

Adapt'Action

Building Regional Resilience through Strengthened Meteorological, Hydrological and Climate Services in the Indian Ocean Commission Member Countries (Hydromet Project)

FEASIBILITY STUDY APPENDICES

September 2019



COMOROS



MADAGASCAR



MAURITIUS



SEYCHELLES

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APPENDIX 1 Kick-Off Meeting notes

Kick-off meeting for the Adapt'Action Hydromet Project Preparation, 10th May 2019, IOC Secretariat, Mauritius

Participants :

COI :	Ginna BONNE, Véronique ESPITALIER-NOEL, Jean-Baptiste ROUTIER, Annaelle HOAREAU
AFD :	André POUILLES-DUPLAIX (Director AFD Mauritius & Seychelles), Sadna NISTAR AMMEARALLY (Project Officer), Nadra BAUBION (Task Team Leader)
EUD :	Rajesh PARBOTEEAH (Climate Change Focal Point, EUD Mauritius & Seychelles)
DAI :	Marie-Ange BAUDOIN (Team Leader), Pascal VENZAC (Hydromet expert), Catherine WALLIS (Project Director)
WMO :	Laurent LABBE, Cyril HONORE, Dominique BEROD, Daniel SIGOHNNOU, Jean-Paul GAUDECHOUX, Jean-Baptiste MIGRAINE
Seychelles :	Met Authority (Vincent AMELIE CEO, Nelson LALANDE) and OPL (Ms Octavia ROSE)
Mauritius:	MMS S Dindyal, NM K. Bisseur, Water Resources Unit, MK Appasamy, Ministry of Energy and Public Utilities, Mme Rachna Ramsum, Ministry of Finance and Economic Development

Madagascar : participant from Met Directorate and OPL excused

Comores: participant from Met Agency excused

Objectives of the meeting

The aim of the meeting was to officially launch the start of the Hydromet project preparation assignment, awarded to the DAI consortium. The Hydromet project has been in design for the past 2 years by the COI and a concept note was submitted to the Green Climate Fund in September 2018 with support from the AFD Adapt'Action initiative.

During the launch event, meteorology services from Seychelles and Mauritius were asked to present the current activities of their organisation and plans for the future. AFD provided an overview of the Hydromet project preparation institutional set-up and governance structures for validation processes. The DAI consultants provided an overview of the project preparation process consisting of a Feasibility Assessment phase and draft the Full Funding Proposal and relevant annexes. The aim is to provide final FS and FP reports by early December 2019.

Summary of comments

- WMO can provide relevant expertise to support the project preparation and project implementation. Meteo France Reunion is one of the regional support institutions of the OMM and should be a resource. WMO have identified 15 internal relevant staff to support the project.
- The WMO HYCOS next incarnation for the Indian Ocean is under preparation
- The EUD has ear-marked 6m euros for this project for the Indian ocean region. The funding falls under the ACP climate services support financing programme. A PAGODA (project preparation document) will need to be prepared and signed before the end of 2019.
- BRIO project is complementary to the Hydromet project. BRIO is financed by AFD Adapt'Action (300k€), is a 2-year project aimed at training junior staff from 4 countries in climate services and climate forecasting.
- Other complementary projects to cite in the Funding Proposal are: the GCF Readiness project and the COI GCF accreditation process, as well as EU COMESA project on strengthening climate services and met agencies and EU GCCA+ initiative.

- The Adapt'Action Enhancing Resilience to Climate Change (ER2C) in Mauritius assignment is providing technical expertise on climate vulnerability assessments, hydrological assessments of drainage capacity in relation to flood risks and identification of adaptation measures in 6 priority sites on Mauritius island. Recommendations of specific interventions for resilience against floods will form part of the RAFE component of the Hydromet project.

Key decision points

- The project preparation will present 1 single project
- Request from Mauritius MoF to present a breakdown of contributions by funding source for each proposed project activity/component.
- AFD (Gestion des Fonds Delegues) will follow up with EUD to support preparation of PAGODA document to facilitate formal process for EUD funding commitment
- Need to ensure that the integration of the RAFE component (Mauritius only) is coherent with the rest of the Hydromet interventions and justifies having a separate sub-project. RAFE is likely to include both soft and hard adaptation measures for flood-risk reduction, including early warning systems and Hydromet monitoring network upgrade. AFD has already met with GCF and discussed the benefit of including RAFE as a locally applied land planning project and complementary to the other Hydromet components. Through RAFE, the Hydromet project would have more direct measurable impacts on final beneficiaries, hence providing greater leverage to the Funding Proposal. However, RAFE includes hard-infrastructure interventions that will unlikely be funded through GCF grants, under the Hydromet project. Advise to underline RAFE in the project proposal as an additional justification to fund and implement the Hydromet project.
- AFD reminded that GCF is keen on states committing complementary investments (seen as necessary for transformational impact). Mauritius may wish to consider financing some of the infrastructure under RAFE. Financial support from AFD is possible through a loan. This also would strengthen the ownership aspect of the Hydromet project preparation.
- National Focal Points (NFP) have been designated for the Hydromet Project Preparation.

Submission of official reports:

- DAI will send the deliverables to AFD (Maurice: Sadna, Adapt'Action: Alexandre, Siege: Nadra) and IOC (JBR + cc Ginna).
- To ensure coordination and transparency, the IOC will transmit the report through official channels (OPLs) to gather feedback/official validation. The OPL will provide official feedback to the IOC, who will transfer the information back to AFD/consultants. COI will manage this process.
- For technical discussions and exchanges, the consultants are authorised to communicate with relevant technical partners.
- Reunion Island is not a Hydromet project beneficiary. Meteo France Reunion through WMO is a technical partner and can contribute to formulation.
- In some countries (e.g. Mauritius) the OPL can organise meetings to discuss deliverable and compile feedback. In other countries, the NFP play that role. In any case, once deliverables are transmitted, there is an expectation that all necessary instances will be consulted and feedback compiled back to IOC.
- The Inception report will be sent for AFD validation. IOC/member states can comment but no validation required.
- The Feasibility Study and Funding Proposal are the official deliverables which require validation from IOC/member states and AFD.

Action points

- DAI to request background documents, complementary project information from COI, AFD, EUD.

- Organise a call with GCF once scope of RAFF project is better understood to check again whether the inclusion of RAFF is relevant and likely to be accepted.
- To justify including the RAFF component in the Hydromet Project, an AFD loan would need to be agreed with GoM to support hard infrastructure financing.
- AFD to look into financing the building of new Met Authority building in Seychelles. Cost estimate by Gov next week (10mill Rupees or 689k USD)
- IOC to communicate formal names of Hydromet NFP
- A Steering committee meeting should be scheduled to formally validate the FS+FP.

Presentation by Ms. Sandhya Devi DINDYAL, MMS under MoEnv, Mauritius

Overview

- ISO certified since 2008 (9001:2015) in accordance to international regulations
- Communicate forecasts to NDRRMC/Gov
- Issues forecast to marine, aviation, local fishermen, construction companies, tourism and ag sector use information
- 7-day forecast (on website), publish monthly and fortnightly issues of rainfall distribution
- Seasonal forecast and seasonal outlooks produced (summer/winter)
- MoU with universities, data free of cost to help out post doc research / dissertation
- Main station in Vacoas, aeronautical met station at plaisance
- Three sections: applied (hydromet, marine met, agro-met, climatology, publication and public awareness)
- Marine met equipment: Wave rider not operational since Oct 2018, tide gauges in place (4) via buoy data, observations on high water etc
- Provide agromet bulletins for 14 regions in the country
- 31 AWS
- Acquired Met Doppler Radar (JICA grant and RoM financed 1/5th cost 500m MUR), radius of 250km for rain quantification. In place and operational since 31st March 2019. Used for extreme event characterisation.
- 150 staff in total at MMS.
- MMS are part of the MoEnv (used to be under the OPM).
- The MMS Act has been drafted, awaits being passed.
- Their budget is separate from the MoEnv.
- They have an obligation to charge users for climate data. Cost policy is negotiated on a case by case basis.
- MMS 2018/2019 budget was 266m MUR (included funds linked to doppler acquisition), 2019/2010 budget is 109m MUR.
- Revenues generated by charging climate data are available from the MoF website.
- For donor projects, MoU are possible to provide data free of charge.

First requirements not exhaustive

- Rain recorders (10 by end of the year with financing support from GoM)
- Waverider: 2 for MRU and 1 for Rodrigues
- Storm surge modelling: upgrade with wave and swells component (to be funded by UNDP)
- Capacity building through post graduate degrees
- Local modelling capacity at MMS

Discussion

- There are several critical sites around the country however AWS are not covering all these critical catchment areas. Need to improve density of AWS.
- No real-time data from AWS, usually data provided within 3 hours (AWS powered by solar energy and configured to optimise energy requirements). Would need range recorders for rainfall to reduce latency.

Presentation from Vincent AMELIE, CEO, Seychelles Met Authority

Overview

- MMS has become autonomous since 2016. They are not budget independent but can decide on the projects to finance.
- The structure includes a section with specialised applications (i.e. Climate change & long- term weather stations, agro-met, hydro-met, aviation met, marine met), additional to operational tasks.
- Collection of rainfall data every morning on Mahe (45 voluntary observation points).
- Want to add AWS, with a threshold to trigger a risk warning
- In the 115 Other islands AWS installed in 2018. Partnered to install low-cost AWS.
- Sea level station monitoring facility (UNESCO)
- Also installed a wave rider buoy (2016), with equipment from Thailand.
- 2nd buoy installed under PUMA project for coastal management (sea surface temp)
- Upper air station (funding from UK met office), data used for forecast preparation and climate modelling.
- Receive models from various institutions (SA, Reunion..)
- Cost recovery: they charge the aviation sector, charge is based on case by case.

Plans ahead and challenges

- Have hired a consultant to design cost recovery scheme (40kUSD), due to start July 2019. Cost recovery would be used to finance other equipment, maintenance. In Tanz, cost recovery provides 35% of met organisation budget. Funding provided by government.
- About to obtain Quality Management Systems ISO 9001: 2015 certification – mainly for aviation sector. Funding provided by government.
- Risk profile (threshold of bad weather events in areas more prone to disasters) -> funding from GCCA+ to develop this
- Strengthened obs network (where to locate the AWS stations). Partnering with regional countries, need to have compatible equipment -> would like funding support for this (GCF?)
- Calibration centre for the region (used to be one in Botswana under SADC) to ensure equipment provides proper reading. Not satisfied with service in Kenya -> would like support (GCF?)
- Upgrade of Synergie & Transmet comms system tool (provided by Meteo France) – system has reached end of life cycle. 350k€ to be upgraded. -> would like support (GCF?)
- Institutional capacity -> would like support (GCF?)

Ongoing projects

- 300K USD – readiness support by DBS to strengthen the NDA ready to vet and support projects for submission to GCF
- Water project (water catchment rehab project by AfBD)
- Seychelles has accepted to host the Regional Climate Portal (Indooceanie Climate Change portal). About to launch in June. Joint management of the portal for 2-year with IOC. Every 2 years SWIO-RCOF event organised by IOC and the data to be hosted in the portal. The interface of data hosted by the website.

APPENDIX 2 Mission Schedule

Acronyms : Marie- Ange Baudouin : MAB; Véronique PASCAL : VPA ; Pascal VENZAC : PVE;

Debasmita BORAL : DBO; Paul VENTON : PAV; Fady HAMADE : FHA; Lino NARANJO : LNA; Julian BERTLIN : JBE

Date	City	Place	Consultant/s	Name/Contact of person	Description
From 23/06 to 16/07 MADAGASCAR					
23/06/2019	Antananarivo	Colbert Hotel	MAB-VPA	Ms. Ginna RAKOTOARIMANANA, Risk Consultant in Madagascar	Overview of main actors working on alert system, NGOs involved and other ongoing projects related to climate services (UNDP, GIZ...)
24/06/2019	Antananarivo	Ministere des Affaires Etrangères	MAB- PVE- VPA-DBO	Multi-stakeholder Meeting (see meeting minutes, Annex 1)	Brief presentation of Hydromet project and consultants' tasks; group discussions around climate services and existing initiatives to strengthen climate services in Madagascar; discussions around access and uses of climate services for climate-sensitive sectors; appointments made for the rest of the week
25/06/2019	Antananarivo	Welthungerhilfe (WHH)	PVE	Mr. Julio RAINIMANANJANAHARY julio.Rainimananjahary@welthungerhilfe.de	Presentation of the FbF (Forecast based Finance) project developed by WHH in cooperation with DGM
25/06/2019	Antananarivo	UNDP	PVE	Ms. Sophie NYIRABAKWIYE sophie.nyirabakwiye@undp.org TTL	Presentation of the PACARC project and the on-going proposal to GCF from UNDP in cooperation with Ministry of Agriculture and DGM; identification of potential synergies with Hydromet
25/06/2019	Antananarivo	Capacity-Building for Communities (C-for C)	MAB-DBO	Ms. Sariaka NANTENAINA, Director of C-for-C Email: sariaka@c-for-c.org Tel: +261 32 05 061 79	Discussion regarding gender baseline in Madagascar, particularly focusing on livelihoods, agricultural households and fishing communities. Received C-for-C's EU funded-Sahala project's review report
27/06/2019	Antananarivo	Direction generale de la peche	MAB	Mr. M. Randriambola TIANA, Directeur de la peche trce2708@gmail.com tel: 034 05 053 18	Discussing the gaps and strengths in accessing and using climate services (weather forecasts and early warnings) for the Fisheries Department; pathways for improvements and needs to include in Hydromet
27/06/19	Antananarivo	AFD	PVE-VPA	Mme Danielle RABENIRINA, chargée de projet environnement rabenirnad@afd.fr tel : 261 20 22 200 46	Link with other ongoing projects; recommendation to enhance the regional aspect of the project because, in Madagascar, the IOC is not clearly known as it refers to Foreign affairs Data to be provided by AFD : gender data

Date	City	Place	Consultant/s	Name/Contact of person	Description
27/06	Antananarivo	BNCCC	MAB-VPA	BNCCC Mr Todisoa MANANKASINA t.manankasina@yahoo.fr Mr Lalason MARCELLIN (Chef de Division Adaptation) lalasonm@yahoo.fr	Presentation of Hydromet project and discussion about sectors' vulnerability to climate-related hazards; identification of existing vulnerability studies and ongoing climate change-related projects in Madagascar
28/06	Antananarivo	Agriculture	MAB-PVE-VPA	Mr. Rakoto MIALINIRAINY Chef de Service d'Appui au Développement des Filières Végétales d'Exportation. Direction d'Appui à la Production Végétale MAEP	Needs of climate services for agriculture and current services done in cooperation with DGM like agricultural calendars and how to support these through Hydromet. Discussing an on-going project with GIZ about vocal dissemination of agricultural advices through cell phones and potential synergies with Hydromet
28/06	Antananarivo	DGM	PVE-VPA	Mme. Nirivololona RAHOLIJAO niriraholijao@gmail.com DGM	Debriefing of the week and needs of infrastructure investment in compliance with other projects from UNDP and GIZ
28/06	Antananarivo	BGNRC CERVO	PVE-VPA	BNGRC-CERVO Mr. Lalah Christian ANDRIAMIRADO Chef de Service Etudes et Veille - CERVO-BNGRC basebngrc@gmail.com lalahchristian@gmail.com tel : 034 05 480 06	Presentation of CERVO operational platform for crisis management; discussing the link with others projects regarding hydro-meter data
28/06	Antananarivo	USAID	DBO	Dr. Eddy RASOANAIVO Food Security Programme Management Specialist USAID – Madagascar erasoanaivo@usaid.org	Discussion regarding food security and gender baseline in Madagascar, gender assessments conducted during USAID's Farano project. Mr. RASOANAIVO introduced Fidy RANDRIANASOLO (Food Assistance Monitoring and Disaster Response Specialist), Serge RAMANANTSOA (WASH Specialist) and Corinne RAFAELL (Gender Specialist), with whom a call was organized on 19/07.
12/07	Antananarivo	ONE Office	JBE	Mr. Pierre RAHAGALALA haga@pnae.mg	Discussing the processes to conduct ESIA in Madagascar and approach to proposal; discussion around vulnerability issues in Madagascar
12/07	Antananarivo	GIZ project office Office	JBE	Mr. Jacques TOHIZARA, Projet Adaptation des chaines de valeurs agricoles au changements Climatiques jacquis.Tohizara@afci.de Mme, Sarah FAVRICHON	Discussion of existing GIZ Agromet project in the South of Madagascar, designed to support poor farmers in drought area. Discussing vulnerability for agricultural production and need for climate-related information.

Date	City	Place	Consultant/s	Name/Contact of person	Description
				sarah.favrichon@giz.de	
16/07	Antananarivo	AFD	JBE	Danielle RABENIRINA rabenirnad@afd.fr	Courtesy visit and presentation of Hydromet project
From 30/06 to 08/07		COMOROS			
1/07	Moroni	ANACM Autorité Nationale de l'Aviation Civile et de la Météorologie	VPA-DBO- MAB-PAV PVE	Mr. Nassur BEN ALI Directeur Général ANACM Mohamed Ahmed YAHAYA Directeur Général Adjoint ANACM Ingénieur SAIFIDINE Mohibaca Baco National Focal Point	General presentation of the project to the General Director of Civil Aviation where Department of Meteorology is situated.
1/07	Moroni	CERVO protection civile	VPA-DBO- MAB-PAV PVE	Colonel Ismael Mr. Illiassa IDJABOU, Sous-Lieutenant, Représentant du COSEP, Point focal national Profil "Risques" iliassa.idjabou@yahoo.fr	Presentation of the alert system as a whole and activation of civil protection action in case of natural disaster crisis; feedback on Cyclone Kenneth for the 3 islands (impacts, responses, recovery process)
1/07	Moroni	Services des pêches	VPA-DBO- MAB-PAV PVE	Mr Kamal MOHAMED, Responsable de suivi VMS et de la Basse de données au CNCSP des Comores kamalmohamed4@gmail.com	Climate services needs analysis and presentation by the General Director of the Service des pêches of its organization.
1/07	Moroni	Service météo	VPA-DBO- MAB-PAV PVE	Ingénieur SAIFIDINE Mohibaca Baco National Focal Point	Rapid visit of the NMHS in Grande Comore and its equipment
2/07	Moroni	Service météo	PVE	Ingénieur SAIFIDINE Mohibaca Baco National Focal Point	Capacity assessment of the met department
2/07	Grand Comore	Ulanga Ngo	VPA-DBO- MAB-PAV-JBL	Site visit in North of Island	Visit of communities impacted by Cyclone Kenneth; focus group discussion to identify early warning received, responses and impacts of Kenneth; and needs to improve EWS at the local level
3/07	Grand Comore	COSEP	VPA	Colonel Ismael Mr. Illiassa IDJABOU, Sous-Lieutenant, Représentant du COSEP, Point focal national Profil "Risques" iliassa.idjabou@yahoo.fr	Cosep alert system implementation and contingency plan activation : case study on Kenneth cyclone
3/07	Grand Comore	Agriculture - CRDE	VPA-DBO- MAB-PAV		Needs of climate services – currently no access to climate services for agricultural activities, and no agromet information available.

Date	City	Place	Consultant/s	Name/Contact of person	Description
3/07	Grand Comore	Direction d e l'Environnement	MAB		Courtesy meeting with the Director, presentation of Hydromt project; document request for latest climate change policy and vulnerability assessment in Comoros
3/07	Grand Comores	AFD	MAB	Mr. Jean-Philippe BOSS, Director; Ms. Aurelie KISCH, Chargee de projets	Courtesy meeting; discussing climate hazards and climate change related problems in Comoros; document request for the last vulnerability assessment produced by AFD
4/07	Grande Comore	Ulanga NGO	VPA-PAV	Site visit in Vouvouni village	Village impacted by flooding; focus group discussion with communities affected by floods to identify needs in terms of better climate services
4/07	Ndrondroni, Moheli	Ulanga NGO	JBE	Site visit in Moheli	Village with a lot of fishermen, impacted during Kenneth by storm surge which have destroyed houses built on the coastline
4/07	Ndrondroni, Moheli	Ulanga NGO	JBE	Site visit in Moheli	Visit and discussion with women farmers working on rice field about climate-related risks and access to climate services
4/07	Ouallah 1, Moheli	Ulanga NGO	JBE	Site visit in Moheli	Discussion about early warnings and climate-related risks with ylang-ylang distillation workers (Renatie Amada)
4/07	Ndrondroni, Moheli	Ulanga NGO	JBE	Site visit in Moheli	Discussion with an intendant at Ndrondroni Irrigation Scheme, and with fishermen on livelihood mode and use of forecasting data.
4/07	Nioumachoua, Moheli	Ecolodge	JBE	Mr. Daniel LAILINA, Director, Park National de Moheli dalayass98@yahoo.fr Jon HILDERANDT info@lakalodge.com	Discussion on tourism and constraints; ecotourism and meteorological data (not collected at national park).
5/07	Grande Comores	UNDP	VPA-DBO	Mr. Mohamed LIHADJI, IT specialist. mohamed.lihadji@undp.org M Yousseuf coordinator manager abderemane.mohamed@undp.org	General presentation of the GCF UNDP project being implemented in Comoros (water security) and potential links/synergies with Hydromet
5/07	Grande Comores	FAO	VPA-DBO	Mme. Alicia NGUETTA alicia.nguetta@fao.org	Presentation of projects related to food security and agriculture which might have link with Hydromet. Information on gender assessment and baseline currently being undertaken in Comoros, particularly with World Bank-GAFSP.
5/07	Fomboni, Moheli	UNDP	JBE	Captain Said Ben OMAR, Director Mansourou Anwadhui RRC/UNDP 2 x UN volunteers Abdou Soimadou Ali MAMADI	Discussion with members of the Risk Reduction and Climate Change Unit on Moheli.

Date	City	Place	Consultant/s	Name/Contact of person	Description
				Project CRCCA abdou.soimadou@undp.org	
6/07	Fomboni, Moheli	Auberge Les Abou	JBE	US Peace Corps personnel	Moheli health and development issues.
5-6/07	Anjouan	Ulanga Ngo	MAB	Mr. Halidi Ahmed Ben ALI halidibenali@yahoo.fr	Site visits and meetings with farming communities affected by cyclone Kenneth; focus group discussions on the losses in the context of cyclones, early warnings and support (or lack of) received and needs of farmers
From 22/07 to 27/07		SEYCHELLES			
22/07	Mahé	Meteo Services	MAB-VPA-PVE-FHA-DBO-LNA-JBE	Mr. Vincente AMELIE v.amelie@meteo.gov.sc	Multi-stakeholders meeting with all concerned stakeholders (institutions) affected by climate hazards, including rep. of agriculture, fisheries, tourism, transport, disaster risk reduction, met. services Case study presentation to illustrate DRR in Seychelles, focusing on a flash flood event in Ans-aux-Pins Scheduling meetings for the week
23/07	Mahé	Ministry of Environment	MAB-VPA-PVE-FHA-DBO-LNA-JBE	PS Louis Agricole (Energy/Environment, GCF NDA in Seychelles) PS Alain de COMARMON (Land Use Planning) Lambert J. WOODCOCK (ACII), HSI INSURANCE	Courtesy visit to present Hydromet project and discuss co-financing commitment from the Government of Seychelles Introducing Hydromet to insurance sector and land use planning
23/07	Mahé, Mont Fleuri	DRDM	MAB-VPA-JBE-PVE	Mr. Paul LABALEINE, Director DRDM plabaleine@drdm.gov.sc Ms. Aisha RACHEL Planning, Intelligence, Research and Information Management Department of Risk and Disaster Management (DRDM) P.O Box 113 Victoria Mahe Global Village. Suite No. 3 Mont Fleuri, Mahe Republic of Seychelles aisha.rachel@drdm.gov.sc tel: + 248 4672200/226	Discussion about disaster risk management in Seychelles

Date	City	Place	Consultant/s	Name/Contact of person	Description
24/07	Praslin, La Digue	Praslin, La Digue	MAB-VPA-PVE-FHA-DBO-LNA-JBE	Meteo services	Site visit of Praslin and La Digue to observe coastal erosion problems and measures implemented by the government/private sector to protect coastal areas
25/07	Mahé, Victoria	Ministry of Environment, Climate Change Unit	MAB-VPA-JBE	Ms. Elissa LALANDE Senior Policy Analyst for Climate Change Department of Energy & Climate Change Mins. Environment, Energy & Climate Change elalande@env.gov.sc tel: +248 4670 400	Discussion of existing climate change related projects in Seychelles; document exchange: team received Seychelles' climate change adaptation strategies (Coastal Management Plan; Wetland Management Plan)
25/07	Mahé, Victoria	Ministry of Social Affairs, Community Development and Sports	DBO	Mrs. Linda WILLIAM-MELANIE P.O. Box 190 Unity House, Block C, 2nd Floor Victoria, Republic of Seychelles lwiliam@gov.sc tel: +248 281621	Discussion of current levels of gender mainstreaming across Ministries and government priorities regarding gender inequalities. Needs identification regarding youth, gender, disaster risk reduction and climate information, along with policy-level interventions both currently in the pipeline and recently published. SADC gender and climate change protocol, and adoption of these guidelines in Seychelles.
25/07	Mahé, Victoria	SFA	VPA-PVE-MAB-JBE-LNA-FHA	Dr Nathalie Bodin Seychelles Fishing Authority (SFA) P.O. Box 449, Fishing Port, Victoria, Seychelles nbodin@sfa.sc tel: +248 467 0337 whatsapp: +248 256 9039 skype: natbod34	Discussion of climate vulnerability in the fishery sector and needs to access climate services; document request for vulnerability assessment in the fishery sector and economic data about losses related to climate change-related hazards, e.g. algal blooms (identified as key hazards for artisanal fishery in Seychelles)
25/07	Mahe, Victoria	Waste Enforcement and Permit Division	JBE	Ms. Nanette LAURE, Waste Enforcement and Permit Division n.laure@env.gov.sc	Discussion of ESIA processes in Seychelles
26/07	Mahé, Ans-aux-Pins	DA (district authority)	VPA-MAB-LNA	ANSE AUX PINS, District Authority Travis CHANG PEN TIVE tchangpentine@gov.sc 2724169	Discussion about flash flood risks in the district, access to, and dissemination of early warnings at the local level, local district contingency plan and local operating system for case study
26/07	Mahé Victoria	Aviation	VPA-PVE-MAB-JBE-LNA-FHA	Meteo Services	Wrap up session with the NHMS team

Date	City	Place	Consultant/s	Name/Contact of person	Description
26/07	Mahé Victoria	Insurance HSI	FHA	Mr. Lambert J. WOODCOCK (ACII), Chartered Insurer General Manager H. Savy Insurance Company Limited PO Box 887 Victoria Mahé Seychelles l.woodcock@hsi.scl / www.hsi.sc tel: +248 4280 400 direct line :+248 4280 402 fax +248 4321 666	Insurance companies have direct interest with an EWS. Discussion about the contribution of an EWS to avoid damages and costs. Costs avoided could contribute to reduce insurance premium. .
From 29/08 to 02/08		MAURITIUS			
30/07	Port Louis	Foreign office	MAB-VPA-PVE-LNA-FHA-DBO	Multi-stakeholder meeting organized by the OPL and Foreign Affairs for Hydromet project	Multi-stakeholders meeting with all concerned stakeholders (institutions) affected by climate hazards, including rep. of disaster risk reduction, met. Services, water management, land drainage authority; brief attendance of GCF NDA (Rachna RAMSUM, Ministry of Finance) Scheduling meetings for the week
31/07	Vacoas	MMS	PVE-LNA	Mr. Renganaden VIRASAMI and Mrs. Sandhya Devi DINDYAL Mauritius Meteorological Services	Presentation of MMS activities, equipment and staff.
31/07	Rose Hill	WRU	MAB-VPA-FHA	Mr Lomush JUGGOO, Director, WRU ljuggoo@govmu.org Mr. Mahendra Kumar BISSESSUR Ministry of Energy and Public Utilities Water Resources Unit (Meeting with Director)	Presentation of Hydromet project and identification of pathways to improve access and uses of climate services at WRU
31/07	Ebene	IOC	MAB-VPA-FHA	Mr. Jean Baptiste ROUTIER jb.routier@coi-ioc.org Indian Ocean Commission	Presentation of the mission outcomes; discussion of the institutional arrangement for Hydromet and potential role of IOC as executing entity
31/07	Ebene	Business Mauritius	MAB-VPA-FHA	Mr. Mickael APAYA, Head of Sustainability and Inclusive Growth m.apaya@businessmauritius.org	Presentation of Hydromet project and discussion of potential needs for climate services among business organizations in Mauritius; identification of potential beneficiaries of the met services.
31/07	3rd Floor, Ken Lee Building, Edith Cavell Street, Port Louis	Shipping Directory	PVE-LNA	Mr. Louis Alain Enrico DONAT (Director of Shipping) Ms. Varsha RAMLAUL Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping (Shipping Division)	Presentation of shipping activities in Mauritius and needs of climate services

Date	City	Place	Consultant/s	Name/Contact of person	Description
31/07	Citadelle Mall Sir Virgil Naz St, 6th Floor Port Louis	NDRRMC	PVE-LNA	Ms. Shivane APPADOO Ms. Smreetee CYPARSADE National Disaster Risk Reduction and Management Centre	Presentation of risk reduction activities in Mauritius and needs of climate services
01/08	Reduit		FHA-LNA	Mr. V NUNDLAUL National Parks and Conservation Services (Ministry of Agro Industry and Food Security)	Discussion of how climate services could improve agriculture.
01/08	Vacoas	MMS	PVE	Mr. Renganaden VIRASAMI and Mrs. Sandhya Devi DINDYAL Mauritius Meteorological Services	Establishment of the list of activities to be supported by the project
01/08	Citadelle Mall Sir Virgil Naz St, Port Louis	LDA	MAB-PVE	Mr. Rajaram LUXIMON Land Drainage Authority	Presentation of Hydromet project and identification of needs from LDA that could be integrated into the project; document request for Mauritius maps with drainage system and flood- prone areas
01/08	Ken Lee Tower, Port Louis	Climate Change Unit, Ministry of Environment	MAB	Mr. S BUSKALAWA sbuskalawa@gov.mu.org	Presentation of Hydromet project; discussion of existing climate change-related project in Mauritius
01/08	Ministry of Tourism Level 5, Air Mauritius Centre, John Kennedy Street, Port Louis.	Tourism	FHA	Ms Lalita SANSPEUR, Principal Tourism Planer	Discussing the needs of the tourism sector for Climate Services and EWS.
01/08	Caudan, Port Louis	AFD	MAB-PVE-FHA	Mr. Andre POUILLES-DUPLAIXA, Director pouilles-duplaixa@afd.fr	Discussion of the mission outcomes and future orientation for Hydromet project development
02/08	Albion	Fisheries Research Centre	PVE	Mrs Yajoshi BASANT RAI (Assistant Director), Mr Pradeep NEERMUL (Scientific Officer), Mr Sanjeev LECKRAZ (Scientific Officer), Mr Dharmendra DEGAMBUR (Scientific Officer)	Presentation of Hydromet project and identification of needs from Fisheries that could be integrated into the project
02/08	Gender Unit, 6TH Floor CSK	Ministry of Gender	DBO	Mrs. Ranee NUNDAH Gender Coordinator	Brief presentation of Hydromet project and its gender equality goals (both nationally and regionally)

Date	City	Place	Consultant/s	Name/Contact of person	Description
	Building, Remy Ollier Street, Port Louis.	Equality, Child Development and Family Welfare		<p>snundah@govmu.org tel: +230 52562493</p> <p>Mrs. N. SEEREKISSAN Gender Coordinator nseereekisan@govmu.org tel: +230 2063808</p> <p>Mrs. Kate MAHNIEU-KOTADOO Gender Coordinator <u>mah-nieu@govmu.org</u> tel: +230 59020198</p>	<p>Discussion of gender mainstreaming capacities and activities among different governmental units, particularly gender cell within the MoE.</p> <p>Identification of priority issues of men and women, particularly with regard to flash floods, losses incurred due to port closure, in the backdrop of scant, often inaccurate, meteo information and services.</p>

APPENDIX 3 Comoros Pre-Validation Workshop notes

Etude de faisabilité du projet régional Hydromet COI/Adapt'Action AFD Atelier national de pré-validation des interventions Comores, 3 Septembre, Hôtel Le Retaj, Moroni

Participants :

Bureau d'études DAI : Marie-Ange Baudoin, Pascal Venzac, Catherine Wallis
PTFs: AFD (Philippe Bosse), PNUD (Mohamed Lihadj), Croissant Rouge (Ali Petamed)
Représentants Gouvernement (20)
ANACM/Météo, SG Ministère des Transports Maritimes et Aériens, Direction de l'Agriculture, Direction de la Pêche, DGEF, DNSAE, Garde Cotes, INRAPE, ONG Ulanga/Université des Comores, SONEDE, Juriste.
Représentants Mohéli (3) : Chambre agriculture, DR tourisme et DR pêche
Représentants Anjouan (3) : Association pêcheurs, DR tourisme et DR pêche



Retours

Composante 1

- Quelle serait l'implication des universités des autres régions en lien avec l'ANACM ? Dans les formations prévues penser à la question de la pérennité (personnes formées doivent rester en poste)
- Commentaire Pêche : Il faudrait que les informations qui récupère l'ANACM puisse aussi arriver utilisateurs finaux. Enjeu de la transmission des informations. Mettre l'accent sur les activités à mettre en œuvre. DAI : focus sur User Interface Plateforme, On reviendra sur le développement de services pour la pêche dans la composante 3.
- Mr Ouledi, ULANGA, Resp du Master GRC : on ne doit pas cibler le choix de formation pour une structure donnée (ANACM). Ce serait répéter les erreurs du passé. Il faut former dans le cadre d'une formation initiale. Toucher un plus grand nombre d'étudiants. Prendre en compte l'existence de l'Université des Comores depuis 20 ans. DAI : bien note.
- Mention des bouées : besoin de formation sur la météo marine.
- Mention des Bénéficiaires direct

Composante 2

- Serait-ce pertinent d'utiliser des relais pour transférer les infos en temps réel auprès des utilisateurs des services climatiques. Tiendra-t-on compte de renforcer un Equipement météo en lien avec les utilisateurs.
- Le PNUD a prévu d'appuyer la ANACM sur les équipements également. Besoin de se coordonner.
- Comment se fait l'accès avec les utilisateurs de l'information ? Quelles sont les interfaces prévues ? Quelle sera la collaboration avec les organismes de télécommunications ?
- Besoin clair de relever le niveau de la qualité des prévisions de Comores et des systèmes de communication. Pour le moment nous passons via l'ASECNA pour transmettre les données synoptiques vers Madagascar.
- Question des inondations : insistance sur l'aléa inondations par rapport à la pluie. Le projet propose-t-il des mesures pour la lutte contre les inondations de déferlement ?
- Une mission d'analyse WB post Kenneth est en cours. Complémentarité des projets. Besoin claire de prévisions plus fines (à l'aide d'une bathymétrie côtière établie) pour modéliser érosion des côtes.
- Directeur Météo : remarque sur le besoin d'inclure le réseau pluvio/sonde, c'est à rediscuter. Autre priorité : question des marégraphes. Un seul marégraphe dans le port de Moroni. Il faudrait aussi équiper les îles.
- Reste à chiffrer le marégraphe, réseau foudre.
- Bouée : quid des mesures de vent, pression, vent également en plus des mesures d'hauteur de vague. Pascal : il faut en discuter car ce type de bouée coûte plus cher.
- Systèmes de production TV : pourra aussi inclure d'autres canaux de coms (e.g. radio, SMS etc.), ce qui est prévu dans le système de production générique
- Descente d'échelle : objectif du radar est de localiser les pluies, important car beaucoup de microclimats.
- Demande du Directeur météo de revoir le budget pour inclure un appui sur les prévisions marines.

Composante 3

- Correction dans le schéma DRR : le COSEP n'a pas pour mission de faire des prévisions de crues, c'est aux services hydrométéo. Il y a eu 15 personnes de la météo formées justement là-dessus à Madagascar.
- Le COSEP est la composante fonctionnelle du Direction Générale de la Sécurité Civile
- AFD : penser à prévoir un fonds de roulement pour permettre le fonctionnement du NHMS. Important également de prévoir une réflexion sur le développement pérenne de l'organisation (ANACM), au-delà de la provision d'équipements et de formations. Penser à renforcer les ressources humaines et se donner le moyen de travailler sur les 3 îles (bien étudier la situation initiale pour comprendre les blocages avant de lancer des interventions)
- Important de promouvoir et d'impliquer l'Université des Comores dans les activités de formation et de jumelage éventuel avec d'autres centres universitaires de la sous-région, y compris sur Mayotte et la Réunion
- Anjouan pêche : les pêcheurs utilisent davantage les prévisions de Météo Mayotte car considérées plus fiables. Comment compte-t-on communiquer les informations qui seront produites par l'ANACM ?
- Relais possible des alertes dans les communautés : les mosquées
- Il existerait une « plateforme » regroupant l'INRAPE, COSEP etc.
- Consensus de la salle sur le besoin de renforcer le plateau technique de la météo en parallèle des liens avec les utilisateurs des services climatiques.
- Il y a eu des tentatives de transmissions de prévis météo aux pêcheurs via SMS mais cela n'a pas abouti.
- L'Alerte jaune informant de la venue du cyclone Kenneth est parvenue 24 heures après l'émission de l'alerte par la météo.
- Autre institution qui pourrait être incluse dans la chaîne de valeur: l'agence du numérique
- Le Réseau National des Aires Protégées est un autre acteur important qui pourrait vouloir bénéficier de services climatiques

Autres projets :

- PNUD appuie également l'ANACM. Il est également prévu un radar a priori, penser à coordonner.
- Projet PNUD FVC sur la résilience des ressources en eau, inclut des équipements de pompage et réservoirs, budget 40m
- Bien penser à mentionner la complémentarité entre Hydromet COI et le PNUD aux Comores
- Intégrer la spécificité des Comores, un archipel d'îles proches, notamment prévoir les budgets pour améliorer la communication entre les îles et leurs institutions. Accepter que cela peut engendrer des coûts supplémentaires.
- Projet BAD sur l'e-gouvernance
- Projet CRCCA sur l'agro-météo (PNUD ?)
- Project PNUD GIRE en cours
- Projet régional Mozambique, Malawi, Comores sur Résilience Urbaine, vient d'être acceptée par le FVC.
- Appuis aussi ponctuels par l'OMS dans domaine de la sante
- Project WB sur les infrastructures routières (projet de reconstruction suite à Kenneth), beaucoup de dégâts constatés dus à la houle et l'érosion côtière qui s'ensuit.
- Données bathymétriques dérivées d'infos satellitaires. Plus d'équipement en mer. Collaboration avec RIMES (Bangkok) pour renforcer ces données. Formations faites en Inde. En attente de la poursuite du financement pour terminer.

APPENDIX 4 Madagascar Pre-Validation Workshop notes

Etude de faisabilité du projet régional Hydromet COI/Adapt'Action AFD Atelier national de pré-validation des interventions Madagascar, 29 Aout, Ministère Affaires Etrangères, Antananarivo

Participants :

Bureau d'études DAI : Marie-Ange Baudoin, Pascal Venzac, Catherine Wallis

AFD : Alexandre Lauret, Danielle Rabenirina

GIZ/PRCCC/PAGE : Narindra Razafimalala

12 participants Gov : DGM Directrice, DGM/DEM, DGM/DRDH, SFCFE BNCCC /REDD+, CPGU, Ministère Sante, MAEP/DGDP Pêche, Agence des Transports Terrestres, Confédération tourisme, MAE.



Retours

Composante 1

AFD Madagascar : Comment est fait le lien avec la politique nationale sur les objectifs de formation, pour aller vers la pérennité des actions Hydromet ? Besoin de voir l'arrimage avec la stratégie nationale actuelle.

Réponse DAI : Les interventions seront cohérentes avec le plan de renf. institutionnel de la DGM et de la stratégie nationale. Compatible avec les ressources nationales/budget. Hydromet prévoit le renforcement du cadre de travail, compétences (notamment sur les nouveaux instruments météo/équipements).

Directrice DGM : attention aux aspects régionaux et au risque de duplication.

- Stratégie régionale de modélisation numérique.
- Par exemple SADC développe également des projets (renf de cap national, chaque pays dote d'équipements puissants/ordinateurs DTM).
- Tous les membres de la COI participent au SAR-COF et cela duplique avec SWIO-COF.
- Centre RCC : création d'un centre de formation à l'île Maurice.

Ne pense pas que l'aspect régional doit être mentionné à cet atelier, se concentrer sur les éléments malgaches avec les secteurs représentés autour de la table. Besoin d'une coordination avec les autres projets au niveau des PTF. Projets en cours : Agromet, Association Régionale

(Afrique) 1. Dans projet PACARC : projet de travail sur politique nationale de la météorologie (statut, pérennisation des infrastructures météo).

4 projets en préparation pour le GCF :

- Renf Cap pays SWIOC Implémentation Tropical suite au cyclone IDAI comite des cyclones de la COI,
- Hydromet UNDP,
- RIMES système alerte précoce¹, et
- Adapt'Action Hydromet

BNCC/NDA : Il n'y aura pas de lettre de non objection si on ne clarifie pas le non chevauchement. La cible est la DGM. Quel va être l'impact concret au sein de la DGM. Changer le nom du projet autre que Hydromet car duplication avec le projet PNUD.

Autre commentaire :

Activités transversales dans le projet (C1 : formation sur suivi évaluation). Pourquoi seulement la DGM et qq secteurs ? DAI : en effet pourrais également inclure au besoin le BNGRC

Composante 2

CPGU :

- Sur mise en place du radar, donner des critères sur le choix du pays.
- Renf le système pluviométrique. Est-il prévu de mettre des stations hydrométriques plutôt pour prise en compte du risque inondation ?
- Propose d'évaluer la capacité actuelle de la DGM sur système d'information et recevoir les équipements. Est-ce que la DGM est bien équipée pour accueillir les centres de calcul ? Cela va influencer les conditions de fonctionnement pour le service de données.
- Court/Moyen terme : quelles activités sont pour la DGM ou bien pour tous les membres de la COI.
- Météo France Réunion : formation prévue sur amélioration prévisions dans l'IO, comment prioriser pour Madagascar ? Comment différencier avec ce projet Adapt'Action.

DGM

- Enjeu pour projections climatiques résolution haute sur Mada, très différent par rapport aux autres états COI plus petits
- Projet PRADA (EU/GIZ). TdRs élaboré. Activité prévue 2020 sur transmission de données en collab avec THAMO.
- PRADA et PRCCC : renf de la capacité de la DGM prévue (collecte et transmission de données).
- Besoin d'un atelier de coordination avec la PTFs, a l'heure actuelle pas de transmission de ces données en services climatiques.
- Besoin de données de marées. Priorité de Madagascar en matière d'observations marines, assistance portuaire. Tellement de projets de faisabilité mais peu d'action concrètes. Que le marégraphe en place.
- Veut des choses concrètes, a besoin d'être mis en œuvre le plus tôt possible en 2021.

Pêche :

- Manque constaté : données marines ?
- Pluviométrie. Y-il un moyen de prévoir la grêle ? Surtout les vignobles, pour réagir à temps. Réponse DGM : Earth Networks. Lancement demain sur lancement capteurs de foudre. Refabrique une image proxy radar et reconstruire images de la pluie/grêle.

AFD :

- Besoin de délimiter les secteurs d'intervention. Idée de se concentrer sur certains secteurs ?

Réponse DAI :

¹ Regional Integrated Multi-Hazard Early Warning System for the Afro-Asian Region¹

- Radar Mada, rayon d'action 200-400km. Il faudrait plusieurs radars pour couvrir le pays. Proposition de le positionner autour de Tana. Prévisions sur pluie qui tombe, besoin de trouver un site haut sur Tana. Pas besoin de préciser la localisation à ce stade.
- Capacité assessment : aspects humains étudiés en partie au cours de la FS. Capacité structurelle, besoin de climatisation et sécurité électrique, pour mise aux normes, connexion télécom et internet
- Réseau hydro serait pris en charge dans le cadre du projet PNUD (cf.doc PPCR 2017)
- Projet BRIO a la COI. Résolution de 12 x 12 km. RIMES : exploitation d'autres données.
- Bouée prévue pour les observations en mer. Mesure de hauteur de vague. Données arrivent à la DGM. Bouée permet de mieux calibrer les modèles. Aspects marins pourra être considéré sur des zones de pêche importantes.
- Sur infrastructure Composante 2 : équipement assez transversal. Concentration sur secteurs va se faire sur composante 3.

Composante 3

DGM :

- Besoin de considérer des actions sectorielles (santé, tourisme, transport)
- Banque Mondiale : projet de sécurité routière. Approche : appli alertes pour les routiers. OMM va réglementer secteur urbain. Liste des secteurs qui vont être ajoutés : santé, énergie, urbain, transport terrestre, tourisme. Agriculture déjà réglementé, transports maritimes et aériens.
- MATHPT (infrastructure) : Atelier PRCCC le 28 août. Politique Nationale des Investissements en Infrastructure. Formation sur mainstreaming des services climatiques. Besoin de renf. Ont bien exprimé leurs besoins en services climatiques. Suite logique : création plateforme usagers climat/usagers.
- DGM va convoquer ATT et transport aérien. Fait partie du plan 2019. Projet PACARC (elab pol national climatologie et plateforme NCCS interface usagers secteurs). Déjà des avancées sur secteur santé : bulletin climat/santé. Réunion le 9 sept sur interface avec usagers secteur agricole.
- Propose de se projeter sur des activités réalistes. Focaliser sur les secteurs. Besoin de recaler avec les besoins nationaux et la DGM.
- Prévoient un déploiement des ingénieurs dans les régions. Lignes de crédit pour les régions, pour inclure les services météo dans les régions. Besoin de travailler sur mise en place interface usagers au niveau régional. Usagers régionaux pressés d'avoir interlocuteurs météo. MAEP ont déjà toutes des directions régionales. 20 services régionaux de la météo créée. Il en reste 3 à créer en 2020.
- DRDH travaille pour fournir des prévisions saisonnières au niveau des districts. Infos régionales pas intéressantes pour usagers. Services régionaux auront à élaborer des prévisions saisonnières au niveau des districts. Down-scaling. Grand besoin de renforcer.

Transport routier/aérien. Majorité des compagnies aériennes sont partenaires. Déjà des stations spécifiques pour le transport terrestres. Besoin de stations sur glissements de terrain.

BNCCC : à l'écoute de tous les secteurs. Ce qui compte, la DGM bénéficie de l'appui pour que le pays soit plus résilient. Besoins doivent être manifestes par les secteurs.

Réponse DAI :

- Appropriation nationale fera que d'autres secteurs pourront être inclus. Si pour météo routière besoin de stations sur zone spécifique – on pourra transformer une station agro met en station routière.

Autres projets :

- Projet MEDER (réseau de radars, détection de foudre)
- Project IOS-NET COI, secteur Energie avec univ Réunion. Stations de rayonnement solaire a Diego Suarez et Tana. Lancement à Maurice du 4-6 sept. DGM en charge d'installer les capteurs
- Secteur tropicaux OMM qui gère

- Project CREWS, WB GDRR/UNISDR/OMM, 23 m de USD sur Mada, en cours de préparation (John Harding).
- Exemple cite du Burkina CREWS : mise à la norme des stations aérodromes une priorité.

Montage institutionnel

- Dans définition des fiches de poste, voir la fréquence des missions dans les pays pour faire le suivi.
- Recrutement externe et rattache à la Directrice. Assistant Technique qui rend des comptes au DGM. PRADA va recruter un allemand qui sera base à la DGM.
- Réunions régulières avec autres pays : pas à l'aise si fonctionnaires ne participent pas. Il faut que la personne pertinente techniquement soit impliqué.
- Aussi besoin d'un point focal a la DGM qui représenterait le projet sur Mada.

Calendrier :

Mi-octobre : session régionale cyclones, puis COP

Alexandre :

- En tant que bailleur, fait son possible pour s'harmoniser avec les PTFs. Besoin de l'appui des autorités nationales pour identifier projets à venir.
- Retour des utilisateurs : très utile pour nous de les recevoir, pour définir des activités qui correspondent bien aux besoins
- Role DGM/NDA Mada de priorizar. Il faut démontrer aux autres bailleurs que ce projet Hydromet répond aux besoins et prioriser. Autres projets pas au même stade de développement.

DGM : bien détailler les thèmes et interventions pour que la DGM puisse se prononcer.

Frais de gestion : NDA/unité de gestion de projet – sera à clarifier.

Actions

- Retour attendu du DGM sur tableau des détaillé des interventions, en précisant les priorités, autres initiatives en cours et stade d'instruction/avancement.
- DGM partage les TdRs PRADA avec THAMO
- DGM : Envoi DNQ/PNB chronogramme aviation civile
- Besoin de lancer les invitations à l'atelier régional au moins un mois à l'avance. Cas ou les fonctionnaires utilisent leurs passeports civils (visa ensuite remboursés par SADC/ OMM)

APPENDIX 5 Mauritius Pre-Validation Workshop notes

Etude de faisabilité du projet régional Hydromet COI/Adapt'Action AFD Atelier national de pré-validation des interventions Mauritius, 6 September, IOC Commission Offices, Ebène

Participants:

DAI: Marie-Ange Baudoin, Pascal Venzac, Veronique Pascal, Fady Hamade, Paul Venton, Rachael Steller

Mauritius Key Stakeholders: P. Sohatee-Tulloo (Shipping Division, Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping); S. Cootapen (Fisheries, Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping); R. Ramsurn (Ministry of Finance); A. Goung (National Parks and Conservation Service); N. Seerunden (Land Drainage Authority); S. Ragoonaden (MACOSS – NGO); S. Cypaisade (NDRRMC); D. Remeuk (Ministry of Foreign Affairs – RID); M. Rucktooa (Ministry of Foreign Affairs – RID); Y. Kato (Japanese Embassy); R. Dhurmea (Meteorological Services); Z. Jhumka (Forestry Service); A. Lauret (AFD); C. Marie (AFD); R. Virasau (Meteorological Services); P. Ramnauth (Ministry of Tourism); S. Ramdowar (Ministry of Public Infrastructure and Land Transport); S. Ramchura (UNDP); M.K. Bissessur (Ministry of Energy and Public Utilities)



Component 1

- When purchase equipment, have a maintenance contract with supplier? But this is limited, usually to only one year. Doesn't cover ongoing calibration or issues after maintenance contract.
- Focused more on meteorological services, less on hydrological? Concern about increasing flash floods, need to capture water. Need institutional strengthening of hydrological services (WRU). Need more discussion of drought. Not visible in components.
- Which organisation needs strengthening regarding hydrology.
- Health and agriculture, as end users, need to be involved.
- But equally, GCF likes focused projects. Can expand in phase 2.
- Also end users come into Component 3.
- In selection of sectors, have to see where there are most climate-related losses, so can rationalise to GCF that project is climate related.
- Document re renewable energy to be shared.
- Already have EWS for tourism sector, not new?
- Sustainability – R&D component?
- Link to NDRRMC? In component 3.
- Water sector has data collection mandate.
- Hydrological engineering
- Matrix of which institutions will benefit, identify who want to train and for what purposes

Component 2

- Data collection system in each country but similar. Experts in each country working together to set up weather monitoring system. Will have to decide whether to have computing centre in each country or centralised.
- One tender for all equipment/infrastructure
- Land drainage master plan overlap?
- Regional maintenance *and calibration* centre
- Basis of cost analysis? Other similar projects and experience. Can use current GCF project for basis.
- Use of cloud to host data to save hardware costs? A choice available regionally, can be left open in feasibility study, and can decide during technical study at start of project.

Component 3

- If something already in place for tourism, should we focus on something else, like health? Water?
- Look to NDS 2015 for key actors
- Specific, dynamic flood model needed for each country
- Forecasting exists, but could be improved, and impact could be improved. In other countries don't have forecasting, so not all interventions will be the same across region.
- Data is collected, but not in user friendly format or analysed. Need to modernise the system.
- Showcase hydromet and climate services with water, rather than mixing early warning and climate services. EWS is short-term (hours or days) alert, whereas climate services are longer term.
- Don't know when to issue the early warning without the modelling to back it up (climate services)
- Acting on early warnings? NDRRMC working on this through Gap Analysis
- Global model to be adapted to each country. Requires accurate data at all levels – from what is in the atmosphere to what is happening below ground. Need to constantly implement new technology into model. Then each country works with the global model to make it more locally precise.
- Have to start somewhere – before producing detailed climate services, need a model to work from and refine.
- Model needs to include parks, not just built up areas. People spend their weekends in parks, and need to be evacuated as well.
- NGOs focused on climate change need to be included in the project – in implementation, through sensitisation workshops
- World Meteorological Services – need to look at the 5 priority areas, includes health
- Ecological model needed to address, for example, wetland backfilling

Related Projects

- National Environment Fund projects (see budget): Alert system, other related projects
- NDRRMC: end of March next year multi-hazard EWS project
- Land Drainage Master Plan
- Dam break analysis (national)
- MMS setting up calibration lab (JICA)
- Limited Area Model (LAM)
- Dissemination of info to fishermen – GoM
- Interest in funding of new building for MMS – unlikely through GCF, but maybe co-financing by GoM
- Project, possibly UN to get all data held in the same place?

Next steps : Health and WRU to be invited to next workshop

APPENDIX 6 Seychelles Pre-Validation Workshop notes

Etude de faisabilité du projet régional Hydromet COI/Adapt'Action AFD Atelier national de pré-validation des interventions Seychelles, 9 September, Seychelles Trading Company, Victoria

Participants:

DAI: Marie-Ange Baudoin, Pascal Venzac, Veronique Pascal, Fady Hamade, Paul Venton, Rachael Steller

Seychelles Key Stakeholders: V. Amelie (Seychelles Meteorological Authority – SMA); H. Seeward (SMA); B. Andrade (SMA); M. Denis (SMA); E. Lalande (SMA); A. Lauret (AFD); T. Chang-Pentive (Local Government); D. Rosette (DRDM); V. Berlouis (DRDM); V. Kumar (SMA); G. Alexis (Public Utilities Corporation – Water Resources); S. Larue (Seychelles Agricultural Agency); L. Valentin (SMA); N. Lalande (SMA), S. Morgan (MEELC); N. Bodin (Seychelles Fishing Authority); G. Bijoux (SMA);



Component 1

- Regional climate services strategy – there is a template on strategy, don't need to reinvent the wheel. Should keep it there because need it, but because have an idea already don't need to budget USD 300,000. (Vincent)
 - Have a national CS strategy, and it is very comprehensive. Can this be used alongside regional strategy? National strategy needs update, policy is being drafted and makes room for strategy update. Yes – can do, this will be adapted to each country as others in the region don't have. (Enviro Dept)
- What capacity building does IOC need? Have a lot of difficulties with other projects. Going to have a regional centre anyway, likely technical. Don't need USD 300,000 for it, depending on the plan and what needs to be strengthened. IOC already has a process to strengthen their capacity, as discussed at their regional meeting 2-3 weeks ago. (Vincent)
- Regional Numerical Weather Prediction a good one. (Vincent)
- Already have local recruitment and training plan for SMA, can be removed. (Vincent)
- Location of maintenance workshop – want to know where will be when contributing, rather than having everything in Mauritius. Difficult to send people there. (DR)
- Small training centre in Mauritius. Can develop something here too? Name in advance that certain things will be in each country. Calibration workshop should be regional, but want to argue for it to be here. (Vincent)
- Access to credible data required for policymakers in Dept for Enviro. Seychelles hosting User Interface Platform (UIP) at the moment that will be strengthened. Departments will have to have arrangements with SMA, goal of the project to improve the data and enable data sharing.
- Why flood on Components page? Too narrow as there will be other issues from climate change. Can amend this through discussion of ranking of key risk for different stakeholders. Better heavy rainfall, flooding and landslides. Need to also consider factors

that influence this such as land drainage – need to ask what is the main issue? Here flooding and landslides, or base it on hazard, heavy rainfall, through which follows flooding and landslides in certain places with impacts on certain places and communities in a unique way. May have greater ability to predict heavy rainfall, but what are the implications for planning, early warning, etc? Regarding training, also need to define triggers – what is “flooding”?

- Sea surface temperature, coral bleaching – scope for it in project. Done globally, but could be downscaled through the project.
- Fisheries: in each box, who are the main stakeholders? Fisheries interested in floods, so can be added, and interested in training, monitoring. Want to have exchange to make sure it meets their needs, even if not as involved as SMA.
- GMES? Project for coastal erosion under IOC
- Sea Safety: forecast of sea state, EWS advising not to go to the sea based on adverse forecast.
- Agriculture sector also suffers a lot during heavy rainfall. No CCA/DRR plan for agriculture. Would be useful. Seychelles Sustainable Development Strategy (SSDS) could be used as a basis. Some have been achieved and some haven't, but haven't done an implementation stocktake.
- Stakeholder training outside SMA? Yes, depending on need. But need tools that will last, not just short-term training that everyone forgets. Looking at one year training, or Masters/PhD. Have local GIS expert – Justin.
- SFA would like to have enviro data expert, mainly for sea. Want training (Masters/PhD). DRDM also wants to be considered for training. And hydrology unit – need hydrologist. Requires FS to include commitment to recruit and retain from govt.
- Have just completed Seychelles National Integrated Emergency Management Plan (becoming official in October), and local govt is important in that. Need to consider training for them.

Component 2

- Climate related risk maps in CMP – can be very useful for this component
- Doppler radar – costs for developing access not included? No, but know where to place it on the mountain, and there could be co-financing.
- Storage of data including hydro? Open to including that with SMA. Also need to ensure software is compatible.
- Agreed met will host hydro data. (Vincent and Elissa?)
- World Bank risk mapping project in the coast?
- Already have a good climatological database mgmt. system, so can shift the funds
- End user production system – integrated into forecasting system, but still a stand-alone activity as it is about collecting data from a broader base and making it accessible.

Component 3

- Tourism products – there are different types – sustainable/ecotourism, coastal tourism, hotels on shoreline, what is the focus? Providing info to all – rather than going to google, hotels go to SMA info, but also want kitesurfers, eg, to check. Equally, want to provide long-term products to tourism industry so they can plan long-term. All products have shorter and longer term.
 - Tourists becoming more demanding re weather expectations for planning. It is an important sector and dynamic. Fady working on it.
- Cost of app development? Don't have one but believe it's good for public. DRDM has an app in development for early warning and interaction with public. Don't have option for SMA to disseminate forecast. Each line of budget includes some that goes for the app, or can use to enhance website.

- Role of DRDM in EWS – would be using hydrological models to disseminate info to public. Difficult to share in real time as receiving data – not currently a mechanism, need to compute in house, want to build up hydrological capacity
 - Met offers to do modelling and disseminates warnings, DRDM coordinates response to modelling and actions through national emergency operating centre. DRDM decides whether to activate NEOC based on the warning. But good for DRDM to attend training to understand background to modelling.
- Data sharing – funds towards security for those networks. Concern about dissemination of inaccurate data on social media that conflicts with DRDM message. Need to strengthen DRDM voice, including through reliable data.
- Education of the public on their role, rather than relying on agencies exclusively (Sophie). Paul: unless results in action, EWS is a pointless action. Trying to build in engagement of different user groups in product design, determine best dissemination mech for each. In that, building of trust and recognition of agencies as a byproduct that counteracts misinformation as established as a trusted source, but takes time to build up. Developing processes in this project that engage with public – communication strategy and training for public/user groups so they are aware of their responsibilities.
- After the DRDM plan is approved, trying to get insurance coverage for private properties, improve uptake, work with insurance sector to see how they can provide info to clients on prevention, maybe through premium benefits. Also need to work with banks, who provide loans and can require risk assessment, and can be a source of info dissemination.
- Agriculture sector has insurance scheme, but has some issues that need resolving – some farmers complain about assessment. Disaster is not well defined. (Daniel agriculture) Need climate services for insurance sector to improve provision. Add to Component 1. Need to understand the thresholds for insurance – what is a disaster? How much rain is a flood in need of compensation? Budget currently doesn't last long, and those not necessarily affected get funds. Need to refine, and have a lot of education about how it works. To do that, need automatic weather stations in catchment areas.
- For fisheries, EWS needs to assist to help staff identify where/when to assess nutrient levels to allow them to test and advise fishermen ASAP.

Related Projects

- GMES – coastal marine services
- Seychelles Ocean Temperature Network – local project w/ SFA and NGOs, funded by GEF
- Indian Ocean Solar Network – regional solar energy IOSNet, 2 in each country. Here one on Mahe and one on Pra – IOC.
- CMA – govt committed SCR 5mil per year, but not enough to complete so looking for further funding
- National climate change policy
- Working on coastal setback policy to compliment CMA
- SSDS finishes in 2020
- National development strategy
- Programme coordination unit has many plans funded by other organisations, but are responsible for coordinating projects across the country
- Third National Communication – UNFCCC – needs more modelling outputs, are doing downscaling through it, and Hydromet can operationalise it. Due to finish end of next year.
- IAEA – monitoring algae bloom and other biotoxins, mainly capacity building and materials. Currently delayed.

- Anchored FAD (Fish Aggregating Device) monitoring fisheries La Digue, want to extend (GEF funded)
- University of California Scripps collaboration coming to an end. Coming here to gather coastal data, completing SLOMO want to find partners to continue project. Physical oceanography modelling coastal areas, want to at least do EEZ Seychelles, if not regional
- Applied for grant for detailed satellite mapping for Prana, but don't have Mahe or LA Digue
- RESAT - Renewable energy satellite analytics tool w/ UK university, lack data for wave energy, ocean technology
- SEYCCAT – Seychelles Climate Change Adaptation Trust
- Project Neptune – includes component to install automatic systems for hydrology network for PUC and SMA, to be upgraded by Hydromet project.
- IAEA project – salinity of coastal areas, seawater intrusion in coastal agriculture (most ag is in the coast)