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| WORLD METEOROLOGICAL ORGANIZATIONCOMMISSION FOR BASIC SYSTEMSOPAG on DPFSMEETING THE REGIONAL SUBPROJECT MANAGEMENT TEAM (RSMT) OF THE SEVERE WEATHER FORECASTING DEMONSTRATION PROJECT (SWFDP) IN SOUTHEAST ASIAHa Noi, Viet Nam, 11-14 August 2015 |  | DPFS/RAII/SeA-SWFDP-RSMT /Doc. 3.1(30.VII.2015)\_\_\_\_\_\_\_Agenda item : 3.1ENGLISH ONLY |

INTRODUCTION TO SEVERE WEATHER FORECASTING DEMONSTRATION PROJECT

**WMO Severe Weather Forecasting Demonstration Project (SWFDP)**

**Overall Framework**

*(Submitted by the Secretariat)*

##### Summary and purpose of document

This document provides information on the development of the WMO SWFDP, its regional subprojects, and the SWFDP framework as established by the Commission for Basic Systems, in two documents: the “SWFDP Overall Project Plan”, and the “SWFDP Guidebook on Planning Regional Subprojects”.

##### Action Proposed

The meeting is invited to review this information, as well as the two project framework documents and consider this information to help formulate a Regional Subproject Implementation Plan (RSIP) for a SWFDP in Southeast Asia.

**Reference(s):** - SWFDP Overall Project Plan

- SWFDP Guidebook on Planning Regional Subprojects

**WMO Severe Weather Forecasting Demonstration Project (SWFDP)**

**Overall Framework**

**1. Introduction**

With the ever-increasing precision, reliability and lead-time provided by numerical weather prediction (NWP) systems, for weather forecasting and the provision of meteorological services, they have also become a very relevant component of routine and severe weather forecasting processes at National Meteorological and Hydrological Services (NMHSs).

The Severe Weather Forecasting Demonstration Project (SWFDP) is an initiative to further explore and enhance the use of outputs of existing NWP systems, including ensemble prediction systems (EPS). It is a cross programmatic activity organized within the Commission for Basic Systems (CBS) at WMO and lead by the Global Data Processing and Forecasting System (GDPFS) in close collaboration with several related WMO Programmes including Public Weather Services (PWS), Agriculture Meteorology (AgM), Marine Meteorology and Oceanography (MMO), Disaster Risk Reduction (DRR), Hydrology and Water Resources (HWR) and Tropical Cyclone Programmes.

The SWFDP aims is to contribute to capacity-building and to help developing countries in particular to have available and implement the best possible use of existing NWP products through a ‘Cascading forecasting process’, from Global Centres to Regional Centres to National Centres, for improving warnings of hazardous weather conditions and weather-related hazards. Global-scale products, as well as data and information provided by other regional centres, are integrated and synthesized by a designated Regional Specialized Meteorological Centre (RSMC) or an agreed Regional Forecast Support Centre (RFSC), which, in turn, provides daily guidance for short-range (days 1 and 2) and medium-range (out to day-5) on specified hazardous phenomena (e.g. heavy rain, damaging waves, etc) to the National Meteorological Centres of participating countries in the region.

The SWFDP has proven to be successfully improving severe weather forecasting in several developing countries including least developed countries (LDCs) and Small Island Developing States (SIDSs) through improved access to, and more effective use of outputs of numerical weather prediction systems for weather forecasters, who in turn have improved the delivery of warning services. The SWFDP represents a systematic and practical approach for building capacity, and for transferring new knowledge and skills. The first ever SWFDP regional subproject was started in South-Eastern Africa in 2006 with participation of just five countries. The subproject was expanded in 2009 to include all 16 countries in Southern Africa and to span all seasons and a number of meteorological and related hazards (heavy rain, strong winds, large waves, cold temperatures, etc.). After successful completion of its demonstration and evaluation, the subproject entered into sustained operational mode in 2012. The SWFDP regional subprojects for the South Pacific Island States and Eastern Africa countries are in the full demonstration phase with main focus on heavy rains, strong winds, and damaging waves since 2011 and 2013. The development of SWFDP regional subprojects for Southeast Asia and the Bay of Bengal regions has been in progress since 2011 and 2012 respectively. The development of SWFDP in Central Asia has also started this year with a technical planning workshop in Almaty, Kazakhstan in April 2015. The development of SWFDP regional subprojects in Western Africa and South-East Europe is also envisioned later this year.

**2 Brief history, to now**

A Workshop on Severe and Extreme Events Forecasting was held in Toulouse, France in October, 2004 to discuss development of a demonstration project at WMO to improve severe weather forecasting and warning services of NMHSs in developing and least developed countries by making use of the NWP/EPS products to be made available to the NMHSs through a ‘Cascading forecasting process’, from Global Centres to Regional Centres to National Centres. The CBS-XIII (St. Petersburg, Russian Federation, 23 February – 3 March 2005) while noting the outcomes of the workshop, including general terms for the demonstration project (its goals, the roles of the participating centres, and the criteria), agreed that the DPFS programme should coordinate the implementation of SWFDP. The CBS-XIII also agreed with the following goals of the demonstration project(s):

* to improve the ability of NMCs to forecast severe weather events;
* to improve the lead time of alerting of theses events;
* to improve interaction of NMCs with Disaster Management and Civil Protection Authorities (DMCPA) before and during events;
* to identify gaps and areas for improvements;
* to improve the skill of products from GDPFS Centres through feedback from NMCs.

A project Steering Group on SWFDP (PSG) was established which formulated a SWFDP Overall Project Plan and provided guidance in the form of a SWFDP Guidebook for the planning of SWFDP regional subprojects during its first meeting in Geneva, Switzerland in December, 2005.

The Executive Council in its fifty eighth session (Geneva, June, 2006) agreed that the SWFDP should be implemented, beginning with one regional subproject, as soon as possible relative to the season of the relevant severe weather phenomena. Subsequently, planning of the first SWFDP Regional Subproject in South-Eastern Africa (RA I) was initiated in July 2006 and the first realization of the SWFDP was implemented at the beginning of the rainy season in November 2006 with participation of five countries namely: Botswana, Madagascar, Mozambique, Tanzania and Zimbabwe. RSMC Pretoria (South Africa) is the integrating regional centre for the global-scale numerical weather prediction (NWP) products provided by the European Centre for Medium-Range Weather Forecasts (ECMWF), the Met Office, UK (UKMO), the National Centres for Environmental Prediction (NCEP, USA), as well as other information from RSMC La Réunion (France) specializing in tropical cyclones in the Indian Ocean, and RSMC Pretoria’s own NWP production system, such as a LAM NWP system (UM SA12), and satellite data products (e.g. METEOSat MSG). A regional subproject management team was established to manage the project implementation.

Training workshops were conducted in 2006 and 2007, targeting weather forecasters of the region who were carrying out the project’s implementation. While the first demonstration phase involving five participating countries ended in November 2007, and was fully evaluated, the subproject’s framework was maintained and the SWFDP continued to reap benefit for the participating NMHSs. Regular reports of the experiences of the participating countries in the SWFDP were extremely positive. The goals of the project of improved weather forecasting and warning service programmes were significantly realized, including for example, longer lead-times for alerting the public and national and regional civil protection agencies, and improved cooperation between NMHSs with their civil protection agencies. Some deficiencies were also identified, such as tools for forecasting the rapid onset of localized severe thunderstorms.

The Cg-XV (Geneva, Switzerland, 7-25 May, 2007) noted with satisfaction the significant development and progress of the SWFDP, from concepts to the first SWFDP regional subproject, implemented in the south-eastern region of Africa in 2006. The participating NMHSs recognized and appreciated the support from the global and regional centres. The Cg-XV noting the importance of accurate and timely severe weather warnings for Members and that if the SWFDP in South-Eastern Africa was successful, decided that its concept should be expanded and implemented throughout RA I and to other WMO Regions especially in developing countries.

Southern Africa

The first ever SWFDP regional subproject, started in South-Eastern Africa in 2006, was expanded in November 2009 to include all 16 countries in Southern Africa, namely: Angola, Botswana, Democratic Republic of the Congo, Malawi, Mauritius, Madagascar, Mozambique, Namibia, Lesotho, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe and Comoros.

The SWFDP ‘Cascading forecasting process’ in Southern Africa, is supported and contributed by UKMO, NCEP/NOAA, and ECMWF as participating global centres, with RSMC, Pretoria as a lead regional centre and RSMC La Reunion as a tropical cyclone forecast support centre. Initially, the subproject was managed by a regional subproject management team (RSMT) and then by a Regional Technical Implementation Team (RTIT) which was established in February 2009. Significant improvements to the forecasting and warning programmes including the delivery of warning services have been realized by the participating NMHSs. Two-week training workshops were organized in 2009, 2012, 2013 and 2014 by the joint efforts of both RSMC and RTC Pretoria.

The subproject entered into sustained operational and future development mode in 2012 with continuing support by the WMO Secretariat. Since then, the overall responsibility of SWFDP regional subproject in Southern Africa lies with the Meteorological Association of Southern Africa (MASA) which is a meteorology group within Southern African Development Community (SADC).

The RTIT is responsible to periodic review of the subproject’s Implementation Plan. The last meeting of RTIT was held in September 2013 in Pretoria, South Africa.

Since 2013, a training desk has also been organized at RSMC Pretoria with attachment of two forecasters from participating developing countries.

In 2014, integration of SWFDP-Southern Africa and Southern Africa Region Flash Flood Guidance System (SARFFGS) was initiated to enhance user interfaces and expand the suite of products available to forecasters using the two systems. For this purpose the RSMC training desk (20-28 October 2014), SARFFGS training event (29-31 October 2014) and the annual two-week SWFDP-Southern Africa training workshop (10-14 November 2014) were held back-to-back in Pretoria. The RSMC training desk was attended by 2 forecasters from Lesotho and Swaziland, who also participated in SARFFGS training which was attended by 8 forecasters and 2 hydrologists form seven out of nine countries within SARFFGS domain. The annual two-week SWFDP training workshop was attended by 16 forecasters (including 4 forecasters from SARFFGS training) and 11 public weather staff (PWS) from fourteen out of sixteen countries involved in SWFDP-Southern Africa. The integration of SWFDP-Southern Africa and SARFFGS aims to support end-to-end early warning system (EWS) for severe weather and flash flood warnings as well as for emergency preparedness and response to warnings at all relevant levels (national to local) to minimize the potential impacts of extreme hydrometeorological hazards in Southern Africa.

The similar capacity development activities are also planned in late 2015.

South West Pacific Islands

The SWFDP regional subproject, entitled “Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project” (SWFDDP) for the South West Pacific Islands (RA V) was commenced in 2009 with initial participation of just four Small Island Developing States (SIDSs), namely Fiji, Samoa, Solomon Islands, and Vanuatu. The subproject was expanded in 2010 to cover five more SIDSs namely Kiribati, Tuvalu, Tonga, Niue & Cook Islands. The global scale NWP guidance products are provided by the UKMO, NCEP/NOAA, and ECMWF. RSMC Wellington is serving as the lead regional centre for the subproject, and RSMC Nadi (Fiji) and RSMC Darwin (Australia) are contributing as regional forecasting functions including especially for tropical cyclones. The password-protected project website Metconnect Pacific is maintained by RSMC Wellington.

The subproject has been in full demonstration phase since November 2010 with main focus on heavy rain, strong winds, and damaging waves. The subproject is managed by a Regional Subproject Management Team (RSMT), the last meeting of which was held in Fiji in August 2013.

For capacity development of the NMHSs on making use of the available NWP products and satellite information in severe weather forecasting and warning services, in-country training approach has been adopted for the region mainly because of the regional characteristics including small NMHSs of nine SIDSs. In-country trainings also focus on the navigation and use of the project website. During 2009-2010, such trainings were carried out in all participating SIDSs except Niue. Such trainings were carried out again in all nine SIDSs in 2012.

In-country trainings are also being carried out in 2015. So far, such trainings have been organized in Samoa, Kiribati and Fiji, while, trainings for the remaining six SIDSs will be organized during remainder of 2015.

Eastern Africa

The development of SWFDP regional subproject in Eastern Africa was initiated with a Technical Planning workshop in Nairobi, Kenya in October 2010 to focus on severe weather forecasting and warning services including over Lake Victoria for the benefit of the general public and socio-economic sectors, in particular agriculture and fisheries. Following the outcomes of this workshop, a Regional Subproject Management Team (RSMT) was established to develop and execute a Regional Subproject Implementation Plan (RSIP) for the region. The initial demonstration phase was commenced on 1 September 2011 with participation of six beneficiary countries in Eastern Africa including Kenya, United Republic of Tanzania and Uganda (which border on Lake Victoria), and Burundi, Rwanda, and Ethiopia. In May 2013, South Sudan also joined SWFDP-Eastern Africa as a participating country.

In addition to severe weather forecasting and warning services for the benefit of the general public and socio-economic sectors, in particular agriculture, for the entire project footprint, the SWFDP – Eastern Africa includes a specific component addressing severe weather forecasting and warning services over the Lake Victoria, addressing marine meteorological aspects for the safety and protection of fishers, living in near shore communities and operating daily in small vessels in the near shore. The intention is to engage the search and rescue (SAR) community to ensure improved warning services would improve safe operations over the lake(s) of the region. A forecast and warning verification module is also part of this component of the project.

For SWFDP-Eastern Africa, global products are provided by ECMWF, NOAA/NCEP and UK Met Office, and DWD provides LAM NWP support to RSMC Nairobi (Kenya). RSMC Nairobi is carrying out the functions of the lead regional forecasting support centre for the entire project domain, while Regional Forecast Support Centre (RFSC), Dar Es Salaam (Tanzania) is providing regional forecast support for Lake Victoria basin.

RSMC Nairobi is responsible for synthesizing all available and relevant products and information, and making the best use of all these products for diagnosing the convective systems, in order to provide daily severe weather forecasting guidance (day-1 to day-5) for the entire project footprint to NMHSs in Eastern Africa region. RFSC Dar Es Salaam has the similar responsibility for Lake Victoria Basin including production and verification of specialized products from high-resolution NWP (LAM) over the Lake Victoria. Both regional centres also maintain password-protected Project Web Portals. The NMHSs continue to be responsible for the warning services to key users including general public, agriculture and fisheries.

The subproject has been managed by the RSMT whuch is responsible to review and update the RSIP. So far RSMT has met twice, in June 2011 in Nairobi, Kenya, and in May 2013 in Arusha, Tanzania. The subproject has been in full demonstration phase since September 2013 with participation of all seven benefitting countries.

For SWFDP-Eastern Africa, two-week training workshops on severe weather forecasting and warning services are organized on regular basis. The training workshops have been rotated among the participating countries so that maximum staff of the NMHSs (forecasters, PWS and Agromet staff) and representatives of stakeholders may be trained in each country. So far such training workshops have been organized in Tanzania (2010 & 2011), Uganda (2012), Burundi (2013) and Rwanda (2014). For 2015, the training workshop has been planned in Addis Ababa, Ethiopia in November 2015.

Southeast Asia

Following the recommendation by the Fifteenth WM Congress (May 2007), the development process for implementing a SWFDP in RA II was started in 2010. In this regard, a technical planning workshop on SWFDP development for RA II Southeast Asia was held in Ha Noi, Viet Nam on 2-5 February, 2010 to explore the region’s needs of and possible benefits from a SWFDP for four countries namely: Cambodia, People’s Democratic Republic of Lao (Lao PDR), Thailand, and Viet Nam. A meeting to develop a strategy for preparing a draft regional subproject implementation plan (RSIP) for Southeast Asia was also organized in Tokyo, Japan on 17-18 September 2010.

The first two-week SWFDP-Southeast Asia Training Workshop on severe weather forecasting (GDPFS) and warning services (PWS) was conducted in Hong Kong, China during 4-15 July 2011 The first meeting of Regional Subproject Management Team (RSMT) was held at Ha Noi, Viet Nam on 10-13 October 2011 to discuss and review the RSIP for SWFDP-Southeast Asia.

Philippines also joined the subproject as a participating country in May 2012 making the total number of benefitting countries as five.

The subproject is supported by CMA, JMA, KMA and ECMWF as global centres. ECMWF has recently joined the subproject in March 2015. The global products from ECMWF would become available for the subproject in early 2016.

Viet Nam’s National Hydro-Meteorological Service (NHMS) is supporting the subproject as a Regional Forecast Support Centre (RFSC). While RSMC Tokyo and RSMC New Delhi are contributing as the regional centres for typhoon and tropical cyclone forecast support respectively. The password protected project Web Portal has been maintained by the RFSC Ha Noi since 2011.

In 2013 and 2014 two more training workshops were organized for the beneficiary countries of SWFDP-Southeast Asia. These training workshops were held in Macao, China in April 2013 and in Quezon City, Philippines in June 2014.

A two-week training workshop has also been planned in 2015. The workshop, which is being organized jointly for the SWFDP participating countries in Southeast Asia and Bay of Bengal regions, will be held in Bangkok, Thailand from 14 to 25 September 2015.

Bay of Bengal

The development process for implementing a SWFDP regional subproject in Bay of Bengal was started with a technical planning workshop on SWFDP development for Bay of Bengal held in New Delhi, India, during 23-27 January 2012 with involvement of five countries in the region namely: Bangladesh, India, Maldives, Myanmar, Sri Lanka and Thailand. The workshop participants agreed that development of SWFDP regional subproject in Bay of Bengal is technically feasible. The workshop recommended that the subproject would focus on to focus on the following severe weather events (and associated hazards such as flooding, droughts, etc) in order of decreasing priority: heavy rain (due to tropical cyclone, thunderstorm, monsoon, etc.); strong winds (due to tropical cyclone, thunderstorm, monsoon, etc); deficit of precipitation/dry spells; high waves /swells; storm surge; heat waves and cold waves / frost; and fog.

In April 2013, a two-week SWFDP training workshop on severe weather forecasting and warning services was held in Macao, China. The workshop was organized jointly for the countries in Southeast Asia and Bay of Bengal.

The SWFDP-Bay of Bengal is supported by IMD (supported by NCMRWF), UKMO, JMA and ECMWF as participating global centres. The RSMC New Delhi is the lead regional forecast support centre including for tropical cyclone.

The development of password-protected project Web Portal for providing global and regional NWP products towards the NMHSs is in progress at RSMC New Delhi. However, the NWP products from both IMD and NCMRWF can be accessed from their respective websites at the following web links:

IMD website : http://202.54.31.51/bias/

NCMRWFwebsite: http://www.ncmrwf.gov.in/product\_main.php

A two-week training workshop has also been planned in 2015. The workshop, which is being organized jointly for the SWFDP participating countries in Southeast Asia and Bay of Bengal regions, will be held in Bangkok, Thailand from 14 to 25 September 2015.

Central Asia

The development of a SWFDP regional subproject in Central Asia (CA) has been in progress since 2014 with involvement of following four countries: Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. A three-member delegation from Central Asia comprising of representatives from UzHydromet, KyrgyzHydromet and RosHydromet visited WMO Headquarters in Geneva during 24-26 September 2014 to have discussions with the relevant WMO staff (DPFS and PWS) to know about the SWFDP framework and its “Cascading Forecasting Process” (global to regional, to national) for improving severe weather forecasting and warnings services in developing countries and LDCs. The delegation also discussed the feasibility of SWFDP development in CA as part of the Central Asia Hydrometeorological Modernization Project (CAHMP) supported by the World Bank. Within the CAHMP, there have been developed Terms of Reference (ToR) for the “Adaptation and Implementation of Numerical Models into RSMC Tashkent (UzHydromet) in the interests of 4 NMHSs in Central Asia”. The meeting therefore agreed that a new version of the draft ToR should be prepared to properly reflect the SWFDP approach and requirements.

Later, a technical planning workshop for improving the severe weather forecasting following the SWFDP approach for CA was held in Almaty, Kazakhstan on 27-29 April 2015. The workshop reviewed and updated the Action Plan for implementation of the SWFDP-CA and introduction of numerical models in RSMC Tashkent in the interests of 4 CA NHMSs.

RosHydromet is the lead global centre for the subproject. Additionally, CMA, ECMWF and JMA have also informally agreed to participate in the subproject as contributing global NWP centres. There was a request from the participating NMHSs to invite KMA as well for its participation in SWFDP-CA as a global centre. Formal agreement with these global centres will possibly be done by Q3 2015.

RSMC Tashkent will be the lead regional centre. However, SWFDP-CA is to be developed and implemented in two stages. In Stage-1, during a transitional period (of 2 years or so), while building the capacity at the RSMC Tashkent (Stage-2), RosHydromet would act as both global and regional centre and would provide the assistance to RSMC Tashkent for the handover (i.e. technology transfer, high-resolution LAM NWP e.g. COSMO-2) and uptake of its functions as regional centre. After acquiring the needed capacity, RSMC Tashkent will be the lead regional forecast support centre (stage-2).

Recently, SWFDP-CA workshop on analysis and interpretation of numerical weather prediction (NWP) products was held in Moscow, Russian Federation, from 6 to 10 July 2015. This workshop was one of the activities included in the Action Plan developed at the technical workshop (Almaty, Kazakhstan, April 2015). Senior forecasters from the CA NMHSs were invited to attend the workshop. The Roshydromet has initiated the development of the password-protected SWFDP Website and Portal (in Russian) to provide the following products:

* Access to deterministic and EPS products provided by RosHydromet
* Access to deterministic and EPS products provided by other Global Centres (possibly CMA, ECMWF, JMA, and KMA), including meteograms;
* Access to LAM outputs (13 km) for the entire project footprint provided by Roshydromet;
* Access to LAM outputs (2 km) for the mountain region, initially provided by Roshydromet, but later from RSMC Tashkent (when the new computer system is installed at the RSMC Tashkent) (Stage-2);
* Access to satellite-based products (e.g. Meteosat 7 & Meteosat 10; Russian satellites namely Meteor-M N2 and Electro, and SCOPE-NWC products);
* Access to synoptic charts from RSMC Tashkent covering the project footprint;
* Websites of the participating NMHSs;
* Access to satellite-based products.

The participants recommended the trial for the preparation and submission of the SWFDP-CA quarterly reports. This trial would cover the period August-September 2015, and representatives of participating countries would submit their reports by 20 October 2015. The regular preparation/submission of the SWFDP-CA quarterly reports will start in January 2016 covering a 3 months period starting with October-December 2015 period. A two-week training workshop (DPFS/PWS) will be held during Q1 2016.

**3 SWFDP project framework**

The general principles which guide the planning and implementation of SWFDP regional projects have been established by WMO’s Commission for Basic Systems (CBS), within the work programme of the OPAG on Data-Processing and Forecasting, in collaboration with the Public Weather Services (Programme). CBS has established a project Steering Group for the SWFDP, which has developed two guiding documents: “SWFDP Overall Project Plan” and the “SWFDP Guidebook on Planning Regional Subprojects”. These two documents have been maintained as experience has been gained though the regional projects, and are made available to this meeting.

**3.1 SWFDP Overall Project Plan**

This document provides information and general guidance in several areas, to assist readers to understand the motivation and goals of the project, and the results that are expected. The actual design and development of a regional project must address the major forecasting and service delivery problems of a particular region of countries.

The conceptual framework for the SWFDP is the “Cascading Forecasting Process”, and training and capacity building are both supported through specific activities and the project’s organization. The document describes the planning process and the wide range of considerations. The project implementation requires a management and accountability framework, which sustains the implementation and review, through accountability at the level of the Permanent Representatives of participating countries. The participating countries and centres have important responsibilities and respective roles to play.

**3.2 SWFDP Guidebook on Planning Regional Subprojects**

This Guidebook is a kind of recipe for developing a regional project, or, otherwise could be thought of as a template for developing an implementation plan (called a “Regional Subproject Implementation Plan”, “RSIP”) for a project that is to address identified severe weather forecasting and warning services issues of a particular geographical region. The Guidebook goes beyond the Overall Project Plan, so that a team of managers or a plan writer could very quickly consider necessary elements of an implementation plan, to start with an idea and create the plan in a relatively efficient fashion.

Ideally, as an idea for a regional subproject matures, a small team could draft an implementation plan, using the Guidebook, which could take several weeks of work and discussions. This small team, with a lead would act as “champions” for the proposal. Then, a meeting would be convened of the stakeholders and participating NMHSs, to discuss and refine the draft plan toward a final version. Some form of Management approval would have to be obtained, both at the level of Regional Association, as well as CBS through its Steering Group on SWFDP.

**4 Conclusion**

The support and guidance, and the basic tools for developing and implementing SWFDP regional projects have been provided though CBS. The meeting is invited to review this information, as well as the two project framework documents, and consider this information to review and update the Regional Subproject Implementation Plan (RSIP) for SWFDP - Southeast Asia.