity Building on Impact Forecasting – Phase II

April 2024 | Dr. Pedro Basabe

ESCAP
Economic and Social Commission for Asia and the Pacific

The ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness

Regional Integrated Multi-Hazard Early Warning System
RIMES

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ACRONYMS

ADB	Asian Development Bank
AFD	Agence Française de Développement
ALGIS	Agricultural Land Use Geographic Information Systems
AMAMAS	Agricultural Meteorological Advisory Monitoring and Services
ANAS	National Authority for Water and Sanitation
API	Application Programming Interface
ASEAN	Association of Southeast Asian Nations
BMKG	Badan Meteorologi, Klimatologi, dan Geofisika
CAP	Common Alerting Protocol
CCA	Climate Change Adaption
CDT	Crop Decision Tree
CEPA	Conservation and Environment Protection Authority
CPA	Civil protection Authority
CREWS	Climate Risk and Early Warning Systems
DAC	Development Assistance Committee
DEC	Department of Environment and Conservation
DHRW	Department of Hydrology and River Works
DMC	Disaster Management Centre
DMH	Department of Meteorology and Hydrology
DMO	Disaster Management Office
DOM	Department of Meteorology
DRR	Disaster Risk Reduction
DSS	Decision Support System
EDF	European Development Fund
ESCAP	Economic and Social Commission for Asia and the Pacific
EW4All	Early Warnings for All Initiative
EWS	Early Warning System
FAO	Food and Agriculture Organization
FMS	Fiji Meteorological Service
FOCUS	Forecast Customization System
GCF	Green Climate Fund
GIS	Geographic Information System
IBF	Impact Based Forecasting
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
LMS	Learning Management System
MAFF	Ministry of Agriculture Forestry and Fisheries
MFA	Maldives Fishermen's Association
MMS	Maldives Meteorological Service
MNRE	Ministry of Natural Resources and Environment
MoPW	Ministry of Public Works

MOU	Memorandum of Understanding
MOWRAM	Ministry of Water Resources and Meteorology
NCHM	National Center for Hydrology and Meteorology
NCMD	National Committee for Disaster Management
NDMA	National Disaster Management Authority
NDMG	National Directorate of Meteorology and Geophysics
NDMO	National Disaster Management Organisation
NHMS	National Meteorological and Hydrological Services
NWS	National Weather Service
OECD	Organisation for Economic Co-operation and Development
PDR	People's Democratic Republic
PICOF	Pacific Islands Climate Outlook Forum
PNG	Papua New Guinea
RIMES	Regional Integrated Multi-Hazard Early Warning System for Africa and Asia
SDC	Swiss Agency for Development and Cooperation
SDG	Sustainable Development Goals
SIDS	Small Island Developing States
SMS	Samoa Meteorological Services
SOFF	Systematic Observations Financing Facility
SPC	South Pacific Commission
SPC	Southwest Pacific Communities
SPREP	South Pacific Regional Environment Programme
STA	Samoa Tourism Authority
UN	United Nations
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WFP	World Food Programme
WMO	World Meteorological Organization
WRD	Water Resources Division

1. EXECUTIVE SUMMARY

Project Name

"Enhancing weather and climate resilience in RIMES Member States through capacity building on impact forecasting – Phase 2"

Project Information

Donor agency: United Nations ESCAP Multi-donor Trust Fund for Tsunami, Disaster, and Climate Preparedness in Indian Ocean and Southeast Asian Countries.

Implemented by: Regional Integrated Multi-Hazard Early Warning System (RIMES)

Timeframe: 1 December 2021 to 29 February 2024 (27 months), incl. no-cost extension of 2 months

Beneficiary Countries

In Asian region: Bhutan, Cambodia, Lao PDR, Maldives, Sri Lanka.

In the Pacific region: Fiji, Papua New Guinea, Samoa, and Timor-Leste.

Type of Evaluation and Objectives

Independent, end-of-project evaluation, through analysis of online questionnaires and online interviews considering project performance by indicators and by evaluation criteria.

Methodology: application of International recognised methodology, source: OECD/DAC, SDC.

The objectives of the end-of-project evaluation are to:

a. Provide an independent assessment of the relevance, coherence, efficiency, effectiveness, impact, and sustainability of the project; and
b. Identify key lessons learned and propose recommendations for follow-up actions and for consideration in RIMES future program design, implementation, and management.

Audience

RIMES, UN ESCAP

49 government stakeholders' partners of the nine beneficiary counties.

Questionnaires filled-out: 43 government officials (16 women, 27 men) of participant institutions of the nine participating countries.

Group discussions interviews: 29 government officials (11 women, 18 men) through 12 key informant interviews.

Evaluator Team

- PhD Pedro Basabe, Senior international consultant, based in Switzerland, former Head of SDC Humanitarian Aid DRR and Rapid Response Hub for SE Asia and the Pacific, from 2017 to 2022.
- Support: Ms Victoria Leat, DRR specialist, EWS specialist in ASEAN since 2009.

Recognition

The evaluator expresses sincere appreciation and congratulations to RIMES for the substantive project vision and realization; to UN ESCAP for the guidance and financial support and especial recognition to beneficiary countries and institutions for making possible this project and evaluation.

Evaluation by Performance Indicators

1. Training of weather and climate information users in beneficiary on potential impact assessment, risk analysis, and application of outputs in planning and decision- making for resource and risk management in agriculture and disaster management sectors.
    - Beneficiary countries' NMHSs and other key sectors participated at the two training sessions on IBF and Risk Analysis (except Timor-Leste's NDMG, participated in 2nd one).
    - All NMHSs were trained on Weather and Seasonal Forecasting, Hydrological Modelling, and Flood Forecasting and Weather Forecasting and Climate Prediction, 2 phases.
    - Climate-sensitive sectors in Lao PDR, the Maldives, Papua New Guinea, Sri Lanka, and Samoa documented and demonstrated application of seasonal forecasting and define impact management strategies, including preparedness plans.
2. Technical support in the conduct of seasonal forums in Lao PDR, Maldives, Papua New Guinea, Samoa, Sri Lanka, and facilitating potential impact assessments to inform seasonal planning.
    - Thirteen national multi-stakeholder monsoon forums were conducted with project support and RIMES technical assistance in cooperation with the NMHSs between Dec.22 and Nov.23.
3. Conduct of subregional dialogue in the Pacific, focusing on Fiji, Papua New Guinea, Samoa, and Timor-Leste.
    - Project considered the RIMES Masterplan (2021-2025), ESCAP Trust Fund's strategy note 2021-2024, and other development partner and financial mechanisms projects, i.e.: Green Climate Fund (GCF), Food and Agriculture Organization (FAO), WMO, Climate Risk and Early Warning Systems (CREWS), Systematic Observations Financing Facility (SOFF), and Early Warnings for All Initiative (EW4All).
4. Expansion of decision support system to aid potential impact and risk analyses in the agriculture sector in Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka.
    - The RIMES-developed Specialised Expert System for Agro-Meteorological Early Warning (SESAME) decision support system (DSS) for agriculture has been enhanced for use in Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka.
5. Capacity building of NHMS in Bhutan, Cambodia, Fiji, Lao PDR, Maldives, Papua New Guinea, Samoa, Sri Lanka, and Timor-Leste to enable them to respond to user demands from agriculture and disaster management sectors.
    - Based on requirements from the NMHSs and sectors of the participating countries at the inception meeting and throughout the various trainings and meetings, RIMES considered and adapted project activities and products.
    - Generation of new enhanced NMHSs products and services for sectoral use were fulfilled for Maldives, Papua New Guinea, Samoa, Sri Lanka, and Timor-Leste.
6. Support NMHS and ministry participation in the RIMES 14th Council Meeting Side Event for knowledge and project experience sharing.
    - The project had higher level impact recognised by NMHS leaders/ representatives at the 14th RIMES Council Meeting held in Bangkok in November 2022.
    - Project progress/results shared at the 15th RIMES Council Meeting (December 2023) and at the 23rd (November 2022) and 24th (November 2023) ESCAP Advisory Council Meetings of TTF.

Evaluation by Evaluation Criteria

Relevance: Project was relevant, aligned with the priorities of the engaged institutions. Provided a response to the needs and policies of the NMHSs. Project activities particularly supported NMHSs and the agricultural sector. Training aligned well with the priorities and capacity needs.

Coherence: Project was broadly coherent with national, regional, and global best practice and strategies. It made effective use of other project outputs including weather and climate data provided by WMO and SPREP (Fiji). Training was a complement to these other activities, rather than a replication. Project was internally coherent with RIMES' other activities.

Effectiveness: Project broadly effective in meeting its stated objectives. Training provided opportunities for dialogue with experts and improve knowledge and services. Monsoon forums engaged widely with key sectors and provided an important platform for information sharing. The development of the Learning Management System (LMS) was useful, utilising other project savings.

Efficiency: Project outputs and outcome were achieved satisfactorily in a cost-effective and timely manner. RIMES applied efficient monitoring and piloting mechanisms. Good coordination and communication were maintained with the main national partners throughout the project. The multi-use functionality of the national forums highly efficient use of project resources and maximised the benefits to stakeholders. Further efforts required to engage other sectoral agencies and sub-national partners.

Impact: Project generated a number of tangible impacts. RIMES was highly effective in creating opportunities for stakeholder discussions and knowledge sharing including during training activities, country monsoon/weather forums, and at the Side Meeting at the RIMES 14th Council Meeting. Fostered collaboration, networking, and knowledge sharing opportunities demonstrate powerful "soft" impact that has been nurtured by this project. The high quality and effective training provided by RIMES contributed to enhanced capacity of both the NHMSs and other sectoral agencies, resulting in demonstrated impacts for project countries.

Sustainability: All project country partners appear eager and motivated to continue future activities. Stakeholders desire to apply knowledge acquired and use tools for their duties. Reliance on additional financial resources from development partners to ensure continuity. Consideration of institutionalisation of IBF was limited. RIMES effectively engaging other development partners to support future monsoon forums. ***"RIMES provides a service that no other entity has been able to provide for low-capacity countries".***

Lessons-Learned and Recommendations

1. **The project was aligned with and contributed to the international agreements, including the Sendai framework for DRR, the Paris Agreement on CC and the SDGs**
   It is recommended to highlight this compliance of international agreements and added-value in next phase proposal, inform development partners and support country report to the UN.
2. **RIMES partnerships and regional/global understanding are invaluable**
   The highly effective nature of RIMES' regional relationships should be capitalised on and leveraged to scaled-up interventions (cf.: recommendation 15 here below).
3. **Knowledge sharing opportunities add significant value**
   Future activities should consider creation of regional knowledge networks between countries with similar environments and geographies, involve wider sectors and actors, at regional, national, and local levels.

4. **National policies required for operationalisation of IBF**
   Activities should clearly align with national policy to support the operationalisation of IBF, with emphasis on project compliance to international agreements to report internationally.

5. **Training and tools alone are insufficient to operationalise IBF**
   Future project activities should carefully consider implementation mechanisms which customise country application of IBF and support custom roadmaps for IBF implementation within each country.

6. **Limitations of tools and applications**
   Future activities should include further customisation of the tools with consideration of accuracy and scale for its application, particularly in small islands states provide practical training and guidelines.

7. **Maintain staff capacity to support project sustainment**
   Future activities should prioritise the full-fledged development and operationalisation of the RIMES LMS, including training modules and materials to develop and certify capacities of new staff and update existing staff.

8. **National cooperation required to support information access**
   Guidance and advice should be provided on the benefits of institutional coordination and cooperation, with a focus on data sharing agreements between institutions.

9. **Multi-stakeholder collaborative approaches strengthen project**
   Foster alliances with local governments, private sector associations and academia to strengthen knowledge, implementation and establish connections and commitments with other regional entities.

10. **Reliance on development partners limits stakeholder ownership**
    Place sustainment as a central consideration, socialising transition strategies with all project actors and prospective donors from project inception.

11. **Consider needs of population and vulnerable groups**
    Mainstream gender in future project activities including development of strategies, with consideration for inclusion of women, people with disabilities and other underrepresented groups at the program design stage.

12. **Additional accountability to affected populations is required**
    Develop specific project information dissemination strategy to engage stakeholders in a wider understanding of project activities, and perspectives including wider engagement in inception and addition of closing meeting.

13. **Siloed systems hinder efficiency and effectiveness of EWS**
    Project design should include mapping of existing tools and application and the development of project activities that will seek to build interoperability between RIMES' tools and these identified systems, where possible.

14. **Last mile service delivery remains a challenge**
    Future project design should include a pilot project to support end-to-end delivery of enhance climate and forecasting services. This could serve as an important tool to refine and enhance wider sub-national project activities in the future.

15. **Capitalise on successes**
    The project has tangible achievements and products as reported. It requires funding for a next phase. It is suggested to "capitalise" on the achievements and perspectives and disseminate them to development partners and fundings mechanisms in collaboration with UNESCAP by organising and end of project event and a donor round table.

2. EVALUATION PURPOSE

This report is undertaken to evaluate Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) implementation of Enhancing Weather and Climate Resilience in RIMES Member States through Capacity Building on Impact Forecasting – Phase 2 project.

The objectives of the end-of-project evaluation are to:

a. Provide an independent assessment of the relevance, coherence, efficiency, effectiveness, impact, and sustainability of the project; and
b. Identify key lessons learned and propose recommendations for follow-up actions and for consideration in RIMES future program design, implementation, and management.

The findings of this evaluation shall be communicated to the United Nations (UN) Economic and Social Commission for Asia and the Pacific (ESCAP), as part of RIMES accountability to the ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness in Indian Ocean and Southeast Asian Countries, and its donors. Findings, particularly on the project's contributions to enhancing the beneficiary-countries' resilience to weather- and climate related hazards shall be communicated to RIMES Member States and to development partners in general, to advocate for replication. RIMES shall use findings of the evaluation for enhancing its project design, planning, and implementation strategies, as well as for guiding replication.

The evaluation terms of reference are provided in Annex 1.

3. BACKGROUND

The Third United Nations World Conference on Disaster Risk Reduction highlighted the importance of holistic and integrated multi-hazard early warning in disaster risk reduction and climate change adaptation. Early warning systems must be supported by the requisite legal, policy and institutional frameworks; integrate risk and impact information; and use recent advances in information and communication technologies and Earth observations. In line with this, RIMES implemented from January 2017 to December 2018 the project "Enhancing weather and climate resilience in RIMES Member States through capacity building on impact forecasting". The project aimed to contribute to building resilience to weather- and climate-related hazards by building capacity on impact forecasting in Bhutan, Cambodia, Myanmar, and Sri Lanka in the Asian region, and Fiji, Papua New Guinea (PNG), and Samoa in the Pacific region.

Between November 30, 2021 – February 29, 2024, RIMES implemented a second phase of activities, focused on:

a. Training of weather and climate information users Bhutan, Cambodia, Fiji, Lao People's Democratic Republic (PDR), Maldives, Papua New Guinea, Samoa, Sri Lanka, and Timor-Leste on potential impact assessment, risk analysis, and application of outputs in planning and decision- making for resource and risk management in agriculture and disaster management sectors.
b. Technical support in the conduct of seasonal forums in Lao PDR, Maldives, Papua New Guinea, Samoa, Sri Lanka, and facilitating potential impact assessments to inform seasonal planning.
c. Conduct of subregional dialogue in the Pacific, focusing on Fiji, Papua New Guinea, Samoa, and Timor-Leste.

d. Expansion of decision support system to aid potential impact and risk analyses in the agriculture sector in Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka.

e. Capacity building of National Meteorological and Hydrological Services (NHMS) in Bhutan, Cambodia, Fiji, Lao People's Democratic Republic (PDR), Maldives, Papua New Guinea, Samoa, Sri Lanka, and Timor-Leste to enable them to respond to user demands from agriculture and disaster management sectors.

f. Support NMHS and ministry participation in the RIMES 14th Council Meeting Side Event for knowledge and project experience sharing.

A summary of these activities, by country is provided in Table 1, below. A more detailed table of activities completed under each component is provided in Annex 2.

Key Activity	Bhutan	Cambodia	Fiji	Laos	Maldives	Papua New Guinea	Samoa	Sri Lanka	Timor-Leste
Training on impact forecasting and risk analysis	Users from disaster management, agriculture, water resources, public health, energy, environment, development, and other relevant sectors, including the media								
Technical support to Monsoon/ Seasonal Forums				NMHSs and users from disaster management, agriculture, water resources, public health, energy, environment, development, and other relevant sectors, including the media				NMHSs and users from climate-sensitive sectors	
Subregional dialogue			NMHS, SPREP, WMO and related entities			NMHS, SPREP, WMO and related entities			NMHS, SPREP, WMO, and related entities
Expansion of DSS for agriculture	NMHS and users from agriculture					NMHS and users from agriculture		NMHS and users from agriculture	
Technical assistance to NMHS to meet user demands	NMHSs								
Support to NMHS and ministry participation for experience and knowledge sharing in RIMES 4th Ministerial Conference	NMHS, Ministry representatives								

Table 1: Summary of project activities, by country.

4. EVALUATION METHODS AND LIMITATIONS

This evaluation presents both summative performance, as well as impact elements to generate evidence, identify lessons, and provide actionable recommendations that may benefit future program implementation. The evaluation applied a mixed methods approach, combining a literature review, review of end of program reporting, and key stakeholder questionnaires and interviews/focus group discussions.

4.1 METHODS

4.1.1 ANALYTICAL FRAMEWORK

Figure 1 summarises the evaluation analytical framework (methodology) applied based on evaluation policies by the Organisation for Economic Co-operation and Development (OECD)/Development Assistance Committee (DAC), adopted by the Swiss Agency for Development and Cooperation (SDC) and adapted by the author.

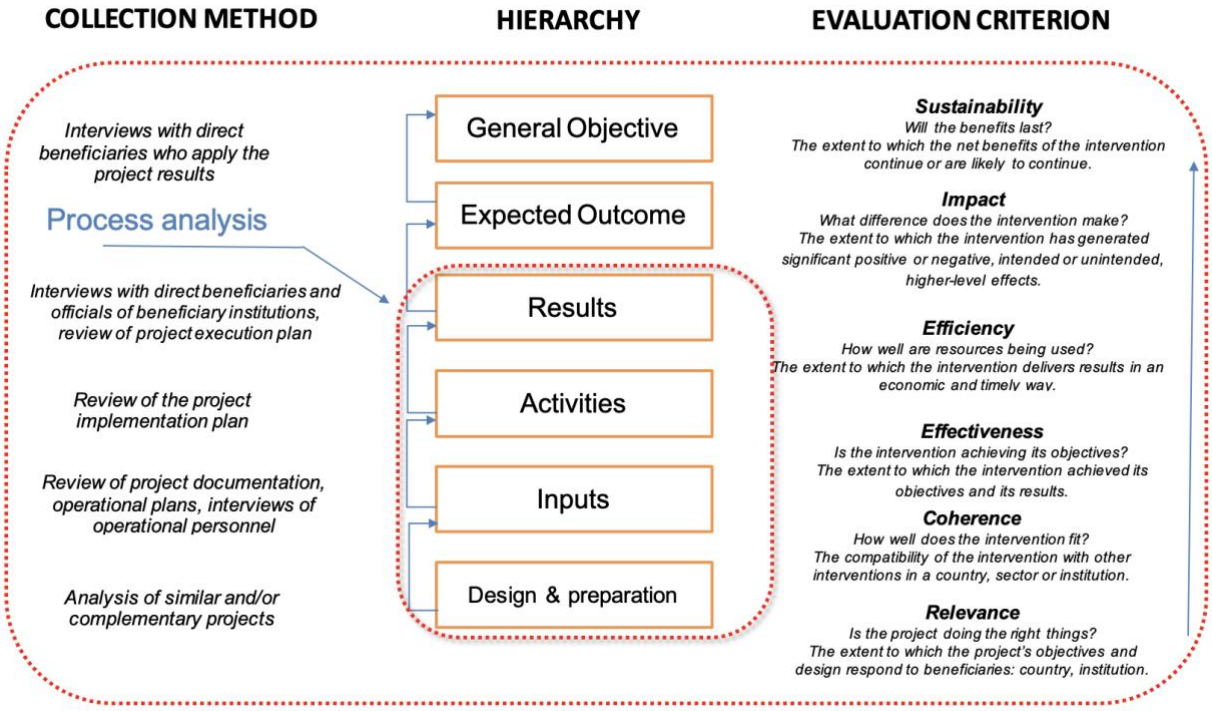

Figure 1: Evaluation methodology analytical framework.

The analytical framework considers three steps: i) collection method, project documents and data analysis, ii) evaluation of project performances against its activities, results, expected outcome, and objective, and iii) project evaluation by evaluation criteria, as defined in Figure 1.

4.1.2 DOCUMENT/LITERATURE REVIEW

The evaluator conducted a thorough document review of 37 pieces of background evidence to inform the evaluation and response to evaluation questions (detailed in Annex 4). This included a review of relevant organisational and program documents, as well as other literature relevant for the evaluation, such as annual reports, project proposals, and end of program reports for the funded activities for the nine countries engaged in project activities. Findings from the document review were

used to inform the stakeholder interview phase of the evaluation, including the design of interview guides and identification of additional stakeholders to be interviewed.

4.1.3 QUESTIONNAIRE

A stakeholder questionnaire was developed to obtain both qualitative and quantitative inputs from a wide range of stakeholders, as well as to guide the evaluator on discussion points/focused questions during the interview process. 43 government officials (16 women, 27 men) of participant institutions of the nine countries filled-out the questionnaire (cf. Annex 5). The developed questionnaire is provided in Annex 4.

4.1.4 FOCUS GROUP DISCUSSIONS/INTERVIEWS

The evaluation team invited 49 government stakeholder-agencies of the nine countries for interview, and representatives of RIMES and ESCAP. The evaluator interviewed 29 government officials (11 women, 18 men) from 17 government stakeholder-agencies through 12 key informant interviews (cf. Annex 5 for a breakdown of participants and gender, by country).

Based on the initial findings from the literature review, the evaluation team developed a set of questions tailored to the different stakeholders. Notes were taken during the interviews, supplemented by transcription and recording services (where permitted and agreed to) to capture interviewee responses.

Prior to the commencement of any interview, the interviewer outlined the purpose of the evaluation, how the information will be used. Informants were made aware that a final evaluation report may be publicly available. Appropriate consideration was given to protection and accessibility measures. The evaluation attempted to ensure gender balance in interviews.

4.1.5 DATA CLEANING AND PROCESSING

Following completion of the questionnaire by all participants, the data was reviewed and cleaned for use in the evaluation. This process involved the fixing or removal of incomplete data within the dataset. In the case of the questionnaire data, some respondents stated "N/A" in the quantitative response fields or provided a score but indicated in corresponding qualitative fields that they were unaware of this aspect of the project or did not know how to score the question. For these data inputs, the qualitative scores for these fields were considered N/A and were nulled.

Following completion of the data cleaning, the scores were averaged by sector, and by country, across the six evaluation criteria. Where a null score was recorded, these scores did not participate in the average calculations. Where no data was available for the relevant evaluation criteria, this is noted in the graphics.

4.1.6 ANALYSIS

The quantitative and qualitative data was compiled and cleaned to enable analysis. The evaluator then grouped information resulting responses to the interviews and secondary data using a two-step process. Firstly, key themes occurring from interviewee responses and notes were identified. Findings were then measured against a rubric to allow triangulation across contexts, informant group and data source.

4.2 LIMITATIONS

Data collection for this report, including interviews, was undertaken remotely. While all stakeholders who participated in the evaluation had reasonable levels of English proficiency, there may be nuances in the participants' responses that are lost in translation. In some cases, there may have been reluctance on the part of interviewees to speak, particularly when their supervisors were monitoring the interviews. Informant discussions related to gender, disability, or social inclusion were limited, as was data on gender and inclusion in program documents. As a result, the evaluation was not able to draw out lessons on the program's ability to reach broader inclusion goals.

While at least a representative from each project country was included in the evaluation process, in some cases, the engagement was limited to just one interviewee, such as the Maldives. Additionally, not all identified participants provided inputs through the questionnaire. In some cases, this lack of data influenced the country graphics and country averages. Through the evaluation process, it was possible to triangulate responses to the questionnaire with information shared by interviewees and with document reviews. However, the limited primary data collection should be kept in mind when reviewing the findings. The individual country limitations are noted in each country's individual analysis, in Annex 6.

5. PROJECT PERFORMANCE ANALYSIS

5.1 ANALYSIS OVERVIEW

This chapter presents an analysis of the results by evaluation criteria, considering international standards from OECD/DAC. The analysis is based on the literature review, stakeholder questionnaire data, and evaluation interviews with participants from the nine beneficiary countries, as well as the project implementor, RIMES, and donor agency, UN ESCAP.

5.2 ANALYSIS OF PROJECT PERFORMANCE BY INDICATORS

The project accomplished all performance indicators. Below a summary of project indicator results is presented as indicated in the RIMES terminal report, which provides more detailed information:

1. **Demonstrated application by user agencies in at least two climate-sensitive sectors in each target country of weather and climate information in potential impact assessment and risk analysis.**

   Evaluation: *All beneficiary countries' NMHSs and other key sectors participated at the two training sessions on IBF and Risk Analysis, with the exception of Timor-Leste's* National Directorate of Meteorology and Geophysics *(NDMG) and four sectors (A, D, H, and W[1]) that participated only in the second training. All NMHSs attended the training sessions on Weather and Seasonal Forecasting, Hydrological Modelling, and Flood Forecasting and the two phases of training on Weather Forecasting and Climate Prediction. The training sessions were substantive, well-documented, and considered of high quality by participants.*

   In addition, the following climate-sensitive sectors documented seasonal forecasting and define impact management strategies, including preparedness plans, in: Bhutan (A), Cambodia (A), Fiji (A), Lao PDR (A, D, T); the Maldives (D); Papua New Guinea (A, D, E); Sri Lanka (A, D, H, E, W), Samoa (H, T) and Timor-Leste (A, D).

2. **Multi-hazard seasonal forum conducted in Lao PDR, Maldives, Papua New Guinea, Samoa, and Sri Lanka, facilitating potential impact and risk assessments to inform seasonal planning, by 2nd semester of the project.**

   Evaluation: *Thirteen national multi-stakeholder monsoon forums were conducted with project support and RIMES technical assistance in cooperation with the NMHSs between December 22, 2022, to November 16, 2023 (three for Lao PDR, two for Maldives, three for Papua New Guinea, one for Samoa and four for Sri Lanka).*

   The forums supported the periodic conduct of multi-hazard seasonal/monsoon or climate outlooks in participating countries, providing venues for the NMHSs and sectoral agencies to enhance collaboration to improve climate services by NMHSs and in preparedness planning by sectoral users.

3. **Linkages and synergies with WMO, SPREP programs and initiatives identified, and role of RIMES Sub-regional Hub in the Pacific identified/recognized.**

   Evaluation: *The project design and implementation considered the RIMES Masterplan (2021-2025), ESCAP Trust Fund's strategy note 2021-2024, and other development partners and*

[1] *Sectors: A=Agriculture, D=Disaster Risk Reduction, E=Energy, H=Health, M=NMHS, T=Transportation, W=Water Resources*

financial mechanisms projects, including Green Climate Fund (GCF), Food and Agriculture Organization (FAO), Bureau of Meteorology (BOM) Australia, WMO, Climate *Risk and Early Warning Systems (*CREWS*), Systematic Observations Financing Facility (*SOFF*), 11th European Development Fund (EDF 11) and Early Warnings for All Initiative (EW4All).*

In the Pacific, synergies were ensured with SPREP and two comprehensive subregional dialogues focusing on Pacific countries (Fiji, Samoa, Papua New Guinea, and Timor-Leste) were facilitated to share knowledge, experience, tools, and a vision for the future.

4. **Decision support system for agriculture enhanced with more crops and/or more locations to aid potential impact/ risk analysis in the agriculture sector in Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka to inform decision-making for managing resources/ risks.**

   ***Evaluation**: The RIMES-developed Specialised Expert System for Agro-Meteorological Early Warning (SESAME) decision support system (DSS) for agriculture has been enhanced for use in Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka. Based on consultation with the agriculture sector of these countries, RIMES upgraded the system in terms of functionalities and user interface, including enhancements and new features and additional data integration.*

   The agriculture sectors of Bhutan, Cambodia, Fiji, PNG, and Sri Lanka were also trained on crop decision tree and agromet advisory development.

5. **NMHSs in each target country deliver at least one user-demanded new/enhanced product/ service in support of impact forecasting/ risk analysis by end of the project.**

   ***Evaluation**: Based on requirements from the NMHSs and sectors of the participating countries at the inception meeting and throughout the various trainings and meetings, RIMES considered and adapted project activities and products. Generation of new or enhanced NMHSs products and services for sectoral use were fulfilled for Bhutan, Fiji, Lao PDR, Maldives, Papua New Guinea, Sri Lanka, and Timor-Leste. In Cambodia and Samoa enhanced capacity of NHMS staff as a result of the project activities has provided a clearer understanding of the services and products required by other sectoral agencies.*

6. **NMHS and ministry representatives sharing their project experience and insights as well as committing to allocate resources to sustain activities and outcomes.**

   ***Evaluation**: The project could not organise the Ministerial conference due to political situation in Sri Lanka in Nov. 2022, instead RIMES organised the 14th Council Meeting held in Bangkok in Nov. 2022. The project supported the participation of 14 representatives of the nine countries.*

   The participant NMHS leaders/representatives recognised the added-value of the project and shared project experience and insights with UN ESCAP and RIMES. They also articulated their country priorities and challenges in meeting user demands and in transitioning to impact-based forecasting. Plans, strategies, and recommendations to ensure attainment of the project's expected outcome were also discussed and documented.

   Furthermore, project progress and accomplishments were shared during the 15th RIMES Council Meeting held in December 2023, as well as in the 23rd and 24th ESCAP Advisory Council Meetings of the ESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness held in November 2022 and November 2023, respectively.

Below, analysis of the project by evaluation criteria are summarised. Additionally, stakeholders' average perception of the project are presented by criteria, by country, for both the NMHSs and other

Sectoral Agencies More granular analysis of each project country is provided in Annex 6. Additionally, the views provided by the project implementor, RIMES, and the project donor, ESCAP are summarised in Annex 7.

5.3 RELEVANCE

"The extent to which the intervention objectives and design respond to beneficiaries (global/regional, country and partner/institution) needs, policies, and priorities, and continue to do so if circumstances change".

The project is considered relevant, aligned with the priorities of the engaged institutions, and in line with both the RIMES Masterplan 2021-2025 and ESCAP Trust Fund's strategy note 2021-2024. It broadly provided a response to the needs and policies of the NMHSs of the nine participating countries articulated at the project inception meeting and during RIMES ministerial and council conferences/meetings.

With an articulated appetite for IBF implementation across all project countries, the designed and delivered project activities particularly supported NMHSs and the agricultural sector in this regard.

Broadly, the project also engaged other key sectors (including DRR, water, energy, and health) however this was more successfully achievement in Cambodia, Fiji, Lao PDR, Papua New Guinea, and Sri Lanka, where coordination mechanisms already existed. While project activities were focused on the national level, RIMES was able to successfully engage sub-national level in Fiji, the Maldives and Timor-Leste.

Below, Figure 2 indicates participating countries' perception of project relevance based on questionnaire inputs, by sectors. Broadly, the project was considered relevant to stakeholders.

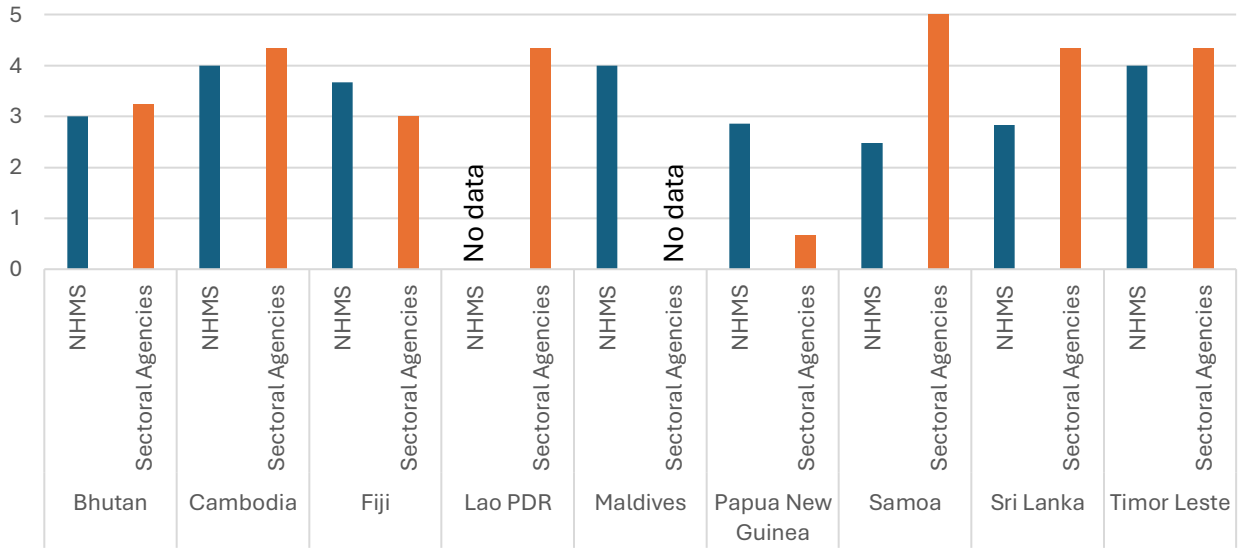

Figure 2: Stakeholder perception of project relevance (1=not relevant, 5=very relevant)

In general, the training developed and delivered by RIMES aligned well with the priorities and capacity needs of project countries at the national level. It was not clear to what extent the training addressed capacity needs of stakeholders at the sub-national level. The decision to deliver training in a multi-country format created an opportunity for engagement with other states and the sharing of knowledge and experiences. However, in some cases, this also resulted in broader training which did not tailor specifically to the needs of some of the attending representatives, particularly where Pacific Island states undertook joint training with mountainous states. Additionally, the mixed

capacity of participants presented challenges in the delivery of "at-level" information, as not all training participants felt the training aligned with the level of knowledge or understanding.

While no theory of change was established in the project proposal, the project successfully supported positive change and innovation, introducing capacity development and tools to move from conventional hazard-based forecasting to impact-based forecasting for more informed decision-making processes across the relevant sectors.

The further development of SESAME was highly relevant to countries where this work was undertaken, with the enhancements providing more relevant data and information for users to apply to their respective activities. Additionally, other tools introduced by RIMES including the Forecast Customization System (FOCUS) were welcomed by stakeholders across all participating countries.

RIMES gave due consideration to existing DSS across the region and their approach to these existing systems in Lao PDR and Timor-Leste was well-considered and relevant approach to project implementation, reflecting a good understanding of the existing environment/tools and a thoughtful design of project activities.

Where monsoon forums were conducted, these were seen as highly relevant, engaging the relevant sectors, and supporting the development of understanding between NHMSs and other sectorial agencies, as well as helping advance the development of enhanced forecasting services.

5.4 COHERENCE

"The compatibility of the intervention with other interventions in a country, sector, or institution".

The project was broadly coherent with national, regional, and global best practice and strategies, building on previous initiatives and results of other projects including FAO, World Bank, ESCAP, WMO, CREWS, GCF, SOFF, EW4All, SPREP, etc. In some project countries, such as Fiji, the project made effective use of other project outputs including weather and climate data provided by WMO and SPREP. In Sri Lanka, the use of the Department of Meteorology's enhanced forecasting services by other projects and initiatives demonstrates the highly coherent nature of project activities and outcomes.

It was noted that some project activities being undertaken by other development partners, including WMO, FAO, and CREWS, were similar in nature however, RIMES ensured the consistency and complementarity with other projects and advised related partners on project design to avoid duplication of efforts and to ensure synergies between activities. The training delivered by RIMES was seen as a complement to these other activities, rather than a replication.

The project was also internally coherent with RIMES' other activities. One project stakeholder had previously undertaken a six-month internship at AIT in Thailand under a different RIMES activity and was therefore familiar with their approach, staff, and expertise. This created a level of trust and engagement with RIMES throughout the project, as well as helped strengthen knowledge sharing, the exchange good practices, and an understanding of RIMES-developed tools and learning to support development and implementation of other regional activities such as the Enhancing Early Warning Systems to Build Greater Resilience to Hydro-meteorological Hazards in Timor-Leste, funded by GCF.

Below, Figure 3 indicates participating countries' perception of project coherence based on questionnaire inputs, by sectors. Broadly, the project was considered highly coherent by stakeholders.

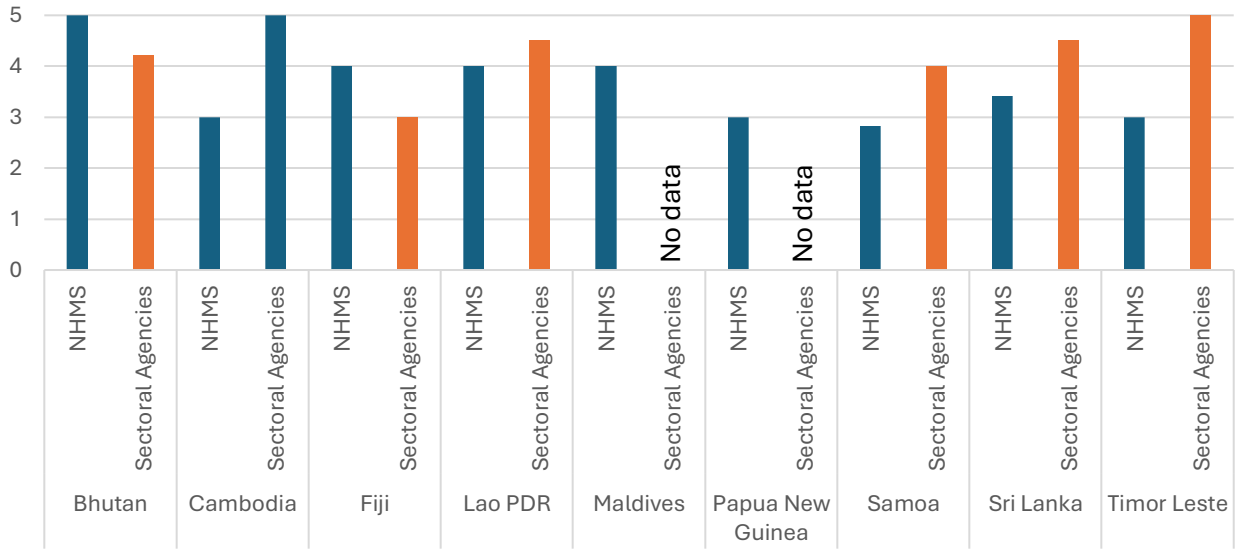

Figure 3: Stakeholder perception of project coherence (1=not coherent, 5=very coherent)

Greater consideration of interoperability between RIMES tool and the various national tools and systems (such as Lao PDR's LaCSA or BMKG Signature in Timor-Leste) would enhance the overall DSS landscape for future project activities. Additionally, further alignment of training with global best practice such as Common Alerting Protocol (CAP) standards would align project activities more closely with international best practice, complement other project activities (including those being undertaken by WMO), and support interoperability with other systems.

The project's support for the continuation of monsoon forums in many of the project countries demonstrates the coherence of project activities with existing national activities and mechanisms. Linking Pacific Island monsoon forums to other regional climate forums such as the Pacific Islands Climate Outlook Forum (PICOF) would further build coherence of project activities, as well as enhance cooperation between countries.

5.5 EFFECTIVENESS

"The extent to which the intervention achieved, or is expected to achieve, its objectives and its results, including any differential results across groups".

The project was broadly effective in meeting its stated objectives and outcomes as planned, bringing countries together to understand impact-based forecasting (IBF) and enhancing weather and climate resilience.

Training undertaken during the project was seen as "*important and useful*", providing opportunities for dialogue with experts to identify challenges, get advice, and improve knowledge and services. The proactive, helpful, and enthusiastic approach of the RIMES project team was noted by evaluation participants, with their expertise and knowledge helping to make events effective and enjoyable, both during training and the monsoon forums. The sharing of real-world experiences was cited as particularly helpful. The challenge of undertaking online training created some limitation to training effectiveness, although it was broadly agreed that RIMES had done well in their delivery of the online training.

Below, Figure 4 indicates participating countries' perception of project effectiveness based on questionnaire inputs, by sectors. Generally, NHMS respondents indicated a lower-level perception of effectiveness than stakeholders from other sectorial agencies.

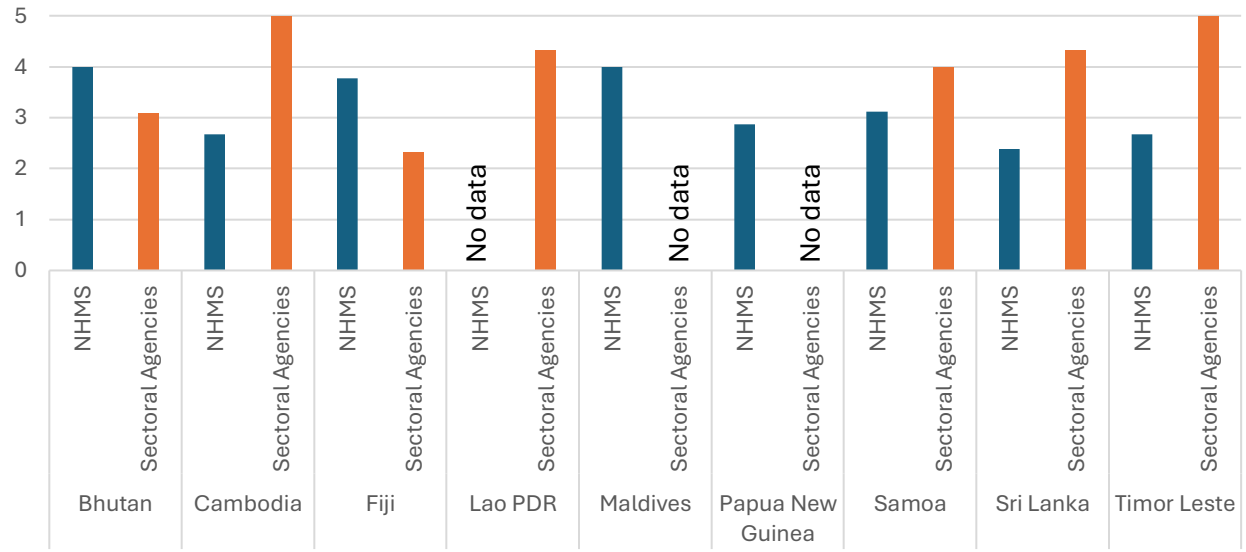

Figure 4: Stakeholder perception of project effectiveness (1=not effective, 5=very effective)

The monsoon forums held in Lao PDR, Maldives, Papua New Guinea, Samoa, and Sri Lanka engaged widely with key sectors and provided an important platform for information sharing. This was considered very effective in the strengthening of national level multi-sectoral collaboration, while the dialogue was highly effective in advancing weather and climate forecasting and services for decision-making. The limited engagement of sub-national stakeholders was noted in some countries, with several evaluation participants indicating a need for engagement at the regional/provincial level to support last mile activities. Additionally, support to the key sectoral agencies to translate technical information for use by last mile users would be beneficial.

The usefulness of the recently developed Learning Management System (LMS) portal was acknowledged, which prototype was launched in December 2023. Data gaps were noted as a challenge to the usefulness and effectiveness of the DSS. Some challenges were noted as a result of unavailability of expensive licenses for software (such as geographical information system (GIS) software) utilised during the training which prevented some participants from completing some of the exercises.

While RIMES do have identified focal persons in each NMHS, their level of engagement in support of project activities should be increased. Future activities may be more effective if NMHS members participate in the formulation of future project proposals and contribute to project management.

While RIMES demonstrated strong awareness and consideration of regional dynamics in many project countries, a deeper understanding of the needs and dynamics of Pacific Island States and the building of cooperation with other partners, such as South Pacific Commission (SPC) and Pacific Met Council could increase the effectiveness of future activities. Further, increasing visibility of project activities and successes would be beneficial to capitalize on results and seek new funding opportunities.

5.6 EFFICIENCY

"The extent to which the intervention delivers, or is likely to deliver, results in an economic and timely way".

Project outputs and outcome were achieved satisfactorily in a cost-effective and timely manner. RIMES applied efficient monitoring and piloting mechanisms, providing opportunities for feedback during events, which was documented and used to adapt project activities to the needs of users.

Good coordination and communication were maintained with the main national partners throughout the project, while it was noted that further efforts to engage other sectorial agencies and sub-national stakeholders would enhance further project efficiency. It was suggested by NHMS representatives that future project events be held in lower-capacity countries to allow more advanced countries to appreciate the specific challenges and limitations they face.

Below, Figure 5 indicates participating countries' perception of project efficiency based on questionnaire inputs, by sectors. There were mixed opinions from stakeholders on their perceived efficiency of the project.

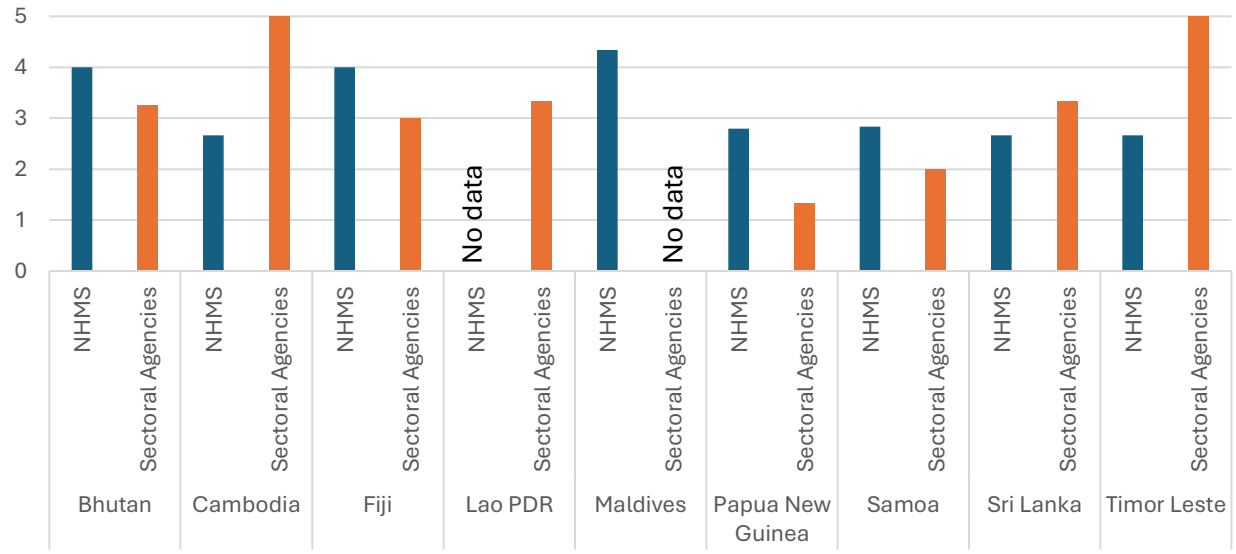

Figure 5: Stakeholder perception of project efficiency (1=not efficient, 5=very efficient)

The multi-use functionality of the national forums for knowledge sharing, stakeholder collaboration, and to obtain feedback on stakeholder needs, was a highly efficient use of project resources and maximised the benefits to stakeholders. The project also actively participated in other knowledge-sharing platforms, workshops, and conferences to advance project activities, and exchange best practices and lessons learned with other actors in the country and thematic field. A good example of this was the facilitation of a Side Event of the RIMES 14th Council Meeting on November 10, 2022, during which RIMES-developed tools and systems were presented and demonstrated to NHMS representatives.

The virtual training modality allowed more participation of stakeholders and savings to be spent on the development of the Learning Management System (LMS), which provides additional benefit, not just to the engaged project countries, but also to the wider RIMES member countries. To maximise future training efficiency, training programmes may be grouped by capacity and/or geographically similarity of participant countries to ensure materials are highly tailored to the needs and skills of participants. The NMHS expressed willingness to be more involved in knowledge and information management in the future.

The project presented an excellent opportunity to explore interoperability between RIMES-developed and other national/regional systems and tools, which was not leveraged. The development of a pilot model to enhance interoperability of RIMES tools with various existing national and regional systems to enhance the overall early warning system (EWS)/DSS environment would support more effective use of collective resources.

RIMES efficiently managed the project and reported on time. It provided annual and bi-annual project progress reports to the project management advisory council for feedback. RIMES also reported project updates during the ESCAP Advisory Council Meeting and held internal monthly team meetings to provide updates on implementation.

5.7 IMPACT

"The extent to which the intervention has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effect".

The project generated a number of tangible impacts including enhancing capacity towards impact-based forecasting through knowledge of IBF science and processes, as well as building national and regional collaboration and coordination.

Below, Figure 6 indicates participating countries' perception of project impact based on questionnaire inputs, by sectors. Some impact of the project was observed by all stakeholders, across all sectors and countries engaged in the evaluation questionnaire.

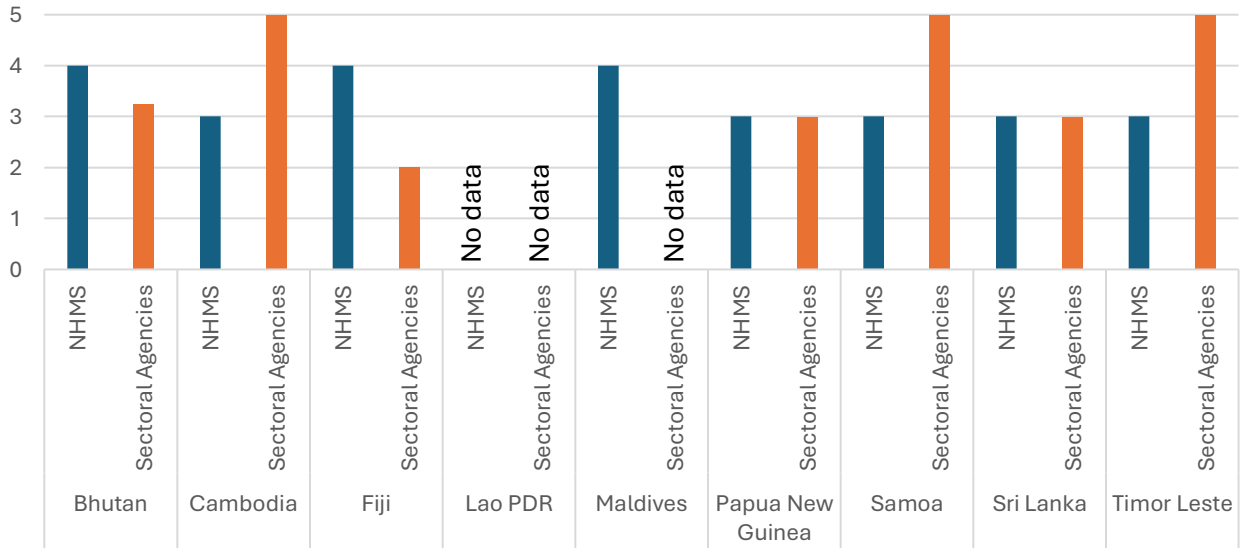

Figure 6: Stakeholder perception of project impact (1=no impact, 5=significant impact)

RIMES was highly effective in creating opportunities for stakeholder discussions and knowledge sharing including during training activities, country monsoon/weather forums, and at the Side Meeting at the RIMES 14th Council Meeting. This developed collaboration and coordination has resulted in tangible impacts including:

- **Bhutan**: Following sector-level feedback provided during engagement activities, the National Center for Hydrology and Meteorology (NCHM) now makes available past extreme event data on their website, which has assisted the energy sector in their risk assessment activities.

- **Fiji**: Collaboration between the Fiji Meteorological Service (FMS) and key agencies fostered by the project created sectoral partnerships resulting in enhanced overall response to weather-related events.
- **Papua New Guinea**: The engagement activities "greatly strengthened the partnership, as well as enhanced the capacity of the Agriculture Department and the PNG National Weather Service to deliver better and tailored services to the agriculture stakeholders through the development of the decision support system tool called the Agricultural Meteorological Advisory Monitoring and Services (AMAMAS)."
- **Samoa:** The 2022-2023 Wet Season Forum provided a deeper understanding to sectors on the available Samoa Meteorological Services (SMS) products, and consideration of how they can be applied to support their work. Specifically, the national disaster management organisation (NDMO) was supported in terms of incorporating IBF into disaster risk reduction (DRR) preparedness and response activities, helping them to link warning levels with pre-defined actions.
- **Sri Lanka**: The monsoon forums, as well as training events, provided opportunities for the sharing of information and articulation of needs from the various sectors. As a result, forecast products have been enhanced (new formats for warning and advisories) based on user feedback. Additionally, even sectors who did not participate in the monsoon forums observed benefits from these events, with the plantation sector noting that they are now able to issue agromet advisories for plantation crops based on information provided by the Department of Meteorology (DoM).

Such collaboration, networking, and knowledge sharing opportunities demonstrate the powerful "soft" impact that has been nurtured by this project.

The high quality and effective training provided by RIMES during the project contributed to enhanced capacity of both the NHMSs and other sectorial agencies, resulting in demonstrated impacts for project countries:

- **Cambodia**: Capacity and knowledge on "crop calendar, climate change action plan, early warning to flood and drought" were enhanced.
- **Lao PDR**: The training contributed to the development of skills and knowledge of Department of Meteorology and Hydrology (DMH) staff, as well as provided access to tools such as FOCUS, to enhance their monthly seasonal forecast/outlook products. These improved products are used by various sectors including the agricultural sector to develop a crop calendar for farmers, the NDMO for preparedness planning and measures at the local level, and the water sector to support dam operations and water resource planning.
- **Fiji**: Leveraging skills and knowledge acquired during the project training, FMS developed enhanced forecasting products including heavy rain maps showing possible impacts classified by expected level, marine alerts/warnings that show possible impacts classified by wind strength, and coastal inundation map indicating possible impacts of damaging swells and coastal inundation. FMS is also now able to provide early action rainfall monitoring for three, six, and nine months, colour coded for rain intensity, including the time periods and potential impacts on the ground. Such enhanced FMS services support the other sectorial agencies (energy, fishery, farmers, tourism, aviation, etc.) with tailored products.

- **Maldives**: "*Knowledge gained during training programs improved operational capacities of forecasting and to determine potential impacts*", which was leveraged by Maldives Meteorological Service (MMS) to improve its forecasting and climate services. These enhanced services have been leveraged across the various key sectors including the creation of sub-seasonal forecasts for the agricultural sector and the addition of a special component within an MMS mobile application (developed under another project) used by the water sector to issue notifications for island communities for rainfall harvesting.
- **Papua New Guinea**: The training helped the National Weather Service (NWS) understand more about weather and climate forecasting. Some enhancements to weather services were noted as a result of this capacity development, which supported various sectors in undertaking their duties.
- **Samoa**: The project training contributed to enhanced understanding of forecasting and climate services by SMS, especially for new forecasters with limited experience and knowledge. The delivered training also supported the forecasting service to refine their standard operating procedures considering the IBF perspective. While not yet implemented, as a result of the training, SMS plans to pilot a new warning impact matrix for the upcoming wet season which will include colour codes, depending on risk levels, in the forecast.
- **Sri Lanka**: As a result of project training activities, personnel capacity was enhanced resulting in plantation agriculture being incorporated into regular agriculture/monthly advice bulletins, supporting the plantation sector in its activities. Additionally, while climate forecasts have been available for use for nearly 20 years, the DOM now contributes to monthly climate bulletins which were previously only developed by the Department of Agriculture.
- **Timor-Leste**: NDMG was previously unable to provide seasonal forecast services. As a result of the capacity development and the tools provided by the project, in complement to other projects being implemented in Timor-Leste, they now provide weekly weather forecast advisories. NDMG now also produces impact matrices based on skills built during project training, wherein impact levels are categorised and colour coded, and supplemented with advisories on what the people should do in each scenario case.
  These advisories are shared with the different sectors for application at both the national and sub-national level including the Civil Protection Authority (CPA) who disseminates the products to the municipality level and the National Red Cross that delivers to its chapters to inform end users. NDMG now also uses RIMES' data exchange platform and FOCUS tool to create monthly forecast bulletins for use by the agricultural sector. These applications demonstrate the resilience-building impacts of the work undertaken under the project.

Where the project supported the enhancement of the RIMES SESAME tool, some notable system improvements were observed:

- **Cambodia:** Detailed crop-specific advisories based on seasonal forecast, along with relevant crop information were prepared for paddy, maize, cassava, and cashew nut and integrated into the system. The DSS outputs were also translated into local languages to support community level awareness raising.
- **Fiji:** Based on discussions with key stakeholders, detailed crop-specific advisories based on seasonal forecast, along with relevant crop information were prepared for paddy, ginger and taro and integrated into the system.

- **Papua New Guinea:** Detailed crop-specific advisories based on seasonal forecast, along with relevant crop information were prepared for coffee, cocoa, taro, sweet potato, and vanilla, and were integrated into the system.
- **Sri Lanka:** DSS for agriculture was enhanced, with the inclusion of big onion and maize crops, preparation of detailed crop-specific advisories based on seasonal forecast, along with relevant crop information, and the establishment of a cloud repository for data.

5.8 SUSTAINABILITY

"The extent to which the net benefits of the intervention continue or are likely to continue".

With broad support for project activities, and a strong appreciation for the approach taken by RIMES in the implementation of project activities, all project country partners appear eager and motivated to continue future activities.

Below, Figure 7 indicates participating countries' perception of project sustainability based on questionnaire inputs, by sectors. Broadly, stakeholders perceived of project sustainment as limited, with resources noted as a key factor.

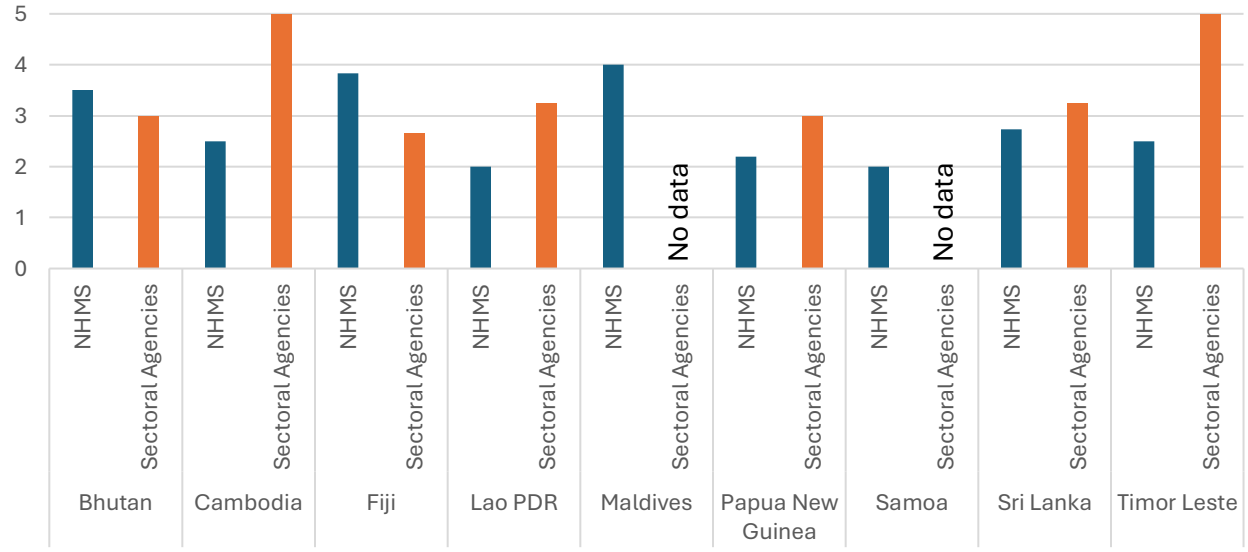

Figure 7: Stakeholder perception of project sustainability (1=not sustainable, 5=very sustainable)

Even though the government budget for these activities is limited, stakeholders indicated their desire to apply knowledge acquired and use tools for their duties. With government financial resources limited, they rely on additional financial resources from development partners including GCF, CREWS, the Asian Development Bank (ADB), World Bank, Agence Française de Développement (AFD), International Monetary Fund (IMF), Japan International Cooperation Agency (JICA), Korea International Cooperation Agency (KOICA), Swiss Agency for Development and Cooperation (SDC), etc., to ensure continuity. While welcoming such international cooperation and financial support, partners articulated their desire to continue monsoon/climate forums, even without donor support.

Where leadership were engaged in monsoon forums, an understanding of the importance of forecasting and climate services was built at the senior level. This high-level awareness supports further resource allocation and strategic focus on forecasting in the future.

Consideration of institutionalisation of IBF was limited during implementation of project activities. In Fiji, discussions began on the development of a policy to institutionalise the use of IBF processes within FMS' operations. Further, Samoa has effectively built formal partnerships with other sectorial agencies towards robust and reliable data exchange and services, including execution of a Memorandum of Understanding (MOU) between the Water Resources Division (WRD) and SMS for access to information on rainfall intensity, as well as river water and tide levels, which are being used to monitor possible flooding. Additionally, an arrangement has been made for SMS' provision of weather forecasts/bulletins to the Samoa Tourism Authority (STA). Such policy frameworks and agreements create a robust framework on which IBF can be implemented. However, it is notable that similar activities did not occur in other project countries. The institutionalisation of IBF processes is vital to ensure the success and sustainment of project outcomes.

The project did not consider an exit strategy, rather RIMES planned for continuous activities in the next project phase. There is limited government budget to sustain the project outcomes and impacts and there remains a heavy reliance on international donors to sustain project outcomes. Recognising this fact, RIMES was effective in engaging other development partners to support future monsoon forums and providing technical advice if required. This included engagement of the World Food Programme (WFP) in Sri Lanka to support upcoming monsoon forums and the development of a proposal to SOFF for the enhancement of the weather network, for which RIMES provided assistance.

The planned launch of a RIMES Sub-regional Hub in PNG is also seen as a significant step in support of sustainment of project outputs and outcomes. Under this hub, the PNG DSS, AMAMAS, is planned to be operationalised within the country, with the training and collaboration developed under this project leverageable to support this effort.

The ongoing partnership with RIMES and their advice provided to other projects was noted as an important component to sustainment, with one evaluation participant stating "continuity is guaranteed as RIMES is always here to support us. Whenever we ask for technical support, they assist." This is a powerful and important component to the further development and enhancement of climate and weather forecasting services. As noted by UNESCAP, "*RIMES provide a service that no other entity has been able to provide for low-capacity countries*".

6. LESSONS LEARNED AND RECOMMENDATIONS

1

Alignment and contributing to International Agreements. By enhancing weather and climate resilience, including risk-informed decision-making and seasonal planning in climate-sensitive sectors in Bhutan, Cambodia, Lao PDR, Maldives, and Sri Lanka in the Asian region, and Fiji, Samoa, Papua New Guinea, Timor-Leste in the Pacific region, the project was aligned and responded to international agreements, namely:

- The Sendai framework for Disaster Risk Reduction 2015-2030, which one of its seven targets, target g) states: "Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessment to people by 2030"
- The Paris Agreement on climate change provides a clear mandate for increased coherence in countries' approaches to climate and disaster risk reduction, and
- The Sustainable Development Goals (SDGs), capacity development achieved under the project, including forecasting and climate prediction knowledge and skills building, has contributed to SDG 13 (climate action), and the project based on collaborative partnerships responds to SDG 17 (Partnerships for the Goals). Additionally, the customisation of the decision support system for agriculture, once operationalised, will enhance climate resilience in the agriculture sector by increasing productivity and improving livelihood of farmers, thereby reducing poverty (SGD 1) and food insecurity (SGD 2).

Recommendation: It is recommended to highlight this compliance of international agreements and added-value in next phase proposal, inform development partners and assist participating countries to align the next project with their policies and institutional framework to also inform about the contribution to the cited international agreements when officially reporting to United Nations on their implementation.

2

RIMES partnerships and regional understanding are invaluable. The RIMES team's existing understanding of regional/global contexts and relationships with key stakeholders and development partners were key assets for project implementation and outcomes. The project considered the RIMES Masterplan (2021-2025), other RIMES interventions, ESCAP Trust Fund's strategy note 2021-2024, and other development partners' projects including WMO, CREWS, GCF, SPREP interventions, etc. RIMES also provided technical advice to participant countries regarding future projects and other regional and global initiatives and was therefore highly coherent and allowed for the optimisation of activities and resources, as well as a vision for the future to support sustainability.

Recommendation: The highly effective nature of RIMES' regional relationships should be capitalised on and leveraged to scaled-up interventions. In addition to providing project progress updates to the UN ESCAP Tsunami Trust Fund Advisory Council Meeting, ESCAP should consider RIMES and beneficiary countries interventions at the Committee on Disaster Risk Reduction, whose role (ESCAP/RES/78/2) is in line with project expectations and tasks. Cooperation should also be sought with ESCAP's Regional Cooperative Mechanism for Drought Monitoring and development partners coordination mechanisms.

3

Knowledge sharing opportunities provided significant added value to project activities. The value of knowledge exchange between public institutions in the nine countries was highlighted, fostering a comprehensive vision for forecasting services, building cooperation, and enhancing confidence in proposed interventions.

Recommendation: The impact of these exchanges in each country should be further developed and articulated through inter-institutional actions. Future project activities should consider the creation of regional knowledge networks between countries with similar environments and geographies. These networks should promote and generate content so that the knowledge created by the project is strengthened and continue independently of the actions promoted by the project. It is also considered important that these networks involve wider sectors and actors, such as academia, the private sector, universities, and other organisations at regional, national, and local levels.

4

National policies required for operationalisation of IBF. The institutionalisation of IBF at the national level requires a strong policy framework. This would also further contribute to the implementation of the international agreements, namely: the Sendai framework, the Paris Agreement on climate change, and the SDGs. However, the limited national policy frameworks hampered operationalisation of IBF in project countries.

Recommendation: Future project activities should be more clearly aligned with national policy to support the operationalisation of IBF. This may be achieved through additional emphasis on project compliance to international agreements and its added value in assisting participating countries to meet their international obligations. Further, more significant engagement with leadership and the involvement of policy makers from the outset of project activities would help build high-level support and policy development.

5

Training and tools alone are insufficient to operationalise IBF. While project training quality and content were highly praised by stakeholders, it was noted that such capacity development did not directly translate to full IBF operationalisation. Equally crucial to successful IBF development is the establishment of mechanisms to implement, maintain IBF systems, processes, and tools.

Recommendation: Future project activities should carefully consider implementation mechanisms which customise country application of IBF, recognising national differences and limitations, taking advantage of each country's capacities and progress, and promoting South-South technical cooperation, as well as opened for cooperation with development partners and funding mechanisms to support this added-value. Further, custom roadmaps for IBF implementation within each country would support country stakeholders and enhance project impacts and sustainment of outcomes.

6

Limitations of tools and applications. The tools introduced during the project, including SESAME and FOCUS, were welcomed by participating countries. User limitations were noted with these tools in relation to local data and modelling capacity which impacted the application of tools in a number of project countries.

Recommendation: Future project activities should include further customisation of the tools with consideration of accuracy and scale for its application particularly in small islands states and accompany their use in all participating countries, including practical training and guidelines. Future activities should also explore how to institutionalise the use of guidelines and application of tools, including the development of the underlying IBF capacities (GIS knowledge, funding for hardware and software, etc.) in coordination with countries and implementing partners that may wish to contribute.

In practical terms, it is recommended that RIMES and ESCAP continuously support the rollout of the SESAME since most of the respondents recognised SESAME as a helpful tool for the agriculture sector but were not able to fully deploy it during the project implementation period.

7

Staff capacity must be maintained to support project sustainment. Staff rotation or the exit of trained personnel affect the consistency, effectiveness, and sustainability of project activities. The absence of sustainable and continuous training solutions may aggravate this problem, resulting in gaps in knowledge and continuity of skills in the institutions involved. The prototype Learning Management System (LMS) developed by RIMES was launched in December 2023. It is now under further development to integrate additional learning materials, good practices, and support wider capacity building across all RIMES member countries.

Recommendation: Capacity sustainability plans are essential, considering staff turnover, which can be effectively addressed through the development and certification of online training modules also envisaged by the RIMES LMS. Future project activities should prioritise the full-fledged development and operationalisation of the RIMES LMS, including training modules and materials to develop capacities of new staff and update existing staff. To ensure their sustainability and institutionalisation through certified course, support from technical and financial partners must also be sought.

8

Cooperation required at national level to support access to information. Although the project successfully fostered collaboration between institutions in different countries, challenges remain in inter-institutional cooperation at national and regional levels with other countries, particularly in relation to data sharing.

Recommendation: Collaboration and coordination between institutions at national and regional level, as well as access to information, are key elements to support the project and to effectively use its outputs. Guidance and advice should be provided to countries on the benefits of institutional coordination and cooperation, and access to project documentation should be made available to all institutions involved. Data sharing agreements between institutions should be considered to institutionalise the sharing of data.

9

Multi-stakeholder collaborative approaches strengthen project outcomes. The project focused on NMHSs and some key sectors per country. However, broader collaboration with local governments, DRR systems or national platforms (as per Sendai framework, paragraph 27 g), civil society, private sector, and academia would have strengthened the results. Involving these parties not only as participants, but also allowing them to provide technical and financial inputs, would have generated more inclusive and robust solutions.

Recommendation: DRR and collaborative climate adaption (CCA) are multidisciplinary issues that require partnerships, as suggested by international instruments (SDGs, Sendai Framework and Paris Climate Agreement). Alliances with municipalities, private sector associations and academia need to be fostered to strengthen knowledge and implementation. In addition, connections and commitments should be established with other regional entities such as Association of Southeast Asian Nations, (ASEAN), SPC, Pacific Islands Climate Outlook Forum (PICOF), Pacific Met Council, etc.

10

Reliance on development partners impedes stakeholder ownership. External fundings was vital to the sustainment of project outcomes and RIMES was highly effective in fostering partnerships with key partners to sustain future activities. However, ensuring sustainability of results and capacities beyond external funding is crucial and builds stakeholder ownership.

Recommendation: Future activities should place sustainment as a central consideration. With an acknowledgement that continued funding support will be required for IBF in all project countries, the convening of a donor roundtable would support more effective and efficient project programming and implementation in the future. Socialising the transition strategy with all project actors and prospective donors, clearly defining commitments for a common goal, project planning and budget, to which financial counterparts can provide technical and financial support could lay the foundations, both for the project next phase and/or other joint interventions or collaboration that the international community may be interested. Additionally, efforts should be undertaken with project stakeholders to build capacity to sustain project activities themselves.

11

Consideration of the needs of specific sub-populations and vulnerable groups. Considerations regarding gender, disability, and other specific sub-populations was largely absent in project planning or delivery. Except where gender balance was considered for training and forum participants, there was limited additional consideration of gender and vulnerability in the project design or implementation. This is a particularly important consideration for the delivery of forecasting information to potentially impacted communities who may need to take actions to mitigate the impacts of weather events.

Recommendation: Further efforts should be taken to mainstream gender in future project activities including development of strategies to ensure full consideration and inclusion of women, people with disabilities and other underrepresented groups at the program design stage. For future programs, RIMES may explore the feasibility of planning for greater inclusion, and engaging with women's and disability rights organizations in country to ensure that forecasting services deliver information in a way that is accessible and relevant to underrepresented groups, including women, people with disability, indigenous and minority communities.

12

Additional accountability to affected populations is required. The project had a number of substantive achievements, but many partners have limited knowledge of these successes. Individual stakeholders may only have been engaged in a single project activity or set of training sessions, gaining little awareness of the wider project context. Only leadership participated in the inception meeting and no closing event was conducted for the project. The evaluation highlighted stakeholders' limited or confused understanding of the wider project goals and awareness of the project successes and outcomes was lacking.

Recommendation: In future project activities, it is recommended that RIMES develop a specific project information dissemination strategy to engage stakeholders in a wider understanding of project activities, including wider inclusion in inception meetings, the presentation of overarching project objectives during project events and training sessions, and the facilitation of a closing event to share details of project successes and lessons learned, to which all project stakeholders should be invited, as well as development partners and financial institutions/mechanisms. Additionally, the establishment of focal persons within each key sector would support a more cohesive engagement strategy, more effective coordination, and the broader "championing" of project activities.

13

Siloed systems hinder efficiency and effectiveness of EWS. Interoperability of systems would increase efficiencies and strengthen the wider EWS ecosystem. RIMES demonstrated strong collaboration and coordination with other initiatives throughout the project however limited consideration of interoperability between their and others' systems and tools due to restrictions in data sharing and systems integration created siloed data and reduced efficiencies.

Recommendation: Future project design should include a mapping of existing tools and application and the development of project activities that will seek to build interoperability between RIMES' tools and these identified systems, where possible. Additionally, future development of RIMES' tools and applications should give careful consideration to interoperability, including the development of relevant Application Programming Interfaces (APIs). Further, capacity development with NHMSs should include CAP standards to support the standardisation and use of alerting messages.

14

Last mile service delivery remains a challenge. While the project addressed needs at the national level and climate services through sectors reached the sub-national level in some project countries, last mile delivery of services to those who will need to action and respond to provided information remained a challenge. The challenge of this service delivery was acknowledged by many evaluation participants.

Recommendation: Future project design should include a pilot project to support end-to-end delivery of enhance climate and forecasting services. This could serve as an important tool to refine and enhance wider sub-national project activities in the future.

15

"Capitalise on successes." The project has tangible achievements and outcomes, as reported. The successes of the project should be clearly articulated and leveraged to support a next phase.

Recommendation: It is recommended that RIMES, in coordination with UN ESCAP, facilitate a project closing event to share project outcomes, successes, and lessons learned (including the findings in this evaluation) with beneficiaries and stakeholders. Invitees should include senior representatives from project country stakeholder agencies, development partners, and members of the TTF (Australia, EU, India, Korea, Japan, New Zealand, Norway, Switzerland, Thailand, UK, USAID, etc.), representatives from funding mechanisms (CREWS, EW4All, GCF, SOFF, etc.) and regional and international development banks (i.e.: ADB, World Bank, etc.) With the same actors, and supported by UN ESCAP, a donor round table could also be considered. Further, a fundraising strategy should be defined to support future activities.

7. DEMONSTRATED GOOD PRACTICES

1. Leveraging events to create platforms for discussion and knowledge sharing between stakeholders which built national institutional partnerships, collaboration, and coordination.

2. Cost optimisation and savings applied to build a learning management tool for wide beneficiary impact across all RIMES member countries.

3. Engaging development partners to support continuation of project activities created continuity of support when the project ended.

4. Dynamic response to stakeholder requests/needs as the project evolved enhanced overall project outcomes.

5. Engagement of highly skilled and knowledgeable project staff-built stakeholder confidence in, and support for, project activities.

6. Designing and implementing project activities to align with, and complement, other projects enhanced overall outcomes and increased efficiencies.

7. Contributed to national institutional partnership, dialogue, and knowledge exchange through the monsoon forums and subregional dialogues.

8. ANNEXES

8.1 ANNEX 1: EVALUATION TERMS FOR REFERENCE

1 Evaluation Objectives

The objectives of the end-of-project evaluation are to:

a) Provide an independent assessment of the relevance, efficiency, effectiveness, impact, and sustainability of the project
b) Identify key lessons and propose recommendations for follow-up actions and for consideration in RIMES future program design, implementation, and management

2 Use of Findings

Findings of the evaluation shall be communicated to ESCAP, as part of RIMES accountability to the ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness in Indian Ocean and Southeast Asian Countries and its donors. Findings, particularly on the project's contributions to enhancing the beneficiary-countries' resilience to weather- and climate related hazards shall be communicated to RIMES Member States and to development partners in general, to advocate for replication. RIMES shall use findings of the evaluation for enhancing its project design, planning, and implementation strategies, as well as for guiding replication.

3 Evaluation Criteria

The following evaluation criteria shall be used:

a) Relevance: consistency of project outputs and results in comparison to what was expected from the project, as well as of project outcomes in relation to the beneficiaries' requirements, country needs, and the Trust Fund's strategic focus (see sections C, F and G of the project TOR/Work Plan and Budget).
b) Efficiency: the proficiency and expediency by which project outputs and results were achieved in relation to inputs utilized, including measures taken to improve implementation and maximize impact with limited resources
c) Effectiveness: extent to which the project's expected objectives/ outcomes have been achieved
d) Impact: changes and effects (positive/ negative, planned/ unforeseen) that have resulted from the project with respect to the target groups and other affected stakeholders
e) Sustainability: the degree to which the project's beneficial outcome will continue after completion of project activities

4 Methodology

The evaluation shall involve:

a) Review of documents, including approved project document, project agreement, progress reports
b) Online interviews of project partners and direct beneficiaries
c) Analysis of data collected

d) Use of appropriate tools to inform evaluative judgments

5 Key Tasks

a) Review project-related documents, including project agreement, progress reports, etc.
b) Develop an analytical framework for the evaluation, including evaluation tools and work plan
c) Finalize the analytical framework, including evaluation tools and work plan, integrating inputs from the Evaluation Management Team
d) Undertake data collection and analysis. Ensure assessment is objective and balanced, affirmations are accurate and verifiable, and recommendations are realistic.
e) Present preliminary findings to RIMES Evaluation Management Team and receive feedback.
f) Prepare draft final report. Acknowledge clearly where changes in the desired direction are already taking place.
g) Prepare final report, integrating/ addressing comments from the evaluation quality assessment

6 Expected Outputs

Deliverable 1. Evaluation analytical framework and tools, finalized in consultation with the Evaluation Management Team
Deliverable 2. Draft evaluation report that includes:

- Executive Summary that includes key findings, good practices, lessons learnt, conclusions, and recommendations
- Main text, to include:
  - Project context
  - Evaluation methodology
  - Overall project assessment
  - Analysis based on evaluation criteria
  - Key accomplishments
  - Lessons learnt/ opportunities for improvement
  - Recommendations
  - Good practices
- Appendices, to include evaluation terms of reference, analytical framework, evaluation tool, list of persons/ organizations consulted/interviewed, documentation consulted, other relevant technical annexes

Deliverable 3. Final evaluation report, integrating comments and addressing comments from the evaluation quality assessment

8.2 ANNEX 2: PROJECT ACTIVITIES COMPLETED UNDER EACH COMPONENT

Components/ Activities	Mode	Date Conducted	Beneficiary Countries/ Participating Sectors[2]									Remarks/ Annexes
			BHU	CBDA	FJ	LAOS	MLDV	PNG	WSAM	SRL	TMOR	
1. Training on Impact Forecasting and Risk Analysis												
1.1. 1st Training on Impact Forecasting and Risk Analysis	Online	18-21 Apr 2022 (SA and SEA Countries) 19-22 Apr 2022 (Pacific Countries)	A, E, M	A, D, M	D, H, M	E, H, M	D, M	D, M, W	M	A, D, E, M, W		Representatives from Timor-Leste were not able to join due to presidential elections. Attendance Confirmation Sheet – S&SE Asia Attendance Confirmation Sheet – Pacific Training Evaluation – Pacific and S&SE Asia
1.2. 2nd Training on Impact Forecasting and Risk Analysis	Online	07-10 Nov 2022 (SA and SEA Countries) 14-17 Nov 2022 (Pacific Countries)	M	A, D, M	H, M	A, E, D, M	A, D, H, M, W	A, D, M, T, W	A, D, H, E, M	A, E, M, W	A, D, H, M, W	Attendance Confirmation Sheet – S&SE Asia Attendance Confirmation Sheet – Pacific Training Evaluation – S&SE Asia Training Evaluation - Pacific
2. Technical support to Monsoon/ Seasonal Forums												
2.1. 16th Lao PDR National Monsoon Forum	In-person	22 Dec 2022				A, D, E, H, M, W						Please see list of participants in the actual reports. Links are provided in Table 2.
2.2. 17th Lao PDR National Monsoon Forum	In-person	09 May 2023										
2.3. 18th Lao PDR National Monsoon Forum	In-person	09 Nov 2023										
2.4. 7th Maldives National Monsoon Forum	Hybrid	12 Jun 2022					A, D, H, M					
2.5. 8th Maldives National Monsoon Forum	Hybrid	10 May 2023										
2.6. 8th PNG National Climate Outlook Forum	Hybrid	27 Oct 2022						A, D, M, T, W				
2.7. 9th PNG National Climate Outlook Forum	Hybrid	04 May 2023										
2.8. 10th PNG National Climate Outlook Forum	Hybrid	16 Nov 2023										
2.9. Samoa 2023 Post-Wet Season Forum	Hybrid	24 May 2023							A, E, H, M, T, W			
2.10. 26th Sri Lanka National	Online	05 May 2022								A, D,		

[2] Sectors: A - Agriculture, D - Disaster Risk Reduction, E - Energy, H - Health, M - National Meteorological and Hydrological Agencies, T - Transportation and W - Water Resource

Components/ Activities	Mode	Date Conducted	Beneficiary Countries/ Participating Sectors[2]									Remarks/ Annexes
			BHU	CBDA	FJ	LAOS	MLDV	PNG	WSAM	SRL	TMOR	
Monsoon Forum										E, H, M, W		
2.11. 27th Sri Lanka National Monsoon Forum	Hybrid	04 Oct 2022										
2.12. 28th Sri Lanka National Monsoon Forum	Hybrid	04 May 2023										
2.13. 29th Sri Lanka National Monsoon Forum	Hybrid	18 Oct 2023										
3. Subregional Dialogue Focusing on Pacific Countries												
3.1. 1st Subregional Dialogue	Online	12 Apr 2022			A, D, M			D, M	M		M	Attendance Confirmation Sheet
3.2. 2nd Subregional Dialogue	Online	04 Sep 2023			A, M			A, D, M	D, M, W		A, D, M, W	Attendance Confirmation Sheet
4. Technical assistance to NMHS to meet user demands												
4.1. Training on Weather and Seasonal Forecasting	Online	29 Aug – 02 Sep 2022	M	M	M	M	M	M	M	M	M	Attendance Confirmation Sheet – S&SE Asia Attendance Confirmation Sheet – Pacific Training Evaluation
4.2. Training on Hydrological Modeling and Flood Forecasting	Online	28 Nov – 09 Dec 2022	M	M	M	M	M	M	M	M	M	Attendance Confirmation Sheet Training Evaluation
4.3. 1st Phase of Training on Weather Forecasting and Climate Prediction	Online	10 – 13 Jul 2023	M	M	M	M	M	M	M	M	M	Attendance Confirmation Sheet Training Evaluation
4.4. 2nd Phase of Training on Weather Forecasting and Climate Prediction	In-person	24 – 27 Jul 2023	M	M	M	M	M	M	M	M	M	Participants' List Training Evaluation Day 1&2 Training Evaluation Day 3 Training Evaluation Day 4
5. Support to NMHS and ministry participation for experience and knowledge sharing in RIMES 4th Ministerial Conference												
5.1. Side Event of the RIMES 14th Council Meeting	In-person	10 Nov 2022		M	M	M	M	M	M	M	M	Bhutan was not able to attend the event in light of ongoing Parliament sessions in their country. Please see attendance sheet in the Report
6. Expansion of Decision Support System (DSS) for Agriculture												
6.1. Crop Decision Tree Development Workshop	Online	07 – 20 Apr 2023	A	A	A			A, M		A		Attendance Confirmation Sheet Training Evaluation

Table 2: Project activities completed under each component.

8.3 ANNEX 3: LIST OF BACKGROUND DOCUMENTS

8.3.1 CONSULTANCY DOCUMENTS AND BIBLIOGRAPHY

Document Title	No. of Pages	Link
Consultancy Terms of Reference, 2024	11	
OECD Assistance Committee (DAC) Criteria for evaluating development assistance	2	https://www.oecd.org/dac/evaluation/49756382.pdf
OECD/DAC Applying Evaluation Criteria Thoughtfully	82	https://www.oecd-ilibrary.org/docserver/543e84ed-en.pdf?expires=1712473539&id=id&accname=guest&checksum=FF14CE57B7C655F1C50CDFF09F7FD96D
Report of external evaluation, RIDASICC project, SDC, UN ECLAC, SMD (P. Basabe)	49 plus annexes	

8.3.2 PROJECT DOCUMENTS

Document Type	Documents	Annexes
Project Contract/ Terms of Reference	1. Letter Agreement No. 2021-0037	1. Annex 1. Terms of References/ Work Plan and Budget
		2. Annex 2. Standard Terms and Conditions
	2. Request for Amendment of TTF30 TOR 3. Amendment no. 1 to Letter of Agreement No. 2021-0037	1. Annex 1. Revised Terms of References/ Work Plan and Budget
	4. Amendment no. 2 to Letter of Agreement No. 2021-0037	1. Annex 1. Revised Terms of References/ Work Plan and Budget
Project Progress and Activity Reports	1. Progress Report 1 (Period Covered: 01 Dec 2021 – 31 May 2022)	1. Annex 1. Report on Training on Impact Forecasting for South Asian and Southeast Asian Countries
		2. Annex 2. Report on Training on Impact Forecasting for Pacific Asian Countries
		3. Annex 3. Report on the 26th Sri Lanka Monsoon Forum
		4. Annex 4. Report on the 1st Subregional Dialogue
		5. Annex 5. Inception Meeting Report
	2. Progress Report 2 (Period Covered: 01 Jun 2022 – 31 Nov 2022)	1. Annex 1. Report on the 7th Maldives National Monsoon Forum
		2. Annex 2. Report on Training on Weather and Seasonal
		3. Annex 3. Report on the 27th Sri Lanka Monsoon Forum

		4. Annex 4. Report on the 8th PNG National Climate Outlook Forum
		5. Annex 5. Report on the 2nd Training on Impact Forecasting and Risk Analysis
		6. Annex 6. Report on the Side Event of the RIMES 14th Council Meeting
	3. Progress Report 3 (Period Covered: 01 Dec 2022 – 31 May 2023)	1. Annex 1. Report on Hydrological Modelling and Flood Forecasting Training
		2. Annex 2. Report on the 16th Lao PDR National Monsoon Forum
		3. Annex 3. Report on the Crop Decision Tree Development Workshop
		4. Annex 4. Report on the 28th Sri Lanka National Monsoon Forum
		5. Annex 5. Report on the 29th Papua New Guinea National Climate Outlook Forum
		6. Annex 6. Report on the 17th Lao PDR National Monsoon Forum
		7. Annex 7. Report on the 8th Maldives National Monsoon Forum
		8. Annex 8. Report on the Samoa 2023 Post-Wet Season Forum
	4. Terminal Report (Period Covered: 01 Jun 2023 – 29 Feb 2024)	1. Annex 1. Report on the Online Training on Weather Forecasting and Climate Prediction
		2. Annex 2. Report on the In-Person Phase of the Training on Weather Forecasting and Climate Prediction
		3. Annex 3. Report on the 2nd Subregional Dialogue
		4. Annex 4. Report on the 29th Sri Lanka National Monsoon Forum Report
		5. Annex 5. Report on the 18th Lao PDR Monsoon Forum
		6. Annex 6. Report on the 10th Papua New Guinea National Climate Outlook Forum Report
		7. Annex 7. NextGen SESAME User Manual
		8. Annex 8. Learning Management System Documentation
		9. Annex 9. List of Agencies that Participate in Project Implementation

Table 3: Table of background and project documents reviewed by the evaluator.

8.4 ANNEX 4: STAKEHOLDER QUESTIONNAIRE

1. Questions on Goal and Expected outcomes and Performance indicators
Rating 1=Not satisfactory; 2=Somewhat satisfactory; 3=Moderately satisfactory; 4=Satisfactory; 5=Very satisfactory.
1.1 Do you think RIMES project attained the project goal and expected outcome indicated above?
1.2 To what extent has the project supported the NMHSs (for Pacific Countries) in identifying synergies and linkages of project activities with on-going initiatives in the subregion for complementarities and sustainability?
1.3 To what extent has the project assisted your country (specific for NMHSs and Agriculture Departments of Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka) in customizing the decision support system for agriculture sector in terms of integrating more crops and more location specific alerts and advisories?
1.4 To what extent has the project supported NMHSs in delivering user-demanded new or enhanced weather and climate products/ services in support of impact forecasting?
1.5 To what extent has the project promoted knowledge sharing and identify project sustainability plan/ measures?
1.6 To what extent has the project enhanced the capacity of the sectoral users in your country or the beneficiary countries in making weather and climate risk-informed decisions?
1.7 To what extent has the project enhanced resilience of your country or the beneficiary countries in weather- and climate-related hazards?

2. Questions on Goal and Expected outcomes and Performance indicators
RELEVANCE: Is the intervention doing the right things? The extent to which the intervention's objectives and design respond to beneficiaries: global/regional, country and partner/institution needs, policies and priorities, and continue to do so if circumstances change.
Rating 1=Not satisfactory; 2=Somewhat satisfactory; 3=Moderately satisfactory; 4=Satisfactory; 5=Very satisfactory.
2.1 To what extent do the objectives of the project address the needs, priorities or policies of your country, institution and/or target sectors?
2.2 To what extent do the objectives of the project address the needs and priorities of indirectly affected stakeholders (not included in question 1.1, e.g. local government, civil society, etc.) in the country of the intervention?
2.3 To what extent do elements / activities of the fundamental design of the project (such as project goal and targets, the structure of project components, the selection of services and intervention partners) adequately reflect the needs and priorities of country and sectoral agencies?
2.4 How did the project contribute to a theory of change, innovation, or the performance of your institution? Will the project continue to do so if circumstances change?

3. <u>COHERENCE:</u> How well does the intervention fit? The compatibility of the intervention with other interventions in a country, sector or institution.
Rating 1=Not compatible; 2=Somewhat compatible; 3=Moderately compatible; 4= Compatible; 5=Very compatible.
3.1 To what extent is the project compatible with other RIMES and UNESCAP interventions or projects in the same country and thematic field (coherence, complementarity and synergies)?
3.2 To what extent is the project compatible with similar interventions of other actors in the country and thematic field (complementarity and synergies)? Examples: linkages and synergies with WMO, SPREP or other UN, inter-governmental organization or development partner projects?
3.3 Please indicate how capacities have been strengthened to enhance resilience to weather and climate-related hazards or to weather and climate risk-informed decision-making and seasonal planning in climate-sensitive sectors in your country?
3.4 Please indicate if the project generated documents, tools or exchange of knowledge and good practices among RIMES member countries and whether or not they are coherent.

4. **EFFECTIVENESS**: Is the intervention achieving its objectives? The extent to which the intervention achieved, or is expected to achieve, its objectives and its results, including any differential results across groups.
Rating 1=Not satisfactory; 2=Somewhat satisfactory; 3=Moderately satisfactory; 4=Satisfactory; 5=Very satisfactory.
4.1 To what extent are the approaches/strategies during implementation adequate to achieve the desired results?
4.2 To what extent has the project met or is expected to meet the desired objectives (Outputs and Outcome)?
4.3 To what extent were the objectives (expected outcome) achieved as planned?
4.4 What are the main factors that influenced the achievement/non-achievement of the expected results of the project?

5. **<u>EFFICIENCY:</u>** How well are resources being used? The extent to which the intervention delivers, or is likely to deliver, results in an economic and timely way.
Rating 1=Not satisfactory; 2=Somewhat satisfactory; 3=Moderately satisfactory; 4=Satisfactory; 5=Very satisfactory.
5.1 To what extent does the project achieve the Outputs, Outcome in a cost-effective manner?
5.2 To what extent does the project achieve the Outputs, Outcome in a timely manner (on schedule or reasonably on schedule)?
5.3 To what extent do management, monitoring and piloting mechanisms support efficient implementation?

5.4 Do you think/wish the project could have been implemented differently? Do you consider that the time for project implementation was optimal to achieve the results?

6. IMPACT: What difference does the intervention make? The extent to which the intervention has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects.
Rating 1=Not satisfactory; 2=Somewhat satisfactory; 3=Moderately satisfactory; 4=Satisfactory; 5=Very satisfactory.
6.1 To what extent the project has generated important effects as per the project expected outcome?
6.2 Please indicate/assess the main impacts (effects) of the project for your country, institution or sector.
6.3 Please indicate/assess two unexpected negative effects, if any, of the project for your country, institution or sector?

7. SUSTAINABILITY: Will the benefits last? The extent to which the net benefits of the intervention continue or are likely to continue.
Rating 1=Not satisfactory; 2=Somewhat satisfactory; 3=Moderately satisfactory; 4=Satisfactory; 5=Very satisfactory.
7.1 To what extent are the partners capable and motivated (technical capacity, ownership) to continue activities that contribute to the achievement of the Outcome?
7.2 To what extent do partners (country, institution or sector) have the financial resources to continue activities that contribute to the achievement of the Outcome?
7.3 To what extent do contextual factors (e.g. legislation, politics, economic situation, social demands) favour or not the continuation of activities leading to the Outcome?
7.4 To what extent were components related to the project's exit plan incorporated for sustainability?
7.5 What factors have favoured or limited the sustainability of the effects/impacts produced by the project after its completion?

8. Overall Project Assessment
8.1 Please indicate three (3) most important project achievements.
8.2 Please indicate overall recommendations for consideration in future intervention/s in your country, institution or sector.

8.5 ANNEX 5: BREAKDOWN OF EVALUATION INTERVIEWEES

List of Institutions/Agencies that Participated in the Evaluation Process[3]

Online Questionnaire

Country	NMHS	Agriculture	DRM	Health	Energy	Water Resource	Others	TOTAL
Bhutan	National Centre for Hydrology and Meteorology F:1	Department of Agriculture, Ministry of Agriculture and Livestock M:2	Department of Disaster Management M:1		Department of Hydropower & Power Systems F:1			**M:3 F:2 T:5**
Cambodia	Department of Meteorology M:2 F:1					Department of Hydrology and River Works M:1 F:1		**M:3 F:2 T:5**
Fiji	Fiji Meteorological Service M:3 F:2	Ministry of Agriculture and Waterways F:1						**M:3 F:3 T:6**
Lao PDR	Department of Meteorology and Hydrology M:1 F:1		National Disaster Management Office F:1					**M:1 F:2 T:3**
Maldives	Maldives Meteorological Service M:1							**M:1 F:0 T:1**
Papua New Guinea	National Weather Service M:4	Department of Agriculture and Livestock F:1				Conservation and Environment Protection Authority M:1		**M:5 F:1 T:6**
Samoa	Samoa Meteorological Service M:2 F:2						Ministry of Works, Transport and Infrastructure M:1	**M:3 F:2 T:5**
Sri Lanka	Department of Meteorology M:3 F:3	Field Crops Research and Development Institute, Department of Agriculture F:1 Tea Research Institute M:1	Disaster Management Center M:1			Department of Irrigation M:1		**M:6 F:4 T:10**
Timor-Leste			Civil Protection Authority M:1			Agriculture and Land use geographic Information		**M:2 F:0 T:2**

[3] M – Male Responders; F – Female Responders; T: Total

Country	NMHS	Agriculture	DRM	Health	Energy	Water Resource	Others	TOTAL
						System (Hydrology Division) M:1		
TOTAL	**M:16 F:10 T:26**	**M:3 F:3 T:6**	**M:3 F:1 T:4**	**M:0 F:0 T:0**	**M:0 F:1 T:1**	**M:4 F:1 T:5**	**M:1 F:0 T:1**	**M:27 F:16 T:43**

Table 4: List of institutions/agencies that participated in the evaluation process by completing the online questionnaire.

Online Interview

Country	NMHS	Agriculture	DRM	Health	Energy	Water Resource	Others	TOTAL
Bhutan	National Centre for Hydrology and Meteorology F:1		Department of Disaster Management M:1					**M:1 F:1 T:2**
Cambodia		Department of Land Resources Management, General Directorate of Agriculture M:1				Department of Hydrology and River Works, Ministry of Water Resources and Meteorology M:1		**M:2 F:0 T:2**
Fiji	Fiji Meteorological Service M:0 F:2	Ministry of Agriculture and Waterways F:1						**M:0 F:3 T:3**
Lao PDR	Department of Meteorology and Hydrology M:1 F:0		National Disaster Management Office F:1					**M:1 F:1 T:2**
Maldives	Maldives Meteorological Service M:1							**M:1 F:0 T:1**
Papua New Guinea	National Weather Service M:5							**M:5 F:0 T:5**
Samoa	Samoa Meteorological Service M:2 F:2							**M:2 F:2 T:4**
Sri Lanka	Department of Meteorology M:1 F:1	Rice Research and Development Institute, Department of Agriculture F:1 Tea Research Institute M:1						**M:2 F:2 T:4**

Country	NMHS	Agriculture	DRM	Health	Energy	Water Resource	Others	TOTAL
Timor-Leste	National Directorate of Meteorology and Geophysics M:1 F:2	Agriculture and Land use geographic Information System M:1	Civil Protection Authority M:2					**M:4 F:2 T:6**
TOTAL	**M:11 F:8 T:19**	**M:3 F:2 T:5**	**M:3 F:1 T:4**	**M:0 F:0 T:0**	**M:0 F:0 T:0**	**M:1 F:0 T:1**	**M:0 F:0 T:0**	**M:18 F:11 T:29**

Table 5: List of institutions/agencies that participated in the evaluation process by completing the online interview.

8.6 ANNEX 6: COUNTRY-LEVEL ANALYSIS

8.6.1 BHUTAN

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Bhutan participated in the project. All key sectors from Bhutan participated in the evaluation either by responding to the evaluation questionnaires (Annex 2) and/or attending the online evaluation interviews held on March 8, 2024.

Government Institution	Role in the Project	Questionnaire	Interview (08.03.2024)
National Center of Hydrology and Meteorology (NCHM)	Main government project partner and Water Resource Sector	✓	✓
Department of Agriculture	Agriculture Sector	2 ✓	
Department of Disaster Management	DRM Sector	✓	✓
Department of Hydropower & Power Systems	Energy Sector	✓	

Table 6: Government agencies from Bhutan, engaged in project activities and evaluation.

SUMMARY OF BHUTAN PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Bhutan focused on training on impact forecasting using seamless forecasts, expansion of DSS for agriculture sector, to cover more crops and/or locations, and technical assistance to the National Center for Hydrology and Meteorology (NCHM) in enhancing monthly and seasonal forecasting.

Specifically, the following stakeholder engagement activities were undertaken with Bhutan representatives:

- Inception Meeting (January 17, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 18-21, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for National Meteorological and Hydrological Services (August 29 – September 2, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 7-10, 2022)
- Online Training on Hydrological Modeling and Flood Forecasting (November 28-December 9, 2022)
- Online Workshop on Crop Decision Tree Development (April 17-20, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)

An understanding of Bhutan's weather and climate capacity enhancement needs were established based on a systematic impact and risk analysis of the existing capacity within the country, facilitated during the monsoon forum. It was confirmed that the project was effective in bringing together the country's stakeholders to help all parties better understand the needs of the various sectors relating to forecasting, while the delivered training sessions helped enhance capacity within NCHM to understand the process of IBF. There was appreciation for the RIMES project team's approach to implementation, their highly skilled and engaged staff, and the support to enhancing forecasting in Bhutan.

EVALUATION CRITERIA ANALYSIS

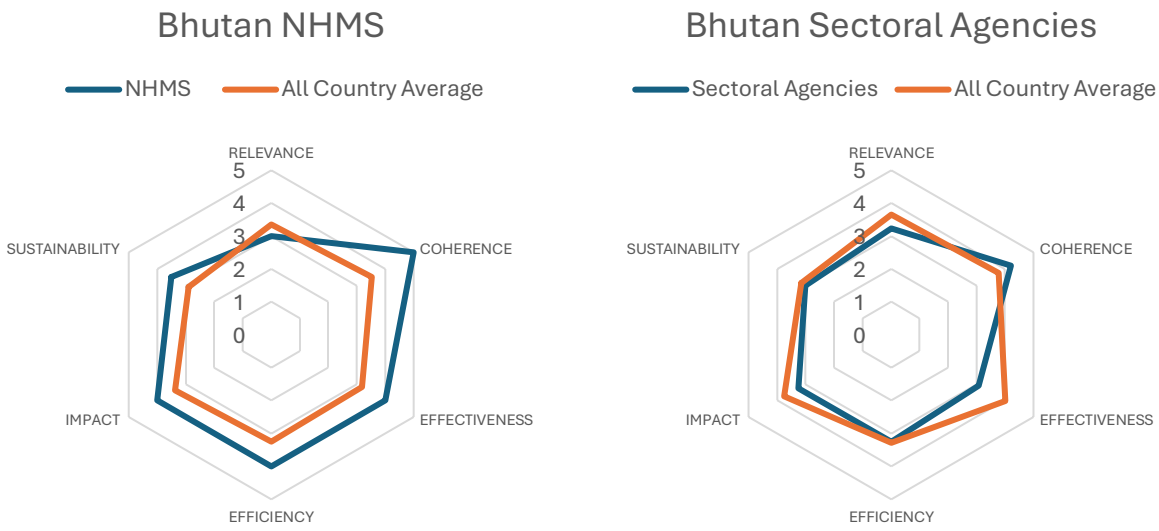

Figure 8: Quantitative scores from Bhutan questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

Project activities supported the identified needs, priorities, and policies of the main actors, in particular NCHM and the agriculture sector. However, participation from additional sectors in future activities should be considered. The selection of services and intervention partners was adequate, with a NCHM representative noting, *"the project was a great idea since it brought many countries together to understand what IBF is and where we stand in our knowledge and implementation"*.

The objectives of the training aligned well with the priorities of Bhutan however not all training participants felt the training aligned with the level of knowledge or understanding. It was noted that some sections of training were not relevant to Bhutan due to the significantly different topography between some of the mountainous countries and Pacific Islands participating. Future training sessions should be further tailored to the specific needs, environments, and capacities of participants.

COHERENCE

The design of Bhutan project activities aligned with the RIMES Master Plan 2021-2025 priorities and was highly compatible with other projects with similar fields of action including the GCF-funded projects for "Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan" at NCHM. Further, it was compatible with other relevant projects including WMO CREWS. This allowed for the sharing of information, coordination, and optimisation of resources.

EFFECTIVENESS

The project was broadly effective in meeting its stated objectives and outcomes, bringing countries together to understand IBF and provided weather and climate services. While Bhutan training on IBF and risk analysis were designed to encompass all key sectors, participation in training events was limited in wider sectoral engagement outside of NCHM and the Department of Agriculture.

Training undertaken during the project was generally helpful to participants in continuing to enhance their forecasting understanding and modelling. Additionally, participants used the training as an opportunity to make connections with NHMS staff from other countries for further knowledge

exchange via social media. The challenge of undertaking online training created some limitation to training effectiveness. Further, Bhutan policy dictates that government staff are unable to undertake travel for training more than once every six months leading to a lack of consistency in the Bhutan participants engaged in project events.

The proactive, helpful, and enthusiastic approach of the RIMES project team was noted by evaluation participants, with their expertise and knowledge helping making events effective and enjoyable. The sharing of real-world experiences was cited as particularly helpful. The usefulness of the developed LMS portal was acknowledged, although it was noted that there had not been time to review its content or to use it since the launch of the prototype in December 2023.

For future activities, Bhutan representatives suggested that the project would be more effective if NMHS members participate in the formulation of future project proposals and contribute to project management. Additionally, the identification of a focal person from each NMHS to coordinate country activities would further enhance the effectiveness of future activities.

EFFICIENCY

Overall, the project was considered to be very beneficial for Bhutan. The outputs and outcome were achieved satisfactorily in a cost-effective and timely manner. For future training activities, to training efficiency could be enhanced through the grouping by capacity and/or geographically similarity of participant countries to ensure materials are highly tailored to the needs and skills of participants. The NMHS expressed willingness to be more involved in knowledge and information exchange in the future.

RIMES's approach to project management was appreciated. To support enhanced project management in the future, it is suggested more piloting for future interventions and separate HR for the project and agromet programmes. Additionally, it was suggested by NCHM representatives that future project events be held in lower-capacity countries to allow more advanced countries to appreciate the specific challenges and limitations they face.

IMPACT

The project generated satisfactory impacts in Bhutan, including enhanced capacity towards impact-based forecasting through knowledge of IBF science and processes. Additionally, collaboration and coordination has been built between countries, as RIMES was highly effective in creating opportunities for stakeholder discussions and knowledge sharing. These activities have resulted in real term impacts, with an NCHM representative stating that *"through this project, we have met many forecasters and members working towards the implementation of IBF, which has helped us to make connections with members from different countries. We sometimes share emails and also keep in contact with the groups on WhatsApp."*

Further, understanding between Bhutan's various sectors was built through the project's creation of spaces for NCHM to share details of their work and forecasting outputs, and for other sectorial agencies to share their information needs. This resulted in a tangible impact noted by the energy sector that, as a result of the project, NCHM has now made past extreme event data available on their website, which has assisted in their risk assessment activities. Such collaboration, networking, and knowledge sharing opportunities demonstrate the powerful "soft" impact that has been nurtured by this project.

While capacity had been built in the understanding of IBF, this had not resulted in operational changes, with the agricultural sector noting that the project had not changed the way they operate, citing the limited number of training sessions as a possible reason. Additionally, the project had not

resulted in the development of an IBF system. A lack of resources and data availability/sharing were considered the limiting factor.

SUSTAINABILITY

With broad support for project activities, and a strong appreciation for the approach taken by RIMES in the implementation of project activities, Bhutan project partners are eager and motivated to continue future activities. The main partner, NCHM, noted that they are advancing ideas and seeking budget for further IBF implementation in Bhutan. However, there was no clear sustainment plan or exit strategy built into the project and stakeholders were unclear on how to proceed with further implementation and operationalisation of IBF for Bhutan. There was a request for RIMES to support this through the development of individualised IBF architecture and an implementation roadmap for Bhutan.

Regarding policy, it was noted in interview with RIMES and Bhutan representatives that no discussion regarding institutionalisation or policy enactment to support IBF had been raised during the project. It was also acknowledged that contextual factors such as legislation, politics, economic situation, social demands could influence the continuity of project impacts and future project activities, in addition to constraints on budget and capacity.

RECOMMENDATIONS

- Engage NCMH in future project design and identify a suitable point of contact who can facilitate wider sectoral engagement.
- Increased national participation, especially sectors outside of NCHM, to pilot and monitor implementation that would contribute to knowledge transfer and replication.
- Further tailor future training to the specific geographic/topographic needs of Bhutan and skills/capacity of participants.
- Where possible, deliver training session in person.
- To align with government regulations, build in a six-month gap between training sessions, or recast training events as “workshops” to allow for the same participants to attend capacity building events throughout the project.
- Support the development of Bhutan-specific IBF architecture and implementation roadmap.
- Ensure EWS and risk management are integrated with the disaster risk reduction and adaption efforts and effectively mainstreamed into national and local planning processes.
- Continue to build capacity and partnership/collaboration among stakeholders at all levels (local/regional) to leverage resources and knowledge exchange facilitating coordinate efforts in addressing weather and climate related risks.
- Ensure project activities are underpinned by policy discussions to support institutionalization and sustainment of initiatives.
- Develop a sustainment/exit plan as part of the project design.
- Support the piloting of future interventions and assist with staff resourcing for the project and agromet programme.

EVALUATION LIMITATIONS

While four key Bhutan sectors provided survey inputs, it was noted that the extent of their knowledge and engagement in project activities varied. For the quantitative analysis, this created some limitation in ratings or inputting “N/A” to many of the response fields. Additionally, only two sectors (NHMS and DRR) were represented in the interview. As such, some limitation was faced to further explore the project experiences of other sectorial agencies, or to seek clarification on inputs provided

in the survey. As with other country interviews, the discussions were conducted in English, introducing some potential for misunderstanding or miscommunication of experiences of participants. Despite these limitations, the evaluation team feels confident that sufficient evidence was collected to provide a solid foundation for the findings and recommendations detailed above.

8.6.2 CAMBODIA

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Cambodia participated in the project. The Ministry of Water Resources and Meteorology (MOWRAM) responded to the evaluation questionnaires through its Department of Meteorology (main project partner) and the Department of Hydrology and River Works (Water Sector), as detailed in Table 7. The online evaluation interview, held on March 13, 2024, was attended by the Agriculture Sector and partially by the Water Sector. Please refer to Annex 2 for the evaluation questionnaire.

Government Institution	Role in the Project	Questionnaire	Interview (13.03.2024)
Ministry of Water Resources and Meteorology (MOWRAM); Department of Meteorology (DOM)	Main Government Project Partner	3✓	
Ministry of Water Resources and Meteorology; Department of Hydrology and River Works (DHRW)	Water Sector	2 ✓	✓ (partial)
Ministry of Agriculture Forestry and Fisheries (MAFF); Department Agriculture Land Resources Management	Agriculture Sector		✓
National Committee for Disaster Management (NCMD)	DRM Sector		
Director General, General Department of Energy Ministry of Mines and Energy	Energy Sector		
Director General for Health Ministry of Health	Health Sector		

Table 7: Government agencies from Cambodia, engaged in project activities and evaluation.

SUMMARY OF CAMBODIA PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Cambodia focused on training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision-making for resource and risk management; integration of earth observations from ESCAP's regional drought mechanism in potential impact and risk assessments, to guide seasonal planning; development/expansion of decision support systems to aid potential impact and risk analyses in the agriculture sector; and capacity building of DHRW to enable them to respond to user demands.

Specifically, the following stakeholder engagement activities were undertaken with Cambodia representatives:

- Inception Meeting (January 17, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 18-21, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for National Meteorological and Hydrological Services (August 29 – September 2, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 7-10, 2022)
- Side Event of the 14th RIMES Council Meeting (November 10, 2022)
- Online Training on Hydrological Modeling and Flood Forecasting (November 28-December 9, 2022)

- Online Workshop on Crop Decision Tree Development (April 17-20, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)

RIMES assisted Cambodia in developing the Crop Decision Trees (CDT) for priority crops, along with relevant crop information and seasonal forecast-based recommendations/advisories. The translation of the DSS into local language provided more opportunity for the system to be used at the community level. The project has good sectoral engagement in Cambodia, bringing together several stakeholders and decision makers to enhance capacity for weather forecasting and climate prediction, impact-based forecasting, and flood modelling and forecasting.

EVALUATION CRITERIA ANALYSIS

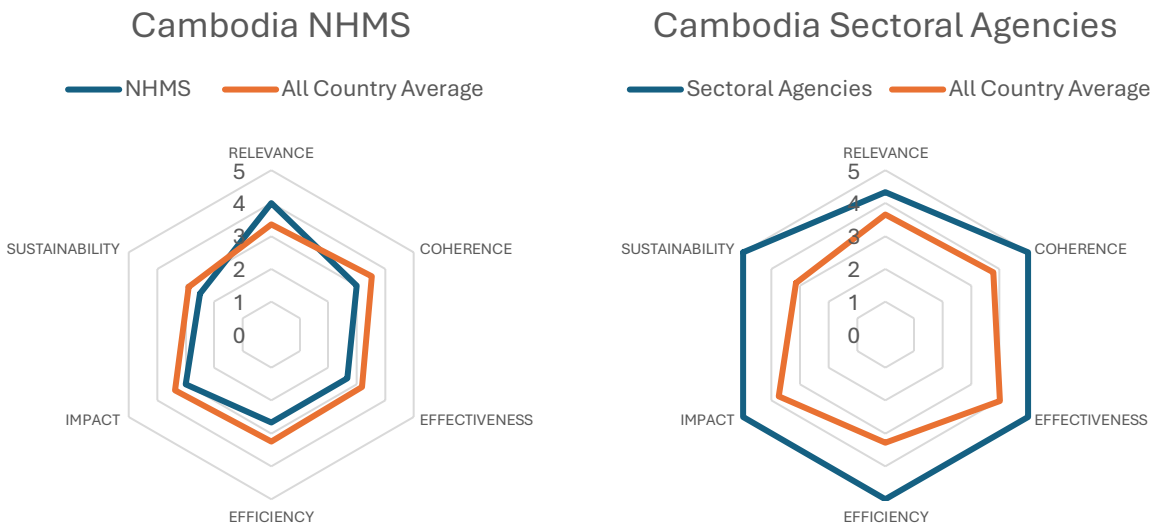

Figure 9: Quantitative scores from Cambodia questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

The project was seen as relevant to Cambodia's key project partner, DOM, addressing the needs, priorities, or policies of their institution to structure project activities and to deliver results as planned. Additionally, project activities were designed to meet the needs of "*local authority, educational sector, research institute*". However, it seems the project focused mostly on the national level, and it is recommended that future activities consider the needs of sub-national level and local governments and engage the civil society to achieve community-level impact.

Future project implementation would benefit from the inclusion of further enhancement of the SESAME DSS tool for dissemination of information to farmers, more training on the operationalisation SESAME, and further sectoral engagement from project initiation.

COHERENCE

Project activities in Cambodia were broadly coherent with other national, regional, and global initiatives, with the project design helping stakeholders "*respond to climate change policy and decision-making policy*" in Cambodia. The project also aligned well with the RIMES Master Plan 2021-2025 priorities and built on previous project activities, including enhancement of the SESAME DSS.

It was noted that some project activities were similar to those being undertaken by other development partners, including WMO, FAO, and CREWS. RIMES ensured the consistency and complementarity with other projects and advised related partners on project design to avoid duplication of efforts or to ensure synergies between activities.

EFFECTIVENESS

The approach and project implementation strategy supported the achievement of satisfactory results, with the main project partner noting its effectiveness in meeting objectives, outcomes, and outputs as planned. The delivered training was seen as effective in building capacity to develop CDTs and an understanding of forecasting. However, it was felt that further capacity development of farmers and local agricultural officials was required to make forecasting outputs useable in Cambodia, and that additional support was needed to translate forecasts into usable products for communities. Similarly, the developed DSS was considered a useful tool, but its application operationally remained limited, in part because it did not have actionable outputs that could easily be utilised by farmers.

Data gaps were also noted as a challenge to the usefulness and effectiveness of the DSS. Particularly, integration of DOM's forecast products into SESAME was not possible due to a confidentiality agreement signed between the Ministry of Water Resources and Meteo-France.

The training was considered high quality and useful, however participants consider in-person training with long duration more suitable to learn and exchange knowledge with other partners and/or countries. Despite these challenges, stakeholder engagement activities were considered highly effective in building collaboration between sectors and helping develop an understanding of the role and importance of forecasting for DRR.

EFFICIENCY

The project achieved satisfactory outcomes in a cost-effective manner, with good coordination and communication maintained with the main national partner throughout the project. For other sectorial agencies, there was limited awareness and understanding of project activities and proposed outcomes. Further, limited communication and coordination was undertaken with other engaged sectors with requests noted for more engagement from project inception and throughout project activities.

The time of project implementation was considered reasonable, however partners expressed eagerness for a next phase to further enhance their capacity and to operationalise forecasts to support farmers.

IMPACT

Through project activities in Cambodia, capacity and knowledge on *"crop calendar, climate change action plan, early warning to flood and drought"* were enhanced, and the project supported "*collaboration and capacity building"* within the country. Further, the information and experience sharing between countries was noted as a particular benefit. The project contributed to innovation, particularly the promotion of the previously developed SESAME tool.

Training was *"very good",* while it is suggested that training should be extended to the provincial level to meet their capacity needs.

The enhancement of the SESAME tool was seen as a tangible impact of the project, with the outputs translated into local languages to support community level awareness raising. While training

participants had received manuals and documents to support their ongoing learning, there was limited awareness of the developed LMS.

SUSTAINABILITY

Project sustainment was considered satisfactory, with partners capable and motivated to continue. The ongoing partnership with RIMES and advice they provided regarding other projects was noted as an important component to sustainment.

Government financial resources in Cambodia are limited, resulting in a reliance on additional financial resources from development partners such as CREWS, ADB, WB, AFD, IMF, JICA, KOICA, to ensure continuity. Institutionalisation efforts (policy development, etc.) were not considered in the project design or delivery,

RECOMMENDATIONS

- Undertake simple mapping/coordination with other projects and partners as part of the project design phase.
- More fully engage other key sectors in project events, including opening and closing events to support accountability to affected populations.
- Consider more fully the needs of local level in forecast outputs and develop forecasting products that are useful for farmers/communities. Deliver training to support this effort.
- Reduce training durations and limit topics to enhance learning and clarity of understanding.
- Support data access and data sharing mechanisms, as well as the enhancement of available weather data.
- Integrate policy/standard operating procedures development into project activities to enhance sustainment.

EVALUATION LIMITATIONS

Only the NHMS and water resource sector provided questionnaire inputs, while MAFF was interviewed in full and DHRW partially. Due to the limited timeframe in which the evaluation was completed, the evaluation of Cambodia project activities relied heavily on background information and inputs from a limited number of stakeholder groups. As such, some limited confidence should be placed on the findings for Cambodia, and it is recommended that further engagement and discussions be undertaken with key stakeholders to build a more robust understanding of the project and its impacts.

8.6.3 FIJI

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Fiji participated in the project. Most of the listed partners participated in the evaluation, either through providing inputs via the developed questionnaire (Annex 2), or by participating in the online evaluation interview, or both, as detailed in Table 8, below.

Ministry	Government Institution	Role in the Project	Questionnaire	Interview (20 and 27.03.2024)
Ministry of Infrastructure and Meteorological Services	Fiji Meteorological Service (FMS)	Main Government Project Partner	5✓	✓
Ministry of Agriculture and Waterways		Agriculture Sector	✓	✓

Ministry of Rural and Maritime Development and National Disaster Management	DRM Sector		
Ministry of Health and Medical Services	Health Sector		

Table 8: Government agencies from Fiji, engaged in project implementation and evaluation.

SUMMARY OF FIJI PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Fiji focused on training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision making for resource and risk management in agriculture and disaster management sectors; conduct of subregional dialogue; expansion of decision support systems to aid potential impact and risk analyses in the agriculture sector; capacity building of FMS to enable them to respond to user demands from agriculture and disaster management sectors; and support FMS and ministry participation in the RIMES 14th Council Meeting Side Event in November 2022 in Thailand.

Specifically, the following stakeholder engagement activities were undertaken with Fiji representatives:

- Inception Meeting (January 17, 2022)
- 1st Online Subregional Dialogue in the Pacific (April 12, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 19-22, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for Pacific countries (August 29-September 2, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 7-10, 2022)
- Side Event to the RIMES 14th Council Meeting (November 10, 2022)
- Online Training on Hydrological Modelling and Flood Forecasting (November 28 – December 9, 2022)
- Online Workshop on Crop Decision Tree Development (April 17-20, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)
- 2nd Online Subregional Dialogue in the Pacific (September 4, 2023)

The project undertaken by RIMES in Fiji demonstrated high performance and significant impact in its approach to enhancing the country's resilience to weather and climate forecasting. Through extensive consultations and stakeholder engagement, RIMES developed project activities that aligned closely with Fiji's requirements and priorities, as highlighted by the FMS. The project's training sessions were particularly beneficial, equipping FMS staff with essential skills to enhance forecasting services and integrating new tools like SESAME and FOCUS, which were deemed valuable for service improvements. Further, strategic partnerships were forged, including with the Australian Bureau of Meteorology, to further enhance forecast capabilities.

The project laid a strong foundation for continued engagement, with stakeholders expressing a desire for ongoing support from RIMES to address technological gaps, enhance community outreach, and further capacity development. Initiatives such as the development of standard operating procedures and the institutionalization IBF practices within FMS operations reflect a commitment to sustaining project outcomes and integrating them into long-term policies and practices, ensuring continued resilience-building efforts in Fiji.

EVALUATION CRITERIA ANALYSIS

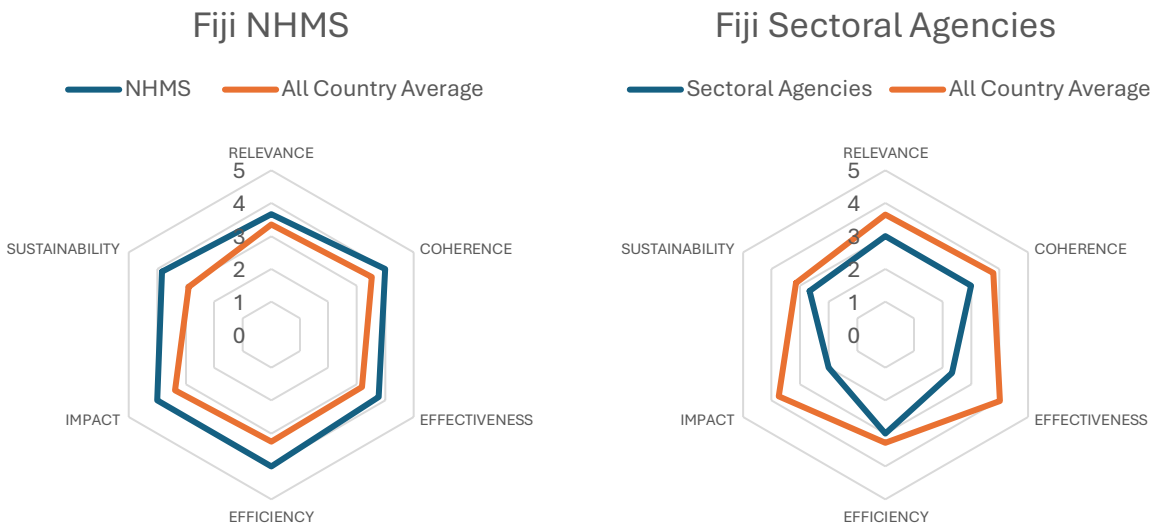

Figure 10: Quantitative scores from Fiji questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

Through consultations, needs assessments, and stakeholder engagement activities, as well as through the existing partnership, RIMES developed appropriate project activities for Fiji. Project activities aligned well with the identified needs, priorities, and policies of the main actors. The main project partner, FMS, underlined the usefulness of the project, stating that the project has *"significantly enhanced the resilience of our country, reducing vulnerability and increasing the ability to recover from weather- and climate-related hazards."*

The conducted project training was considered highly relevant to participants, developing the skills required to enhance FMS forecasting services. The expansion and enhancement of the SESAME DSS for Fiji was relevant to the national context, adding priority crops for the country. While not yet operational, the system has significant potential benefits for both FMS and the agricultural sector, in turn supporting other government sectors. Further, the FOCUS and MET tools introduced by RIMES include Weather Research and Forecasting models, seasonal outlooks, analytical and graphical visualizations of data etc. which are considered "*vital*" to FMS service enhancements.

Engagement of a wide range of stakeholders including farmers, agricultural extension workers, researchers, and policymakers in the design and implementation process would help ensure that the DSS meets the practical needs and preferences of end-users.

COHERENCE

Project design and activities were broadly coherent, building on existing knowledge, tools, previous initiatives, both internally and externally. The project made effective use of other project outputs including weather and climate data provided by WMO and SPREP. Additionally, the project complemented and reinforced existing government efforts in Fiji, "*supporting a coordinated and coherent approach*" to resilience.

RIMES has developed effective partnership with key stakeholders to further enhance project outcomes. This includes the Australian Bureau of Meteorology who are supporting the development of Fiji forecasts. There are plans to integrate these forecasts into the DSS under GCF funding to

further enhance its usefulness for Fiji. RIMES' future interventions would benefit from engagement with other tool developers to explore interoperability between systems.

EFFECTIVENESS

Overall, the approaches and strategies used during implementation were sufficient to support the achievement of the project's objectives and results, indicating a sound foundation for project effectiveness. Hence, *"the project had the ability to deliver on its objectives and generate positive impacts in the targeted areas, indicating successful progress towards fulfilling its mandate"*.

Project activities brought together key stakeholders, supporting "*increased collaborative partnerships*" between the sectors. Further, the training was highly effective in building FMS staff capacity, providing them with enhanced understanding of weather and climate forecasting and how to apply the FOCUS tool to support this. Additionally, participants were exposed to new datasets that could be leveraged to enhance their forecasting services. Fiji participants noted that they had been unable to undertake one of the exercises during training due to the absence of the required software. Such logistical considerations should be prioritised for future training events.

Despite successful project delivery, there appeared to be limited awareness from stakeholders of the overall project or its outcomes, indicating a need to more effectively communicate the wider project aims and objectives with stakeholders. Further, there was a request to identify and engage with a focal point for each sector to ensure that project activities were fully aligned, and stakeholders were updated on the project.

EFFICIENCY

The project actively participated in knowledge-sharing platforms, workshops, and conferences to exchange best practices and lessons learned with other actors in the country and thematic field. Additionally, the RIMES team leveraged existing products, tools, and services to increase efficiency of interventions.

The virtual training modality allowed more participation of stakeholders and savings to be spent on the development of the LMS, which provides additional benefit, not just to the engaged project countries, but also to the wider RIMES member countries. However, the online modality of many training sessions was noted as an impediment to the learning, with face-to-face sessions considered more appropriate for future training activities and exchange, along with longer training durations.

The monitoring and evaluation of the impact of the DSS on agricultural productivity, resilience, and socio-economic outcomes would help inform future interventions and improvements.

IMPACT

The project activities supported FMS in responding to user demands from the agriculture and disaster management sectors. Utilising the skills, knowledge, and tools provided during the project, FMS has developed enhanced forecasting products including heavy rain map showing possible impacts based on expected level, marine alerts/warnings that show possible impacts classified by wind strength, and coastal inundation map indicating possible impacts of damaging swells and coastal inundation. They are also now able to provide early action rainfall monitoring for three, six, and nine months, colour coded for rain intensity, including the time periods and potential impacts on the ground. Such enhanced FMS services support the other sectorial agencies (energy, fishery, farmers, tourism, aviation, etc.) with tailored products.

Overall, the training provided "*enhanced knowledge on impact-based forecasting, which has helped in operations, especially incorporating impact information in forecasts, increasing resilience*

amongst the general public in terms of disaster preparedness." For the agricultural sector, the project provided the skills and knowledge to develop CDTs for three priority crops in Fiji. However, since the training, the CDTs have not been operationalised. It was suggested that additional hands-on CDT training and support on how to utilise them would provide significant impact to the agricultural sector.

The project fostered innovation within Fiji institutions by encouraging experimentation with new approaches, technologies, and partnerships. FMS has explored new methods for delivering weather and climate information to end-users, such as mobile applications, participatory workshops, and community-based early warning systems. These innovations have helped to reach new audiences, improve the relevance and accessibility of services, and enhanced the impact on decision-making processes. Additionally, the project supported increased collaboration between FMS and key agencies, with these sectoral partnerships resulting in enhanced overall response to weather-related events.

SUSTAINABILITY

There was strong support for further project engagement with RIMES, particularly to address gaps in technology and community outreach to underserved and remote communities, as well as continued capacity building. It is notable that FMS representatives approached RIMES to request support for the development of standard operating procedures to further enhance their services. Discussions have also begun on the development of a policy to institutionalise the use of IBF processes within FMS' operations. These actions speak to the excellent partnership developed between RIMES and stakeholders, as well as to the eagerness of FMS to continue, implement, and formalise IBF practices. Further, the establishment of a DSS technical working group within the Department of Agriculture demonstrates with wider sectoral engagement with project outcomes and activities and commitment to sustain them.

RECOMMENDATIONS

- Engage a wide range of stakeholders including farmers, agricultural extension workers, researchers, and policymakers in the design and implementation process.
- Explore opportunities to develop interoperability between DSS tools to strengthen the EWS ecosystem.
- Ensure trainees have access to appropriate software to ensure full participation in capacity building.
- Engage stakeholders in inception/closing meetings and share updates throughout the project to support accountability to affected populations.
- Deliver training in person and increase training duration to enhance effectiveness and impact of training.
- Facilitate a regional knowledge sharing event.
- Support the operationalisation of tools and IBF practices through on-duty shadowing and guidance.
- Support Fiji in IBF policy implementation.
- Integrate additional crops, emerging pests and diseases, and evolving climate patterns into the DSS.
- Monitor and evaluate the impact of the DSS on agricultural productivity, resilience, and socio-economic outcomes to inform future interventions and improvements.

EVALUATION LIMITATIONS

Only two of the four key Fiji sectors provided questionnaire inputs and participated in the evaluation. However, of these two sectors, there were a diversity of views, providing broad ranging evaluation inputs. Along with the available background data, the evaluation team feels confident that sufficient evidence was collected to provide a solid foundation for the findings and recommendations detailed above.

8.6.4 LAO PDR

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Lao PDR participated in the project. A number of the listed partners participated in the evaluation, either through providing inputs via the developed questionnaire (Annex 2), or by participating in the online evaluation interview, or both, as detailed in Table 9, below.

Government Institution	Role in the Project	Questionnaire	Interview (20.03.2024)
Department of Meteorology and Hydrology (DMH), Weather Forecasting and EW Division (Directly under the supervision of the Office of the Prime Minister)	Main Government Project Partner	2✓	✓
Climate and Agrometeorology Division, Department of Meteorology and Hydrology (DMH)	Climate and Agrometeorology Sector		
Hydrology Division	Water resources		
National Agriculture and Forestry Research Institute	Agriculture Sector		
Disaster Prevention Division, Social Welfare Department, Ministry of Labour and Social Welfare	DRM Sector	✓	✓
Department of Energy Policy and Planning	Energy Sector		
Ministry of Health; Legislation Division, Secretariat of Disaster Health Management Committee	Health Sector		

Table 9: Lao PDR government agencies engaged in project activities and evaluation.

SUMMARY OF LAO PDR PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Lao PDR focused on training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision-making for resource and risk management in agriculture and disaster management sectors; technical support in the conduct of three seasonal forums and facilitating potential impact assessments to inform seasonal planning; capacity building of DMH to enable them to respond to user demands from agriculture and disaster management sectors; and support DMH and ministry participation in RIMES 4th Ministerial Conference for experience and knowledge sharing.

Specifically, Lao PDR stakeholders were engaged in the following activities:

- Inception Meeting (January 17, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 18-21, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 14-17, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for National Meteorological and Hydrological Services (August 29 – September 2, 2022)

- Side Event of the 14th RIMES Council Meeting (November 10, 2022)
- Online Training on Hydrological Modelling and Flood Forecasting (November 28-December 9, 2022)
- 16th Lao PDR National Monsoon Forum (December 20, 2022)
- 17th Lao PDR National Monsoon Forum (May 9, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)
- 18th Lao PDR National Monsoon Forum (November 9, 2023)

Training delivered by RIMES helped build Lao PDR DMH staff capacity in forecasting and climate prediction. The skills and knowledge gained in this training, in combination with efforts undertaken under other projects, supported the enhancement of monthly seasonal forecast/outlook products which were then used by various sectors (e.g., agriculture, health, water resources, etc.) to help build resilience in the country. The three monsoon forums funded under the project effectively built on previous forums and created an opportunity for DMH to present their meteorological and hydrological products and services to stakeholders and receive feedback to enhance their services in the future.

EVALUATION CRITERIA ANALYSIS

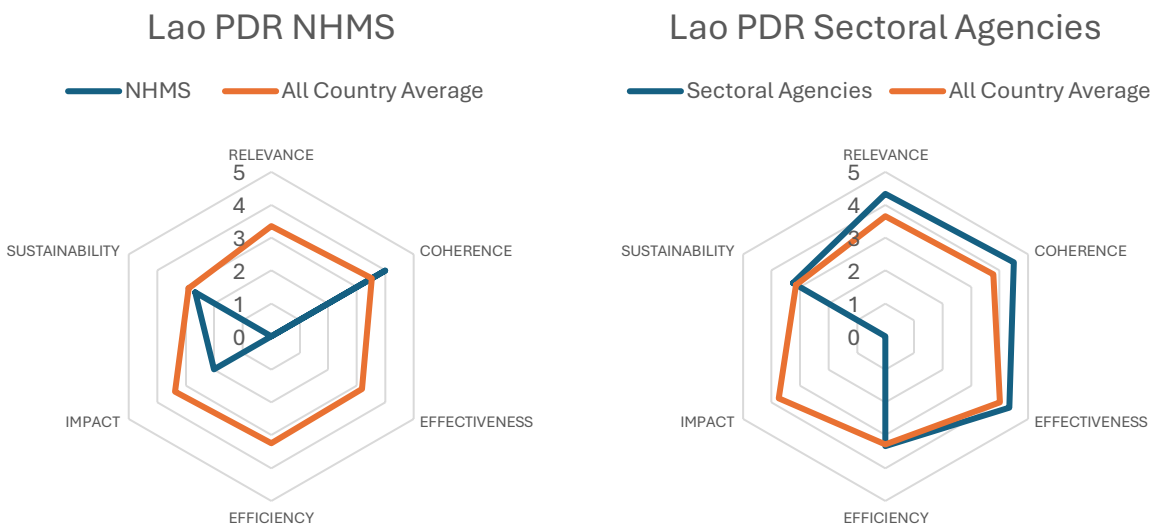

Figure 11: Quantitative scores Lao PDR questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

The project is considered relevant, addressing the articulated needs and priorities of Lao PDR's main project partner, DMH, particularly to support the strengthening resilience through risk-informed decision-making and seasonal planning. The project's continuation of the country's semi-annual monsoon forums supported the continuing engagement of relevant sectors. Given that forecast and climate information is disseminated to the community level, efforts to engage the sub-national level in forums and training sessions would have further support resilience building efforts.

Having identified that Lao PDR already had its own DSS tool – LaCSA -, the project design did not seek to advance the use of RIMES' SESAME tool in the country. This is seen as a well-considered and

relevant approach to project implementation, reflecting a good understanding of the existing environment/tools and a thoughtful design of project activities.

COHERENCE

Project activities in Lao PDR were broadly coherent with other national, regional, and global initiatives and best practice. The project was "*designed in accordance with the development of Lao PDR policy*", building on previous projects and identified needs to design project interventions. Further, the project was *"compatible with similar interventions of other actors, linkages and synergies with WMO, other UN, inter-governmental organisations or development partners."* Specifically, the project collaborated and exchanged information with other ongoing projects, such as CREWS and FAO projects that focused on capacity development for medium- and long-term outlook. The training delivered by RIMES was seen as a complement to these other activities, rather than a replication.

The project was also internally coherent with RIMES' other activities. It was noted by one DMH staff member that they had previously undertaken a six-month internship at AIT in Thailand, under a different RIMES activity and was therefore familiar with RIMES' approach, staff, and expertise. This created a level of trust and engagement with RIMES throughout the project, as well as helped strengthen knowledge sharing, the exchange good practices, and an understanding of RIMES-developed tools and learning/information portals.

Considering existing LaCSA, opportunity was provided during training for Lao PDR participants to share details and lessons learned regarding the LaCSA, Further consideration of interoperability between RIMES tools and LaCSA in the future would enhance the overall DSS landscape both for Lao PDR, and the wider RIMES member countries.

EFFECTIVENESS

Project activities in Lao PDR were considered effective, with participants "*very satisfied*" with the engagement activities. Project training activities were seen as "*important and useful*", providing opportunities for dialogue with experts to identify challenges, get advice, and improve knowledge and services.

Through the delivered training, DMH staff enhanced their knowledge and understanding of drought monitoring and prediction, drought indices, and the past El Niño-Southern Oscillation events. Despite the online modality of much of the training, this did not significantly impact the learning, with one participant stating, *"it felt like it was a face-to-face training due to the regular updating and following-up with participants"*. The experience and knowledge of the trainers and presenters was noted as particularly valuable to the learning experience. This highlights the admirable efforts made by the RIMES team to provide effective training, even under challenging circumstances. Requests for further knowledge sharing on risk knowledge or weather and climate forecasting were noted.

The use of the monsoon forums to engage widely with key sectors was considered very effective in the strengthening of national level multi-sectoral collaboration, while the limited engagement of sub-national stakeholders was noted. Several evaluation participants expressed a need for engagement at the regional/provincial level to support last mile activities. Additionally, support to the key sectoral agencies to translate technical information for consumption by last mile users would be beneficial.

EFFICIENCY

The project was delivered in a timely manner and on budget. As noted above, participants felt that RIMES effectively managed online training, however, it was agreed that face-to-face engagement was still preferred to support learning, as were longer training durations. Additionally, a request for more effective interpreting services was noted. Future training events would benefit from participants

being split by background and/or experience level to ensure that the training correctly meets participants skill or knowledge level.

The RIMES team was effective in leveraging other activities to support the project aims and objectives and extend the understanding and awareness of wider RIMES project activities and initiatives. A good example of this was the creation of a Side Event of the RIMES 14th Council Meeting on November 10, 2022, during which RIMES-developed tools and systems were presented and demonstrated to NHMS representatives.

It was noted that Lao PDR was not included in project activities relating to ICT tools developed by RIMES due to the country's existing LaCSA tool. The project presented an excellent opportunity to explore interoperability of these tools and could have been used as a pilot model to enhance interoperability of the various existing national and regional systems to enhance the overall EWS/DSS environment.

RIMES demonstrated flexibility and adaption in their approach to project activities in Lao PDR. During one of the conducted monsoon forums, interaction from participants was limited until the end of the event. With inputs and guidance from ESCAP, the RIMES team adapted their approach for the following forum, "*demonstrating their ability to evolve and incorporate changes during project implementation*". Additionally, the real-time feedback and comments received from participants during training events were effectively responded to and addressed, highlighting RIMES' agile approach.

IMPACT

The project contributed to resilience building in Lao PDR. The training delivered by the project, along with activities conducted under a separate FAO project, contributed to the development of skills and knowledge of DMH staff, as well as provided access to tools such as FOCUS, to enhance their monthly seasonal forecast/outlook products. These improved products are now used by various sectors including the agricultural sector to develop a crop calendar for farmers, the NDMO for preparedness planning and measures at the local level, and the water sector to support dam operations and water resource planning. It was noted that the products developed by DMH are still highly technical and further efforts are required to help translate them into more easily digestible and useable information for communities.

SUSTAINABILITY

Overall, partners are capable and motivated to continue to implement the outputs of the project and acknowledge that they need to continue to build the forecasting skills through further training and activities.

As a result of leadership engagement in the monsoon forums, an understanding of the importance of forecasting and climate services was built at the senior level. This high-level awareness may support further resource allocation and strategic focus on forecasting in the future.

It was acknowledged that the impact of project activities could have been higher if more staffing resources and greater capacity had been available. Further, there is limited government budget to sustain the project outcomes and impacts, with a heavy reliance on international donors to sustain project outcomes persisting. Recognising this fact, RIMES was effective in engaging other development partners to support future monsoon forums and providing technical advice, if required.

RECOMMENDATIONS

- Engage sub-national level sectors in further project design and implementation.

- Explore feasibility of interoperability between LaCSA and RIMES' tools to enhance the wider EWS/DSS ecosystem.
- Deliver training on the translation of forecast products into actional warnings/alerts for communities (last mile) and how forecast products can be effective utilised to support DRR.
- Increase training duration and provide better interpretation service to enhance learning.
- Group training participants by skill/experience level to ensure training is delivered at the right level.
- Support the further development of data, as well as facilitate data sharing, to enhance tools and DMH services.

EVALUATION LIMITATIONS

While three key Lao PDR sectors provided questionnaire inputs, participation in the focus group discussion was limited to just one person from DMH. As such, it was not feasible to further examine some of the answers provided in the questionnaire, presenting some limitations in the understanding of some of the comments. Additionally, as with other country interviews, the discussions were conducted in English, introducing some potential for misunderstanding or miscommunication of experiences of participants. Despite these limitations, the evaluation team feels confident that sufficient evidence was collected to provide a solid foundation for the findings and recommendations detailed above.

8.6.5 MALDIVES

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from the Maldives participated in the project. Only the Maldives Mereological Service participated in the evaluation through providing inputs via the developed questionnaire (Annex 2) and by participating in the online evaluation interview, as detailed in Table 10, below.

Ministry	Government Institution	Role in the Project	Questionnaire	Interview (18.03.2024)
Ministry of Climate Change, Environment ar Energy	Maldives Meteorological Service (MMS)	Main government project partner	✓	✓
-	Maldives Fishermen's Association (MFA)	Agriculture Sector		
Ministry of Defense	National Disaster Management Authority (NDMA)	DRM Sector		
Ministry of Health	Health Protection Agency	Health Sector		
Ministry of Climate Change, Environment and Energy	Water and Sanitation	Water Sector		

Table 10: Government agencies from the Maldives, engaged in project implementation and evaluation.

SUMMARY OF MALDIVES PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in the Maldives focused on training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision-making for resource and risk management in agriculture and disaster management sectors; technical support in the conduct of seasonal forums and facilitating potential impact assessments to inform seasonal planning; capacity building of MMS to enable them to respond to user demands

from agriculture and disaster management sectors; and support MMS and ministry participation in RIMES 4th Ministerial Conference in December 2022 in Sri Lanka.

Specifically, the following stakeholder engagement activities were undertaken with the Maldives representatives:

- Inception Meeting (January 17, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 18-21, 2022)
- 7th Maldives National Monsoon Forum (June 12, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for National Meteorological and Hydrological Services (August 29 – September 2, 2022)
- Side Event of the 14th RIMES Council Meeting (November 10, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 14-17, 2022)
- Online Training on Hydrological Modeling and Flood Forecasting (November 28-December 9, 2022)
- 8th Maldives National Monsoon Forum (May 10, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)

As a result of the training and stakeholder engagement activities undertaken during the project, MMS gained a deeper understanding of IBF and is now working towards its implementation in the Maldives. It was highlighted that "*the training improved our services; we were able to support enhanced quality products to deliver for other sectors to use*". This was complemented by the two monsoon forums held during the project which provided important opportunities for sectoral awareness raising on available forecasting and climate products, as well as their application to enhance disaster resilience. Feedback received by the sectors during these events was used to further refine MMS' services. These enhanced products have been leveraged by NDMA for use in the development of Island Disaster Management plans and for mitigation decision-making.

EVALUATION CRITERIA ANALYSIS

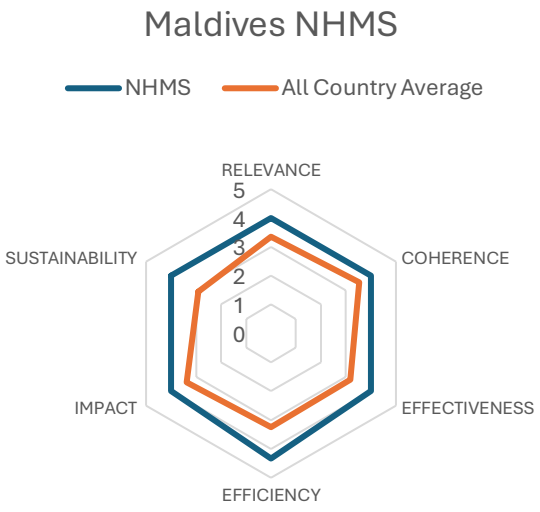

Figure 12: Quantitative scores from Maldives questionnaire participants, by qualified criteria. No data provided by sectoral agencies.

RELEVANCE

The project was very relevant for the Maldives, supporting necessary improvements in weather and climate risk-informed services for decision-making and seasonal planning. The project aligned with the needs and priorities of the Maldives and participant institutions, as well as considered the needs of indirect beneficiaries, such as the Maldives Red Crescent Society, community council, and civil society to develop island disaster management plans, in coordination with the NDMA. The importance of the project to partners was exemplified by one informant who noted "*understanding to develop risk matrix and to decide on severity and urgency level of hazards was very important to us.*"

Evaluation participants felt that the project successfully identified project priorities in the Maldives based on "*discussion and consultations among agencies*" demonstrating the collaborative nature of RIMES' approach to implementation. It was noted that, during the inception meeting, the Maldives representative indicated that their sectoral priorities were the tourism sector, however this was not addressed in project activities and this sector does not seem to have been engaged in project activities.

COHERENCE

The project built on previous initiatives and results of other projects. RIMES ensured synergies, exchanges, and provision of technical advice to other projects such as the United States Agency for International Development (USAID) climate adaptation, WMO, CREWS, SOFF EW4All, etc., throughout the project. Stakeholders felt that the project was strongly coherent with other activities in the country, stating that the project "*generated good practices that can be used in coherent manner with other activities*".

The project was also internally coherent, with RIMES' other project activities in the Maldives well aligned to both benefit from, and contribute to, this project's outputs and outcomes, such as the USAID-funded, RIMES-implemented, climate adaption project which has provided improved computational capacity to run high resolution weather modelling, further supporting steps to operationalize IBF in the Maldives.

To further build coherence, a knowledge exchange between the Pacific Small Island Developing States and the Maldives with similar geographic environment for weather and climate forecast and products is recommended.

EFFECTIVENESS

Project training conducted with stakeholders from the Maldives was effective in building knowledge and skills in relation to IBF, with one informant noting that it "*provided the knowledge to move forward with implementation [of IBF]"*. The training was seen as "*well-structured*" and "*helped them identify gaps in their current forecast products*" however, the online delivery was noted as an impediment to learning. Further, challenges were noted as a result of the unavailability of licenses for some software utilised during the training which prevented some participants from completing exercises. While MMS had received the credentials to log into the developed LMS portal created and managed by RIMES, its use in the Maldives appeared limited due to a lack of understanding of how to use it.

The monsoon forums provided good opportunities to share details of MMS' services with the various sectors involved in DRR. Further, the forums created a platform for other sectorial agencies to provide feedback on their information needs. These dialogue events were highly effective in advancing weather and climate forecasting and services for decision-making.

EFFICIENCY

Planned activities were delivered on time and the main partner indicated satisfaction with the cost sharing of this project. Due to financial constraints, the monsoon forums were only conducted once a year, while partners would have preferred biannual events given the effectiveness of the forums. The implementation team demonstrated flexibility in their delivery of project activities, adapting not only to the evolving pandemic impacts but also adjusting project activities based on identified and articulated needs of partners. Partners noted the low burden the project activities placed on them, stating "*it was easy to engage on this project"*.

IMPACT

"Knowledge gained during training programs improved operational capacities of forecasting and to determine on potential impacts", which was used by MMS to improve its forecasting and climate services. These enhanced services have been leveraged across the various key sectors including the creation of sub-seasonal forecasts for the agricultural sector and the addition of a special component within an MMS mobile application (developed under another project) used by the water sector to issue notifications for island communities for rainfall harvesting.

Impediments to further leveraging of the project outputs and outcomes include the limited capacity (lack of agrometeorologist) to develop advisories bulletins and the need for an agrimeter system.

SUSTAINABILITY

Partners express satisfaction with the project and its results. They are capable and motivated to continue future project activities. With the service enhancements already integrated into MMS' operations, and the service outputs being incorporated into other sectorial agencies' activities, project impacts are seen as relatively sustainable. Further, RIMES' engagement of senior staff and leadership in project activities was considered helpful in building support for sustainment of the project outputs.

While the local budget for IBF is very limited, stakeholders noted that they are looking for other development partners initiatives, such as EW4All and SOFF, to further advance IBF in the Maldives. A proposal has been submitted to SOFF for the enhancement of the weather network, for which RIMES provided assistance. With RIMES considered a technical partner, it is very easy for Maldives partners to continue activities with RIMES. Although no exit plan was developed for project activities, "*continuity is guaranteed as RIMES is always here to support us. Whenever we ask for technical support, they assist."*

RECOMMENDATIONS

- Deliver in-person training to encourage knowledge sharing, team work, and network development.
- Utilize open source/free software to ensure full participation in training.
- Include senior staff to build a broader understanding of operational requirements/gaps.
- Undertake a knowledge exchange between Pacific Small Island Developing States (SIDS) and the Maldives.
- Provide training on use of the LMS.
- Conduct a study tour to see IBF in operation.
- Develop activities to support last mile information sharing/alerting.

EVALUATION LIMITATIONS

Only MMS participated in the evaluation, with the evaluation of the Maldives relied heavily on background information and inputs from a limited sample group. As such, limited confidence should be placed on the findings for the Maldives, and it is recommended that further engagement and discussions be undertaken with key stakeholders to build a more robust understanding of the project and its impacts.

8.6.6 PAPUA NEW GUINEA

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Papua New Guinea participated in the project. A number of the listed partners participated in the evaluation, either through providing inputs via the developed questionnaire (Annex 2), or by participating in the online evaluation interview, or both, as detailed in Table 11, below.

Ministry	Government Institution	Role in the Project	Questionnaire	Interview (26.03.2024)
Department of Transport & Infrastructure	National Weather Service (NWS)	Main Government Project Partner	4✓	5✓
Department of Environment and Conservation (DEC)	Conservation and Environment Protection Authority (CEPA)	Main Government Project Partner		
Ministry of Agriculture	Department of Agriculture and Livestock	Agriculture Sector	✓	
Department of Provincial and Local Government Affairs	National Disaster Center	Energy Sector		
Department of Environment and Conservation (DEC)	Conservation and Environment Protection Authority (CEPA) (hydrology part of the NMHS)	Water Sector	✓	

Table 11: Government agencies from Papua New Guinea, engaged in project activities and evaluation.

SUMMARY OF PAPUA NEW GUINEA PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in PNG focused on training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision making for resource and risk management in agriculture and disaster management sectors; technical support in the conduct of seasonal forums and facilitating potential impact assessments to inform seasonal planning; conduct of subregional dialogue; expansion of decision support system to aid potential impact and risk analyses in the agriculture sector; capacity building of the National Weather Service (NWS) to enable them to respond to user demands from agriculture and disaster management sectors; and support NMHS and ministry participation in the Side Event of the RIMES 14th Council Meeting held in Thailand on 10 November 2022.

Specifically, the following stakeholder engagement activities were undertaken with PNG representatives:

- Inception Meeting (January 17, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 19-22, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 7-10, 2022)

- 1st Online Training on Weather and Seasonal Forecasting for Pacific countries (August 29-September 2, 2022)
- 1st Online Subregional Dialogue in the Pacific (April 12, 2022)
- 8th Papua New Guinea National Climate Outlook Forum (October 27, 2022)
- Side Event of the RIMES 14th Council Meeting in Bangkok (November 10, 2022)
- Online Training on Hydrological Modelling and Flood Forecasting (November 28 – December 9, 2022)
- Online Workshop on Crop Decision Tree Development (April 17-20, 2023)
- 9th Papua New Guinea National Climate Outlook Forum (May 4, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)
- 2nd Online Subregional Dialogue in the Pacific (September 4, 2023)
- 10th Papua New Guinea National Climate Outlook Forum (November 16, 2023)

The training delivered by the project was highly successful in enhancing NWS staff's knowledge and understanding of weather and climate forecasting. Where possible, this knowledge was applied to improve their services for the various sectors including the development of drought hazard maps that are issued to stakeholders of various sectors including water, health, energy, agriculture, and DRR/DRM.

Both the National Climate Outlook Forums and the engagement of PNG representatives in the Subregional Dialogues *"fostered collaboration and communication among agencies"* and brought an *"increased awareness to the importance of such services and the need for its long-term sustainability."* RIMES demonstrated excellent coordination and collaboration with other development partners to support the long-term sustainment of project outcomes.

EVALUATION CRITERIA ANALYSIS

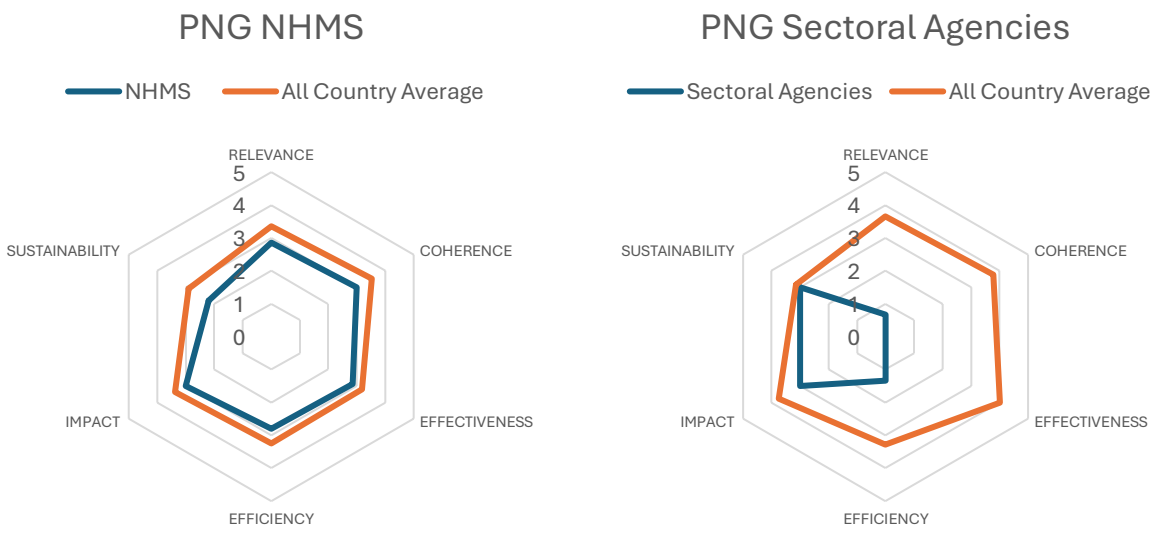

Figure 13: Quantitative scores from PNG questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

Project activities in PNG aligned with the identified needs, priorities, and policies of the key sectors in the country. Stakeholders felt that RIMES clearly understood the needs of the Pacific Island

countries, and this was reflected in project activities and training. However, it was also noted that some project activities were broadly designed to suit all participating countries and more consideration of the unique strengths and challenges of each country could have made activities more relevant to PNG.

During project activities, time was allocated for PNG stakeholders to share details of their country's capacities and needs. This provided RIMES with an effective feedback loop to tailor project activities to PNG's needs. It was requested that further efforts to incorporate other crop hazards such as pests and disease be considered in future project activities.

COHERENCE

The project was broadly coherent with previous initiatives, ongoing activities, and planned projects both internally and externally. Within RIMES, PNG project activities built on the launch the National Multi-Hazard Early Warning Center in 2017, which RIMES supported, while, externally, the project aligned well with other development partners' activities, including FAO, CREWS, the European Development Fund (EDF), and GCF.

Additionally, the engagement of the international community in the National Climate Outlook Forums provided wide awareness of project activities and helped facilitate ESCAP's discussions with CREWS regarding next steps to support/sustain project activities. However, with a number of projects working in the same field of activities, some stakeholders articulated concerns regarding replication of activities or a lack of synergy between developing systems. RIMES appears to have been mindful of these concerns in their approach, collaborating with various international development partners to ensure that activities were aligned and complementary.

EFFECTIVENESS

The project activities effectively built IBF knowledge and skills. The delivered training was considered of high quality, providing an "*understanding of hazards and the underlying risks*". The training on risk matrix/analysis was noted as an "*outstanding product from the training*", helping forecasters understand and prioritise risk. A number of the PNG training participants were new forecaster staff, providing an opportunity to build a new culture of operations based on the enhanced skills and knowledge provided through the training. Further training of these young staff was suggested for future engagements.

While the IBF tools demonstrated to PNG during project engagements were welcomed and considered "*user-friendly and it was easy to follow*", the lack of sufficient data and information was seen as a barrier to its effective use in the country.

The three Climate Outlook Forums conducted under the project *"fostered collaboration and communication among agencies"* brought together all sectors involved, one noted: *"increased awareness to the importance of such services and the need for its long-term sustainability."* The Subregional Dialogue Meetings provided another important platform for knowledge sharing and collaboration, with the event assisting PNG stakeholders to *"recognise the synergies between EWS and IBF."*

Despite successful project delivery, there appeared to be limited awareness from stakeholders of the overall project to capitalise on its outcomes, indicating a need to more effectively communicate the wider project aims and objectives with stakeholders.

EFFICIENCY

Project activities in PNG were delivered in a timely manner. The multi-use functionality of the National Climate Outlook Forums for knowledge sharing, stakeholder collaboration, and to obtain feedback on stakeholder needs, was a highly efficient use of project resources and maximised the benefits to stakeholders.

While online training freed up funds for other activities, including the development of the LMS, it was felt that the online modality for future training with pre-installation of software on computers, and orientation on its use prior to the training would save time during the training events.

IMPACT

The training delivered under the project was high quality and helped NWS understand more about weather and climate forecasting. Some enhancements to weather services were noted as a result of this capacity development, which supported various sectors in undertaking their duties. Despite this enhanced capacity, tangible IBF impacts were limited by a lack of application in the PNG context. A request from stakeholders for shadowing of forecasting staff in their duties to help support the testing and operationalisation of IBF within the country is an excellent approach to build on project activities. Further, there is a need to develop the underlying policies and authorisations to implement such changes to forecasting in PNG. This should be considered in future activities.

The engagement activities "*have greatly strengthened the partnership, as well as enhanced the capacity of the Agriculture Department and the PNG National Weather Service to deliver better and tailored services to the agriculture stakeholders through the development of the decision support system tool called AMAMAS*." While not yet operational, it promises to be an effective tool for delivering crop-specific advisories to the farmers and agriculture experts that will guide them in the planning and farm management decisions.

SUSTAINABILITY

The planned launch of a RIMES Sub-regional Hub in PNG is seen as a significant step in support of sustainment of project outputs and outcomes. Under this hub, the PNG DSS, AMAMAS, is planned to be operationalised within the country, with the training and collaboration developed under this project leverageable to support this effort. Further, RIMES has successfully collaborated and coordinated with various development partners to support further development of project activities, including the sustainment of the National Climate Outlook Forums under GCF.

Interviewed participants demonstrated ownership of project activities, indicating that they feel capable and motivated to continue the activities however, they raised concerns about the availability of funds, outside of the international community, to sustain activities.

RECOMMENDATIONS

- Tailor training to the specific needs of PNG to enhance capacity development.
- Ensure tools/software for training are provided in advance of planned training activities and, where possible, provide pre-socialisation to enhance the learning.
- Ensure wide socialisation of project activities including overarching aims and objectives and outcomes with key beneficiaries.
- Further engage new forecasters in future capacity development activities to build on and sustain capacity gains from the project.
- Support the development of required data to support weather and climate forecasting to help address this impediment to IBF.

- Provide shadowing of NWS staff for the testing and operationalisation of IBF products in PNG.

EVALUATION LIMITATIONS

Three key PNG sectors provided questionnaire inputs and two participated in the focus group discussion. As such, it was not feasible to further examine the perspectives of other sectorial agencies, presenting some limitations. Additionally, as with other country interviews, the discussions were conducted in English, introducing some potential for misunderstanding or miscommunication of experiences of participants. Despite these limitations, the evaluation team feels confident that sufficient evidence was collected to provide a solid foundation for the findings and recommendations detailed above.

8.6.7 SAMOA

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Samoa participated in the project. The Samoa Mereology Service (SMS) and the transport sector responded to the questionnaire (Annex 2), while only the SMS attended the online evaluation, as detailed in Table 12, below.

Ministry	Government Institution	Role in the Project	Questionnaire	Interview (26.03.2024)
Ministry of Natural Resources and Environment (MNRE)	Samoa Meteorology Service (SMS)	Main Government Project Partner	3✓	2✓
Samoa Ministry of Agriculture and Fisheries	Crops Division	Agriculture Sector		
MNRE	Disaster Management Office (DMO)	DRM Sector		
MNRE	Renewable Energy Division	Energy Sector		
MNRE, Samoa Meteorological Service	Water Resources Division	Water Sector		
Ministry of Health		Health Sector		
		Transport Sector	✓	

Table 12: Government agencies from Samoa, engaged in project activities and evaluation.

SUMMARY OF SAMOA PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Samoa focused on training of weather and climate information on potential impact assessment, risk analysis, and application of outputs in planning and decision making for resource and risk management in agriculture and disaster management sectors; technical support in the conduct of seasonal forums and facilitating potential impact assessments to inform seasonal planning; and capacity building of SMS to enable them to respond to user demands from agriculture and disaster management sectors.

Specifically, the following stakeholder engagement activities were undertaken with Samoan representatives:

- 1st Online Training on Impact Forecasting and Risk Analysis (April 19-22, 2022)
- 1st Online Subregional Dialogue in the Pacific (April 12, 2022)

- 1st Online Training on Weather and Seasonal Forecasting for Pacific countries (August 29–September 2, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 7-10, 2022)
- Side Event of the RIMES 14th Council Meeting (November 10, 2022)
- Online Training on Hydrological Modelling and Flood Forecasting (November 28 – December 9, 2022)
- Samoa Post 2022-2023 Wet Season Forum (May 24, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)
- 2nd Online Subregional Dialogue in the Pacific (September 4, 2023)

The activities delivered under the RIMES project were supportive of enhancing SMS capacity in relation to weather and climate forecasting. With enhanced understanding of IBF, the forecasting service refined their standard operating procedures considering the IBF perspective.

The engagement of all key sectors in the Post 2022-2023 Wet Season Forum and participation of Samoa representatives in Subregional Dialogues and the Side Event of the RIMES 14th Council Meeting were highly effective at building collaboration and communication between stakeholders *"through the national dialogue and forum that brought together the sectors and stakeholders to ensure there is good discussion between the practitioners and developers of the climate and weather information"*. Going forward, other key development partners, including SPREP, WMO, CREWS, and SOFF, have been engaged to continue outcomes delivered under the project.

EVALUATION CRITERIA ANALYSIS

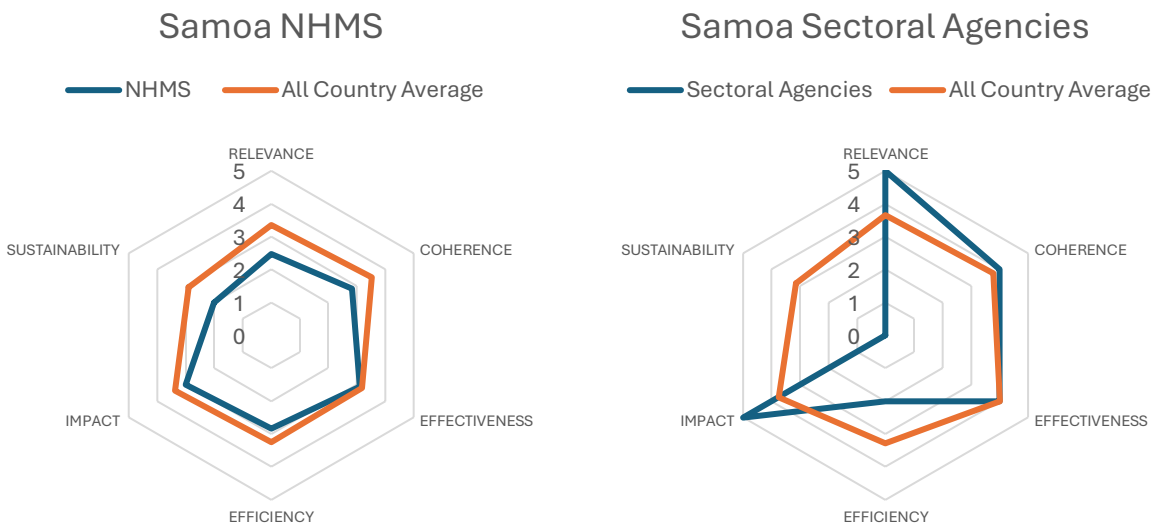

Figure 14: Quantitative scores from Samoa questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

The project was very relevant for Samoa, with the project design effectively "*capturing the need of SMS and other core stakeholders*". SMS indicated a desire to invest in IBF systems, with the training enhancing their understanding of what is needed to implement IBF in Samoa. The health sector indicated that the provided training was "*important and crucial*" to their duties.

Samoa was not represented at the inception meeting. It is recommended that senior leadership be engaged in key meetings and events to help build both understanding of, and national buy-in to, project activities.

Training and engagement events were considered useful in building a deeper understanding of IBF however, the forecasting tools were not always adopted for use in small island states. Additionally, the lack of data available for forecasting in Samoa limited the application of the training.

Given the limited data availability in Samoa, further efforts to build computational power and develop monitoring networks are required to support IBF.

COHERENCE

The project was broadly coherent with national, regional, and global best practice and strategies, building on previous initiatives and results of other projects including World Bank, SPREP, WMO, CREWS and SOFF and EW4All. The Post Wet Season Forum was seen as a good complement to the Seasonal Outlook Forums supported by the World Bank and Southwest Pacific Communities (SPC). One evaluation participant noted that events "*were not via SPREP, the secretariat for the Pacific, nor via the WMO. It was new to us to be introduced to the training of Seasonal and Weather forecast without the involvement of the usual partners.*" This informed on the usefulness of the direct training, but also suggests further efforts may be required to ensure other entities are engaged in future project activities to support coherence.

It was noted that SMS is currently working with the World Bank on the development of a meta-model, producing inundation maps using model and observation data and, under a GCF project, the Water Resource Division (WRD) developed flood forecasting system. As technical partner of GCF project, RIMES can ensure coherence and continuity of activities, training, models, and systems into the future. Nevertheless, there is a need to further explore interoperability between Samoa's existing and under-development DSS tools with RIMES' tools during future project activities.

EFFECTIVENESS

The project was seen as "*quite effective in terms of deliveries"*. Project training was considered useful in "*providing insights into IBF through the use of precise data which can then be provided to the community*."

Additionally, the training built an understanding of the flow of information regarding drought forecasting. The training was considered particularly effective for Samoan participants to strengthen their knowledge. In-person training was requested for future activities. While the quality of the training was praised, it was recommended that additional time be allocated for training, with more emphasis on building GIS skills for Samoan participants. An assessment of participants core skills level is recommended in advance of future training activities, with the possibility of supplementary training for new staff to ensure the effectiveness of the training. Additionally, more hands-on application of training topics and tools would enhance the overall effectiveness of future training sessions.

The Post Wet Season Forum and engagement in the Subregional Dialogue were seen as helpful as it "br*ought together the sectors and stakeholders to ensure there is good discussion between the practitioners and developers of the climate and weather information*".

The effectiveness of project activities was hampered by limited data availability in Samoa and the need for additional hardware and software to support forecasting activities. Additionally, the tools introduced by RIMES during the project were noted as having limitations for Pacific Island application. Efforts to build the underlying structural capacity to implement IBF and identification of

more applicable tools and appropriate scale for small islands would enhance the effectiveness of future project activities.

Despite successful project delivery, there appeared to be limited awareness from stakeholders of the overall project or its outcomes, indicating a need to more effectively communicate the wider project aims, objectives, and successes with stakeholders.

EFFICIENCY

Project activities in Samoa were delivered on time. RIMES applied efficient monitoring, providing opportunities for feedback during events, which was documented and used to adapt project activities to the needs of users.

The multisectoral approach to engagements supported wide benefit of project activities, as well as providing opportunities for collaboration and discussion between the sectors, supporting efficient and useful knowledge transfer between countries and sectors.

The online delivery was seen as an efficient use of project resources, allowing for additional project activities which had not been planned (e.g., the development of the LMS). In person training would enhance the learning experience for future activities. The delivery of the training materials and recordings of the training were seen as an effective use of project resources, further enhanced by the development of the LMS.

IMPACT

While none of the tools shared by RIMES are currently used by SMS to support their forecasting operations, the project contributed to enhanced understanding of forecasting and climate services by SMS, especially for new forecasters with limited experience and knowledge. The delivered training also supported the forecasting service to refine their standard operating procedures considering the IBF perspective. While not yet implemented, as a result of the training, SMS plans to pilot a new warning impact matrix for the upcoming wet season which will include colour codes, depending on risk levels, in the forecast. It is recommended that tools more relevant to Samoa be introduced for any future activities, and that efforts be undertaken to support the operationalisation of IBF in Samoa, with specific consideration of the data and technical limitations of the country.

The 2022-2023 Wet Season Forum provided a deeper understanding to sectors on the available SMS products, and consideration of how they can be applied to support their work. Specifically, the NDMO was supported in terms of incorporating IBF into DRR preparedness and response activities, helping them to link warning levels with pre-defined actions. The forum, as well as the Subregional Dialogues, also help build an understanding of the need for a multisectoral approach. One participant suggested that the improvement of weather and climate risk-informed decision-making and seasonal planning "*may be attributed to the consistency of communication between agencies and stakeholders*."

SUSTAINABILITY

Main partners are capable and motivated to continue, and have the knowledge required to implement IBF activities. The continuing support and advocacy for the project from the Minister of Natural Resources and Environment highlights the high-level interest and support for IBF in Samoa. Financial resources for IBF in Samoa are limited and partners rely on international cooperation with key development partners (e.g., SPREP, WMO, CREWS, SOFF) to support their activities. RIMES demonstrated effectiveness in advising partners and prospective projects to help ensure continuity.

Samoa has affectively built formal partnerships with other sectorial agencies towards robust and reliable data exchange and services. This includes a Memorandum of Understanding (MOU) between WRD and SMS for access to information on rainfall intensity, river water and tide levels, which are being used to monitor possible flooding, as well as an arrangement for SMS' provision of weather forecasts/bulletins to Samoa Tourism Authority (STA). These existing agreements suggest a robust framework on which IBF can be developed.

LESSONS-LEARNED AND RECOMMENDATIONS

- Ensure Samoa is represented at inception meetings and key stakeholders are kept engaged with overarching project activities/outcomes throughout the project to support accountability to affected populations, as well as to enhance project support and ownership at the national level.
- Tailor training to specific context with special consideration for the availability of data, tools, and services for countries with limited resources/capacities, as well as the skill level of trainees.
- Identify opportunities to enhance the underlying technical architecture/framework to allow for more effective forecasting.
- Customise models/tools to meet the scale and accuracy needs of small island states and are integrated into project plans and activities to build coherence and efficiencies in project implementation.

EVALUATION LIMITATIONS

Only MRNE and the transport sector participated in the evaluation questionnaire and only MRNE providing inputs via interview. As such, the assessment of Samoa relied heavily on background information and inputs from a limited sample group. Given this, limited confidence should be placed on the findings for Samoa, and it is recommended that further engagement and discussions be undertaken with key stakeholders to build a more robust understanding of the project and its impacts.

8.6.8 SRI LANKA

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Sri Lanka participated in the project. Most of the listed partners participated in the evaluation, either through providing inputs via the developed questionnaire (Annex 2), or by participating in the online evaluation interview, or both, as detailed in Table 13, below.

Ministry	Government Institution	Role in the Project	Questionnaire	Interview (15.03.2024)
Reporting under the purview of the Ministry of Disaster Management	Department of Meteorology (DoM)	Main government project partner	✓	2✓
-	DoM Climate Change Secretariat	Climate Change Sector	✓	
Ministry of Agriculture	Department of Agriculture	Agriculture Sector	✓	✓
Ministry of Plantations Industries	Tea Research Institute	Agriculture Sector	✓	✓
Ministry of Disaster Management	Disaster Management Centre (DMC)	DRM Sector	✓	
-	Ceylon Electricity Board	Energy Sector		

Ministry of Health	Disaster Preparedness and Response Division	Health Sector		
Ministry of Irrigation and Water Resources Management	Department of Irrigation	Water Sector	✓	

Table 13: Government agencies from Sri Lanka, engaged in project activities and evaluation.

SUMMARY OF SRI LANKA PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Sri Lanka focused on the training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision-making; technical support in the conduct of seasonal forums and facilitating potential impact assessments to inform seasonal planning; expansion of decision support system to aid potential impact and risk analyses in the agriculture sector; capacity building of DoM to enable them to respond to user demands from agriculture and disaster management sectors, and support to DoM and ministry participation in the RIMES 14th Council Meeting Side Event for knowledge and project experience sharing.

Specifically, the following stakeholder engagement activities were undertaken with Sri Lankan representatives:

- Inception Meeting (January 17, 2022)
- 1st Online Training on Impact Forecasting and Risk Analysis (April 18-21, 2022)
- 26th Sri Lankan National Monsoon Forum (May 5, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for National Meteorological and Hydrological Services (August 29 – September 2, 2022)
- 27th Sri Lankan National Monsoon Forum (October 4, 2022)
- Side Event to the 14th RIMES Ministerial Conference (November 10, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 14-17, 2022)
- Online Training on Hydrological Modeling and Flood Forecasting (November 28-December 9, 2022)
- Online Workshop on Crop Decision Tree Development (April 17-20, 2023)
- 28th Sri Lankan National Monsoon Forum (May 4, 2023)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)
- 29th Sri Lankan National Monsoon Forum (October 18, 2023)

The continuation of monsoon forums under the project was highly effective in building stakeholder collaboration and cooperation and creating a platform for knowledge sharing. Project training activities were seen as beneficial to stakeholders, enhancing knowledge on forecasting and risk analysis. The increased forecasting capacity and coordination developed through this project (and others) enhanced the overall forecasting services provided by DoM. This supported other key sectors (health, energy, water, etc.) to more effectively plan for, and respond to, climate and hazard events. This was demonstrated by the Mahaweli Authority's use of DoM's rainfall forecasts to managing spill flow and convert/divert expected rainfall for power flow and the Irrigation Department's used of DoM's short- and medium-range weather forecasts for flood forecasting and early warning.

The previously developed SESAME was utilised in two pilot locations in Sri Lanka to provide agro-advisories, particularly for maize and rice, based on potential impacts from forecasted weather/predicted climate conditions.

EVALUATION CRITERIA ANALYSIS

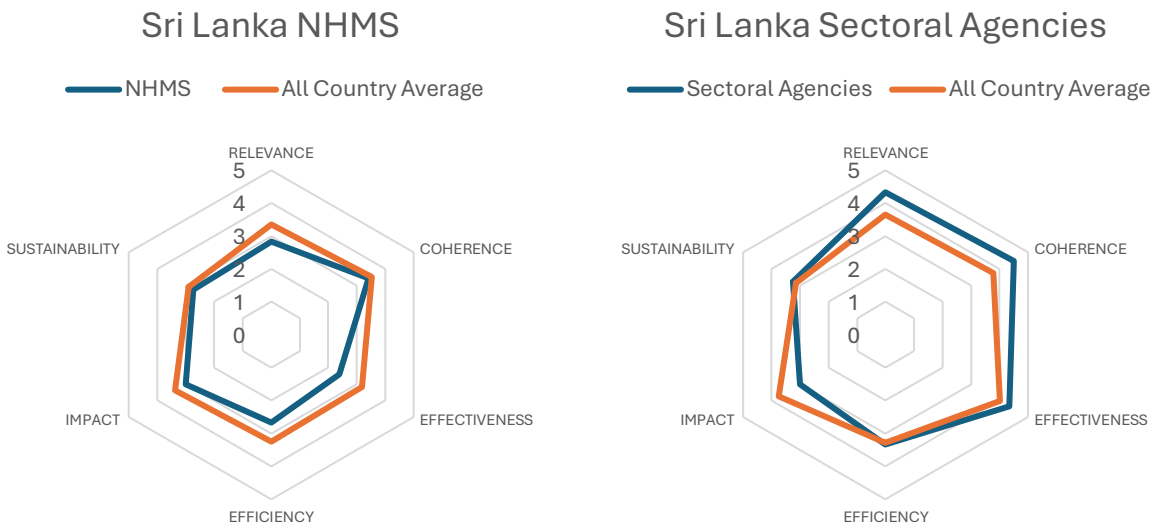

Figure 15: Quantitative scores from Sri Lanka questionnaire participants, by evaluation criteria, by sector.

RELEVANCE

Project activities supported the identified needs, priorities, and policies of the main actors, aligned well with Sri Lankan policy, and were considered "*essential and relevant*" by project participants, especially those in the plantation sector. This was particularly noted at the national level. It was less distinct to what extent the activities were relevant to community-level needs. Additional efforts to consider the sub-national requirements and needs would enhance future project delivery.

The project responded well to project partners and other user's needs, such as the Department of Fisheries and Aquatic Resources, Field Crop Research and Development Institute, Tea Research Institute, Rubber Research Institute, and the Mahaweli Authority. Given the important role of Sri Lanka's plantation agriculture in the economy and livelihood creation, engaging this sector in project forecasting activities contributed to "*a new dimension in plantation agriculture management.*"

The training was generally seen as satisfactory, however the broad nature of the training to encompass the various needs of different participant nations led to less targeted capacity building for Sri Lanka specifically.

COHERENCE

The project was "*compatible with other projects with similar thematic areas as climate smart agriculture have high complementarity with this project*". The project built effectively on the already established twice-annual monsoon forums which had been established in 2009, under Asian Development Bank (ADB) funding. Further, it considered other initiatives at nation and regional levels, for example the project shared details of "*analytical methodology used by RIMES for Lao PDR forecasters to identify weather conditions*". The project activities in Sri Lanka also contributed to the international agenda including the Sendai framework, Paris climate agreement, and SDGs.

The use of enhanced forecasting services by DoM by other projects and initiatives demonstrates the highly coherent nature of project activities and outcomes.

EFFECTIVENESS

The monsoon forums undertaken during the project were considered highly effective in to strengthening collaboration between key stakeholders and sectors to share knowledge and experiences, as well as enhance capacity to undertake IBF. Evaluation participants noted that the forums improved climate and forecasting knowledge across sectors and now "*nearly all the sectors know about IBF*". The project supported resilience building in Sri Lanka, with one partner stating that, because of the project *"climate resilience has increased; I would say 75/80% in plantation agriculture sector"*. This effectiveness seems to have been mostly applicable at the national level.

The training conducted under the project was considered satisfactory by participants, providing an opportunity to "*gain new techniques and learnings"* for IBF. While the topics covered by the training were considered relevant and useful, the short duration and virtual modality were noted as impediments to the overall effectiveness of training activities. Data gaps were noted as a key barrier to the development and operationalisation of IBF, while it was suggested that the effectiveness of the project would have been increased if free GIS software (such as QGIS) was leveraged.

EFFICIENCY

Project activities in Sri Lanka were delivered on time and within budget. However, one of the evaluation informants considered "*the time for activities implementation is too short."* The multi-use functionality of the monsoon forums for knowledge sharing, stakeholder collaboration, and to obtain feedback on stakeholder needs, was a highly efficient use of project resources and maximised the benefits to stakeholders.

The capacities developed during the project were able to be widely utilised by other initiatives, such as DoM and United Nations Development Programme (UNDP) collaboration to develop a web GIS-based platform with 3-hour and 24-hour rainfall forecast, and the cooperation with Dialogue Axiata PLC to deliver Short Messaging Services and voice message-based weather and warning service for fishermen. This demonstrates the ability of project outputs to be leveraged for wider benefits, promoting efficiencies across the development community.

IMPACT

The project directly contributed to enhanced forecasting and climate products for use by the various sectors in Sri Lanka. As a result of project training activities, personnel capacity was enhanced resulting in plantation agriculture being incorporated into regular agriculture/monthly advice bulletins, supporting the plantation sector in its activities. Additionally, while climate forecasts have been available for use for nearly 20 years, under project activities, the DoM now contributes to monthly climate bulletins which were previously only developed by the Department of Agriculture. The monsoon forums, as well as training events, provided opportunities for the sharing of information and articulation of needs from the various sectors. As a result, forecast products have been enhanced (new formats for warning and advisories), based on user feedback. Additionally, even sectors who did not participate in the monsoon forums observed benefits from these events, with the plantation sector noting that they are now able to issue agrometer advisories for plantation crops based on information provided by DoM.

Under project activities, the DSS for agriculture was enhanced, with the inclusion of big onion crops, preparation of detailed crop-specific advisories based on seasonal forecast, along with relevant crop information, and the establishment of a cloud repository for data. Further efforts are now required to operationalise the use of the DSS within Sri Lanka.

"Soft" impacts, including improved vertical and horizonal coordination between and across sectors, were observed. Following forums, the disaster management sector conducted meetings with stakeholders/funding agencies, sharing details of the upcoming seasonal forecasts and developing appropriate plans to respond to these conditions. Overall, it was considered that the project *"contributed to increase the resilience against hydro-meteorological disasters in Sri Lanka."*

SUSTAINABILITY

Interviewed participants demonstrated ownership of project activities, indicating that they feel capable and motivated to continue. With the monsoon forums are now well established within the country, their continuation is seen as *"a very stabilised process, so sustainable"*. RIMES engagement of other development partners such as WFP has created opportunities for financial support for future forums to continue. However, even without such external funding, stakeholders felt that the forums were important enough to sustain independently noting that *"even during economic crisis, we continued"* and that the agricultural sector *"has separate funds for climate monitoring, so the institution would support the continuation of activities"*.

It was noted that forecasting and risk analysis cannot work in isolation to build resilience and further capital investment is needed to ensure resilience in Sri Lanka. There was limited awareness of the developed LMS, suggesting that capacity development sustainment could be limited.

LESSONS-LEARNED AND RECOMMENDATIONS

- More targeted training topics for each country would enhance training outcomes.
- Engage more at sub-national level to understand specific needs/requirements.
- Expand activities to address last mile challenges.
- Engage a social media expert to help develop content to reach local/ground level.
- Engage wider stakeholder groups in inception meeting and facilitate a closing event to create greater accountability to affected populations.
- Explore opportunities to leverage open-source software to enhance sustainability and address budget limitations.
- Operationalise the DSS.

EVALUATION LIMITATIONS

The evaluation was well supported by stakeholder participation and representation across nearly all the key sectors, both in interview and through questionnaire inputs. As such, high confidence can be placed on the findings for Sri Lanka.

8.6.9 TIMOR-LESTE

COUNTRY STAKEHOLDERS AND EVALUATION PARTICIPATION

The following government institutions from Timor-Leste participated in the project. Representatives from the listed partners participated in the evaluation, either through providing inputs via the developed questionnaire (Annex 2), or by participating in the online evaluation interview, or both, as detailed in Table 14, below.

Ministry	Government Institution	Role in the Project	Questionnaire	Interview (25.03.2024)
Ministry of Transportation and Communication	National Directorate of Meteorology and Geophysics (NDMG)	Main Government Project Partner		3✓
Ministry of Agriculture and Fisheries	Agricultural Land Use Geographic Information Systems (ALGIS)	Agriculture Sector		✓ (muted)
Ministry of Interior	Civil Protection Authority (CPA)	DRR Sector	✓	2✓
Ministry of Public Works (MoPW)	National Authority for Water and Sanitation (ANAS, I.P)	Water Resource Sector	✓	

Table 14: Government agencies from Timor-Leste, engaged in project activities and evaluation.

SUMMARY OF TIMOR-LESTE PROJECT ACTIVITIES AND ACHIEVEMENTS

Project activities in Timor-Leste focused on training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision making for resource and risk management in agriculture and disaster management sectors; capacity building of NDMG to enable them to respond to user demands from agriculture and disaster management sectors; and support NDMG and ministry participation in the RIMES 14th Council Meeting Side Event in November 2022 in Thailand.

Specifically, Timor-Leste stakeholders were engaged in the following activities:

- Inception Meeting (January 17, 2022)
- 1st Subregional Dialogue (April 12, 2022)
- 1st Online Training on Weather and Seasonal Forecasting for National Meteorological and Hydrological Services (August 29 – September 2, 2022)
- Side Event of the RIMES 14th Council Meeting (November 10, 2022)
- 2nd Online Training on Impact Forecasting and Risk Analysis (November 14-17, 2022)
- Online Training on Hydrological Modeling and Flood Forecasting (November 28-December 9, 2022)
- Online Training on Weather Forecasting and Climate Prediction (July 10-13, 2023)
- In-Person Training on Weather Forecasting and Climate Prediction (July 24-27, 2023)
- 2nd Subregional Dialogue (September 4, 2023)

Project activities in Timor-Leste were relevant to the country's needs and supported NDMG to build capacity in forecasting. This capacity development resulted in enhanced climate and forecasting services, specifically their weekly weather forecast advisories. These enhanced advisories were disseminated to other sectorial agencies including Civil Protection Authority (CPA), the water sector, and the Red Cross, supporting wider resilience efforts. Received training was considered of high

quality. The RIMES team effectively leveraged other engagement and projects to share details of project activities, disseminate project outputs, and identify collaborative opportunities.

Further efforts to integrate existing operational tools including Badan Meteorologi, Klimatologi, dan Geofisika (BMKG) Signature, Windy.com, etc., and to apply automation tools such as Common Alerting Protocol (CAP) would further support future project outcomes and impacts.

EVALUATION CRITERIA ANALYSIS

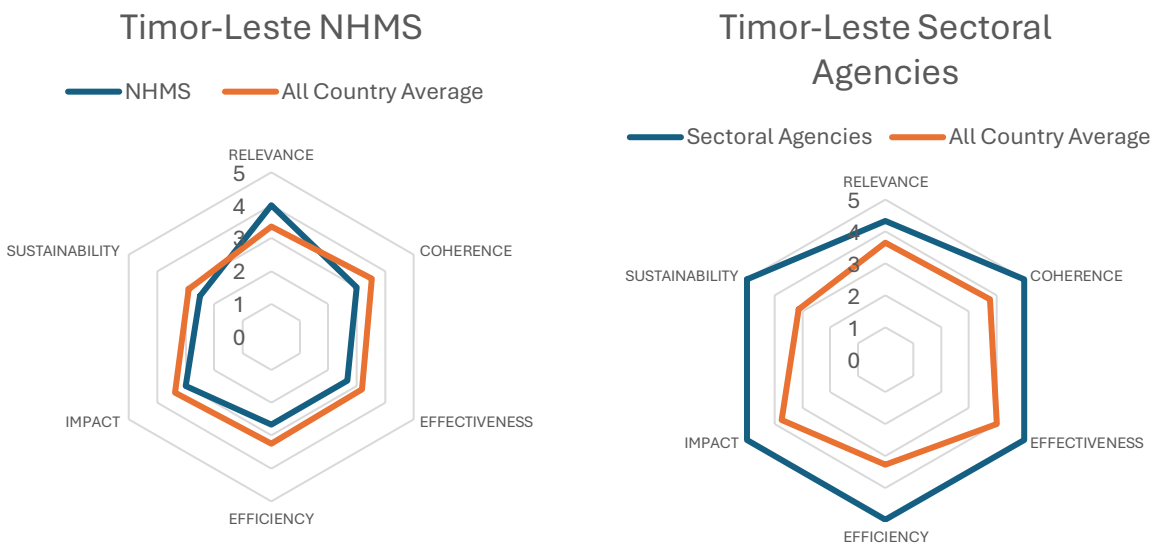

Figure 16: Quantitative scores from questionnaire participants in Timor-Leste, by evaluation criteria, by sector.

RELEVANCE

The project addressed the needs and priorities expressed by NDMG during the inception meeting and training sessions, as well as requests articulated at the annual RIMES steering committee meeting. The project delivery also incorporated feedback from indirect beneficiaries such as municipal-level authorities, via CPA. Those engaged in project activities felt that the project was highly relevant, stating *"I am very happy with this program because it involves Pacific states that are geographically similar climate conditions"*.

Having identified that Timor-Leste is already developing its own DSS tool with support from the GCF, the project design did not seek to advance the use of RIMES' tools in the country. This is seen as a well-considered and relevant approach to project implementation, reflecting a good understanding of the existing environment/tools and a thoughtful design of project activities.

COHERENCE

The project activities in Timor-Leste were broadly synergetic with other projects including the GCF and SPREP. RIMES supported NDMG to leverage the GCF-funded monsoon forum to share details of their seasonal forecast, which was then used by the participants to discuss potential impacts and appropriate preparedness plans and strategies for the coming season. RIMES is also advising on the future national framework for climate services under the GCF project. These actions demonstrate the RIMES team's commitment to identify and leverage opportunities for collaborations.

Efforts to integrate NDMG's existing modelling and data practices (BMKG Signature model, etc.) could provide more coherence and impacts, and alignment of training with CAP standards would align project activities more closely with international best practice, complement other project

activities including those being undertaken by WMO, and support interoperability with other systems.

The project was internally coherent, with RIMES incorporating inputs and feedback from project activities into the implementation of their Enhancing Early Warning Systems to Build Greater Resilience to Hydro-meteorological Hazards in Timor-Leste, funded by GCF.

EFFECTIVENESS

While NDMG and CPA considered the project to be very effectiveness, it was notable that the water sector considered it only moderately satisfactory, perhaps reflecting their limited engagement in project activities.

Training provided under the project built NDMG capacity for weather and seasonal forecasting and hydrological modelling and flood forecasting, specifically by improving knowledge IBF and RIMES tools including the data exchange platform and FOCUS.

Partners noted the quality of the training sessions and requested assistance to improve the accuracy of weather forecast for the municipalities, further support in relation to data gaps challenges, and the integration of RIMES tools with other tools they are currently using include the BMKG Signature and Windy.com models. Longer duration training sessions and face-to-face modality were requested as enhancements which would improve the effectiveness of training.

The subregional dialogues with Pacific participating countries were well attended by the relevant sectors in Timor-Leste and provided effective opportunity for the country's representatives to share details of their current forecasting and climate services, as well as to hear from other countries their experiences and lessons learned.

EFFICIENCY

The project was implemented in a timely manner, with the RIMES team demonstrating flexibility and adaptability in their approach to incorporate feedback and requests from Timor-Leste stakeholders.

Challenges in the coordination of activities and limited engagement from some sectors were referenced by one evaluation participant as impediments to project success in Timor-Leste. It was noted that Timor-Leste stakeholders were unable to participate in two of the organised training events due to conflicting schedules (including due to the country's election). While it is acknowledged that scheduling events for nine countries is a challenge, ensuring partner availability to participate in events must be a priority during project implementation.

Timor-Leste was included in the Pacific meeting, while Pacific leadership countries (Togo, and previously the Cook Islands) were not invited to join the discussion. While these states were not project partners and therefore were not required to attend, it is suggested for future interventions to consider the Pacific Island structures and politics that are highly relevant for project implementation and sustainment with a holistic regional approach.

IMPACT

Prior to the project, Timor-Leste was unable to provide seasonal forecast services. As result of the capacity development and the tools provided by the project, in complement to other projects being implemented in Timor-Leste, NDMG now provides weekly weather forecast advisories. NDMG also produces impact matrix based on skills built during project training, wherein impact levels are categorized and colour coded, and supplemented with advisories on what the people should do in each scenario case.

These advisories are shared with the different sectors for application at both the national and sub-national level including CPA who disseminates the products to the municipality level and the National Red Cross that delivers to its chapters to inform end users. Further, *"the water resources sector has benefited of this project because the forecast provides information related to rainfall in a place"*. NDMG also uses the data exchange platform and FOCUS tool to create monthly forecast bulletins for use by the agricultural sector. These applications demonstrate the resilience-building impacts of the work undertaken under the project. It is notable that CPA collaborates with NGOs that work at the local level to reach people vulnerable groups.

Stakeholders felt that automation of dissemination processes (including the use of CAP) would have created a greater project impact.

SUSTAINABILITY

Main partners are capable and motivated to continue and to be up-to-day with science, which evolves. The engagement of leadership in the inception meeting and the subregional dialogue was seen as supporting project sustainment, providing decision-makers with a broader understanding of the role and importance of forecasting and climate services for the country.

Partners noted their limited financial resources to ensure sustainability and highlighted their continued reliance on international cooperation, e.g., GCF, CREWS, EW4All, SOFF. Nevertheless, some resources would be used to maintain main activities delivered under the project such as CPA training resources, for both national and international, including other sectoral agencies, and municipalities.

Partners do not see external factors that could limited the sustainably of activities, although the regular reorganisation of the government structure may create some future challenges. The need to formalise and clarify the relationship and collaboration of the meteorology and hydrology services (currently under different ministries) is required. Continued socialisation of weather and climate impacts to the community and stakeholders and the establishment of a standard operating procedure between NDMG and CPA for information dissemination to enhance the sustainment of the project.

LESSONS-LEARNED AND RECOMMENDATIONS

- Integrate NDMG's existing modelling and data practices (BMKG Signature model, etc.) to provide more coherence and impacts to project activities.
- Improve accuracy of weather forecast for the municipalities. It is also suggested to improve the data exchange platform and FOCUS and to combine with IBF analysis.
- Incorporate Common Alerting Protocol (CAP) standards into training.
- Deliver more frequent, longer duration, and in-person training sessions to increase effectiveness.
- Provide tools/approaches to improve accuracy of weather forecasts at the municipality level.
- Undertake mapping of Pacific Island structures/context to support more effective engagement in the future.
- Improve the dissemination of information to the communities via automatic means and have training on it.

EVALUATION LIMITATIONS

The evaluation was well supported by stakeholder participation, with representation across most of the key sectors, either in interview or through questionnaire inputs. As such, reasonable confidence can be placed on the findings for Timor-Leste.

8.7 ANNEX 7: SUMMARY OF RIMES AND ESCAP VIEWS

This chapter provides a summary of evaluation findings by country, based on project documents, participating country survey results, and discussions with country representatives through virtual meetings. For each participating country, this chapter provides details of the surveyed and interviewed institutions and their participating in project activities, as well as summarises and analyses the project achievements and the evaluation by criteria. It is complemented with country-level lessons learned and recommendations.

Additionally, this section provides a summary of the interview record with the project implementing partner, RIMES, and the project donor: the secretariat of ESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness.

8.7.1 RIMES SUMMARY OF INTERVIEW

Below, a summary of the discussion undertaken with RIMES representatives is detailed, including their lessons learned during project implementation.

Institution	Role in the Project	Questionnaire	Interview (06.03.2024)
Regional Integrated Multi-Hazards Early Warning Systems for Asia and Africa (RIMES)	Project Implementor	✓	✓

Table 15: Implementing partner, engaged in project activities and evaluation.

SUMMARY OF DISCUSSION

RIMES indicated that project activities and related performance indicators had been achieved, namely:

- Training of weather and climate information users on potential impact assessment, risk analysis, and application of outputs in planning and decision- making for resource and risk management.
- Technical support in the conduct of seasonal forums in select countries.
- Conduct of subregional dialogue in the Pacific Region.
- Expansion of decision support system for agriculture in select countries.
- Capacity building of National Meteorological and Hydrological Services.
- Support for NMHS and ministries' participation in RIMES 14th Council Meeting for knowledge sharing.

Informants shared details of the project successes. This included knowledge sharing and cross-sectoral coordination and collaboration undertaken through interaction between NMHSs and sector user during monsoon forums and trainings on impact-based forecasting. Additionally, during the subregional dialogue in the Pacific, information was shared, and project coordination was discussed with a number of partners, i.e., WMO's CREWS and the 11th European Development Funding on projects in PNG; exchange on GCF projects; and at country level with Met Services (Fiji, Samoa, Australian BOM).

RIMES noted that a decision support system (DSS) has been customised for NMHS and agriculture department in Bhutan, Cambodia, Fiji, Papua New Guinea, and Sri Lanka, with new features such as water requirement information and more comprehensive inventory of pest and diseases. They indicated that this system now requires pilot testing in member countries.

It was highlighted that, thanks to the savings from to online delivery of training sessions, a major additional achievement was realised: the development and launch of a Learning Management System (LMS) portal (at the RIMES Council Meeting in December 2023). The LMS displays all training modules online, including case studies, video recordings, etc., to support continued and expanded capacity development across all RIMES member countries.

Some challenges noted by RIMES included difficulty in delivering effective training online, participating countries preferred in-person trainings; formalisation of cooperation between the NMHSs and the sectoral agencies; data sharing between sectors, and the inclusion of other users and partners, such as local government and civil society that can support and maintain people-centred and risk-informed EWS and disaster risk management.

RELEVANCE

RIMES felt the project satisfactorily met participating countries' needs and priorities. Individual country project activities were designed and adjusted in alignment with the RIMES Masterplan 2021-2025, which considers the broader requirements articulated by countries during RIMES ongoing discussions with these countries during ministerial and council conferences/meetings. Additionally, preliminary project events were leveraged to better understand the specific gaps to meet user demand. RIMES indicated that, throughout the project, when participating countries articulated a need, they would strive to address this demand and adapt their project activities to support this. An example of this was a request from some countries to use RIMES' Forecast Customisation System (FOCUS) Tool, following which, they were connected directly to RIMES' development team to support this request. RIMES representatives indicated that their flexible approach also ensured the good structure of the project and selection of services to be provided under the project activities that contributed to pivoting trainings based on the individual needs and geographic scope of participating countries.

While the primary focus of the project was NHMSs, RIMES noted that they also worked to engage other priority sectors in each country, given their respective roles in disaster risk reduction. To support these various sectors (DRM, health, energy and transportation, etc.), RIMES shared that the project also considered the needs of these different sectors in their project design and implementation. They encouraged discussions between the sectors and the NMHSs to foster collaboration, as well as to help NHMSs understand the specific requirements of these sectors to support the tailoring of forecast products to these specific needs. The communication was relevant since, for some line ministries, the topic was new. Humanitarian agencies were also invited to some events.

While RIMES indicated that no theory of change was established in the project proposal or utilised throughout the project, their approach to the project placed capacity development and process changes front and centre of their activities. RIMES felts that, despite this lack of written theory of change, the project had successfully supported positive change, i.e., the transition from conventional hazard-based (what the weather will be) forecasting to impact-based (what the weather will do) forecasting for more informed decision-making processes across the relevant sectors. RIMES interview participants acknowledged that a specifically articulated theory of change could be helpful for future activities.

It was noted that no formal gender mainstreaming was considered in the project, although RIMES attempted to ensure gender balance during project events, i.e., trainings. Additionally, RIMES representatives indicated that no specific consideration had been given to integrating the needs of

vulnerable populations (those with disabilities, ethnic groups, etc.) in the project design or implementation.

COHERENCE

Informants stated that the project design considered the RIMES Masterplan (2021-2025), other RIMES interventions, ESCAP Trust Fund's strategy note 2021-2024, and other development partners' projects including WMO's CREWS, GCF, SPREP interventions, etc. As such, they felt that the project strongly aligned with other regional and global initiatives and was therefore highly coherent and allowed them to optimise their activities and resources.

They felt that there was a high level of coherence regarding capacity development activities, with training and other capacity building activities leveraging global best practice and the latest technologies. Further, they felt that project activities employed a systematic approach, with impact-based forecasting (IBF) training sessions utilising climate information to assess risks by combining hazard, exposure, and vulnerability data. Further, during the monsoon forums, risk analysis by sector was undertaken based on the information provided by NMHSs for weather and climate outlook, identification of potential impacts, exposed elements, and formulation of strategic measures.

RIMES also noted that the project was innovative, citing the development of an LMS under project activities in response to identified participant countries' needs (as well as recognising the potential value to other RIMES member countries who were not engaged directly in this project) for such a system. The LMS prototype was launched in December 2023, and is now under further development to support wider capacity building across all RIMES member countries. In the meantime, RIMES noted that all partners can access an introductory course on IBF and other learning materials.

The interview participants stated that, as the project was designed during the COVID-19 pandemic, a conservative approach to in-person activities had been planned but they were able to adapt to the evolving pandemic conditions throughout the project and conduct a several in-person activities as well. RIMES participants felt this demonstrated their coherence to the changing environment and their flexibility and adaptability in the fact of such change.

EFFECTIVENESS

RIMES representatives felt that the project approach, strategy, and implementation all contributed to meet project objective, outcome, and outputs, as planned. Additionally, they stated that their objectives were achieved: "*the project has strengthened the skills of NMHS forecasters both regarding the weather and climate forecasting, as well as hydrological modelling for flood forecasting*". Hence, they considered that "*the project has been very effective on outcomes*", for instance by providing capacity building support to NMHSs and sectoral agencies based on identified specific gaps, requirements, and collaboration opportunities.

While they felt that the project objectives had been met, informants acknowledged that there had been some challenges with implementation due to the significantly varying capacities between some of the participating countries and this had potentially impacted the effectiveness of some interventions. Further, a lack of institutionalised data sharing mechanism among stakeholders hindered full operationalisation of IBF in the project countries, even where capacity had been effectively built by project activities. While data sharing mechanisms were outside the scope of project activities, RIMES representatives recognised that this was a barrier to the effectiveness of implementation. They also noted that the project activities were focused on the national level (with some inclusion of provincial level), and they had limited awareness of the extent to which community

level capacity would be built as a result of their interventions. RIMES indicted they would be keen to pilot more community-level activities under another phase of this project.

It was also noted that implementation was impacted by the modality of implementation of some activities, with virtual training specifically as a challenge. RIMES candidly shared that they did not feel that capacity development objectives could be fully realised as a result of this challenge, but that the project team employed a flexible and creative approach to try and address this, including (where safe to do so) adjustment to in-person activities, requesting reallocation of budget to such activities. While this online modality proved challenging, it allowed wider participation, and the optimisation of project resources permitted the project team to achieve additional accomplished activities within the approved budget and timeline. This included the development of the LMS, not initially planned, as well as project sustainability and wider capacity development across RIMES member countries. RIMES noted that, while the LSM has been established, further work is needed to populate the system with additional training materials.

EFFICIENCY

Informants asserted that the project achieved the proposed outcome and outputs in a cost-effective and timely manner. They noted how cost savings from some activities were applied to the completion of additional activities, including the LMS, delivery of in-person training sessions, and face-to-face forums, addressing feedback and requests articulated by stakeholders.

Referencing the no cost extension, it was noted that this was only required to accommodate the completion of the terminal report and project evaluation, and that all other project activities were completed within the originally conceived timeframe.

RIMES participants felt that they effectively managed the project and leveraged monitoring tools to ensure project success. This included delivery of annual project progress reports to the ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness advisory council for feedback and bi annual report delivery to ESCAP by informing about all activities. RIMES delivery of project updates during the ESCAP Advisory Council Meeting, and internal monthly team meetings to provide updates on implementation. They also noted that the project team was agile in adjusting as needed to the evolving environment and stakeholder needs, i.e. during the pandemic. They indicated that partners feedback was used by RIMES to adapt their strategies for following activities.

IMPACT

RIMES indicated that they felt the project had significantly enhanced the technical capacity of NHMSs and had successfully developed different scenarios and helped stakeholders formulate strategies based on this. The main RIMES representative stated that *"the most significant impact or result of this project would be countries, realising how important the collaborative partnership among all stakeholders is, particularly in impact-based forecasting, since the generation of these kinds of forecasts does not only require the hazard maps that are being produced by the NMHS, it requires all the necessary information like exposure and vulnerability capacity information that comes from the different sectors"*.

Fiji was mentioned as an example of a participating country which had leveraged the project activities to develop a technical working group within the Department of Agriculture to maintain the decision support system (DSS) customised for them under the project. However, they also noted limitations in the implementation of IBF systems across participating countries, in part due to the lack of formalized data sharing between the sectors.

Considering the most significant project impacts, informant highlighted the enhanced collaborative partnership between the sectors during forums, the demonstration of the forecast tool, i.e., the Maldives and Sri Lanka are now using seasonal forecast maps to identify upcoming conditions, and the customisation of the DSS for impact-based forecasting for agriculture in five countries.

As noted, less favourable impact of the project mentioned was the reliance/expectation that monsoon forums will continue to be sustained by external (donor) funds, considering the limited financial resources available for these events within the participating country.

SUSTAINABILITY

Informants noted that sustainment of project outcomes and impacts varied between participating countries. While the project did not have a specific exit plan, some project activities were designed to support long-term sustainment.

They also mentioned that participating countries' willingness or capacity to sustain project outcomes and impacts varied significantly. RIMES engagement of other development partners, including WFP, GCF, etc., was highlighted as vital to help sustain the monsoon forums, with Lao PDR, Cambodia, the Maldives, Papua New Guinea, and Timor-Leste named as examples of this. Towards sustainability, Fiji Met Service has committed to incorporating lessons learned and new approaches into its everyday operations and decision-making processes, which exemplify the incorporation of the project outcome into national policies and helps ensure the sustainment of project impacts.

The interview participants shared that, during project activities, the usefulness of establishing MOUs between the NMHS and their sectoral users so that there will be seamless sharing of data even after the project was discussed but no specific agreements had been signed as of the time of the interview. They recognised the importance of such agreements for project impacts to be sustained and leveraged over the long term. RIMES participant also noted that the policy-making bodies had not always been engaged in project activities. Additionally, that most participant countries do not have national strategy for forecasting and a framework is needed, to which project activities could be linked and institutionalised.

Informants again noted the relance of participating countries on external donor resources which may not be sustainable over the long term. Their engagement of the donor/development community helped ensure medium term funding for activities, but they recognised that more country ownership would help to fully sustain their own activities.

It was noted that contextual factors such as political or economic crisis could limit the continuity and implementation of the knowledge acquired. Considering potential activities under a third phase of the project, RIMES would like to complete system developed for various countries and undertake testing of the system in pilot countries. Additionally, they would like to enhance future capacity building activities with participating countries but focusing on working products for stakeholders to use and test.

8.7.2 ESCAP SUMMARY OF INTERVIEW

Below, a summary of the discussion undertaken with UN ESCAP representatives is provided.

Institution	Role in the Project	Questionnaire	Interview (06.03.2024)
ESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness	Donor agency		2 ✓

Table 16: Donor agency, engaged in project activities and evaluation.

SUMMARY OF DISCUSSION

Overall, ESCAP felt that the project was successful in its objectives and that the project had been well-developed with the needs of participant countries well understood and addressed. Further, they praised RIMES' approach to implementation, highlighting the deep level of understanding of specific country needs that RIMES had developed. They were particularly impressed with the opportunities RIMES created for knowledge sharing through interaction between NMHSs and sector users during monsoon forums and training on impact-based forecasting.

ESCAP noted some observed challenges, for example the lack of in person training (preferred by countries), although they recognised that the resulting cost savings had been used effectively to develop an LMS. They also cited the lack of formalised cooperation between the NMHSs and the sectoral agencies, and the inclusion of other users and partners, such as local government and civil society who could support and maintain people-centred and risk-informed EWS and disaster risk management.

RELEVANCE

ESCAP felt that RIMES has a good understanding of the needs of individual NHMSs and is therefore able to effectively design and implement projects that directly address these needs. They noted RIMES' ability to pivot their activities based on the articulated needs of each country as the project progressed.

While ESCAP observed good engagement with NHMSs and the agricultural sector, they felt that other stakeholders were less considered in RIMES' approach, and there may be limited awareness of these other stakeholders' needs. Further, local governments and civil society had less participation.

While acknowledging the important achievements of RIMES, ESCAP noted how they have remained Asia and Africa focused in their activities and ESCAP would like to see more expansion into, and understanding of the needs of, Pacific islands.

COHERENCE

ESCAP felt that the project and RIMES' approach to implementation was well aligned with regional and global initiatives. They noted that the project worked to link activities to other development partners such as CREWS and GCF, and that RIMES effectively leveraged lessons learned from other activities into project design and implementation, helping ensure effectiveness.

ESCAP indicated a desire to for link the monsoon forum to other regional climate forums such as the Pacific Islands Climate Outlook Forum (PICOF) to further enhance links between countries.

EFFECTIVENESS

Project implementation had been very effective highlighted ESCAP. The project optimised resources (online delivery of the activities), which allowed to conduct additional accomplished activities within the approved budget and timeline.

Regarding the training, they felt that the project was impressive in its ability to deliver training in a way that uncovered working level capacity and built on identifies needs. They also acknowledge the challenges of online learning and were pleased to see RIMES address this where possible to enhance the effectiveness of training. It was also noted a lack of institutionalised data sharing mechanism among stakeholders, hindering full operationalisation of IBF in the countries.

It was recommended that RIMES work to better understand the needs and dynamics of Pacific Island states and to build cooperation with other partners, such as SPC, Pacific Met Council, etc., which would be beneficial to design a next phase. Partnership development with leader island states in the Pacific was also considered important, i.e., Tonga's leadership can push the agenda forward. More investment and consistency regarding visibility would also be beneficial to capitalise results and seek new funding opportunities.

EFFICIENCY

RIMES provides annual project progress reports to the project management advisory council for feedback. ESCAP is invited to all activities and received the bi-annual and annual reports. RIMES also reports project updates during the ESCAP Advisory Council Meeting and held internal monthly team meetings to update about implementation. ESCAP valued the ongoing partnership with RIMES, noting the quality and consistency of dialogue between them and RIMES throughout the project.

ESCAP felt that RIMES was agile to adjust as needed, i.e., during the pandemic. Partners were able to provide feedback and then RIMES adapted for the following activity. ESCAP recognised the timely and useful adaptability to incorporate changes as RIMES went through implementation.

ESCAP cited PNG's monsoon forum as a great example of a coordination tool, under leadership of NHMS. This event facilitated ESCAP talking to CREWS to help develop next steps of that/support project activities.

IMPACT

Impact at the high level was witnessed at during the side meeting of the RIMES 14th Council Meeting, during which RIMES was able to showcase how donor's funds were spent effectively. The event also deepened the partnership between members. Because of RIMES' engagement, they were able to introduce four young Pacific forecasters to the Fiji ambassador who then share their experiences/articulated their needs. This resulted in an intervention at the committee (Resolution 79/1) sponsored by Fiji and Maldives.

From ESCAP's perspective, the greatest achievement/impact of the project was delivered through the development of the LMS. Effectively using project cost savings, RIMES was able to launch the LMS at their Council Meeting, demonstrating the wider impact of the project as all member countries – including those with engagement is limited by sanctions (e.g., Myanmar) can benefit from the outputs of the project. ESCAP praised RIMES' ability to pivot their activities and deliver this unexpected additional positive impact.

ESCAP noted how their long and successful relationship with RIMES provides more appetite for risk regarding project activities and they are happy to fund pilot activities to see what works and what can be scaled up under further funding. As such, as well as the tangible project results, they saw this

project as an opportunity for learning and to explore what is needed/possible in this space. As they noted, *"RIMES provide service that no other entity has been able to provide for low-capacity countries"*.

SUSTAINABILITY

ESCAP noted their desire to ensure sustainment of project activities and outcomes and were keen to see this addressed with NHMSs in any future phases of project activities. They cited Fiji as an example of where a working group for agromet activities had been established, although they were unsure if it had been sustained beyond the project. It was noted that the project allowed ESCAP to support RIMES capacity development, which in turn supports the wider role of ESCAP in enhancing regional capacity. They indicated that the best strategy was to develop local capacity, praising RIMES' wider strategies with each country.

Considering external and contextual factors that may impact project sustainment, ESCAP reflected on the fact that RIMES were able to continue, and be effective in, project implementation in the face of regional challenges and changes such as the Sri Lankan economic crisis and new governments in Fiji and the Maldives. As such, they felt confident in RIMES' ability to adapt to changing environments in their delivery of projects, citing "genuine partnerships" fostered with participating countries as key to that success.