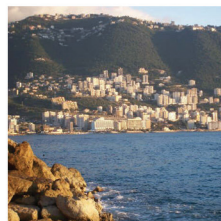
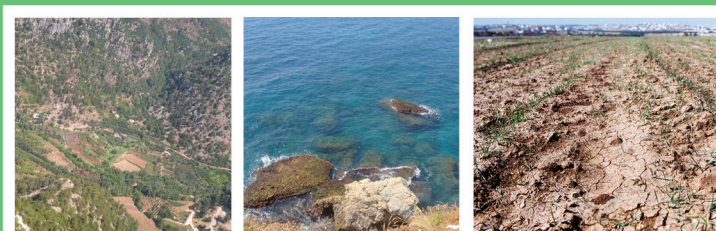




**REGIONAL INITIATIVE FOR THE  
ASSESSMENT OF THE IMPACT OF  
CLIMATE CHANGE ON WATER RESOURCES  
AND SOCIO-ECONOMIC VULNERABILITY  
IN THE ARAB REGION**



**ESCWA**

**United Nations Economic and Social Commission for Western Asia**

# REGIONAL INITIATIVE FOR THE ASSESSMENT OF THE IMPACT OF CLIMATE CHANGE ON WATER RESOURCES AND SOCIO-ECONOMIC VULNERABILITY IN THE ARAB REGION



**The Regional Initiative** aims at assessing the impact of climate change on freshwater resources in the Arab region through a consultative and integrated assessment that seeks to identify the socio-economic and environmental vulnerability caused by climate change impacts on water resources in the Arab region.

## MANDATE

Arab Governments called for the preparation of the assessment through various declarations and resolutions upon which United Nations – League of Arab States (UN-LAS) coordination is based.

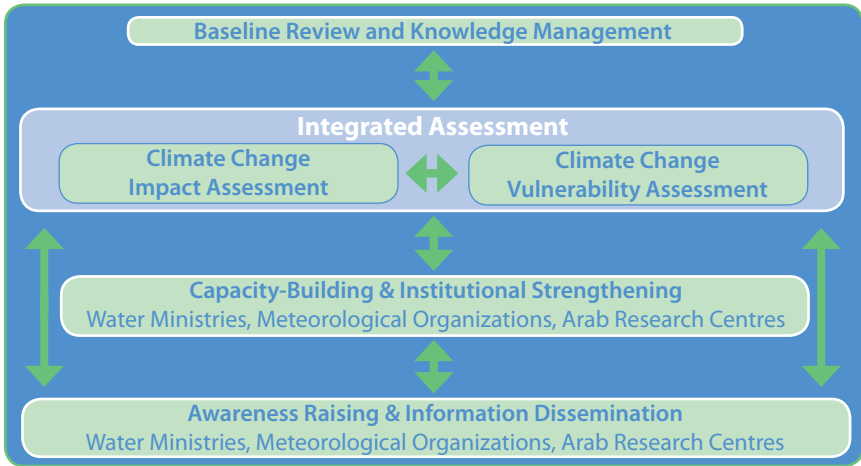
<b>Council of Arab Ministers Responsible for the Environment (CAMRE)</b>	Issued the Arab Declaration on Climate Change calling for the development and dissemination of climate change assessment methodologies and increased understanding of climate change impacts (Cairo, December 2007)
<b>ESCWA 25<sup>th</sup> Ministerial Session Resolution on Climate Change</b>	Called for the preparation of an assessment of socio-economic vulnerability caused by climate change impacts on water resources (Sana'a, May 2008)
<b>Arab Summit for Economic and Social Development</b>	Accepted the preparation of project to assess climate change impacts on the region (Kuwait, January 2009)
<b>UN-LAS 9<sup>th</sup> Sectoral Meeting on Climate Change</b>	Called for United Nations – League of Arab States (UN-LAS) joint action on the preparation of vulnerability studies that should include the socio-economic climate change impacts related to water, land, drought, desertification, biodiversity, health and agriculture (Cairo, June 2009)
<b>Arab Ministerial Water Council (AMWC)</b>	Approved the project brief submitted by ACSAD based on the Regional Initiative as an IWRM project in support of the Arab Water Security Strategy (Cairo, July 2010)
<b>Regional Expert Group Meetings</b>	Annual Expert Group Meetings convened at the intergovernmental and interagency level for development and implementation of the Regional Initiative (EGM 1: October 2009; EGM 2: November 2010; EGM 3: July 2011; EGM 4: May 2012)
<b>Regional Coordination Mechanism/Thematic Working Group on Climate Change</b>	Regional Initiative established as a joint interagency initiative (Beirut, November 2010)

## OBJECTIVES

- To assess the impact of climate change on freshwater resources through an integrated regional initiative that seeks to identify socio-economic and environmental vulnerability caused by the impact of climate change on water resources based on regional specificities.

The outcomes of the assessment aim to provide a common platform for addressing and responding to climate change impacts on freshwater resources in the Arab region by serving as the basis for dialogue, priority setting and policy formulation on climate change adaptation at the regional and national levels.

### Regional Initiative Pillars

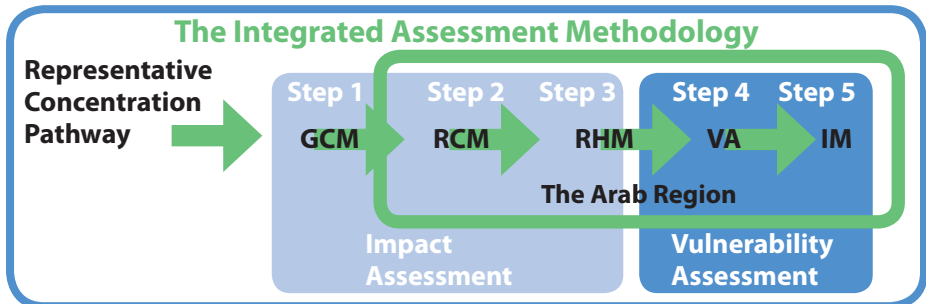


## INTEGRATED ASSESSMENT METHODOLOGY

The methodology combines climate change impact assessment and vulnerability assessment tools. The five stages of analysis include:

1. Selecting Representative Concentration Pathways (**RCPs**) and reviewing available Global Climate Models (**GCMs**).
2. Implementing an ensemble of Regional Climate Models (**RCMs**) over an Arab Domain for downscaling climate projections.
3. Interfacing Regional Hydrological Models (**RHM**) with RCM outputs to analyse climate change impacts on water resources.
4. Conducting a socio-economic Vulnerability Assessment (**VA**) based on impact assessment findings.
5. Performing an Integrated Mapping (**IM**) of the findings for facilitating regional policy analysis and dialogue.

### The Integrated Assessment Methodology



## ASSESSMENT OF THE IMPACT OF CLIMATE CHANGE ON WATER RESOURCES AND SOCIO-ECONOMIC VULNERABILITY IN THE ARAB REGION

Within the framework of the Regional Initiative, the Swedish International Development Cooperation Agency (SIDA) funds a project of the same name. Launched in December 2010, the project implements the following activities:

- Delineation of the Arab Domain based on regional sensitivity analysis.
- Generation of six regional climate projections (50 km x 50 km and 25 km x 25 km scales)
- Generation of 12 hydrological impact scenarios (2 for each regional climate projection)
- Capacity-building for Arab water ministries and meteorological offices
- Five national workshops
- Six regional training workshops
- Three regional expert group meetings
- One high-level meeting
- Support for a regional knowledge platform

### UNDERSTANDING EXTREME EVENTS

The SIDA-supported project component includes the analysis of extreme weather events as a core component of the integrated assessment and associated capacity-building activities. This includes training on climate change prediction, projection and extreme events indicators. Updating of national disaster losses databases will also be pursued as well as basin-level case studies to support extreme events analysis.

### PARTNERS

The project is an integral part of the Regional Initiative and is implemented in partnership with the following organizations:

- League of Arab States (LAS)
- United Nations Economic and Social Commission for Western Asia (ESCWA) – project coordinator
- Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD)
- Swedish Meteorological and Hydrological Institute (SMHI)
- World Meteorological Organization (WMO)
- United Nations International Strategy for Disaster Risk Reduction (UNISDR)

### DONOR

Swedish International Development Cooperation Agency (SIDA)

## REGIONAL INITIATIVE OUTPUTS

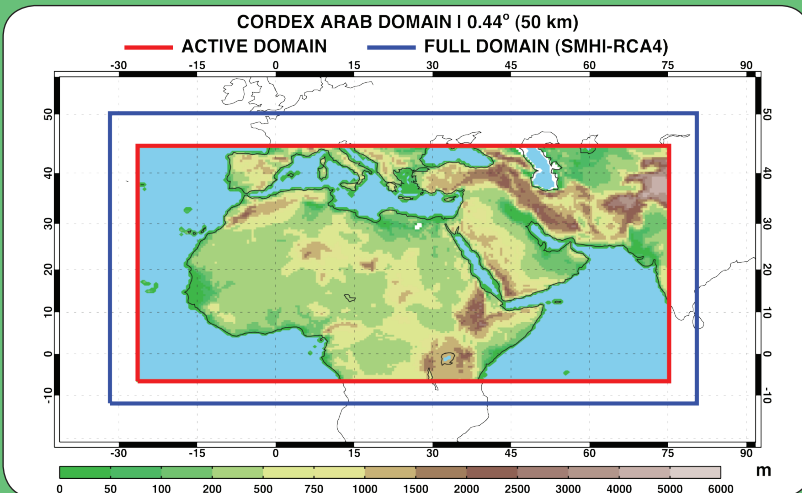
The Regional Initiative will achieve the following:

- **Establish** an Arab knowledge hub on climate and water.
- **Delineate** an Arab Domain for regional climate modelling in accordance with CORDEX protocols.\*
- **Complete** an ensemble of regional climate projections for the Arab region based on representative concentration pathways.
- **Conduct** detailed analysis of climate change impacts on water resources based on hydrological modelling tools.
- **Incorporate** extreme weather events analysis in the climate change impact assessment and vulnerability assessment.
- **Identify** vulnerability hotspots.
- **Increase** the capacity of Arab water ministries and meteorological institutions to engage in climate prediction and climate change projection.
- **Provide** a common and comparable scientific understanding of climate change impacts and associated vulnerabilities across the Arab region.
- **Inform** policy dialogue, negotiations and exchange among Arab decision makers.

These outputs are achieved through projects and activities implemented by the Regional Initiative partners.

### \* Establishing an Arab Domain under CORDEX

The **C**Oordinated **R**egional climate **D**ownscaling **E**Xperiment (**CORDEX**) is a World Climate Research Program (WCRP) initiative that supports research and exchange on regional climate modelling based on a common and unified set of protocols. By establishing an Arab Domain under CORDEX alongside other regional domains, public and private researchers can pursue regional climate modelling based on a uniform set of limiting boundary conditions and a common set of assumptions that allows for inter-comparison and exchange on climate change projections conducted at the Arab regional level. This effort is led by SMHI in consultation with other Regional Initiative partners.





The **Arab Integrated Water Resources Management Network (AWARENET)** Working Group on Climate Change is comprised of experts in climate change and its effects on water. WGCC was established to produce concrete outputs on linkages between climate change and integrated water resources management, and will provide technical expertise to support the impact assessment and vulnerability assessment components of the Regional Initiative.

## Regional Initiative Partners



UNITED NATIONS  
UNIVERSITY

**UNU-INWEH**



United Nations  
International Strategy for Disaster Reduction



## Donors



Federal Ministry  
for Economic Cooperation  
and Development

The Regional Initiative is coordinated by ESCWA.  
For more information, check the RI website: [www.escwa.un.org/RICCAR](http://www.escwa.un.org/RICCAR)



**ESCWA**

United Nations House, Riad El Solh Square  
P.O. Box: 11-8575, Beirut, LEBANON  
Tel.: +961 1 981301; Fax: +961 1 981510  
[www.escwa.un.org](http://www.escwa.un.org)

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