

UNITED NATIONS

Economic and Social Commission for Western Asia



Climate Change and Water Resources in the Arab Region

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- I. Potential CC impacts on water resources
- II. The Regional Initiative on CC vulnerability assessment of water resources in the Arab region
- III. Key outcomes of COP-17 and Rio+20 on Climate Change
- IV. Road to Doha – COP-18

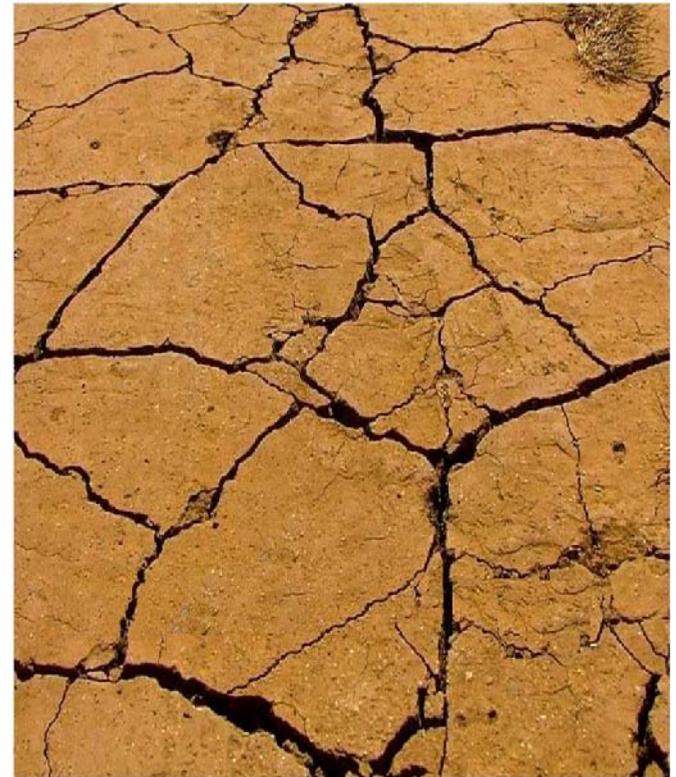
I. Potential CC Impacts on Water and Agriculture



Despite its low contribution to GHG's emissions, the region will highly suffer from climate change which might undermine national and regional development plans including:

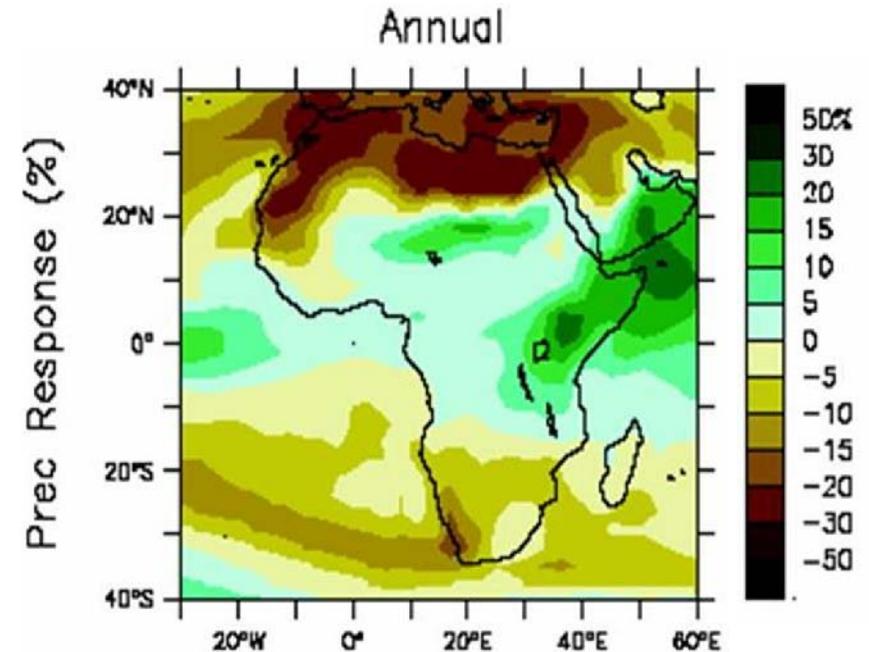
1. Temperature increase:

- An increase in drought cycles thus affecting groundwater quantity and quality (e.g. estimated 50% and 15% reduction in freshwater in Syria and Lebanon);
- A decreased agricultural productivity and an increase in the area of semi-arid lands;



I. Potential CC Impacts on Water and Agriculture

- An increase in desertification and land degradation, and the associated effects on biodiversity;
- 30-50% expected reduction in runoff of the Euphrates and Tigris and fluctuation in the Nile of +30 to -70%;
- CC might affect production capacity of desalination plants.



Depreciation changes over Africa from the MMD-A1B simulations.

Annual mean fractional change in precipitation between 1980 to 1999 and 2080 to 2099, averaged over 21 models.

I. Potential CC Impacts on Water and Agriculture



2. Sea level rise: Leading to drowning of coastal areas and:

- **Loss of agricultural lands**: Qatar, Egypt, UAE, Kuwait and Iraq are estimated to lose 12-15% of their fertile Delta lands;
- Potential increase in the **occurrence of natural disasters**, “floods and hurricanes” (Guno Hurricane in Oman);
- **Seawater intrusion** to coastal groundwater resources might pose a threat to Egypt, Lebanon, Syria and Gulf States.



> 1,000,000 migrant ● Extreme
> 500,000 migrant ● High
5,000-50,000 migrant ● Medium

I. Potential CC Impacts on Water and Agriculture



Potential Social and Economic Impacts:

- **Increased political conflicts** due to competition over varying and increased natural resources degradation, mainly water and land;
- **Population displacement and mass immigration** from flooded or drought affected regions in Egypt, Qatar, United Arab Emirates, Kuwait and Iraq;
- **Increase in unemployment** and decrease in wages due to agricultural lands loss, and to halting of tourism and fishing activities...etc;
- **Effect on human security** and livelihoods;
- **Increase in poverty and health problem levels** among potential natural disaster victims and poor marginalized groups.
- **Negative impacts on the major economic sectors**, especially Agricultural productivity and food costs;



II. The Regional Initiative on CC vulnerability assessment of water resources in the Arab region



Title

Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region

Objective

- **To assess the impact of climate change on freshwater resources in the Arab Region through a consultative and integrated regional initiative that seeks to identify the socio-economic and environmental vulnerability caused by climate change impacts on water resources in the region.**
- **The assessment aims 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 level.****

Implementation Framework – الهيكل التنفيذي للمشروع – UN-ESCWA

حصر المعلومات الأساسية المتاحة وإدارتها
Baseline Review & Knowledge Management

Integrated Assessment (تقييم متكامل)

تقييم تأثير التغير المناخي
Climate Change
Impact Assessment

تقييم قابلية التأثر من التغير المناخي
Climate Change
Vulnerability Assessment

بناء القدرات
Capacity Building & Institutional Strengthening
for Water Ministries, Meteorological Offices, Arab Research Centers

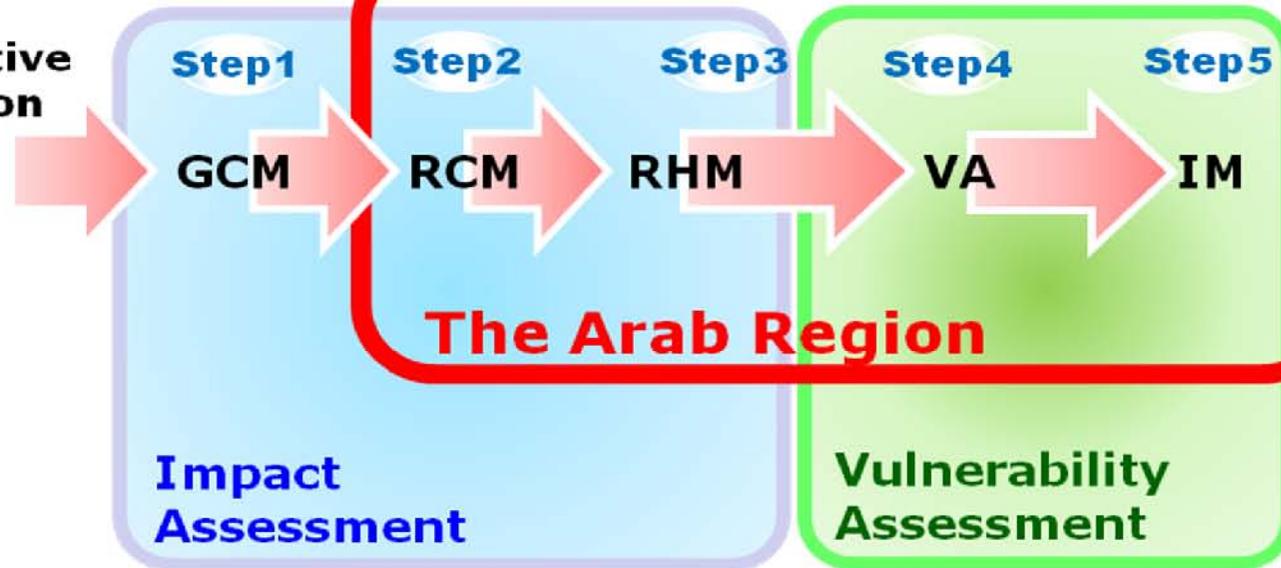
رفع الوعي
Awareness Raising & Information Dissemination

Climate Change Integrated Assessment Methodological Framework



The Integrated Assessment Model

Representative Concentration Pathway



Step 1: Global Climate Modeling using General Circulation Model

Step 2: Regional Climate Modeling

Step 3: Regional Hydrological Modeling

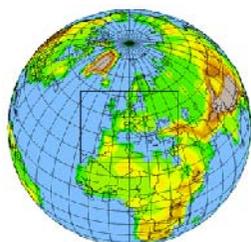
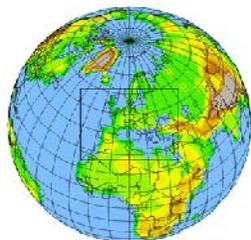
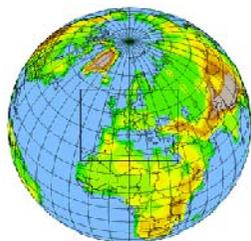
Step 4: Vulnerability Assessment

Step 5: Integrated Mapping

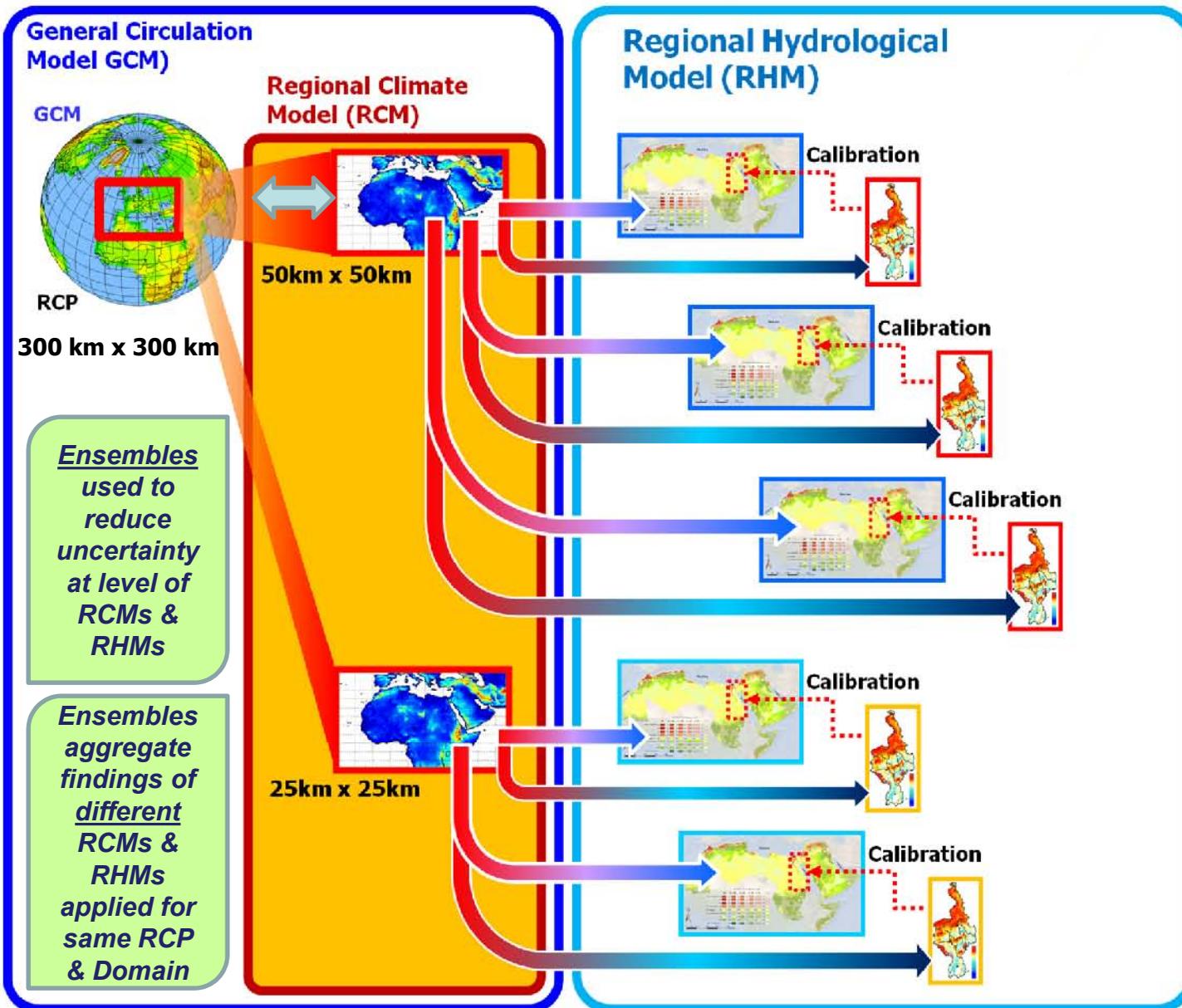
Impact Assessment Component



Different GCMs



Same RCP

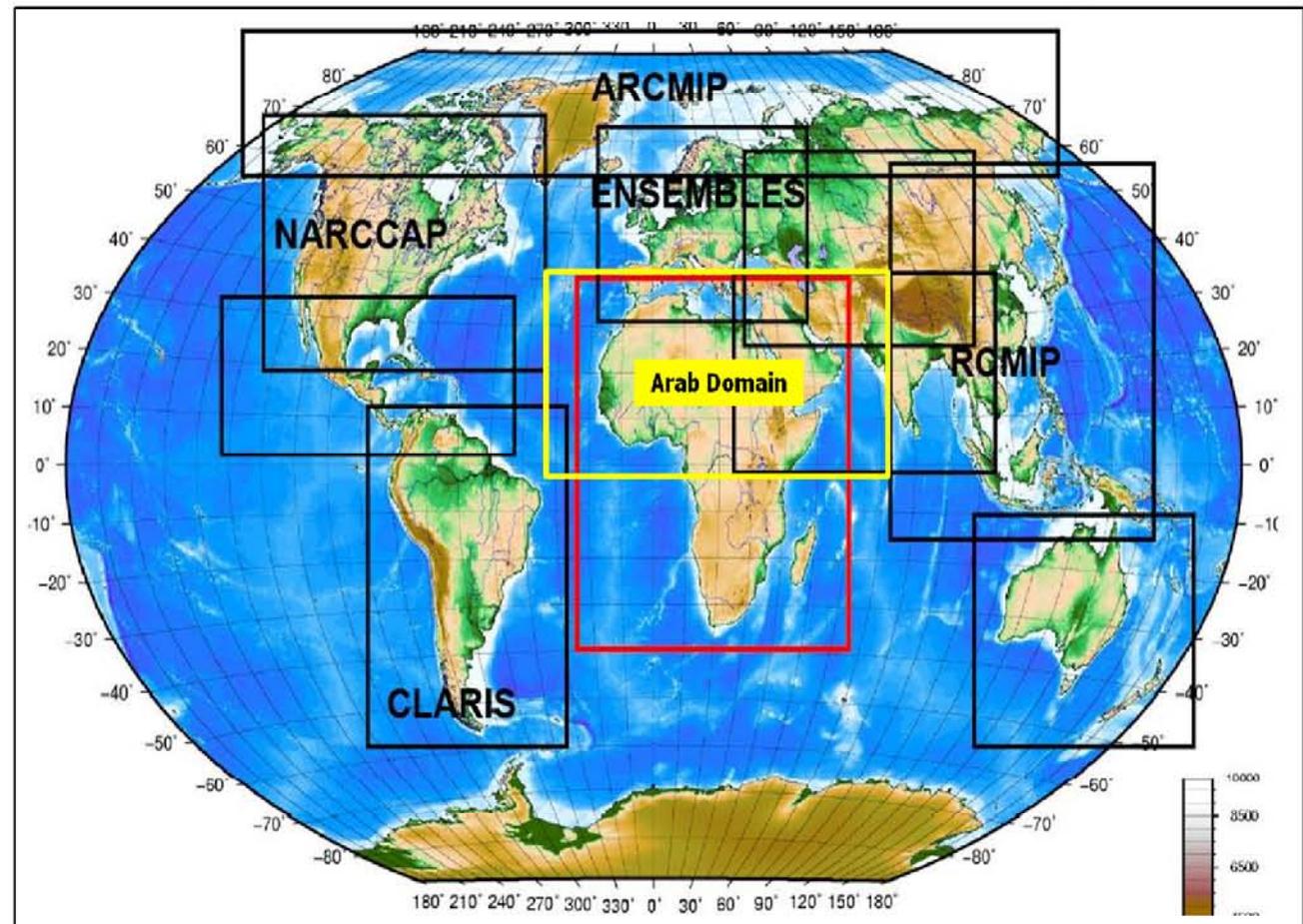


Regional Climate Modeling: Establishing an Arab Domain under CORDEX



CORDEX: COordinated Regional climate Downscaling EXperiment

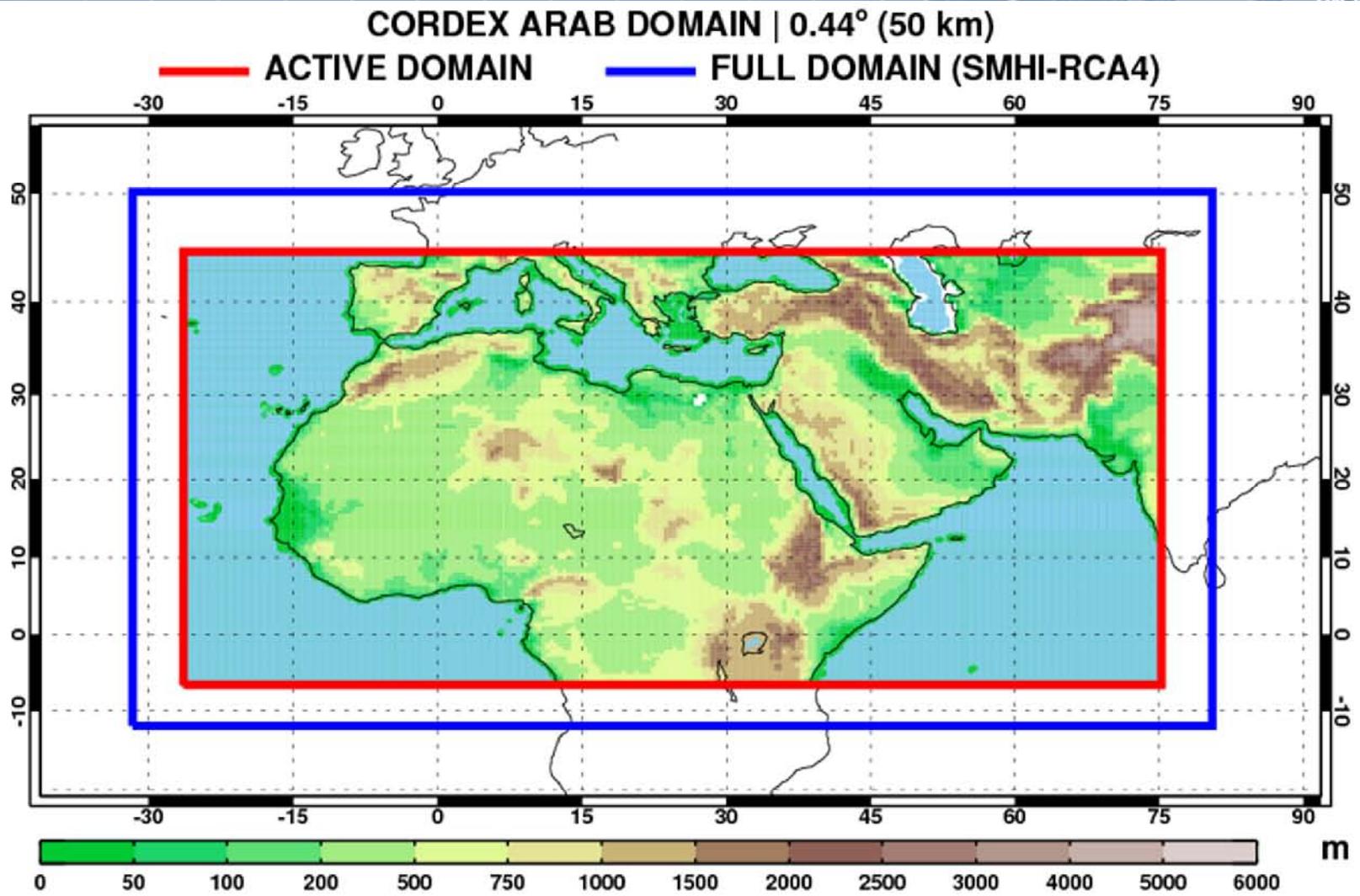
- Regional Initiative establishing the **limiting boundary conditions (LBCs)** of an Arab Domain to be recognized by CORDEX.
- SMHI conducting Sensitivity Analysis in consultation with regional partners and CORDEX members
- Purpose is to support further research on Arab Region based on common domain & assumptions, and to **reduce uncertainty through ensembles**.



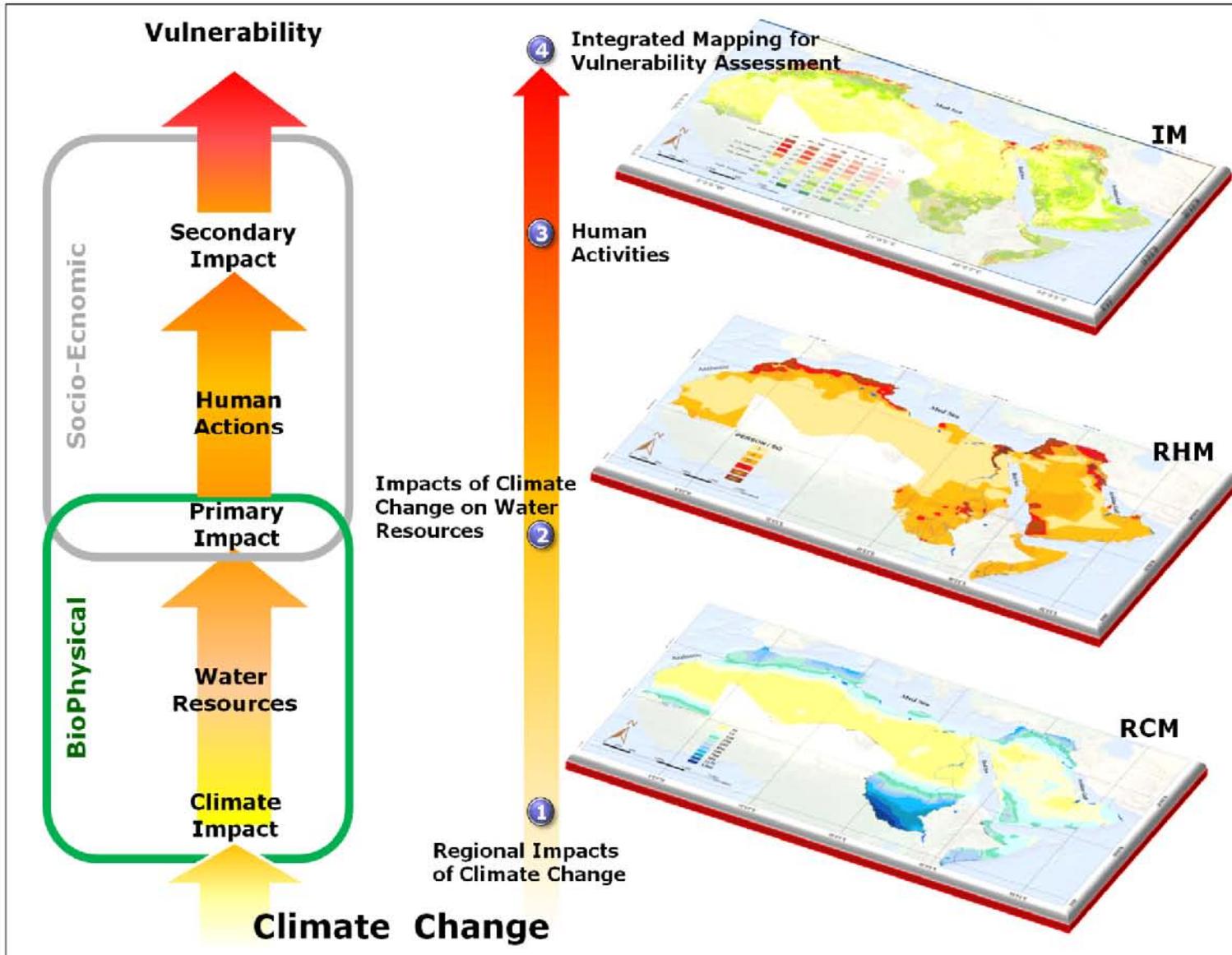
** Sample Arab Domain in map only for illustrative purposes; others under consideration*

Illustration adapted from Giorgi et al., 2009, p.178, as drawn from collective CORDEX effort displayed at: <http://www.meteo.unican.es/en/projects/CORDEX>.

Establishing an Arab Domain under CORDEX



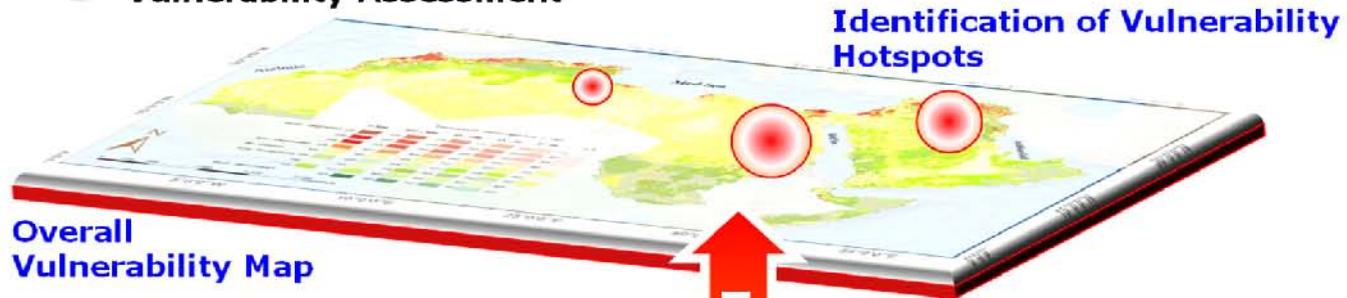
Vulnerability Assessment



*Based on
Impact
Assessment
–
not
“what if”
scenarios*

Integrated Mapping

4 Integrated Mapping for Vulnerability Assessment



Human Activities

3

Irrigated / Rainfed Areas

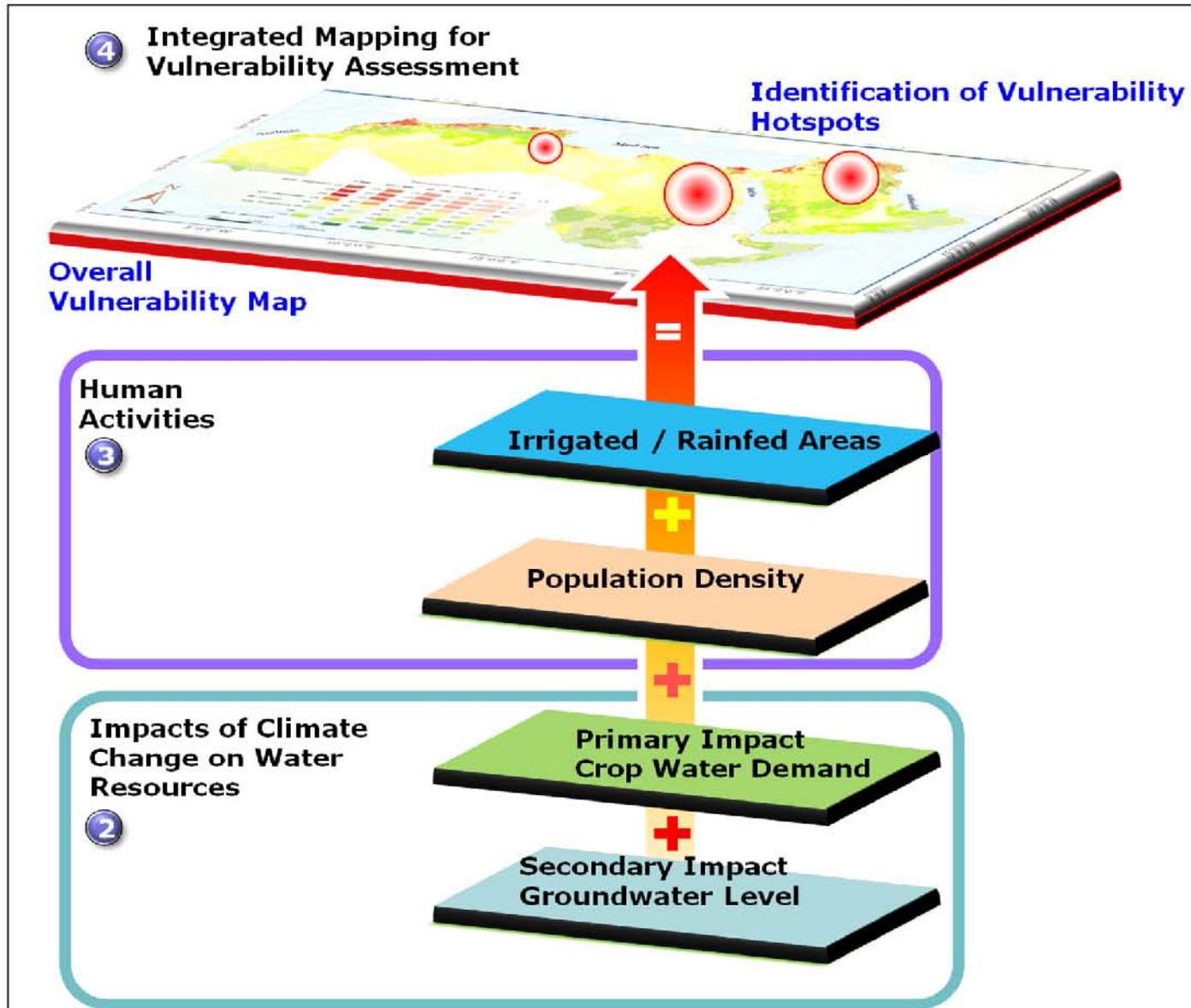
Population Density

Impacts of Climate Change on Water Resources

2

Primary Impact
Crop Water Demand

Secondary Impact
Groundwater Level



Regional Initiative Implementation Partners



Partners



UNITED NATIONS
UNIVERSITY

ACSAD

LAS



World Meteorological Organization
Working together in weather, climate and water



United Nations
International Strategy for Disaster Reduction

Donor



SWEDISH INTERNATIONAL DEVELOPMENT
COOPERATION AGENCY

National Research Institutes *(under formalization)*

Environmental and Climate Research Institute (ECRI)
Ministry of Water Resources and Irrigation (Egypt)

Center of Excellence for Climate Change Research
PME - King Abdulaziz University (KSA)

III- Rio+20 outcome document: “The Future We Want”

A. Priority/key/thematic/cross-sectoral issues and areas

– Climate Change

- Reaffirm that climate change is one of the greatest challenges of our time, and express profound alarm that emissions of greenhouse gases continue to rise globally.
- Deep concern that developing countries are particularly vulnerable to the adverse impacts of climate change.
- Developing countries are experiencing increased negative impacts from climate change, which is severely undermining food security and efforts to eradicate poverty, and achieve sustainable development.
- Therefore adaptation to climate change represents an immediate and urgent global priority.

A. Priority/key/thematic/cross-sectoral issues and areas

– Climate Change

- Calls for the widest possible cooperation by all countries in an effective and appropriate international response.
- Note concern on the significant gap between the aggregate effect of Parties’ mitigation pledges of greenhouse gases by 2020.
- Importance of mobilizing funds from a variety of sources to support nationally appropriate mitigation actions, adaptation measures, technology development and transfer and capacity building in developing countries.
- Welcome the launching of the Green Climate Fund and call for its prompt operationalization .
- Urge parties to UNFCCC and parties of Kyoto protocol to fully implement their commitments and build upon the progress achieved including at the most recent COP-17/CMP in Durban in 2011 .

Outcomes of COP-17 - Durban Platform



- Governments decided to adopt a universal legal agreement on climate change as soon as possible, but not later than 2015 and to come into force in 2020.
- Work will begin on this immediately under a new group called the Ad Hoc Working Group on the Durban Platform for Enhanced Action.
- Governments, including 35 industrialized countries, agreed a second commitment period of the Kyoto Protocol from January 1, 2013.
- To achieve rapid clarity, Parties to this second period will turn their economy-wide targets into quantified emission limitation or reduction objectives and submit them for review by May 1, 2012.

Outcomes...Durban Platform



- A significantly advanced framework for the reporting of emission reductions for both developed and developing countries was also agreed, taking into consideration the common but differentiated responsibilities of different countries.
- Governments agreed the full implementation of the package to support developing nations, agreed last year in Cancun, Mexico.
- The package includes the Green Climate Fund, an Adaptation Committee designed to improve the coordination of adaptation actions on a global scale, and a Technology Mechanism, which are to become fully operational in 2012.

Outcomes...Durban Platform



- The UN Climate Change process will be led by the climate science in the IPCC's Fifth Assessment Report and the global Review from 2013-2015.
- The next major UNFCCC Climate Change Conference, COP 18/ CMP 8, is to take place 26 November to 7 December 2012 in Qatar, in close cooperation with the Republic of Korea.

IV - The Road to Doha – COP-18



- China, The US and India agreed to take on emissions-reduction targets at least “with legal force” by 2020 the latest. i.e. both developed and developing countries will be required to cut their carbon emissions...
- The deal holds little promise for the climate in the medium terms (what will happen till 2020?) ...i.e. still voluntary and not legally binding....
- Little was done to address the scale of emissions cut....
- Canada withdrew from Kyoto Protocol just after the COP-17 as it failed to meet its targets which puts more pressure on the negotiation for a second KP commitment period.

IV - The Road to Doha – COP-18



- Countries agreed to take a ‘review’ of the climate science in a few years to more effectively link to the IPCC process.
- Build capacity of Arab countries on key negotiation issues towards COP 18.
- Qatar established an Alliance Initiative for Arid and Semi-arid Countries to deal with drought and impacts of CC at the global level.
- Need to prepare for contribution of Arab countries and institutions, NGO’s and major groups to major negotiations sessions and side events of the COP-18 in Qatar.

Thank you!

Additional Information on the Regional Initiative available at:

www.escwa.un.org