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**PROGRESS ACHIEVED IN IMPLEMENTING THE REGIONAL INITIATIVE FOR THE
ASSESSMENT OF THE IMPACT OF CLIMATE CHANGE ON WATER RESOURCES
AND SOCIO-ECONOMIC VULNERABILITY IN THE ARAB REGION (RICCAR)****Summary**

The Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) is a collaborative effort of the United Nations, the League of Arab States and international expert institutions that responds to a number of intergovernmental resolutions adopted at the ministerial level. This report reviews the progress achieved in implementing RICCAR in relation to its four pillars, namely (a) a baseline review of the collection of data and information; (b) an integrated assessment of impact and vulnerability; (c) capacity-building and institutional strengthening; and (d) awareness-raising and information dissemination.

Since the ninth session of the Committee on Water Resources of the Economic and Social Commission for Western Asia (ESCWA), the following RICCAR activities were carried out. A guidance document on the methodological framework of integrated assessment was issued by ESCWA. The set-up of the Arab domain, an effort led by the Swedish Meteorological and Hydrological Institute (SMHI), was completed and endorsed by the Coordinated Regional Climate Downscaling Experiment (CORDEX). Five regional climate modelling (RCM) projections based on the Arab domain were done by SMHI, thus contributing to an ensemble of outputs for analysis. The Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD) has been digitizing climate regional data based on historical records, and compiling hydrological data for specific basins. The third and fourth expert group meetings of RICCAR were convened to consult with Governments and counterparts on progress achieved and future work. Two regional training workshops were also organized to support capacity-building in the fields of climate prediction/projection, extreme events indices in the Arab region and RCM application and analysis. National workshops were also held to support the development of disaster inventory databases. In addition, the RICCAR methodology was disseminated at several regional and global meetings. The RICCAR website and brochure were also released to raise awareness and facilitate access to the information generated by the initiative. Constraints to implementation include difficulties in collecting observed climate and hydrological data, and political instability in the region.

Additional funding and support for RICCAR was provided by the Swedish International Development Cooperation Agency (SIDA); by the German Federal Ministry for Economic Cooperation and Development (BMZ) through a new partnership with the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)); and by ESCWA, the United Nations Environment Programme and the United Nations Office for Disaster Risk Reduction through their regular programme of work.

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ABBREVIATIONS AND ACRONYMS

ACCWaM	Adapting to Climate Change in the Water Sector in the MENA Region
ACSAD	Arab Center for the Studies of Arid Zones and Dry Lands
AMWC	Arab Ministerial Water Council
BMZ	German Federal Ministry for Economic Cooperation and Development
CAMRE	Council of Arab Ministers Responsible for the Environment
CORDEX	Coordinated Regional Climate Downscaling Experiment
CSC	Climate Service Center
EGM	Expert Group Meeting
ESCWA	Economic and Social Commission for Western Asia
GCM	General Circulation Model
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
HEC-HMS	Hydrologic Modelling System of the Hydrologic Engineering Center
HYPE	Hydrological Predictions for the Environment
IM	Integrated mapping
IPCC	Intergovernmental Panel on Climate Change
KAU	King Abdulaziz University
KAUST	King Abdullah University of Science and Technology
MENA	Middle East and North Africa
RCM	Regional climate modelling
RCP	Representative Concentration Pathway
RHM	Regional hydrological model
RICCAR	Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socioeconomic Vulnerability in the Arab Region
SIDA	Swedish International Development Cooperation Agency
SMHI	Swedish Meteorological and Hydrological Institute
UNEP/ROWA	United Nations Environment Programme, Regional Office for West Asia
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC COP-18/CMP-8	Eighteenth Conference of the Parties to the United Nations Framework Convention on Climate Change, Eighth Session of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol
UNISDR	United Nations Office for Disaster Risk Reduction
VA	Vulnerability assessment
WHO	World Health Organization
WMO	World Meteorological Organization

Introduction

1. The Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) is a collaborative intergovernmental, inter-agency initiative of the United Nations and the League of Arab States, implemented in partnership with international expert institutions. This report reviews the progress achieved and the constraints faced in implementing RICCAR, and presents planned future work.

I. BACKGROUND AND OVERVIEW

2. RICCAR responds to the requests of Arab Governments who wish to increase the understanding of the impact of climate change on water resources and its associated effects on socioeconomic vulnerability in the Arab region. The Arab Ministerial Declaration on Climate Change, which was adopted by the Council of Arab Ministers Responsible for the Environment (CAMRE) in December 2007, calls for the preparation of methodologies aimed at assessing the impact of climate change on water resources, in view of supporting the development of climate change adaptation strategies and measures in the region. This call was followed by a resolution adopted by the twenty-fifth session of the United Nations Economic and Social Commission for Western Asia (ESCWA) in May 2008, which requested the secretariat to prepare an assessment of the vulnerability to climate change of economic and social development in the region, with particular emphasis on freshwater resources. Then, in January 2009, the Arab Summit for Economic and Social Development accepted the preparation of a project to assess the impact of climate change on water resources in the Arab region. The implementation of the initiative is coordinated and reported upon through the Arab Ministerial Water Council (AMWC), the Arab Permanent Committee for Meteorology of the League of Arab States and the United Nations Regional Coordination Mechanism Thematic Working Group on Climate Change in the Arab region, which is chaired by the United Nations Environment Programme, Regional Office for West Asia (UNEP/ROWA).

3. The objective of RICCAR is to assess the impact of climate change on freshwater resources in the Arab region and to identify the regional socioeconomic and environmental vulnerability to climate change. In doing so, it aims to provide a common regional platform for addressing and responding to the impact of climate change.

4. The four pillars of RICCAR are:

- (a) Baseline review and knowledge management;
- (b) Climate change impact analysis and vulnerability assessment;
- (c) Capacity-building and institutional strengthening;
- (d) Awareness-raising and information dissemination.

5. The implementation of RICCAR involves Arab Governments, the League of Arab States and its specialized agencies, ESCWA and a number of other United Nations entities, as well as other international institutions. The Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD); the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)); the Swedish Meteorological and Hydrological Institute (SMHI); UNEP/ROWA; the United Nations Educational, Scientific and Cultural Organization - Office in Cairo (UNESCO Office in Cairo); the United Nations University-Institute for Water, Environment and Health; the United Nations Office for Disaster Risk Reduction (UNISDR) and the World Meteorological Organization (WMO) all contribute to the initiative. RICCAR is coordinated by ESCWA.

6. Several projects contribute to the implementation of the initiative, including a project funded by the Swedish International Development Cooperation Agency (SIDA) entitled "Assessment of the Impact of Climate Change on Water Resources and Socioeconomic Vulnerability in the Arab Region", led by ESCWA and implemented in partnership with the League of Arab States, ACSAD, SMHI, UNISDR and WMO. The

project commenced in December 2010 and is expected to continue through 2014. SIDA provided additional funding in December 2011 to include the analysis of extreme weather events in the project. The total contribution of SIDA to the project is approximately US\$4 million, which provided for many RICCAR activities such as the review of baseline information, the set-up of the Arab domain, regional climate modelling and regional and national workshops.

7. A second project supporting RICCAR is led by GIZ and entitled “Adapting to climate change in the water sector in the MENA region” (ACCWaM). The project focuses on the vulnerability assessment and regional knowledge hub components of RICCAR. It is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) which provides technical support through a German consultancy called “adelphi” and financial support to ESCWA, used for the organization of working group meetings and the establishment of the regional knowledge hub. ESCWA is also collaborating with GIZ, the League of Arab States and ACSAD on other ACCWaM activities related to adapting to climate change outside the scope of RICCAR.

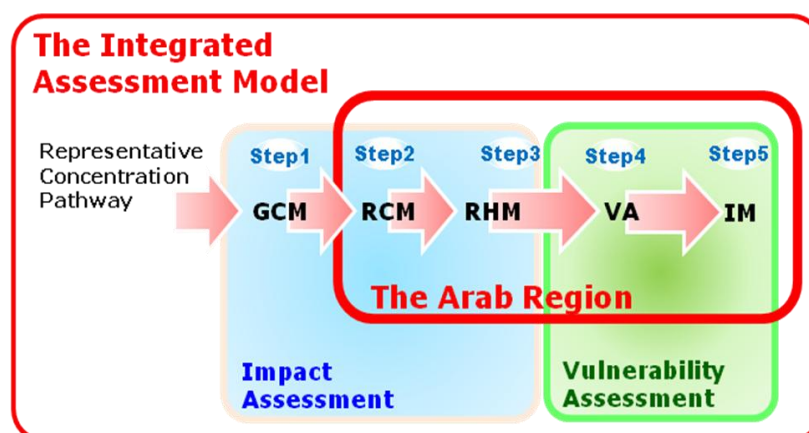
8. The outcomes of a regional climate modelling project implemented by the UNESCO - Office in Cairo contributed to the sensitivity analysis that allowed for the set-up of the Arab domain. Research and modelling outputs provided by two Saudi Arabian research institutes based at the King Abdullah University of Science and Technology (KAUST) and the King Abdulaziz University (KAU) also contributed to the sensitivity analysis. It is expected that the outputs of the climate modelling experiments conducted by those three institutions and by the Climate Service Center (CSC) in Germany will contribute to an ensemble of climate modelling projections for the Arab region.

II. PROGRESS ACHIEVED

A. METHODOLOGICAL FRAMEWORK

9. ESCWA developed a methodological framework for an integrated assessment of the impact of climate change on water resources and associated socioeconomic vulnerability in the Arab region, linking climate modelling, hydrological modelling, vulnerability assessment and integrated mapping tools. This methodological framework is explained in detail in the ESCWA publication entitled “Assessing the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region: A Methodological Framework for Pursuing an Integrated Assessment”,¹ published in August 2011. The paper provides a step-by-step review of how RICCAR pursues an integrated assessment by using impact assessment outcomes to inform the vulnerability assessment development, as shown in figure I.

Figure I. Integrated assessment methodology



¹ E/ESCWA/SDPD/2011/1. Available from: <http://www.escwa.un.org/information/pubaction.asp?PubID=1118>.

B. BASELINE REVIEW

10. Climate data availability and quality were reviewed by ACSAD, which found that historical observations for monthly and daily temperatures for the Arab region are limited. Accordingly, ACSAD is pursuing selected climate data rescue activities to digitize climate data available in record books for the period 1950-2010, using data acquisition tools and quality control programmes. This work is being complemented by the efforts of WMO and ESCWA to support climate data rescue at the national level in selected countries.

11. Concurrently, SMHI reviewed the availability of general circulation model (GCM) projections that are based on the new scenarios of representative concentration pathways (RCPs) adopted by the Intergovernmental Panel on Climate Change (IPCC) for its fifth assessment report. In doing so, SMHI examined how well different GCMs performed for data on the Arab region, and worked on assembling different available global datasets in evaluating the outcomes of regional climate modellings (RCMs) conducted for the Arab domain.

12. ACSAD and SMHI also initiated the identification and assessment of hydrological data and models that could be used for regional scale hydrological modelling based on RCM outputs. Three hydrological models were proposed by SMHI, namely the Hydrological Predictions for the Environment (HYPE) model, the HBV model and the VIC model, while ACSAD also recommended the use of the Hydrologic Modelling System of the Hydrologic Engineering Center (HEC-HMS). Four test basins were identified to calibrate and test the regional hydrological model, namely the Orontes, Nahr al-Kabir, Euphrates, and Tensift basins. Available datasets were also reviewed for their applicability in hydrological modelling for the Arab region, considering the difficulty to secure observed data to support hydrological modelling. A coordination meeting between ACSAD and SMHI was held in October 2011 at SMHI in Norrköping, Sweden, to exchange views on the available hydrological databases and the performance of applied models, and to follow-up on the discussions of the SIDA project partners meeting, held in Beirut in July 2012.

13. ESCWA conducted a preliminary assessment of socioeconomic and environmental indicators and datasets available in the region, as a first step in the process of gathering information for the RICCAR vulnerability assessment. A compilation of socioeconomic datasets and maps delineating subnational administrative districts in Arab countries was also undertaken.

C. THE ARAB DOMAIN

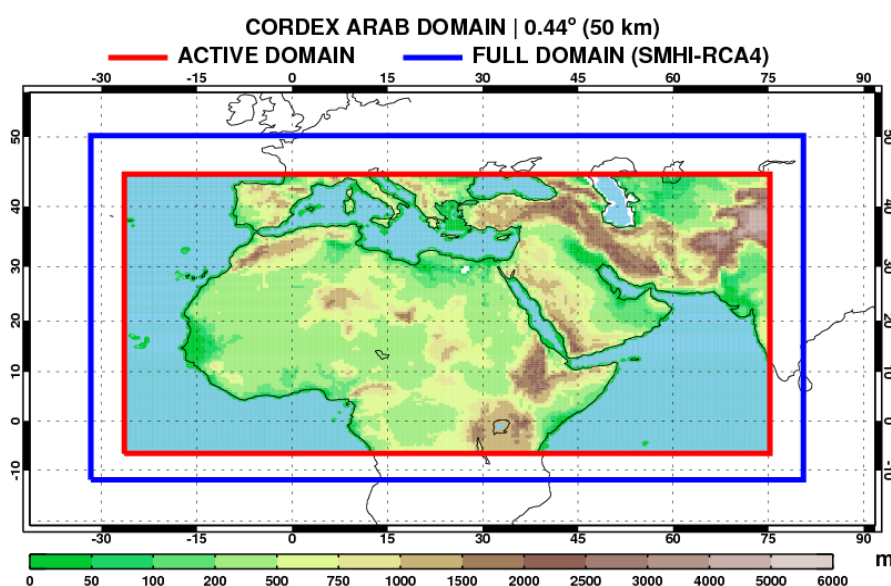
14. At the third RICCAR expert group meeting (EGM) on assessing climate change impacts on water resources and socioeconomic development in the Arab region (Beirut, 6-7 July 2011), SMHI was requested to coordinate and lead the set-up of the Arab domain with ACSAD, UNESCO, KAU and KAUST. It was agreed that the domain would be established based on the international protocols adopted by the Coordinated Regional Climate Downscaling Experiment (CORDEX), which is a project of the World Climate Research Programme/Working Group on Regional Climate, so that it meets international modelling standards.

15. The set-up of the domain entailed conducting a sensitivity analysis of five possible domains, which were tested and reviewed by SMHI in consultation with the other partner organizations. The final Arab domain is illustrated in figure II² and covers the headwaters of the Nile, Tigris and Euphrates Rivers, as well as a significant portion of the Indian Ocean whose circulation patterns affect climate in the Gulf and the Mashreq, including cases of extreme weather events.

² This figure and additional information about the domain are available from <http://www.escwa.un.org/RICCAR/ad.asp?ReferenceNum=AD>.

16. The Arab domain was approved as an official CORDEX domain in July 2012.³ The establishment of the domain promotes research and analysis of regional climate modelling for the entire Arab region, using the same boundary conditions and standards. It consequently avoids inconsistencies in the analysis of the Arab region that could result from compilations of projections generated for the African, Asian and Mediterranean domains. The establishment of the domain also allows for the generation and comparison of different RCM projections undertaken by different institutions of the Arab region, both within and outside the scope of RICCAR. This development enhances the ability of researchers to examine the impact of climate change on the Arab region and generate knowledge about a region that has been poorly covered in the international literature. However, it should be noted that there is currently some debate within CORDEX on whether the domain should be referred to as the Arab domain or the MENA-CORDEX domain (where MENA refers to Middle East and North Africa), as CORDEX uses geographical nomenclature when referring to its vetted domains. However, it was agreed that within the framework of the collaboration with the League of Arab States and of RICCAR, the domain would continue to be referred to as the Arab domain.

Figure II. The Arab domain



17. The Arab domain (MENA-CORDEX domain) is referred to as ARB-44 when conducting projections at a resolution of 50 km x 50 km, and as ARB-22 when conducting projections at a resolution of 25 km x 25 km. The establishment of the Arab domain within CORDEX is a major achievement of RICCAR and a significant step forward in encouraging greater research, understanding and awareness about the impact of climate change on the Arab region.

D. ENSEMBLE OF REGIONAL CLIMATE PROJECTIONS

18. An ensemble of RCM projections for the Arab region can help to reduce uncertainty in the analysis of impacts. Indeed, such an ensemble allows for the cross-comparison of different RCM runs over the Arab region that use the same or different RCMs or the same or different GCMs, based on a common domain and set of scenarios. The fourth RICCAR EGM, on regional cooperation for climate change impact assessment on water resources in the Arab Region (Beirut, 4-5 July 2012), thus agreed to pursue an RCM ensemble approach for the Arab region based on CORDEX standards. This resulted in the agreement that the RCMs

³ Information on the domain is available on the CORDEX website (<http://wcrp-cordex.ipsl.jussieu.fr/>) and the Danish Meteorological Institute website (<http://cordex.dmi.dk/joomla/>), which provides the CORDEX archive design details on regional domains.

will be undertaken using RCP8.5 and RCP4.5 emission scenarios, in accordance with CORDEX decisions, and that SMHI would lead the coordination of this ensemble with other institutions.

19. The ensemble will include projections generated by SMHI, ACSAD using PRECIS (Providing Regional Climates for Impacts Studies), KAU and KAUST. CSC is also interested in preparing a projection for the Arab domain within the ensemble. The table below describes the preliminary ensemble for the Arab region to be pursued under RICCAR, noting that additional RCMs could be included later. Five climate projections were completed by SMHI on the Arab domain to date, using its RCM called RCA4. ACSAD has applied PRECIS to the Arab domain using historical data and expects to initiate the projection component soon.

ARAB-CORDEX ENSEMBLE MATRIX

RCM (Institute)	GCM (resolution)	Historical (1950-2005)	RCP8.5 (2006-2100)	RCP4.5 (2006-2100)
RCA4 (SMHI)	EC-Earth (50km)	✓	✓	✓
RCA4 (SMHI)	EC-Earth (25km)	✓	✓	
RCA4 (SMHI)	CNRM (50km)	✓	✓	(✓)
RCA4 (SMHI)	HadGEM (50km)	(✓)	(✓)	(✓)
RCA4 (SMHI)	GFDL-ESM (50km)	✓	✓	(✓)
RCA4 (SMHI)	TBD (25km)	✓	✓	
n/a (KAUST)	GFDL-ESM-1 (25km)	✓	✓ (2050)	✓ (2050)
RegCM4 (KAU)	TDB (50km)	✓	✓	✓
Remo (CSC)	MPI-ESM (50km)	✓		✓

Source: SMHI presentation, *Establishing an Arab Domain within CORDEX & Pursuing an Ensemble Approach*, presented at the fourth RICCAR EGM held in July 2012 in Beirut. <http://css.escwa.org.lb/SDPD/1845/2-2.pdf>.

✓: running, completed, or planned.

(✓): may be run if possible.

E. ANALYSIS OF EXTREME EVENTS

20. In December 2011, the SIDA project component of the initiative was amended in order to incorporate the analysis of extreme events. UNISDR thus joined the project partners and worked on establishing or updating databases of disaster losses in selected Arab countries through the e-platform Desinventar (<http://www.desinventar.net/>). Those databases of disaster losses will support disaster preparedness at the national level and help in the characterization and analysis of extreme weather events, such as flash floods and drought, which are part of the impact assessment and vulnerability assessment components of the initiative.

21. UNISDR organized a training workshop in Tunisia in August 2012 on the development of historical databases of disaster losses, which gathered 35 sector representatives who were trained on the Desinventar methodology. A process was developed to trace back 30 years of extensive and intensive disaster events, mostly related to hydro-meteorological events. A national coordinator for the exercise was recruited to support this work at the national level. The coordinator is expected to work with six consultants in different regions of Tunisia to ensure full coverage of the loss database at the country level. The database is expected to be ready by March 2013.

22. Two pilot projects aimed at climate data rescuing by digitizing historical observations to support RCM and the analysis of extreme events are also being prepared by WMO and ESCWA. The pilots aim to provide support to the meteorological offices in Jordan and Palestine, based on proposals received by ESCWA following the training workshop organized for the representatives of Arab meteorological offices in Casablanca, in March 2012.

F. VULNERABILITY ASSESSMENT AND REGIONAL KNOWLEDGE HUB WORKING GROUPS

23. The fourth RICCAR EGM held in July 2012 recommended the establishment of two working groups to support the preparation of the vulnerability assessment and the establishment of the regional knowledge hub.

24. The Vulnerability Assessment Working Group supports the preparation of the vulnerability assessment methodology and the assessment report. The working group is composed of four Arab Government representatives, four representatives from the League of Arab States or other Arab organizations, four representatives of United Nations organizations and three representatives from international expert organizations. GIZ has also contracted the German consultancy “adelphi” to provide technical support to the working groups in coordination with ESCWA. To this end, “adelphi” prepared a background report reviewing several vulnerability assessment methodologies and mapping tools that were presented at the first meeting of the Vulnerability Assessment Working Group (Beirut, 29-30 January 2013).

25. The Regional Knowledge Hub Working Group defines the scope, coverage and content of the regional knowledge hub and the terms of reference of the institution that will be identified to host it. The working group also sets the selection criteria that will be applied in choosing that host institution. Three representatives of Arab Governments, three representatives of League of Arab States or other Arab organizations, three representatives of United Nations Organizations and one representative of an international expert organization form the Regional Knowledge Hub Working Group. Its first meeting was held in Beirut, on 31 January and 1 February 2013.

26. The recommendations and decisions of the working groups will be presented at RICCAR EGMs, convened on an annual basis.

G. CAPACITY-BUILDING

27. A regional workshop on climate prediction/projection and extreme events indices in the Arab region was organized by WMO and ESCWA on behalf of the SIDA project partners, in collaboration with the Direction de la Météorologie Nationale of Morocco (Casablanca, 13-16 March 2012). The workshop targeted meteorologists, climatologists and other Government officials. Seventeen Arab countries were represented, and the chairman and members of the Expert Team on Climate Change Detection and Indices provided technical support. The workshop aimed to enhance capacity in climate data collection, quality control and processing capability and reviewed climate prediction and projection tools, outputs and services available in the Arab region. It also included a computer-based training on a software used to support the quality control of climate data.

28. A second regional workshop was held on RCM applications and analysis, targeting ministries of water and environment. It was organized by SMHI, ACSAD and ESCWA on behalf of the SIDA project partners, from 2 to 4 July 2012 in Beirut. The workshop sought to increase the understanding of RCM inputs, outputs and tools, and to increase capacity for the analysis of RCM applications in the Arab region. Fifteen representatives from 12 Arab countries, plus representatives from 13 international organizations, participated in the workshop which was held back-to-back with the fourth RICCAR EGM.

H. RICCAR WEBSITE AND BROCHURE

29. ESCWA launched the RICCAR website (www.escwa.un.org/RICCAR) in May 2012, which provides open access to documents, training materials, presentations and meeting reports produced within the initiative. ESCWA also used its regular budget funds to prepare a brochure⁴ on RICCAR in consultation with the other partner organizations.

III. REGIONAL CONSULTATIONS

A. EXPERT GROUP MEETINGS

30. Two EGMs were organized as part of the series of annual meetings convened to support the implementation of RICCAR. Representatives from Arab countries, specialized agencies of the League of Arab States, United Nations organizations and regional and international institutions participated.

31. The third RICCAR EGM called for the establishment of a comprehensive regional climate and hydrological database for consolidating historical records, and requested Arab Governments to share climate and hydrological observational data, with a view to supporting the development of the database and the validation and calibration of the regional climate modelling and hydrological modelling components of the impact assessment. In doing so, they also recognized the need to utilize available global data sources and data sets. The meeting also showed that several Arab Governments and research institutions in the region are engaged in climate modelling activities, and recommended that those institutions be invited to contribute to the regional initiative. The use of one or more of the RCP scenarios adopted by IPCC for its fifth assessment report was also encouraged.

32. The fourth RICCAR EGM reported on progress achieved, including the establishment of the Arab domain, and recommended that an ensemble approach be pursued to support climate modelling efforts within the Arab domain based on RCP8.5 and RCP4.5, in accordance with CORDEX guidance documents. The meeting also discussed preliminary criteria for establishing the regional knowledge hub and recommended the establishment of two working groups to support further progress on the vulnerability assessment and the establishment of the regional knowledge hub.

B. OTHER REGIONAL MEETINGS AND CONSULTATIONS

33. RICCAR is regularly reported upon in meetings of concerned intergovernmental bodies. ESCWA and ACSAD reported to AMWC Technical Scientific and Advisory Committee on the initiative at its January 2011 and January 2012 sessions in Cairo. ESCWA and the League of Arab States also presented RICCAR and the SIDA project at the first High-Level Meeting for Arab Ministers of Meteorology and the Heads of the Meteorological Offices hosted by the Presidency for Meteorology and Environment of the Kingdom of Saudi Arabia (Jeddah, March 2012). RICCAR was also recognized by the twenty-eighth session of the Arab Permanent Committee for Meteorology, which endorsed the recommendations of the workshop held in Casablanca in March 2012.

34. In addition, RICCAR was presented during expert consultations and conferences convened by WMO, the Food and Agriculture Organization and the Centre for Environment and Development for the Arab Region and Europe. The initiative was also presented at the side event on “Climate Change Vulnerability and Impact Assessment: Initiatives for Adaptation in the Arab Region”, organized during the eighteenth Conference of the Parties to the United Nations Framework Convention on Climate Change, and the eighth session of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol (UNFCCC COP-18/CMP-8) that was held in Doha, from 26 November to 7 December 2012. The side event was organized by ESCWA and the League of Arab States, with the participation of the United Nations

⁴ Available from: http://www.escwa.un.org/divisions/div_editor/Download.asp?table_name=divisions_other&field_name=ID&FileID=1435.

Development Programme, UNEP and the World Health Organization (WHO). RICCAR and other complementary initiatives related to climate change action planning, vulnerability and resilience were presented during the session.

IV. IMPLEMENTATION CONSTRAINTS

A. REGIONAL POLITICAL INSTABILITY

35. The implementation of RICCAR has been challenged by the instability of the Arab region that affected the engagement of some countries over the past two years. As a result, the completion of some related activities and the conduct of some workshops and meetings have been delayed. Travel restrictions on citizens of some Arab countries have also limited the ability of some Government officials to participate in meetings and workshops convened in Beirut. Efforts are thus underway to convene future meetings in alternative venues, based on available financial resources.

36. Telephone communication and e-mail traffic between Syria and Lebanon were interrupted at various times during 2012, and ACSAD staff members are now working from different locations. That fact is affecting the timely delivery of their contributions to the initiative and preventing scheduled meetings of SIDA project team members. Although it has not yet seriously affected the implementation of RICCAR except in terms of delays, close monitoring and evaluation of the situation continues.

B. DATA AVAILABILITY AND ACCESSIBILITY

37. Securing available and reliable data from Arab Government counterparts is also a challenge. Observed climate data is critically needed for the calibration of the regional climate models. Moreover, water related data such as river flows are key inputs to hydrological models, and limited data availability in certain basins affects the ability to validate the long-term prediction of flow changes in rivers and streams. ACSAD is thus currently securing the approval of Arab countries as for the use of some hydrological data in pilot river basins. Historical climate records available at ACSAD are also being digitized. SMHI is using globally available climate and hydrological databases to carry out a preliminary analysis of the outputs, but additional data from official Government sources is needed to verify the outputs of the model. The League of Arab States and ESCWA are seeking political support to facilitate data exchange in the Arab region through resolutions issued by ministerial councils. In addition to those regional efforts, WMO and ESCWA are seeking to support Jordan and Palestine in the area of climate data rescue within the framework of the implementation of RICCAR activities aimed at capacity-building and institutional strengthening.

V. FUTURE WORK

38. A regional workshop and EGM will be held during 2013 to discuss the preliminary results of the regional climate modelling outputs and the initiation of the hydrological modelling component of RICCAR. The workshop on linking regional climate models to regional hydrological models will engage water ministries in the review of RCM results and their use for informing hydrological modelling at the basin-wide and regional scales. It will be organized by SMHI, ACSAD, ESCWA and their partners. A fifth RICCAR EGM will also be convened to discuss the preliminary findings of the regional climate models covering the Arab domain, involving senior water policymakers. It will be organized by the League of Arab States, UNEP and ESCWA. A consultative workshop with Arab meteorological offices will also be convened by WMO and the League of Arab States as part of efforts to support a regional climate outlook forum. National workshops on inventories of disaster losses will be convened by UNISDR during 2013 in Morocco, Yemen and Jordan.

39. In addition to those meetings, policy briefs and technical materials will be issued for awareness-raising on the project outputs and relevant information will be released to Government officials, decision makers and the public at large.

40. Preparations to build upon the findings of RICCAR are also underway. ESCWA was awarded a United Nations Development Account project on “Developing the Capacities of the Arab Countries for Climate Change Adaptation by Applying Integrated Water Resource Management Tools”, which is being implemented in partnership with UNEP/ROWA, ACSAD, WHO and the Arab Countries Water Utilities Association. The GIZ project, “Adapting to climate change in the water sector in the MENA region”, will also contribute to the implementation of this UNDA project. It will begin in 2013 and prepare IWRM training tools for adaptation in five key sectors based on the climate impact assessment and vulnerability assessment findings generated by RICCAR. The United Nations Development Account project will help to ensure the continued use and dissemination of the findings of RICCAR within the water sector and in related socioeconomic and environmental policy areas.
