

WORLD METEOROLOGICAL ORGANIZATION

Regional Association II (Asia)

**STRATEGIC OPERATING PLAN
FOR THE ENHANCEMENT OF
NATIONAL METEOROLOGICAL AND HYDROLOGICAL
SERVICES (NMHSs)
IN REGIONAL ASSOCIATION II (ASIA)**

2012-2015



December 2012

1. Introduction

This RA II Strategic Operating Plan aims at providing a clear path forward for the Region to address critical societal needs. It takes into account the framework of the WMO Strategic Plan 2012-2015 which was approved in the Sixteenth World Meteorological Congress (Geneva, May/June 2011), with eight Expected Results grouped within five Strategic Thrusts under three Global Societal Needs. A schematic representation of the structure of WMO Strategic Plan 2012-2015 is given below.

Three Global Societal Needs	Five Strategic Thrusts	Eight Expected Results
Improved protection of life and property (related to the impacts of hazardous weather, climate, water and other environmental events, and increased safety of transport on land, at sea, and in the air)	Improving service quality and service delivery	<ol style="list-style-type: none"> 1. Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings and services in response to users' needs, and to enable their use in decision-making by relevant societal sectors. 2. Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements.
Poverty alleviation, sustained livelihoods and economic growth (in connection with the Millennium Development Goals), including improved health and social well-being of citizens (related to weather, climate, water and environmental events and influence)	Advancing scientific research and application, as well as development and implementation of technology	<ol style="list-style-type: none"> 3. Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, predictions and warnings to support in particular disaster risk reduction and climate impact and adaptation strategies. 4. Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO. 5. Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development.
Sustainable use of natural resources and improved environmental quality	Strengthening capacity-building	<ol style="list-style-type: none"> 6. Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfil their mandates.
	Building and enhancing partnerships and cooperation	<ol style="list-style-type: none"> 7. New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategic issues.
	Strengthening good governance	<ol style="list-style-type: none"> 8. An effective and efficient Organization.

2. Priority areas of RA II

Within the five Strategic Thrusts and eight Expected Results, WMO as a whole has identified the following five priority areas that have significant contribution to the achievement of the expected results:

- Global Framework for Climate Services (GFCS);
- Aviation meteorological services;
- Capacity building for the developing and least developed countries;
- Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS); and
- Disaster Risk Reduction (DRR).

Considering the circumstances in the Region, RA II identified the following highest priority areas:

- Implementation of the WIS/WIGOS and necessary improvement of the GTS;
- Sustainable capacity development including human resources development;
- Implementation of the GFCS in support of agriculture and food security; water; health; and disaster risk reduction, as well as energy and other sectors, through, but not limited to enhancement and operation of the RA II RCC network and RCOFs;
- Climate services to address the slow-onset impacts of climate variability and climate change;
- Establishment of a region-wide multi-hazard early warning system for disaster risk reduction;
- Implementation of aeronautical meteorological services enhancements in coordination with CAeM and upgrading of service delivery capability in other application areas including marine meteorological services;
- Implementation of the WMO Flood Forecasting Initiative, water resources assessment and regional exchange of hydrological data and information; and
- Reduction of risks and impacts of Region specific hazards caused by sand and dust storms, thunderstorms and associated extreme weather events.

3. RA II Operating Plan

In accordance with the highest priority areas of RA II, a set of deliverables and associated activities were developed in the following RA II Operating Plan. They are listed under the relevant WMO Strategic Plan Expected Results, Regional Key Outcomes (RKO) and corresponding Key Performance Indicators (KPIs). Relevant Programmes and technical commissions responsibility and implementation schedules are also presented. Baselines and targets are listed for each deliverable to measure the progress towards achieving the Expected Results.

For a number of the activities with “Members” listed in the “Responsibility” column, relevant Members should reaffirm the goals and consider means to implement the deliverables, and in particular each NMHS should conduct action items to improve their own services and/or help other NMHSs in the Region.

4. Monitoring and evaluation mechanism

Monitoring and evaluation are tools to measure the performance of implementation of the Strategic Operating Plan. They also contribute to the identification of good practices and lessons learned with respect to implementation, as well as policy, strategy and programmatic design that will inform the next phase of strategic planning. While monitoring is an ongoing function, evaluations are conducted routinely and results are reported to the future RA II sessions.

Surveys of the basic capability of NMHSs in RA II were carried out in 2008 and 2011. The results of the latter one were used to form the baseline of achievement of the deliverables in the RA II Operating Plan 2012-2015, with a view to monitoring and evaluating the progress of the implementation of the deliverables. Information will be regularly gathered from Members through surveys to analyze the likely trends, developments, evolving needs and deficiencies of the Region.

Operating Plan for the Enhancement of National Meteorological and Hydrological Services (NMHSs) in Regional Association II (Asia) (2012–2015)

This document contains the core of the RA II Operating Plan. It takes into account the framework of the WMO Strategic Plan 2012-2015 (i.e., eight Expected Results grouped within five Strategic Thrusts under three Global Societal Needs). Under the relevant WMO Strategic Plan Expected Results, Regional Key Outcomes (RKO) and corresponding Key Performance Indicators (KPIs) are identified which serve as the common regional basis for action. Listed under each of the RKO are the areas where deliverables are expected, through cooperation among Members, especially their NMHSs, for enhanced provision, access, operation or capability. Associated activities, relevant Programmes and Technical Commissions, responsibility, implementation schedule, and baselines and targets are also presented.

For a number of the activities with "Members" listed in the "Responsibility" column, relevant Members should reaffirm the goals and consider means to implement the deliverables, and in particular each NMHS should conduct action items to improve their own services and/or help other NMHSs in the Region, for example, by encouraging and facilitating exchange and training on the relevant know-how to implement the deliverables, with the assistance of WMO (Regional Office for Asia and the South-West Pacific) when appropriate.

[Note: Baselines and targets were determined based on the 2011 and/or 2008 regional surveys. For newly proposed deliverables/activities, the targets are presented as [##%] which will be determined in the next regional survey.]

Expected Result 1

Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings, and services in response to users' needs, and to enable their use in decision-making by relevant societal sectors.

RKO 1.1	Access to seamless weather, climate, water, and related environmental products and services (e.g., warnings, forecasts and supporting information) is improved in RA II.								Baseline and Target	
KPI 1.1.1	Number of NMHSs that have successfully upgraded the capability of reception and exchange of data and products.									
Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015		
1.1.1	Automatic data reception, decoding and archival; automatic data visualization; and automatic data processing	(a) provide support and/or conduct expert visit to Members in need, as necessary; (b) encourage and facilitate exchange and training on relevant know-how	WWW	CBS	(a) EG-WIS; (b) Members	x	x	x	x	Percentage of Members having automatic data reception, decoding and archival capability; automatic data visualization; and automatic data processing, to reach 85% (or +2 Members) or above. [2011 level (average): 79%]
1.1.2	Promotion and strengthening of the principle of free and unrestricted international exchange of data and products among Members, particularly their NMHSs	encourage and facilitate the exchange and training of relevant know-how	WWW	CBS	Members	x	x	x	x	Percentage of Members putting in practice the principle of free and unrestricted international exchange of data and products among Members, particularly their NMHSs, to reach 90% (or +1 Members) or above. [2011 level: 87%]

RKO 1.2	Delivery of high-quality weather, climate, water and related environmental products and services to users' communities is improved in RA II.								Baseline and Target	
RKO 1.2.1	Capabilities of Members to provide and use high-quality aviation applications and services are enhanced.									
KPI 1.2.1.1	Number of Members enhancing their capabilities to provide and use high-quality aviation applications and services.									
KPI 1.2.1.2	Number of Members compliant with aviation QMS.									
Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015		
1.2.1	Improvement or delegation of responsibilities on issuance of SIGMET	provide support and/or conduct expert visit to Members in need, as necessary	WWW, AeMP	CBS, CAeM	Members	x	x	x	x	Significant reduction in number of SIGMET deficiencies by 31.12.2013.

1.2.2	Provision of improved aeronautical meteorological services to Air Traffic Management (ATM)	(a) encourage Members' dialogue with ATM users and implementation of MET services in support of ATM operations; (b) provision of guidance material and advice to Members; (c) continue to conduct training workshops for Members	AeMP	CAeM	Members	x	x	x	x	(a) % of Members taking actions to participate in bilateral exchange of XML/GML data in WXM from the AMD 76 (Nov 2013) 10% by 31.12.2013; (b) % of Members with a Memorandum of Understanding / Service Level Agreement on Met Services to ATM (50% by 31.12.2013; 80% by 31.12.2015)
1.2.3	Implementation of cost recovery of aeronautical meteorological services	encourage and facilitate exchange and training on relevant know-how	WWW, AeMP	CBS, CAeM	Members	x	x	x	x	Percentage of AEMSP practicing cost recovery of aeronautical meteorological services, to reach 45% (or +1 Member) or above. [2008 level: 41%]
1.2.4	Implementation of WMO-No. 49 requirements for aeronautical meteorological personnel	(a) provide support and/or conduct expert visit to Members in need, as necessary; (b) include a topic on AeM in Regional Seminar or emerging issues of RA II-15 to discuss the issue in depth; (c) additional training workshops on competency assessment, if required.	WWW, AeMP, ETRP	CBS, CAeM	EG-AeM and Members	x	x	x	x	Percentage of AEMSP having implemented WMO-No. 49 requirements for aeronautical meteorological personnel by meeting (i) competency requirements (current deadline is late 2013) or (ii) education and training requirements (current deadline is late 2016), to reach 60% or above by 31.12.2013 and 100% by 31.12.2016. [2011 level (average): 53%]
1.2.5	Implementation of QMS for AeM Service Providers (AEMSP)	(a) share the experience and lessons learned with focal points for QMS (from IR of Iran, Oman and Qatar); (b) organize regional workshops on QMS; (c) promote and coordinate twinning assistance between Members in RA II in cooperation with CAeM TT-QMS.	WWW, AeMP	CBS, CAeM	EG-AeM and Members	x	x	x	x	Percentage of AEMSP implementing QMS, to reach 50% or above by 31.12.2013 and to reach 80% by 31.12.2015. [2011 level: 41%]
RKO 1.2.2		Capabilities of Members to deliver high-quality weather, climate, water and related environmental products and services are enhanced.							Baseline and Target	
KPI 1.2.2.1		Increase in users with timely access to an increased number and range of products.								
KPI 1.2.2.2		Number of NMHSs that observe the principle of free and unrestricted international exchange of relevant data and products among Members.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
1.2.6	Increased accuracy, timeliness and usefulness of tropical cyclone forecasts and warnings	promote activities of and collaborate with TC and PTC	WWW, DPFS, TCP	CBS	RSMC, WGWS, ICT-DRR and Members	x	x	x	x	Percentage of Members increasing the accuracy, timeliness and usefulness of tropical cyclone forecasts and warnings, to reach 67% or above. [2011 level: 57%]
1.2.7	Establish/review legal basis for provision of services, including charging for services, as appropriate	(a) encourage and facilitate exchange and training on relevant know-how; (b) render assistance if needed to Members	WWW, PWSP	CBS	MG and Members	x	x	x	x	A high percentage of Members having a legal basis for provision of services, including charging for services, to be maintained at 93% (or +1 Member) or above. [2011 level: 93%]
1.2.8	Issuance of medium-range forecasts/warnings (1 day – 2 weeks ahead)	encourage and facilitate exchange and training on relevant know-how	WWW, PWSP, DPFS	CBS	Major NWP Centres and Members	x	x	x	x	Percentage of Members issuing medium-range forecasts/warnings, to reach 91% (or +1 Member) or above. [2011 level: 87%]
1.2.9	Operation of a website for real-time weather information, forecasts and warnings	encourage and facilitate the exchange and training of relevant know-how	WWW, PWSP, DPFS	CBS	Coordinating Group of the website and Members	x	x			Percentage of Members operating a website for real-time weather information, forecasts and warnings, to reach 95% (or +1 Member) or above. [2011 level: 93%]
1.2.10	Issuance of marine forecasts/warnings for coastal waters including sea state and wave/swell	encourage and facilitate the exchange and training of relevant know-how	WWW, MMOP	CBS, JCOMM	WGWS and Members	x	x	x	x	Percentage of marine met service providers issuing forecasts/warning for coastal waters including sea state and wave/swell, to be maintained at 92% or above. [2011 level: 92%]

1.2.11	Provision of agrometeorological services to the user community by promoting practical applications of technological advances in the agrometeorology domain	(a) encourage and facilitate exchange and training on relevant know-how; (b) conduct mission visit(s) to Members in developing countries or least developed countries	WWW, AgMP, ETRP	CBS, CAgM	WGHS and Members	x	x	x	x	Percentage of Members providing agrometeorological services to the user community by promoting practical applications of technological advances in the agrometeorology domain, to reach 67% or above. [2011 level: 57%]
1.2.12	Demonstrated socio-economic benefits (SEB) of weather, climate and water services	(a) encourage and facilitate exchange and training on relevant know-how; (b) develop guidance on methodologies for assessing SEB of weather, climate and water services; (c) develop a web-based SEB guidance platform	WWW, PWSP	CBS	EG-PWS, MG and Members	x	x	x	x	Percentage of Members engaging in socio-economic studies demonstrating the benefits of their infrastructure, information, products and services, to reach 73% or above. [2011 level: 63%]

Expected Result 2

Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements.

RKO 2.1		Multi-hazard early warning systems are implemented in RA II.							Baseline and Target	
KPI 2.1.1		Number of NMHSs upgrading the capability in providing short-range forecast/warning, in disaster risk assessment and in contributing to disaster mitigation and sustainable development.								
KPI 2.1.2		Number of NMHSs improving efforts in outreach activities to users through public education and liaison with stakeholders.								
KPI 2.1.3		Number of NMHSs integrated into national emergency management systems.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
2.1.1	Improvement in hydrological warnings capability through enhanced and effective cooperation with other NMHSs	(a) use WMO Flood Forecasting Initiative as platform; (b) organize training course for Members	WWW, HWRP, DRR	CBS, CHy	(a) WGHS; (b) WGHS, ICT-DRR, Members and Coordinating group of training course	x	x	x	x	Number of Members having improvement in hydrological warnings capability through enhanced and effective co-operation with other NMHSs, to reach 73% or above. [2011 level: 63%]
2.1.2	Improvement in adaptation capacity of water resources systems in a changing climate	improve on requirements for climate information for water managers	WWW, HWRP, WCP	CBS, CHy, CCI	WGHS and Members	x	x	x	x	Number of Members having improved adaptation capacity of water resources systems in a changing climate, to reach 60% or above. [2011 level: 50%]
2.1.3	Improvement in capacity for water-related disaster management (Hydrological extremes)	organize a workshop on the provision of input and support to disaster management	WWW, HWRP, DRR	CBS, CHy	WGHS, ICT-DRR, Members and Coordinating group of training course	x	x	x	x	Number of Members having improved capacity for water-related disaster management, to reach 70% or above. [2011 level: 60%]
2.1.4	Issuance of storm surge warnings	(a) use Coastal Flood Inundation Demonstration Project (CFIDP) to improve on capacity for coastal flood forecasting and management (including deltas and estuaries); (b) encourage and facilitate exchange and training on relevant know-how	WWW, DRR, MMOP, TCP	CBS	(a) ICT-DRR; (b) Members	x	x	x	x	Percentage of marine met service providers issuing storm surge warnings, to reach 80% (or +2 Member) or above. [2011 level: 75%]
2.1.5	Provision of support for combating marine pollution	(a) encourage Members to provide water quality information of rivers discharging into the oceans; (b) encourage and facilitate exchange and training on relevant know-how	WWW, HWRP	CBS, JCOMM	(a) WGHS; (b) Members	x	x			Percentage of marine met service providers providing support for combating marine pollution, to reach 68% or above. [2011 level: 58%]
2.1.6	Provision of support for search and rescue operations	encourage and facilitate exchange and training on relevant know-how	WWW, DRR	CBS	ICT-DRR and Members	x	x			Percentage of marine met service providers providing support for search and rescue, to reach 85% (or +2 Member) or above. [2011 level: 79%]

2.1.7	Implementation of instrumentation (e.g., DART) for real-time monitoring of storm surge or tsunami	encourage and facilitate exchange and training on relevant know-how	WWW, TCP	CBS, CIMO	Major Centres and Members	x	x	x	x	Number of systems implemented in the region for real-time monitoring of storm surge or tsunami. (2011 survey: NOT reliable result - to be determined in the next survey)
2.1.8	Early warning system for frost formation and heat waves	encourage and facilitate the exchange and training of relevant know-how	WWW	CBS	WGWS and Members	x	x	x	x	Percentage of Members operating early warning system for frost formation and heat waves, to reach 52% or above. [2011 level: 42%]
2.1.9	Established/strengthened links with national disaster managers	provide support and/or conduct expert visit to Members in need, if necessary	DRR	-	ICT-DRR and Members	x	x			Percentage of Members having links with national disaster managers, to reach 94% or above. [2011 level: 90%]
2.1.10	Development/implementation of a public education programme	encourage and facilitate exchange and training on relevant know-how	ETRP, PWSP	CBS	ICT-SD and Members	x	x			Percentage of Members having a public education programme, to reach 77% or above. [2011 level: 67%]

RKO 2.2		National integrated flood management plans are developed in RA II.							Baseline and Target	
KPI 2.2.1		Number of NMHSs improving the capability in observation and development of products and services for the user community including flood/flash and landslide/debris flow warnings.								
Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015		
2.2.1	Reliability of quality control procedures applied on data collected from hydrological stations	(a) assess the performance of hydrometric instruments and techniques of observations; (b) prepare documentation for the intercomparison of instruments and methods of observations	WWW, HWRP	CBS, CHy, CIMO	WGHS, EG-WIGOS and Members	x	x			Percentage of Members having implemented reliability measures for their quality control procedures applied on data collected from their hydrological observation stations, to reach 77% or above. [2011 level: 67%]
2.2.2	Hydrometric measurements with quality and accuracy	(a) provide guidance on the use of appropriate instrumentation and methods of observation in diverse conditions; (b) improve sediment measuring techniques; (c) assess the accuracy and use of space-based observations for hydrometric purposes	WWW, HWRP	CBS, CHy, CIMO	WGHS, EG-WIGOS and Members	x	x			(a) Number of Members having access to use of appropriate instrumentation and methods of observation in diverse conditions, to reach 50% or above; (b) Number of Members having access to space-based observations, to reach 50% or above.
2.2.3	Calculation of runoff with quality and accuracy	(a) focus on the development of rating curve; (b) detect trends and variability in selected river basins in the region; (c) provide guidelines for calculating runoff data accuracy	WWW, HWRP	CBS, CHy	WGHS and Members;	x	x			Number of Members capable of calculating runoff with quality and accuracy, to reach 70% or above. [2011 level: 60%]
2.2.4	Measurement of changes in river flow in snow/glacier-fed rivers (to assess effect of climate change and climate variability)	(a) improve the measurement to include the use of remote sensing; (b) implement snow and glacier observations and assess impacts on mountain water resources; (c) collate comprehensive information on the regional status of glaciers and glacial runoff in RA II (in collaboration with IGOS – Cryosphere and CliC)	WWW, HWRP	CBS, CHy, CIMO	WGHS, EG-WIGOS and Members;	x	x			Number of Members measuring changes in river flow in snow/glacier-fed rivers, to reach 53% or above. [2011 level: 43%]
2.2.5	Issuance of flood, flash and urban flood warnings and constantly improving upon them	(a) develop user-oriented flood forecasting products; (b) conduct mission visit(s) to Members in developing countries or least developed countries	WWW, HWRP, DRR	CBS, CHy	WGHS, ICT-DRR and Members	x	x	x	x	Number of Members giving and constantly improving flood and flash flood warnings, to reach 80% or above. [2011 level: 73%]

2.2.6	Issuance of landslide/debris flow warnings and constantly improving upon them	(a) collect and disseminate guidance materials and manuals on the assessment of rainfall/flood induced mass movement hazards; (b) assess sedimentation rates in major reservoirs; (c) develop early warning methodologies including documentation of best practices; (d) engage in hazard mapping of sediment-related disasters	WWW, HWRP, DRR	CBS, CHy	WGHS, ICT-DRR and Members;	x	x	x	x	Number of Members giving and constantly improving landslide/debris flow warnings, to reach 45% or above. [2011 level: 33%]
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RKO 2.3		Drought early warning systems are improved in RA II.							Baseline and Target	
KPI 2.3.1		Number of NMHSs enhancing the drought early warning system.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
2.3.1	Monitoring and warning systems for drought	(a) develop indicators for the determination of the onset of hydrological droughts; (b) prepare guidance for the development of drought monitoring networks	WWW, HWRP	CBS, CHy, CIMO	WGHS and Members	x	x	x	x	Percentage of Members having monitoring and warning systems for drought, to reach 63% or above. [2011 level: 53%]

Expected Result 3

Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, predictions and warnings to support in particular disaster risk reduction and climate impact and adaptation strategies.

RKO 3.1		Weather information and prediction products are improved in RA II.							Baseline and Target	
KPI 3.1.1		Number of NMHSs generating NWP products and producing weather forecasts.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
3.1.1	Operational access to NWP products from major centres and effective use and interpretation of all NWP products in forecasting operations	(a) provide support and/or conduct expert visit to Members in need, as necessary; (b) implement RA II Pilot Project to Develop Support for NMHSs in Numerical Weather Prediction, which is to develop a consortium comprising NWP operators and product providers to support and assist NMHSs in their full use of NWP products and in the development of NWP activities suited to their circumstances, in their provision of weather services, including forecasts and warnings	WWW, DPFS	CBS	(a) EG-WIS; (b) Coordinating Group of the RA II Pilot Project, Major NWP Centres and Members	x	x	x	x	Percentage of Members having access to NWP products and using it in forecasting operations, to reach 93% (or +1 Member) or above. [2011 level: 90%]
3.1.2	Extended use of Ensemble Prediction System (EPS) and consensus technique for tropical cyclone forecasting	encourage and facilitate the exchange and training of relevant know-how	WWW, DPFS, TCP	CBS	Major NWP Centres, RSMC and Members	x	x			Percentage of Members extending the use of EPS and consensus technique for tropical cyclone forecasting, to reach 50% or above. [2011 level: 40%]
3.1.3	Operational nowcasting (0-6 hours ahead) service on high-impact weather	(a) provide training and technical support to flash flood and urban flood forecasting; (b) encourage and facilitate exchange and training on relevant know-how	WWW, DRR, DPFS	CBS	(a) EG-OF; (b) Members	x	x	x	x	Percentage of Members providing operational nowcasting service on high-impact weather, to reach 86% (or +2 Member) or above. [2011 level: 80%]
3.1.4	Short-range forecasts and warnings (6-24 hours ahead)	encourage and facilitate exchange and training on relevant know-how	WWW, DRR, DPFS	CBS	EG-OF and Members	x	x	x	x	Percentage of Members issuing short-range forecasts/warnings, to be maintained at 100%. [2011 level: 100%]
3.1.5	Enhanced capability of severe weather forecasting and warning services through SWFDP	(a) implement regional components of Severe Weather Demonstration Project, in particular SWFDP-Southeast Asia and SWFDP-Bay of Bengal (b) increase awareness of SWFDP and utilization by NMHS	WWW, DPFS	CBS, CAS	Members and Coordinating group of SWFDP-SeA/BB	x	x	x	x	Number of Members which benefited from SWFDP. (to be determined in the next survey)
KPI 3.1.2		Number of NMHSs providing standardized products such as monthly and seasonal predictions.								

Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
3.1.6 Provision of monthly/seasonal climate prediction	(a) further establish sub-regional RCOFs; (b) encourage and facilitate exchange and training on relevant know-how	WCP, DPFS	CCI, CBS	EG-CS and Members	x	x	x	x	Percentage of Members providing monthly/seasonal climate prediction, to reach 75% (or +1 Member) or above. [2011 level: 70%]

RKO 3.2		Climate information and prediction products for climate adaptation and risk management are improved in RA II.							Baseline and Target
KPI 3.2.1		Number of NMHSs upgrading the capability in observation and in development of climate services to meet users' diverse requirements in respect of sustainable development.							
KPI 3.2.2		Number of operational Regional Climate Centres providing inputs for the National Climate Centres.							
KPI 3.2.3		Number of users receiving climatological products periodically.							
Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
3.2.1 Enhanced capability in climate observations	encourage and facilitate exchange and training on relevant know-how	WCP	CCI	EG-CS and Members	x	x	x	x	Percentage of Members increasing the number of climatological stations operated or supervised by them and the number of climate variables measured and processed, to reach 57% or above [2011 level: 47%]; Percentage of Members increasing the issuance of climatological statistics and indices and make them easily available and delivered to users, to reach 90% or above [2011 level: 87%]; Percentage of Members making observations to monitor climate change and climate variability, to reach 86% (or +1 Member) or above. [2011 level: 83%]
3.2.2 Enhanced capability in providing climate services to meet users' requirements	facilitate exchange and training on relevant know-how by RCCs	WCP, DPFS	CCI, CBS	EG-CS, RCCs and Members	x	x			Percentage of Members systematically increasing the number of users receiving climatological products periodically, to reach 95% or above [2011 level: 93%]; Percentage of Members providing meteorological and climatological information for the sustainable use and conservation of natural resources to be maintained at 97% or above. [2011 level: 97%]
3.2.3 Maintenance of metadata records for their observation stations	encourage and facilitate exchange and training on relevant know-how	WCP, WWW	CCI, CIMO	EG-CS, EG-WIGOS and Members	x	x	x	x	Percentage of Members maintaining metadata records for their observation stations, to reach 90% or above. [2011 level: 87%]
3.2.4 Enhancement and establishment of the Regional Climate Centres (RCCs)	(a) improve RCC products to meet Members' requirements; (b) encourage and facilitate candidate RCCs to demonstrate the capabilities and move on to designation process	WCP, DPFS	CCI, CBS	(a) BCC & TCC; (b) EG-CS and Members	x	x	x	x	Number of RCCs established and designated, to reach 4 or above. [2011 level: 2]
3.2.5 Marine observations and providing data to support global and regional climate studies, including participation in GLOSS (Global Sea Level Observing System) to monitor long-term sea-level changes associated with global warming	encourage and facilitate exchange and training on relevant know-how	WCP, MMOP	CCI, JCOMM	EG-CS and Members	x	x			Percentage of marine met service providers making marine observations and providing data to support global and regional climate studies, to reach 50% or above. [2011 level: 38%]
3.2.6 Adoption of innovative agrometeorological adaptation strategies in face of climate variability and climate change	encourage and facilitate exchange and training on relevant know-how	WCP, AgMP	CCI, CAgM	WGCS and Members	x	x	x	x	Percentage of Members engaging in advising users on the adoption of innovative agrometeorological adaptation strategies in face of climate variability and climate change, to reach 50% of Members or above. [2011 level: 37%]

RKO 3.3		Hydrological information and products, including water resource assessments, are improved in RA II.							Baseline and Target	
KPI 3.3.1		Number of NMHSs having established Quality Management Frameworks for Hydrology using current guidance materials for hydrology and water resource management.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
3.3.1	Establishment of Quality Management Frameworks for Hydrology using current guidance materials for hydrology and water resource management	encourage and facilitate exchange and training on relevant know-how	WCP, HWRP	CCI, CHy	WGHS, WGCS, RA II and Members	x	x	x		Percentage of Members establishing Quality Management Frameworks for Hydrology, to reach [##]% or above. (to be determined in the next survey)
3.3.2	Assessment of basin-wide water resources availability, including use of climate predictions	(a) prepare assessment and outlook of basin-wide availability water surplus and deficits on a national levels in a regional context including the use of climate scenarios; (b) set up knowledge base to adapt to changes in water resources availability (trends, outlook...)	WCP, HWRP	CCI, CHy	WGHS, WGCS and Members	x	x	x	x	Number of Members carrying out assessment of basin-wide water resources availability, including use of climate predictions, to reach [##]% or above. (to be determined in the next survey)
3.3.3	Implementation of Water Resources Assessment (WRA)	(a) develop and promote new approaches for WRA; (b) develop continuous monitoring tool and regional database for WRA; (c) provide guidance materials for WRA and its variability linking to climate predictions	HWRP	CHy	WGHS and Members	x	x	x	x	Number of Members implementing WRA, to reach [##]% or above. (to be determined in the next survey)
3.3.4	Development of national and regional capacity building programmes and related training activities for hydrological services	encourage and facilitate exchange and training on relevant know-how	HWRP	CHy	WGHS and Members	x	x	x	x	Percentage of Members participating in the development of national and regional capacity building programmes and related training activities, to reach [##]% or above. (to be determined in the next survey)
RKO 3.4		Drought information and prediction for risk management is improved in RA II.							Baseline and Target	
KPI 3.4.1		Number of NMHSs and Regional Centres issuing drought information and prediction								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
3.4.1	Enhanced preparedness to predict and manage hydrological droughts and knowledge for decision-making	(a) follow up on drought related research and action activities including CAgM and drought management programme; (b) document national guidance materials to manage droughts	WWW, WCP, HWRP	CBS, CHy, CIMO, CCI	WGCS, WGHS and Members	x	x			Number of Members having enhanced its preparedness to predict and manage hydrological droughts and its knowledge for decision-making, to reach 67% or above. [2011 level: 57%]

Expected Result 4

Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable surface-based and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO.

RKO 4.1		WMO Integrated Global Observing System (WIGOS) is implemented in RA II.							Baseline and Target	
RKO 4.1.1		WIGOS is implemented in the Region based on CONOPS and RA II WIGOS Implementation Plan.								
KPI 4.1.1.1		Number of NMHSs that have successfully implemented the WIGOS in compliance with CONOPS.								
KPI 4.1.1.2		Number of NMHSs that deliver high-quality observational data.								
KPI 4.1.1.3		Increased observing systems' interoperability, data compatibility and traceability of observations.								
KPI 4.1.1.4		Increased availability of observational data for users.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.1.1	Regular maintenance and calibration of observation instruments, and implementation of reliability measures on quality management routines and procedures of weather observations	(a) implement the RA II Pilot Project to Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations; (b) report on status on calibration instruments; (c) provide education and training support for NMHSs	IMOP, WWW	CIMO, CBS	(a) EG-WIGOS; (b) WMO/DRA and developed Members	x	x	x	x	Percentage of Members having a regular programme for maintenance and calibration of observation instruments, and implementing reliability measures on their quality management routines and procedures of weather observations, to reach 93% or above. [2011 level: 90%]
4.1.2	Availability of qualified maintenance technicians in NMHSs	implement the Pilot Project to enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations;	IMOP, WWW	CIMO, CBS	EG-WIGOS	x	x	x	x	Percentage of Members having qualified maintenance technicians in their service, to reach 86% or above. [2011 level: 83%]
4.1.3	Ensuring the accuracy of the instruments they use	(a) identify quality requirements and user expectations; (b) monitor data quality by utilizing NWP QC monitoring reports; (c) enhance capacities of RA II RICs; (d) organize RIC training workshops for Members;	IMOP, WWW	CIMO, CBS	EG-WIGOS and Members	x	x	x	x	(i) Percentage of Members using the service of RICs (Regional Instrument Centre), to reach 57% or above. [2011 level: 47%]; (ii) Percentage of Members using the service of national standards laboratory / institution, to reach 80% or above. [2011 level: 70%]
4.1.4	Reliability of maintenance procedures for measurement and equipment (including gauges) in hydrological stations and of quality control procedures applied on data collected from hydrological stations	develop SOPs for operation and maintenance of stations	IMOP, HWR, WWW	CIMO, CHY, WWW	WGHS	x	x			Percentage of Members having implemented reliability measures for their maintenance procedures for measurement and equipment in hydrological stations and for their quality control procedures applied on data collected from their hydrological stations, to reach 77% or above. [2011 level: 67%]
4.1.5	Real-time delivery of measured observations at remote stations	Implement the Pilot Project to enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations	WWW	CBS	Coordinating Group of the Pilot Project;	x	x	x	x	Percentage of Members implementing real-time relay of measured observations from remote stations, to reach 90% or above. [2011 level: 87%]
4.1.6	Increased observational data availability for users	monitor availability of data, identify deficiencies and propose measures for their resolutions	WWW	CBS	EG-WIGOS, RA II, WMO/RAP and Members	x	x	x	x	Percentage of Members with increased observational data availability for users, to reach [##]% or above. (to be determined in the next survey)

4.1.7	Development and update of Regional WIGOS Implementation Plan (WIP)	(a) establish a Task Team on Regional WIP; (b) identify key regional requirements of users and determine regional priorities; (c) encourage Members to develop national WIGOS Implementation Plan; (d) encourage Members to develop national reports on progress of Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP); (e) develop a portal to share EGOS national reports; (f) provide Members with technical guidance and capacity development support; (g) coordinate with EG-WIS; (h) report progress of RA II Regional WIP projects to RA II MG	WWW	CBS	(a) Task Team; (b) EG-WIGOS; (c) EG-WIGOS; (d) RA II and WMO OBS Dept. (e) EG-WIGOS and WMO OBS (f) Members and WMO OBS	x	x			Presentation of the 1st version of the Regional WIGOS Implementation Plan to RA II-15.
4.1.8	Development of RA II WIGOS/WIS Observation and Information Portal	(a) make a comprehensive review of all existing observing systems in the Region; (b) develop a portal for comprehensive weather data and products; (c) develop a portal for standard and best practices and interlink the portal with related websites	WWW	CBS	(a) EG-WIGOS; (b) Task Team; (c) Task Team	x	x	x	x	A regional observation and information portal to be developed and maintained.
4.1.9	Integration of Observing Systems for supporting Disaster Risk Reduction and aviation services	(a) standardize RBSN/RBCN stations; (b) develop integrated weather radar product for severe weather monitoring at the sub-regional level; (c) develop integrated surface-based and space-based operational products; (d) organize training and workshops on standard data management procedure	WWW	CBS	EG-WIGOS and Task Team	x	x	x	x	Reporting the progress and outcomes to RA II-16 session.
RKO 4.1.2		Observing networks are further improved in RA II.								
KPI 4.1.2.1		Number of NMHSs that have successfully implemented the improvement of observation capability.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.1.10	Enhanced temporal and spatial coverage of weather measurements	encourage and facilitate exchange and training on relevant know-how	WWW	CBS	Members	x	x	x	x	Percentage of Members expanding their weather measurements, both temporally and spatially, to reach 90% or above. [2011 level: 87%]
4.1.11	Maintenance/enhancement of the following stations in the Region: (a) operational Regional Basic Synoptic Network (RBSN) surface stations (b) automatic weather stations (AWSs) (c) rainfall stations (d) operational RBSN upper-air stations (e) operational Regional Basic Climatological Network (RBCN) stations (f) operational tide gauges	(a) collect and share standard and best practices documents from RA II Members; (b) survey and share status on QC/QA procedures and site management; (c) encourage the collection of metadata on observing systems; (d) enhance the service, support and standard of Regional Instrument Centre (RIC); (e) develop RIC websites and QA/QC portal; (f) encourage and facilitate exchange and training on relevant know-how	WWW, WCP, MMOP	CBS, CCI, JCOMM	(a) Members; (b) RICs	x	x	x	x	(a) Number of RBSN surface stations implemented and operational, to reach 1,819 (or +0.5%) or above. [2011 level: 1,810] (b) Number of AWSs implemented, to reach 4,300 (or +1.9%) or above. [2008 level: 4,221] (c) Number of rainfall stations implemented, to reach 39,000 (or +2.2%) or above. [2008 level: 38,173] (d) Number of RBSN upper-air stations implemented and operational, to be maintained at 327 (no change) or above. [2011 level: 327] (e) Number of RBCN stations implemented and operational, to reach 890 (or +1%) or above. [2011 level: 881] (f) Number of tide gauges implemented, to reach 563 (or +2%) or above. [2011 level: 553]

4.1.12	Maintenance/enhancement of operational weather radar stations in the Region	(a) develop strategic plan on development of the Southeast Asia radar network; (b) encourage and facilitate exchange and training on relevant know-how	WWW	CBS	Members	x	x	x	x	Number of weather radar stations implemented and operational, to reach 317 (or +1.0%) or above. [2011 level: 314]
4.1.13	Maintenance/enhancement of ground station(s) in the Region to receive high-resolution images from geostationary meteorological satellites	(a) continue implementation of the RA II Pilot Project to Develop Support for NMHSs in Satellite Data, Products and Training; (b) encourage and facilitate exchange and training on relevant know-how	WWW, SP	CBS	(a) EG-WIGOS; (b) Members	x	x	x	x	Percentage of Members operating such ground station(s), to be maintained at 77% (no change) or above. [2011 level: 77%]
4.1.14	Growth in spatial and temporal coverage of hydrological observation networks	maintain stations with long hydrological records for climate services	HWR, WWW	CHY, CBS	Members	x	x	x	x	Percentage of Members expanding their hydrological observation network both spatially and temporally, to reach 70% or above. [2011 level: 60%]
4.1.15	Maintaining/recruiting more voluntary observing ships (VOS) for meteorological, oceanographic and/or upper-air observations	encourage and facilitate exchange and training on relevant know-how	WWW, MMOP	CBS, JCOMM	Members	x	x	x	x	Number of VOSs operating in the Region to reach 1,100 or above. [2011 level: 1,020]
4.1.16	Operation of AWSs on green technology (including use of renewable energy such as solar and wind power), for sustainable development	organize training courses for Members	WWW	CBS	WG-WIGOS/WIS and Members	x	x	x	x	(i) Percentage of Members operating AWSs on green technology, to reach [##]% or above. (2011 survey: NOT reliable result - to be determined in the next survey); (ii) Total number of AWSs in the Region operating on green technology. (2011 survey: NOT reliable result - to be determined in the next survey)

WMO KO 4.2		WMO Information System is developed and implemented within RA II.							Baseline and Target	
RKO 4.2.1		Continued consolidation of the GTS to the managed network (AMDCN) is implemented with advanced centres (e.g., GISCs).								
KPI 4.2.1.1		Number of NMHSs that have successfully implemented the WIS in compliance with the regional WIS Implementation Plan.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.2.1	Regional WIS implementation plan for RA II [is developed]	(a) mobilize one or two experts of "Local Secondment" for development of Regional WIS Implementation Plan; (b) continue identification of WIS requirements of Members; (c) arrange a coordination meeting for GISCs and candidates; (d) initiate the development of AMDCN in RA II and provide guidance to Members in joining an AMDCN managed by their related GISC(s) and implementation of their connection; (e) organize training, WIS experts' visit for WIS implementation; (f) mobilize human resources	WWW	CBS	EG-WIS, GISCs and candidates, RA II and advanced centres	x	x			Presentation of the 1st version of the Regional WIS Implementation Plan to RA II-15.

4.2.2	Implementation of GISCs, DCPCs and NCs in RA II	(a) demonstrate capabilities of GISCs and DCPCs; (b) produce regional information documents on WIS; (c) organize a regional and national workshop for potential DCPCs and NCs;	WWW	CBS	(a) GISC candidates, CBS, EC (b) Members (c) EG-WIS	x	x	x	x	14th Congress felt that the area of responsibility of each RA II GISC should be officially agreed upon at the next session of RA II, now scheduled in 2012. However, to allow the Members of RA II to benefit from the new system before this, Congress encouraged RA II to initiate the coordination and consultations as a tentative solution so that each National Centre should be linked to a principal GISC and to a secondary GISC, taking into account the efficiency of options, the cost effectiveness for both NCs and GISCs, data distribution capacity of the GISCs, and the current structure of the GTS.
4.2.3	Assessment of the implementation of WIS in RA II	carry out a survey to monitor the status of WIS Centres and AMDCN development/implementation	WWW	CBS	EG-WIS, GISCs, DCPCs and NCs		x	x	x	(i) Percentage of Members successfully implementing WIS, to reach 50% or above. (2011 survey: NOT reliable result - to be determined in the next survey); (ii) Percentage of Members benefiting from WIS in terms of data and products exchange, to reach 50% or above. (2011 survey: NOT reliable result - to be determined in the next survey)
4.2.4	Reform of VPN Pilot Project in RA II and RA V	(a) coordinate new themes and share workloads; (b) develop and evaluate new WIS applications; (c) provide evaluated techniques and applications to operational WIS centers; (d) expand project participants	WWW	CBS	Coordinators in RA II and RA V, Steering Group of the project (CMA, JMA, HKO, BoM, NZ MetServices) and project participants	x	x	x	x	Reporting the reform with initial outcomes to CBS-15 and RA II-15.
RKO 4.2.2		GTS is further improved.								
KPI 4.2.2.1		Number of NMHSs that have successfully implemented the improvement of telecommunication capability.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.2.5	Improvement of the Regional Meteorological Telecommunication Network (RMTN) to meet the minimum required bandwidth of 128 kbps	(a) encourage the migration from analogue to digital circuits in the Middle-East and Central Asia; (b) continue annual survey in the RMTN status;	WWW	CBS	(a) RTHs; (b) EG-WIS and Members;	x	x	x	x	Achievement of all RMTN circuits at actual bandwidth of more than/equal to 128 kbps.
4.2.6	Solution of isolated NMCs from the GTS	(a) encourage and facilitate exchange on relevant know-how; (b) render assistance to NMCs Baghdad, Kabul and Thimpu;	WWW	CBS	Members, EG-WIS, related RTHs and WMO/WIS	x	x	x	x	All NMCs being connected to the GTS or WIS.
4.2.7	Connection to the Internet by broadband VPN	provide assistance	WWW	CBS	RTHs and Members	x	x	x	x	A high percentage of Members connected to Internet by broadband, to reach 92% (or +1 Member) or above. [2011 level: 90%]
4.2.8	Shift from the costly radiofacsimile broadcast of meteorological and oceanographic information in chart form to more economical modern communication means	(a) encourage and facilitate exchange on relevant know-how; (b) render assistance if needed to Members who wish to involve the operators and users in modernizing the service	WWW	CBS	Members	x	x			Number of marine met service providers who are still running radiofacsimile broadcast, to be kept at 23% or below. [2011 level: 23%]
4.2.9	Revision of Volume II (Regional Aspects) of Manual on the GTS (1991 edition)	(a) designate a new Theme Leader in Regional GTS Manual; (b) review comprehensively overall contents with data and reform the current Volume II	WWW	CBS	(a) MG; (b) EG-WIS and Members	x	x			Submission of a draft amendment for Volume II of Manual on the GTS to RA II-15.
RKO 4.2.3		Data discovery, access and retrieval (DAR) services are implemented in RA II.								
KPI 4.2.3.1		Number of NMHSs that have successfully implemented Metadata catalogue.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	

4.2.10	Data catalogue is implemented by DCPCs and NCs	(a) review and complement the initial catalogue for DCPCs and NCs; (b) develop a system to update data catalogue with relevant centres	WWW	CBS	GISCs, DCPCs and NCs	x	x	x	x	Percentage of Members joined metadata management of WIS in RA II, to reach 50 % or above.
4.2.11	Validation checking and Maintaining Data catalogue in the area of responsibility by the related GISC(s)	review and check the updated data catalogue to maintain its reliability in the area of responsibility	WWW	CBS	related GISC(s)	x	x	x	x	Percentage of DAR consistency, to reach 95% or above.
RKO 4.2.4		Migration to Table Driven Code Forms (TDCF) is implemented in RA II.								
KPI 4.2.4.1		Number of NMHSs exchanging data in Table Driven Code Forms (TDCF).								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.2.12	A regional contingency plan (step-by-step migration) is developed.	(a) provide RTHs' plan for assisting NCs in their responsibility area that have difficulties in migration; (b) develop a regional plan by compiling plans of Members and RTHs	WWW	CBS	RTHs	x	x	x		A regional contingency plan to be developed and maintained.

RKO 4.3		Accessible climate observations and climate data archives at NMHSs and global data centres are increased in RA II.								Baseline and Target
RKO 4.3.1		Implementation of the Global Climate Observing System (GCOS) is progressed in RA II.								
KPI 4.3.1.1		Number of NMHSs that have contributed to the implementation of GCOS .								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.3.1	Maintenance/enhancement of operational GCOS surface and upper-air stations in the Region	encourage and facilitate exchange and training on relevant know-how	WCP, GCOS, WWW	CCI, CBS	Members	x	x	x	x	Number of GCOS surface stations implemented and operational, to be maintained at 294 (no change) or above. [2008 level: 294]; Number of GCOS upper-air stations implemented and operational, to be maintained at 39 (no change) or above. [2008 level: 39]
4.3.2	Improved observations for climate services	(a) enhance capacities of RA II RICs; (b) develop the RA II operational climate database; (c) organize RIC training workshop for the Members	WCP, GCOS, WWW	CCI, CBS	RA II and Members	x	x	x	x	Implementation of the RA II operational climate database.
RKO 4.3.2		Historical climate data are preserved in RA II.								
KPI 4.3.2.1		Level of availability of long period, rescued, digitized climate records with appropriate metadata.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
4.3.3	Increased availability of rescued and digitized climate data	(a) encourage and facilitate exchange and training on relevant know-how; (b) render assistance to NMHSs for DARE projects	WCP, WWW	CCI, CBS	(a) Members; (b) WMO and Members;	x	x	x	x	Percentage of Members, with increased availability of rescued and digitized climate data, to reach [##]% or above. (to be determined in the next survey); Percentage of Members carrying out rescue and digitization of climate records, to reach 92% or above. [2011 level: 90%]

Expected Result 5

Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development.

RKO 5.1		Research in climate prediction/projection to improve the skills of seasonal, decadal, and longer time scales is enhanced in RA II.								Baseline and Target
KPI 5.1.1		Number of Members engaging in regional or sub-regional climate research.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	

5.1.1	Enhanced regional or sub-regional climate research capacity	promote the cooperation between EG-CS and WCRP/CLIVAR regional Panels and hold joint workshop with research communities at RCOF	WRRP, WCRP	CCI	EG-CS and Members	x	x	x	x	Percentage of Members engaging in regional or sub-regional climate research, to reach 50% or above.
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RKO 5.2		Research in the prediction of high-impact weather on time scales of hours to seasons is enhanced in RA II.							Baseline and Target	
KPI 5.2.1		Number of Members using THORPEX GIFS products to improve warning services.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
5.2.1	Advanced research capability on high-impact weather	continue the research within THORPEX and promote activities of Asian Regional Committee of the Program	WWRP	CAS	Members	x	x	x	x	Number of Members participating THORPEX research activities, to reach [##]% or above. (to be determined in the next survey)
5.2.2	Efficient and effective technical transfer from research to operation for high-impact weather prediction	initiate and implement new Research Development Project (RDP) in the Region	WWRP, DPFS	CAS, CBS	Members	x	x	x	x	Number of WMO research projects in the Region to be maintained at three. [2011 level: 3]

RKO 5.3		Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments in RA II.							Baseline and Target	
KPI 5.3.1		Global Atmospheric Watch (GAW) stations enhanced in RA II.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
5.3.1	Maintenance/enhancement of Global Atmospheric Watch (GAW) stations in the Region	(a) establish a regional panel of experts to take care of this task; (b) support training and capacity building activities related to atmospheric chemistry; (c) enhance the technical exchange and cooperation on atmospheric composition observation in the region; (d) enhance the station audit of GAW systems in the region	GAW	CAS	Members	x	x	x	x	Number of GAW stations implemented, to be maintained at 34 (no change) or above. [2008 level: 34]

RKO 5.4		Research activities on seamless forecasts of weather, climate, water and the environment from months to seasons are enhanced in RA II.							Baseline and Target	
KPI 5.4.1		Number of Members enhanced the ability to deliver timely and quality forecasts of sand and dust storms in RA II.								
KPI 5.4.2		Number of Members using GIFS-TIGGE products to improve warning services.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
5.4.1	Enhancement of sand and dust monitoring and forecasting	(a) enhance the ability of partner research experts to deliver timely and quality forecasts of sand and dust storms under the WMO Sand and Dust Storm Warning and Assessment System (SDS-WAS). (b) organize workshops and form task team in the Region to provide guidance to relevant NMHSs; (c) examine data policies and exchange observational sand and dust data; (d) enhance the quality check and conduct intercomparison	WWRP, GAW, DPFS	CAS, CBS	Members and Major centres of the SDS-WAS	x	x	x	x	Percentage of Members with enhancement in delivering timely and quality forecasts of sand and dust storms, to reach [##]% or above. (to be determined in the next survey)
5.4.2	Increased research capability related to EPS and its application	make trial use of GIFS-TIGGE products and support activities related to EPS techniques.	WWRP, DPFS	CAS, CBS	Members	x	x	x	x	Percentage of Members using GIFS-TIGGE products to improve warning services, to reach [##]% or above. (to be determined in the next survey)

RKO 5.5		Predictions/projections of El Niño/Southern Oscillation (ENSO) and monsoons are improved in RA II.							Baseline and Target	
KPI 5.5.1		Number of Members with improvement in ENSO, IOD, monsoons and MJO predictions .								

	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
5.5.1	Improvement in ENSO, IOD, monsoons and MJO predictions	encourage and facilitate exchange and training on relevant know-how	WCP	CCI	EG-CS and Members	x	x	x	x	Percentage of Members with improvement in ENSO, IOD, monsoons and MJO predictions, to reach [##]% or above. (to be determined in the next survey)

Expected Result 6

Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfil their mandates.

RKO 6.1	Visibility and relevance of NMHSs and Regional Centres in regional and national development agendas is improved, particularly in developing and least developed countries in RA II.									Baseline and Target
KPI 6.1.1	Number of NMHSs having access to the template to formulate capacity assessment and development plan.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
6.1.1	Enhanced importance and relevance of NMHSs in regional and national agenda	organize a regional LDC coordination Meeting and national workshops for strategic plan in RA II	TCOP, RP, LDCP	-	MG and Members	x	x	x	x	One regional LDC coordination Meeting and a national workshop for strategic plan are organized in RA II.

RKO 6.2	Infrastructure and operational facilities of NMHSs and Regional Centres are improved, particularly in developing and least developed countries in RA II.									Baseline and Target
RKO 6.2.1	Infrastructure and operational facilities are improved to develop and disseminate products in RA II.									
KPI 6.2.1.1	Number of NMHSs with improvement in infrastructure and operational facilities to disseminate products.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
6.2.1	Improved operation of an automatic telephone answering system for weather information, forecasts and warnings	(a) develop necessary capability to deliver frequently updated and accurate information (b) encourage and facilitate exchange and training on relevant know-how	TCOP, LDCP	CBS	Members	x	x	x		Percentage of Members operating an automatic telephone answering system for weather information, forecasts and warnings, to reach 77% or above. [2011 level: 67%]
6.2.2	Improved Website for the delivery and display of their services and products with new technology	(a) encourage and facilitate exchange and training on relevant know-how (b) render assistance if needed to Members	TCOP, LDCP	CBS	Members	x	x	x		Percentage of Members operating a website for delivery and display of their services and products, to reach 95% (or +1 Member) or above. [2011 level: 93%]
RKO 6.2.2	NMHSs' capability in self-monitoring the performance and improvement is enhanced in RA II.									
KPI 6.2.2.1	Number of NMHSs with enhancement of capability in self-monitoring the performance and improvement.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
6.2.3	Verification of the accuracy of public forecasts	encourage and facilitate exchange and training on relevant know-how	PWSP	CBS	Members	x	x	x	x	Percentage of Members carrying out forecast verification, to reach 90% (or +1 Member) or above. [2011 level: 87%]
6.2.4	Feedback from the public through opinion surveys, user groups, etc.	encourage and facilitate exchange and training on relevant know-how	PWSP	CBS	Members	x	x	x	x	Percentage of Members obtaining feedback from the public through opinion surveys, user groups, etc., to reach 83% (or +2 Member) or above. [2011 level: 77%]
6.2.5	Verification of aviation forecasts (including TAF) and warnings using a WMO-recommended set of methods	(a) encourage and facilitate exchange and training on relevant know-how (b) implement pilot project to develop support for NMHSs in aviation forecast verification	AeMP	CAeM	Members	x	x	x	x	Percentage of AEMSP carrying out verification of aviation forecasts and warnings using a WMO-recommended set of methods, to reach 62% or above. [2011 level: 52%]
6.2.6	Feedback from aviation users through opinion surveys, user groups, etc.	encourage and facilitate exchange and training on relevant know-how	AeMP	CAeM	Members	x	x	x	x	Percentage of AEMSP obtaining feedback from aviation users through opinion surveys, user groups, etc., to reach 79% or above. [2011 level: 69%]

6.2.7	Feedback from marine users through opinion surveys, user groups, etc.	encourage and facilitate exchange and training on relevant know-how	MMOP	JCOMM	Members	x	x	x	x	Percentage of marine met service providers obtaining feedback from marine users through opinion surveys, user groups, etc., to reach 80% or above. [2011 level: 71%]
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RKO 6.3		Education and training development activities at national and regional levels are improved, especially in developing and least developed countries in RA II.							Baseline and Target	
KPI 6.3.1		Number of NMHSs maintaining a structured training programme for professional, technical and supporting staff.								
KPI 6.3.2		Number of NMHSs assisting its staff in acquiring the necessary qualification to improve services.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
6.3.1	Maintenance of highly-qualified staff with specialized training in NMHSs	encourage and facilitate exchange and training on relevant know-how	ETRP	EC Panel on ET	MG, Members and Regional Training Centres	x	x	x	x	Percentage of Members having success in maintaining highly qualified personnel with specialized training, to reach 95% or above. [2011 level: 93%]
6.3.2	Maintenance/implementation of a structured training plan for professional, technical and supporting staff	(a) encourage and facilitate exchange on relevant know-how; (b) conduct mission visit(s) to Members in developing countries or least developed countries	ETRP	EC Panel on ET	MG, Members and Regional Training Centres	x	x	x	x	(i) A high percentage of Members with a structured training plan, to reach 95% (or +1 Member) or above. [2011 level: 93%]; (ii) Report of expert visit if any.
6.3.3	Access and use of e-learning materials	(a) encourage and facilitate exchange and training on relevant know-how, including the set up of necessary infrastructure for e-learning; (b) develop a distance learning module for aeronautical forecaster and observer competency in cooperation with the CAeM Expert Team on Education, Training and Competencies (ET/ETC)	ETRP	EC Panel on ET	MG, Members and Regional Training Centres	x	x	x	x	Percentage of Members having access to e-learning materials, to reach 83% or above. [2011 level: 77%]
6.3.4	Professional certification of staff in respect of WMO's latest personnel classification scheme	encourage and facilitate exchange and training on relevant know-how	ETRP	EC Panel on ET	MG, Members and Regional Training Centres	x	x	x	x	Percentage of Members with their staff obtaining professional certification in respect of WMO's latest personnel classification scheme, to reach 63% or above. [2011 level: 53%]
6.3.5	Continuous education programmes and refresher courses for staff, as well as management training (including strategic planning) for mid- and high-level personnel	encourage and facilitate exchange and training on relevant know-how	ETRP	EC Panel on ET	MG, Members and Regional Training Centres	x	x	x	x	Percentage of Members actively engaged in continuous education programmes and refresher courses for staff as well as training for mid- and high-level personnel on management skills, to reach 83% or above. [2011 level: 77%]

RKO 6.4		Capacities of NMHSs are enhanced through cooperation and partnerships with other national and regional organizations in RA II.							Baseline and Target	
KPI 6.4.1		Number of NMHSs taking part in WMO's global weather information services as well as pilot projects in RA II.								
KPI 6.4.2		Number of NMHSs benefited from development projects and activities supported and implemented with regional partners.								
Deliverables		Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
6.4.1	Enhanced development cooperation activities in partnership with regional partners	(a) identify financial institutions/technical cooperation organizations' support mechanisms and good practices for mobilizing resources; (b) replicate the funded projects for other Members; (c) encourage and facilitate exchange and training on relevant know-how	TCOP, RP		MG, RA II and Members	x	x	x	x	Number of new project activities developed in partnership with regional partners to be two or above.

6.4.2	Contributing operational weather information to WMO's on-line World Weather Information Service (WWIS)	encourage and facilitate exchange and training on relevant know-how	PWSP	CBS	WMO/PWS and Members	x	x	x	x	(i) Number of Members contributing operational weather information to WWIS, to reach 32 or above. [2011 level: 26]; (ii) Number of cities in the Region for which weather forecasts are on WWIS, to reach 368 (or +10 cities) or above. [2011 level: 358]
6.4.3	Support to exchange of official warnings of severe weather by contributing to WMO's on-line Severe Weather Information Centre (SWIC)	encourage and facilitate exchange and training on relevant know-how	PWSP	CBS	WMO/PWS and Members	x	x	x	x	Number of Members supporting exchange of official warnings of severe weather by contributing to SWIC, to reach 14 (or +2 Member) or above. [2011 level: 12]
6.4.4	Enhanced use of and participation in city-specific NWP products provided to developing countries via Internet (RA II Project)	(a) provide NWP products in text format by advanced centres; (b) provide verification software to participating Members; (c) organize training courses on use and interpretation of NWP products; (d) carry out a feasibility study of provision of forecast for each of the RBSN stations in the Region	WWW, DPFS, RP	CBS	RA II, Coordinating Group of the RA II Project and Members	x	x	x	x	(i) Number of Members joining the project, to reach 19 (or +1 Member) or above. [2011 level: 18]; (ii) progress report by the Project Coordination Group.
6.4.5	Enhanced use of and participation in the support provided to developing countries in Aeronautical Meteorology Programme (RA II Project)	provide enhanced products including: additional satellite products; gridded forecast of icing/turbulence at increased spatial and temporal resolution; and enhanced user-friendliness of the web interface	AeMP, RP	CAeM	RA II, Coordinating Group of the RA II Project and Members	x	x	x	x	(i) Number of Members joining the project, to reach 14 (or +2 Member) or above. [2011 level: 12]; (ii) progress report by the Project Coordination Group.

Expected Result 7

New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategic issues.

RKO 7.1	WMO leadership and contribution in relevant UN system and other international and regional partners' initiatives and programmes is improved in RA II.								Baseline and Target	
KPI 7.1.1	Number of NMHSs with enhanced capability to develop subregional joint projects in the areas of meteorological observations and to cooperate with other sectors such as health organizations in the provision of specific weather services or advice in RA II.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
7.1.1	Exchange of weather radar images operationally over GTS/WIS, Internet or other means, with a view to producing a composite radar picture for the Region (or sub-region), to enhance public, aviation and marine safety	(a) initiate discussion with relevant Members (b) set up a working group if necessary (c) provide guidance and organize workshop for NMHSs	WWW, RP	CBS	RA II, WG-WIGOS/WIS and Members	x	x	x	x	Feasibility report on the exchange of weather radar images operationally and the preparation of a composite radar picture. Initial set-up plan to be prepared for the exchange of radar images and production of radar products.
7.1.2	Collection and distribution of automated meteorological observations from aircraft, e.g., AMDAR and ADS data	Provide guidance and organize workshop for NMHSs	AeMP, RP	CAeM	RA II and Members	x	x	x	x	(i) Number of Members collecting/distributing automated met observations from aircraft, to be maintained at 11 (no change) or above.; [2011 level: 11]; (ii) Number of observations generated per year. (2011 survey: NOT reliable result - to be determined in the next survey)

7.1.3	Health-related studies in association with partner organizations (in areas such as urban micro-climate studies in respect of respiratory diseases, and bio-climate studies in respect of diseases such as Dengue Fever and avian flu)	encourage and facilitate exchange and training on relevant know-how	WCP, RP	CCI	RA II and Members	x	x	x	x	Percentage of Members engaging in health-related studies in association with partner organizations, to reach 63% or above. [2011 level: 53%]
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RKO 7.2	Public, decision-makers and other stakeholders are increasingly aware of key WMO and NMHSs issues, activities and priorities through enhanced communication in RA II.									Baseline and Target
KPI 7.2.1	Number of NMHSs implementing a strategy for communication with key stakeholders in RA II.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
7.2.1	Enhanced visibility of activities and priorities of WMO and NMHSs through established starategy for communication with stakeholders and regional organizations	(a) develop a communication strategy/guideline with stakeholders including academia and with regional organizations; (b) encourage and facilitate exchange and training on relevant know-how	PWSP		MG, ICT-SD, RA II and Members	x	x			Number of Members which developed communication strategy with stakeholders and regional organizations to reach [##]% or above. (to be determined in the next survey)

Expected Result 8

An effective and efficient Regional Association.

RKO 8.1	Effectiveness and efficiency of Regional Association are improved.									Baseline and Target
KPI 8.1.1	Members' satisfaction with XV-RA session in efficiency and cost-effectiveness.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
8.1.1	Successful RA II-15, Regional Seminar, Technical Conference, etc.	(a) prepare decision- and action-based documents to improve the effectiveness of RA sessions; (b) focus on Members' implementation of standards and recommended practices (SARPs) and the monitoring and evaluation of the status of implementation; (c) organize pre-session/conference discussions through teleconference and/or the RAP website	RP	-	RA II and MG	x	x	x	x	Percentage of Members being satisfied with RA session, to reach [##]% or above. (to be determined in the next survey)
8.1.2	RA II SOP developed, adopted and published	(a) develop the draft RA II Operating Plan (ERs 1-8) by 15-Jun-2012; (b) adopt the RA II OP 2012-2015 at the MG-6 session in October 2012; (c) refine the RA II OP, develop and adopt the RA II SOP 2012-2015 at RA II-15 in Dec 2012	RP	-	RA II, MG and Task Team on SOP	x				Adoption of the SOP at RA II-15.
8.1.3	Monitoring and evaluation of the implementation of RA II SOP	(a) develop the new format of the survey; (b) carry out survey on the capability of NMHSs; (c) analyze and evaluate the survey results and report to RA II-16; (d) contribute to development/updating of WMO Country Profile Database (CPDB) and best utilize CPDB for information exchange and monitoring of the progress	RP	-	RA II, MG and Task Team on SOP		x		x	Survey to be implemented in 2013 and 2015.

RKO 8.2	Effectiveness and efficiency of Regional Office for Asia and the South-West Pacific (RAP Office) including the WMO Office for West Asia are improved.									Baseline and Target
KPI 8.2.1	Degree of satisfaction of Members with relocation of the RAP Office from Geneva to the Region.									
KPI 8.2.2	Degree of satisfaction of Members with the information on RA II activities available on WMO web site.									
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	

8.2.1	Increased efficiency and cost-effectiveness of RAP office in the Region	(a) assess pros and cons of office relocation; (b) obtain approval from RA II and RA V	RP	-	RA II	x	x	x	x	Percentage of Members being satisfied with relocation of RAP office in the Region.
8.2.2	Information on RA II activities available on WMO web site	post information on RA II activities on WMO web site within 1 week once the information is available	RP	-	RA II	x	x			Percentage of Members being satisfied with the update of information, to reach 70% or above.

RKO 8.3		Effectiveness and efficiency of Subsidiary Bodies of RA II are improved.							Baseline and Target	
KPI 8.3.1		Degree of satisfaction of Members with activities of the subsidiary bodies in line with Regional Operating Plan.								
	Deliverables	Activities	Programme	TC	Responsibility	2012	2013	2014	2015	
8.3.1	(Implementation and) Completion of activities of the subsidiary bodies in line with Regional Operating Plan	(a) establish effective working structure; (b) publish annual progress reports; (c) enhance responsibilities/functions of the Management Group	RP	-	RA II MG and other Subsidiary Bodies	x	x	x	x	Activities of the subsidiary bodies to be completed in line with Regional Operating Plan.