

# Assessing Climate Change Impacts in the Arab Region

Economic and Social Commission for Western Asia



UNITED NATIONS

الأمم المتحدة

ESCWA

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Sustainable Development Policies Division

Training Workshop on Climate Finance for Finance Experts,  
12–13 February 2020, LAS, Cairo

# Intergovernmental Mandates calling for & supporting Climate Change Assessment in the Arab Region

Arab Ministerial Declaration on Climate Change  
*CAMRE*  
2007

Arab Economic and Social Summit  
*Resolution on Climate Change & Water Project*  
2009

Arab Permanent Committee for Meteorology  
*Resolutions*  
2012, 2013, 2014, 2015, 2016, 2017

Arab Ministerial Council of for Meteorology & Climate  
2018

ESCWA  
25<sup>th</sup> Ministerial Session  
*Resolutions on Climate Change, Rio+20 follow-up*  
2008, 2012, 2014

Arab Ministerial Water Council  
*Resolutions*  
2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017

ACSAD Board of Directors  
*Resolution*  
2013

ESCWA  
30<sup>th</sup> Ministerial Session  
*Resolution setup Center for Arab Climate Change Policies*  
2018

Environment

Foreign Affairs & Planning

Water

Met

Agriculture

# Climate Modelling

**Objective: 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.**

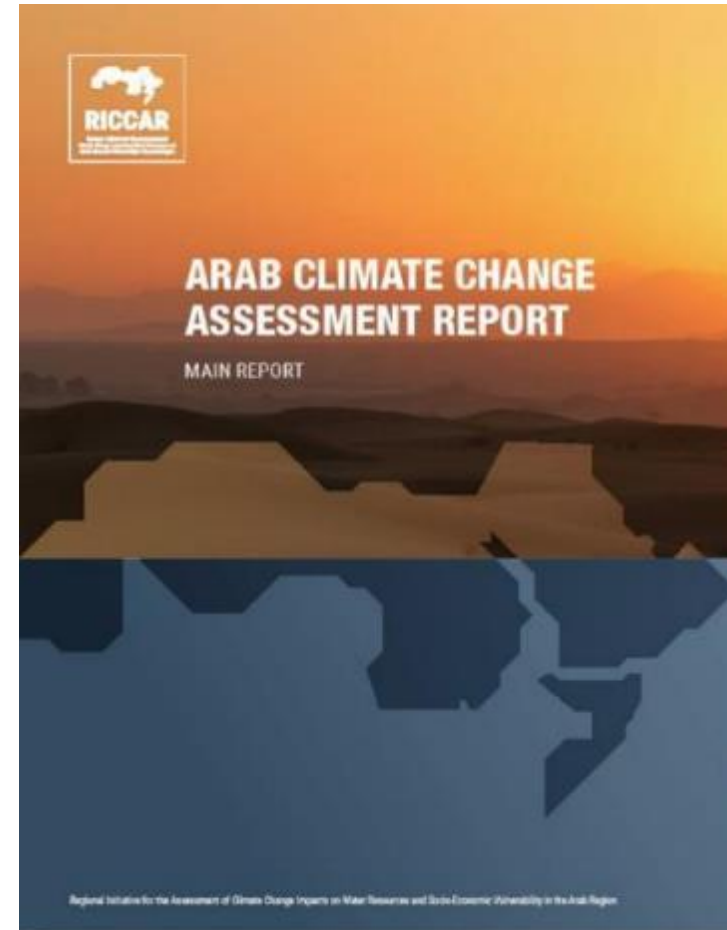
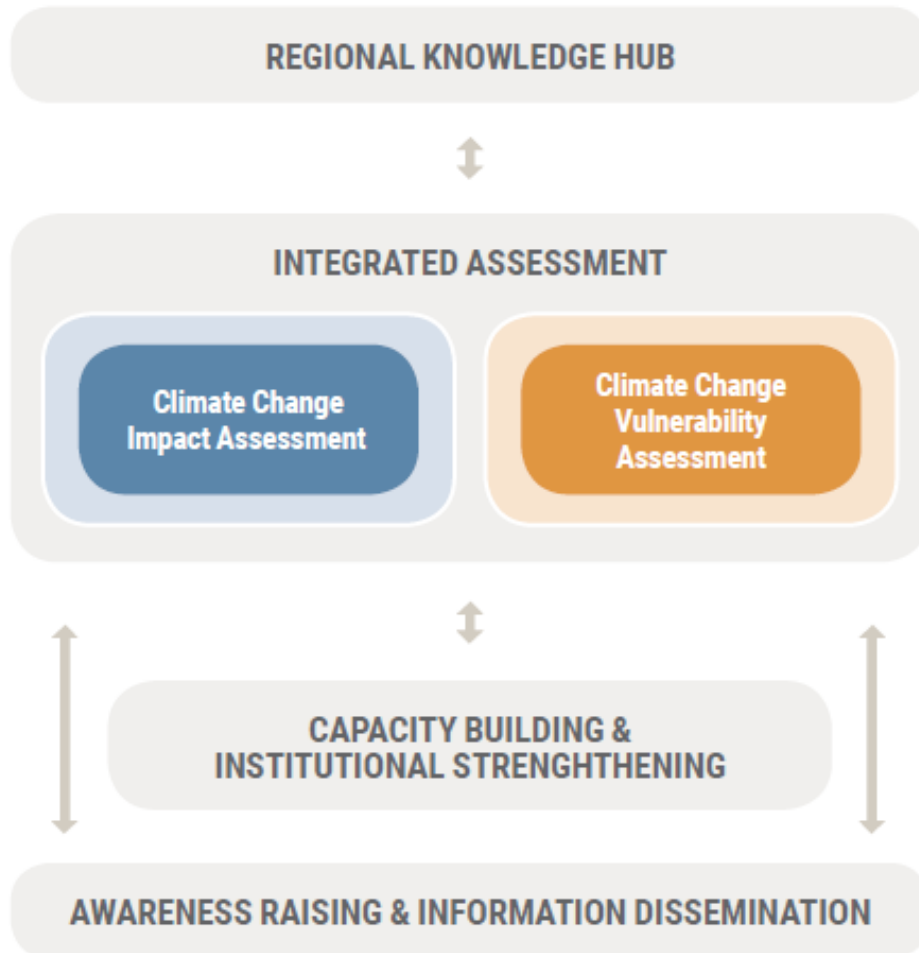
**Assessment**

**Adaptation**

**Mitigation**

**Negotiations**

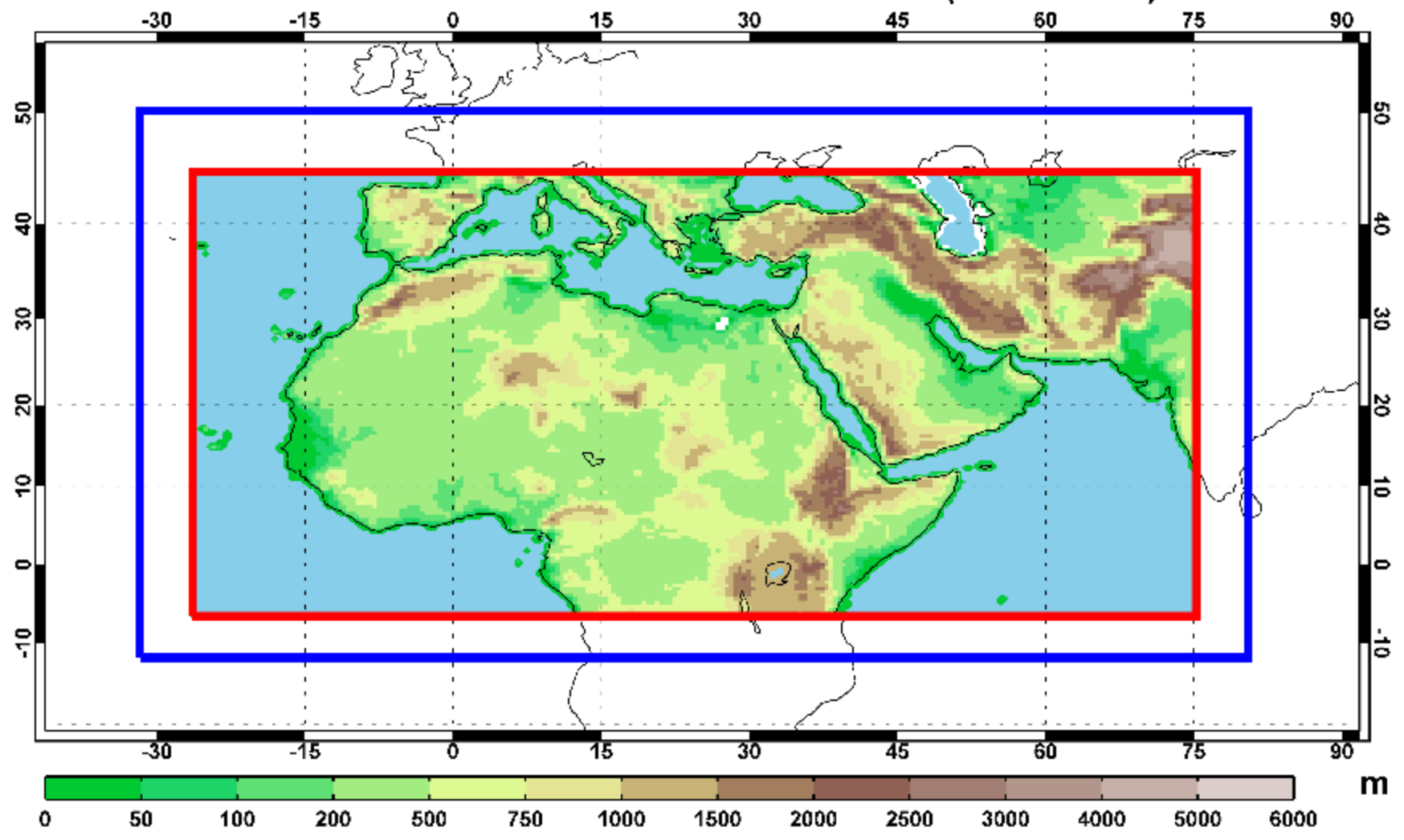
# RICCAR: Four Pillars of Work



# The Arab Domain

CORDEX-MENA/Arab Domain | 0.44° (50 km)

— Active Domain      — Full Domain (SMHI-RCA4)

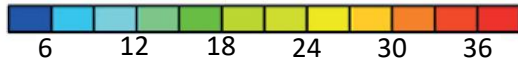
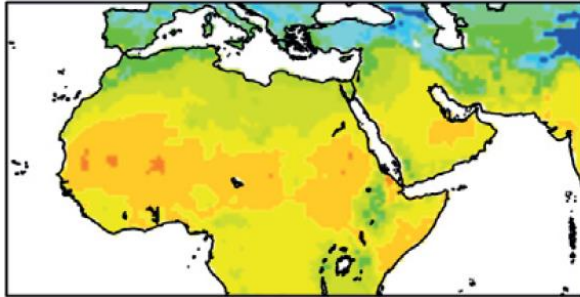


# Average Mean Annual Temperatures may increase by more than 5° C in Arab States

Reference Period

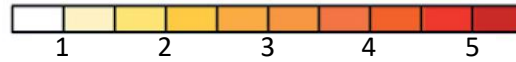
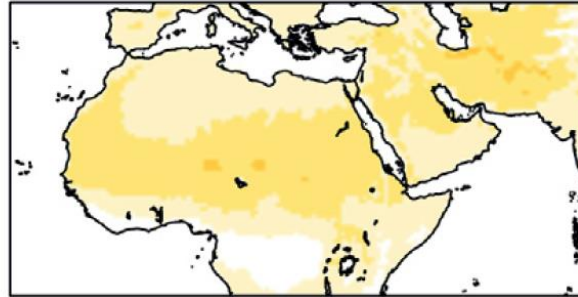
Moderate Scenario (RCP 4.5)

1986-2005



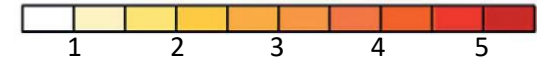
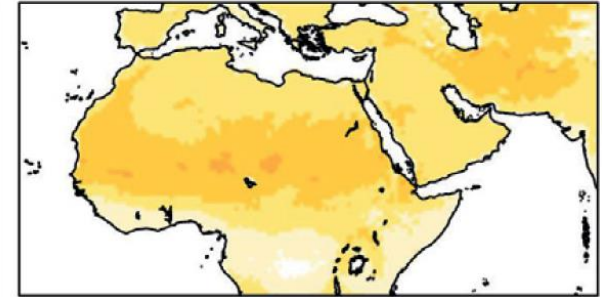
Mean Temperature (° C)

2046-2065



Change in Temperature (° C)

2081-2100

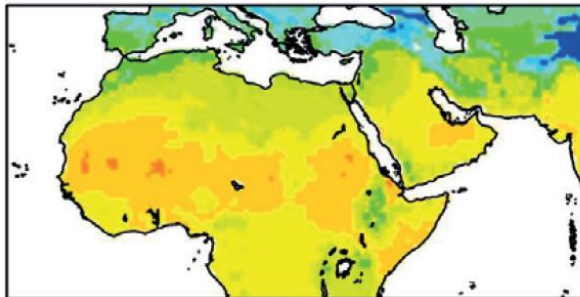


Change in Temperature (° C)

Reference Period

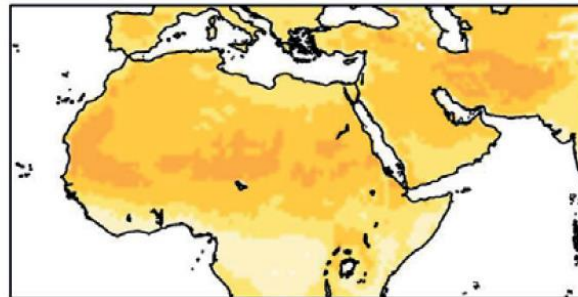
Extreme Scenario (RCP 8.5)

1986-2005



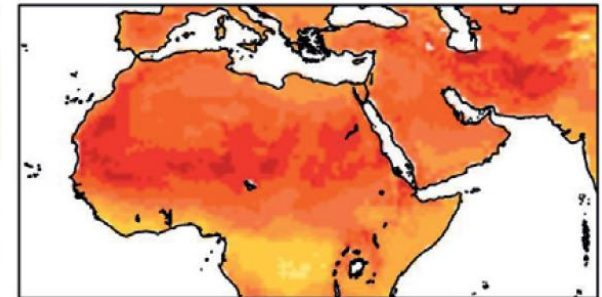
Mean Temperature (° C)

2046-2065



Change in Temperature (° C)

2081-2100



Change in Temperature (° C)



# Dramatic increases in the number of “Very Hot Days” > 40°C per year

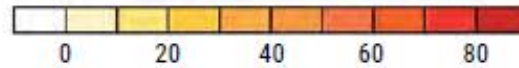
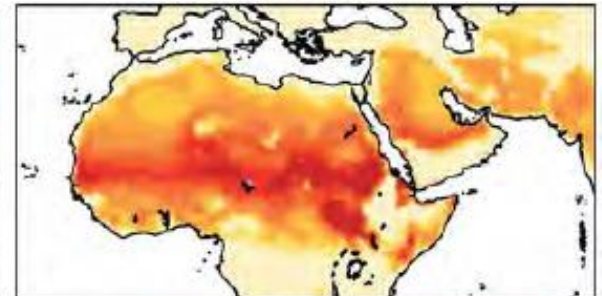
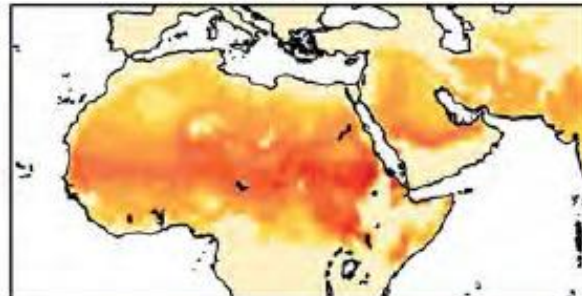
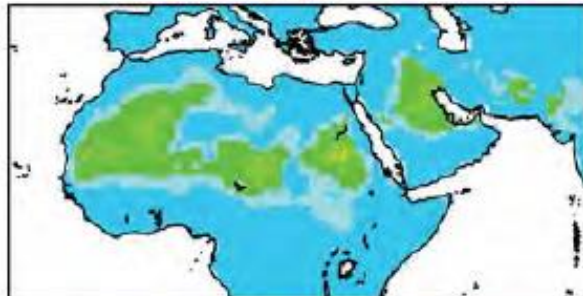
Reference Period

Moderate Scenario (RCP 4.5)

1986-2005

2046-2065

2081-2100



Increase in Number of Days/year

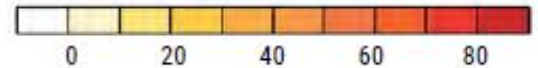
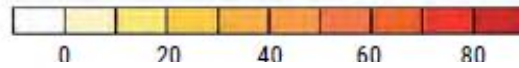
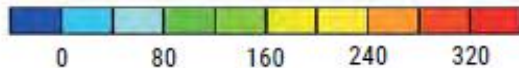
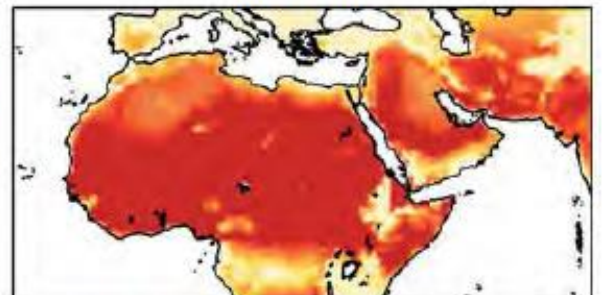
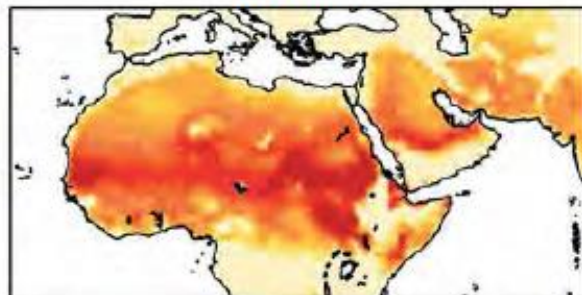
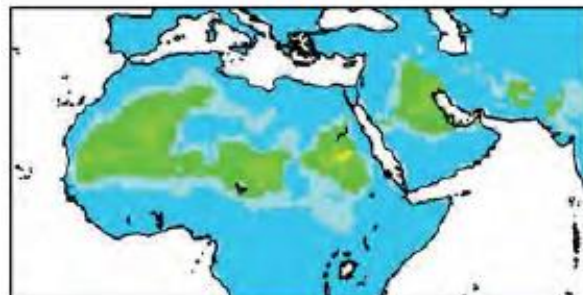
Reference Period

Extreme Scenario (RCP 8.5)

1986-2005

2046-2065

2081-2100



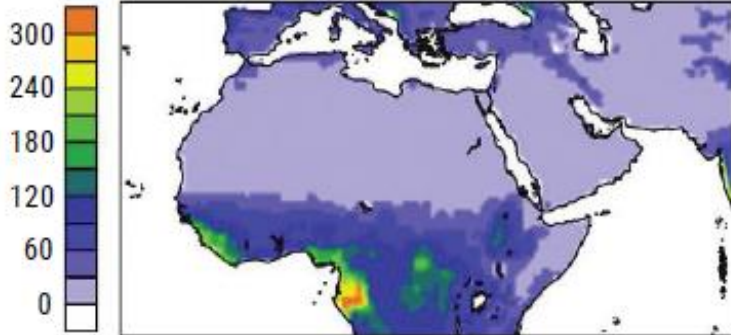
Increase in Number of Days/year

# Changes in the average monthly precipitation for end of century

(compared to reference period)

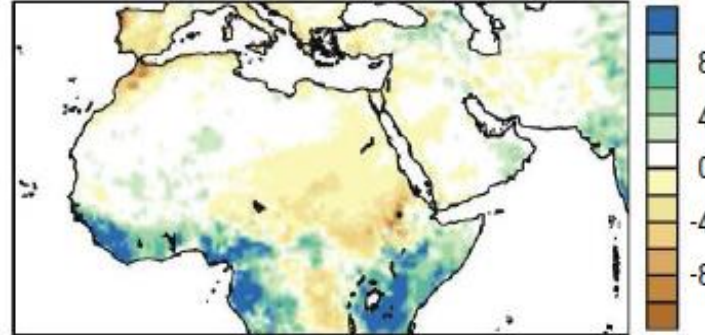
mm/month

1986-2005



2081-2100

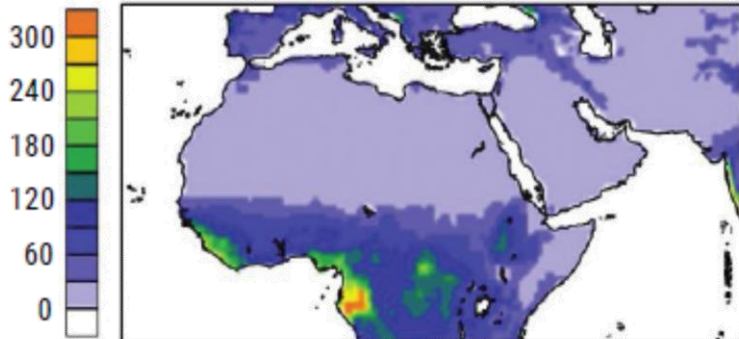
mm/month



**RCP 4.5**

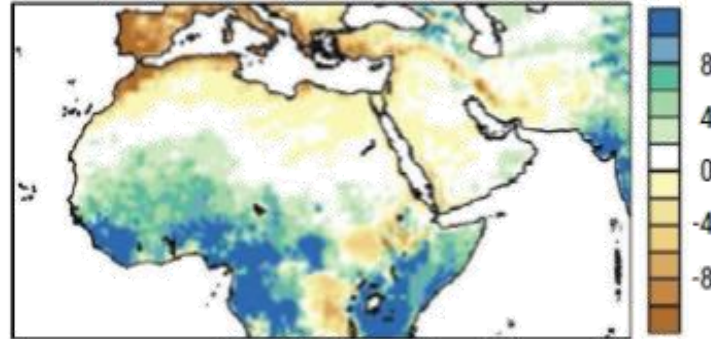
mm/month

1986-2005



2081-2100

mm/month



**RCP 8.5**

- Both scenarios show a reduction of the average monthly precipitation reaching 8-10 mm in the coastal areas of the domain, mainly around the Atlas Mountains in the West and upper Euphrates and Tigris river basins in the East.

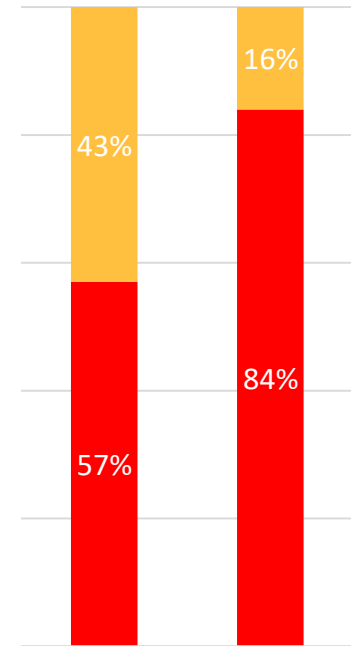
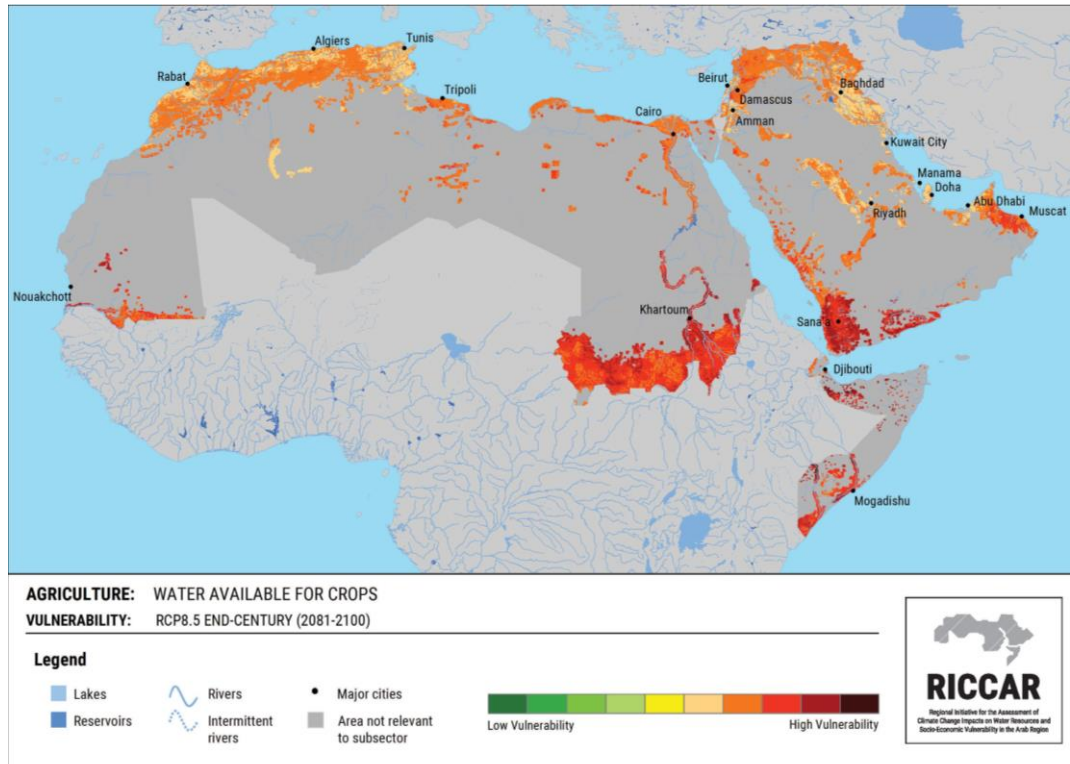
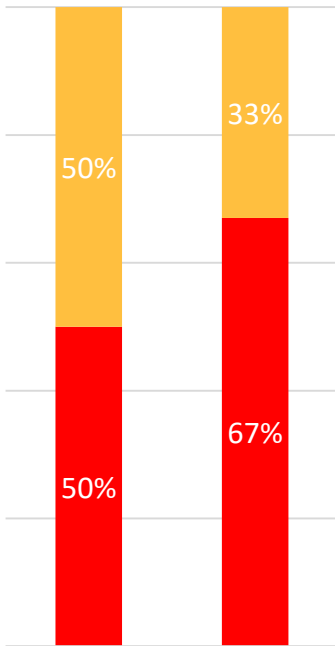


# The Arab Region is one of the most vulnerable to climate change

## Mid Century (% Study Area)

## Water Available for Crops: Vulnerability

## End Century (% Study Area)



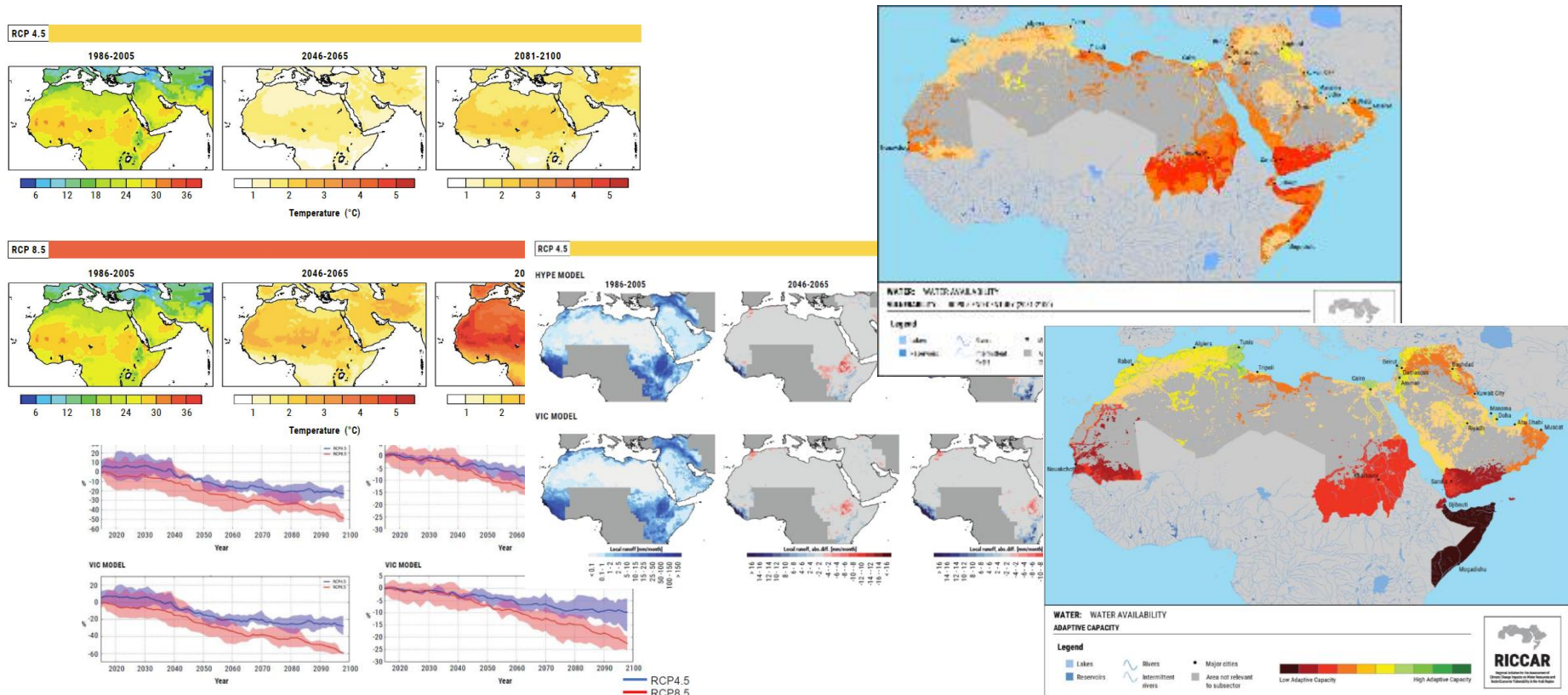
Up to 84% of Agricultural Land in the Arab Region is Highly Vulnerable to Water Availability under Climate Change

- Low Vulnerability
- Moderate Vulnerability
- High Vulnerability

- Low Vulnerability
- Moderate Vulnerability
- High Vulnerability

# Outcomes

As per **RICCAR Arab Climate Change Assessment Report**, the region will experience rising temperatures, and negative climate change impacts on freshwater resources used across strategic sectors, thus increasing socio-economic and environmental vulnerability in Arab States across water-dependent sectors.



# Main Findings and Conclusions (1)

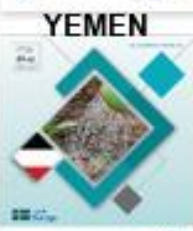
- 1** The temperature in the Arab region is increasing and is expected to continue to increase until the end of the century.
- 2** Precipitation trends are largely decreasing across the Arab region until the end of the century, though limited areas expected to exhibit an increase in the intensity and volume of precipitation.
- 3** Extreme climate indices and seasonal projections provide valuable insights into climate change impacts, particularly at smaller scales of analysis.
- 4** Analysis of climate change impacts on shared water resources can benefit from regional and basin-level assessments.
- 5** Sector case studies enhance understanding of climate change implications.
- 6** Predicted vulnerability is largely moderate to high and exhibits a generally increasing gradient from north to south across the Arab region.
- 7** Both components of potential impact are important to consider when conducting vulnerability assessments.
- 8** Of the three components of the VA, adaptive capacity is most likely to influence vulnerability, suggesting that the ability of mankind to influence the future is stronger than that of climate change and environmental stressors.
- 9** Areas with the highest vulnerability, which have been defined as hotspots, generally occur in the Horn of Africa, the Sahel and the south-western Arabian Peninsula, irrespective of sector, subsector or projected climate scenario.

# Main Findings and Conclusions (2)

- 10** Despite declining precipitation, areas with the lowest vulnerability relative to the region include the western Mediterranean, coastal Maghreb, and the coastal Levant due to higher adaptive capacity in this area compared to other parts of the region.
- 11** Even though the central Mediterranean coast and Green Mountains are subject to particularly strong warming, the area is indicative of moderate vulnerability due to relatively higher adaptive capacity, as compared to other parts of the region.
- 12** Despite precarious environmental, economic and social conditions within the lower Nile River Basin, the area demonstrates projected moderate vulnerability due to high adaptive capacity relative to other parts of the region.
- 13** Although the Euphrates and Tigris rivers face challenges due to demographic pressures, hydro-infrastructure developments and water quality degradation, socioeconomic vulnerability to climate change is found to be moderate relative to other parts of the region.
- 14** Despite remaining among the hottest areas in the Arab region, and signalling increasing temperatures, the Arabian Gulf generally projects moderate vulnerability to climate change.
- 15** Region-specific integrated vulnerability assessments can be drawn upon to inform regional cooperation, as well as basin level, country level and sector level analysis to advance understanding and collective action on climate change.



# Publications



# Regional Knowledge Hub (RKH)

## WEBSITE

- Provides access to all RICCAR reports and technical materials prepared by the implementing partners;
- Informs on training tools, activities and events;
- Offers assistance tools for submitting inquiries and requests for support.

Launched in June 2018

[www.riccar.org](http://www.riccar.org)

## DATA PORTAL

- Visualization of RICCAR maps;
- Access to RICCAR data repository;
- Search functionality and research tools for generating maps, downloading datasets, and exporting outputs in different formats;
- Links to other databases through a common platform.

Launched in April 2019

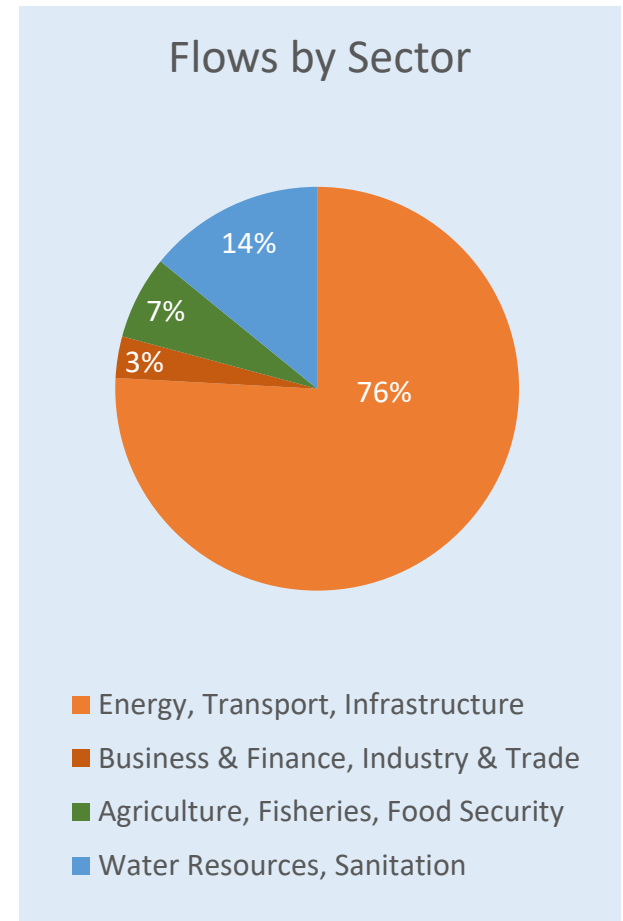
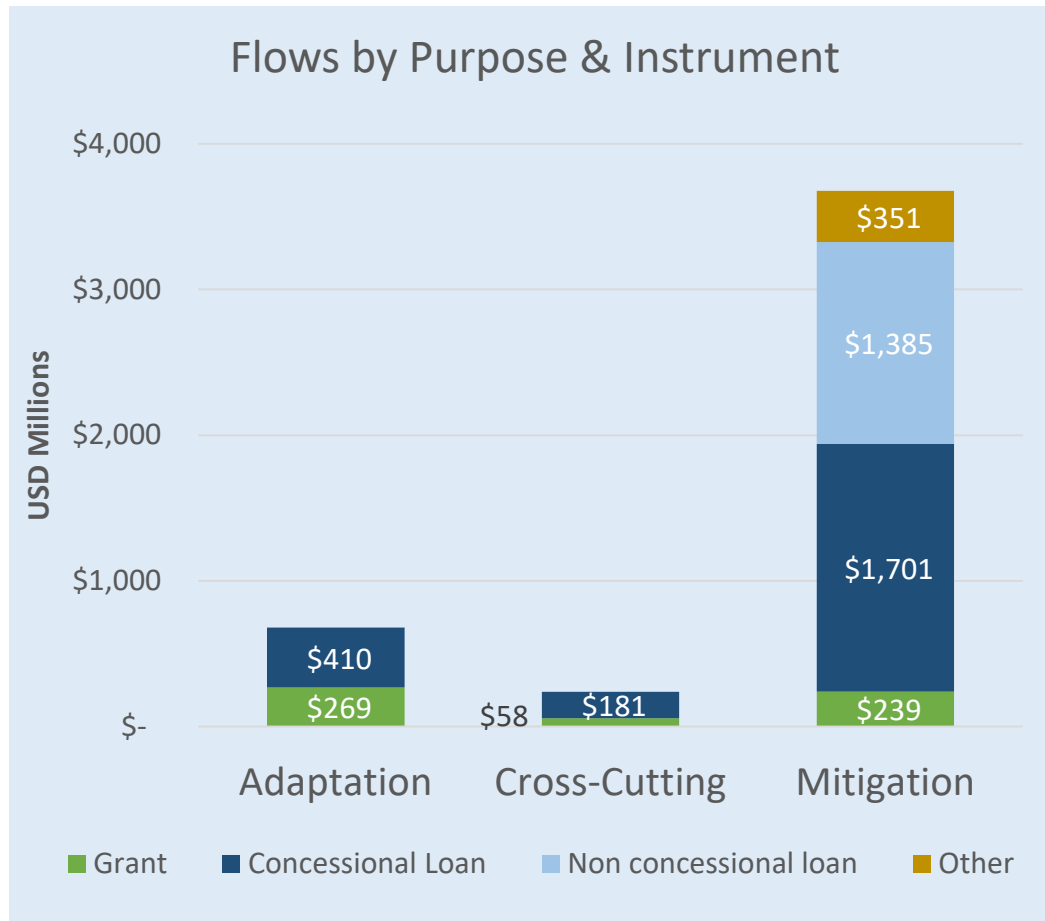
<https://rkh.apps.fao.org/home/>

### Regional Knowledge Nodes



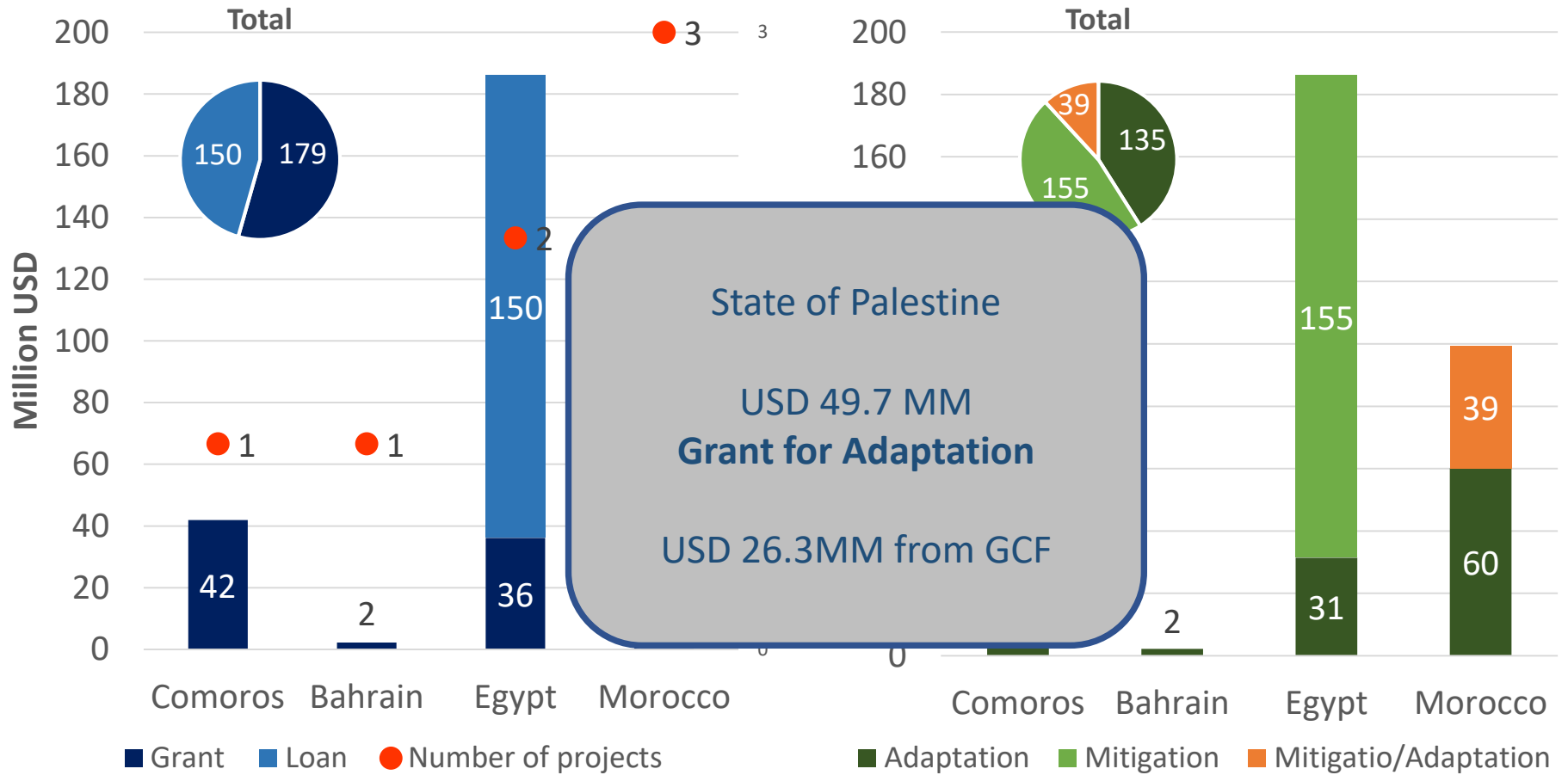
# Adaptation is the priority in the Arab Region, but the type & quantity of financial flows does not meet the need.

Bilateral, Regional, & Other Flows\* to Arab States & MENA region reported by developed countries to UNFCCC, 2016 (most recent reporting year)



\* Note: Includes flows from a single source state to one or more recipient states. Excludes flows via multilateral funds and via multilateral development banks.

# GCF Financing to Arab countries 2016 - Nov 2019



Note: Some Arab States have also received funding through five multiple country projects. These include: Djibouti, Egypt and Tunisia (part of two projects), Jordan and Morocco (part of three projects)



# Context: The Arab Region faces a dual challenge: the quality & quantity of climate finance does not meet the need

## Quantity

The *supply* of international public climate finance is insufficient to meet the need. This is a *quantity* problem.

### Flows below \$ Needs in NDCs

Available data suggests majority of **19.7 Billion needed** per year (NDCs) is **not provided**<sup>1</sup>

### Gaps in Defining Need Imply Larger \$ Gap

Available **data is becoming dated**; 10 Arab States have **no cost estimates in NDCs**.

### Arab States Report Insufficient Access

Arab States repeatedly report **insufficient finance and barriers to access** during consultations

## Quality

The *type* of climate finance does not match the demand nor the objectives of the Paris Agreement. . This is a *quality* problem

### Mitigation exceeds Adaptation

**By a factor of 5** for bilateral<sup>2</sup> flows (\$3.7 vs \$0.7 billion; 2016) and by a factor of 4 for Multilateral Development Bank flows (\$3.5 vs 0.8 billion; 2018).<sup>3</sup>

### Loans exceed grants

Also **by a factor of 5** for bilateral<sup>1</sup> flows (also \$3.7 vs \$0.7 billion) to the Arab region (2016).<sup>4</sup>

### Public flows are donor-driven

**\$33.6 of \$55.7 billion** in public flows from developed to developing states **are bilateral**<sup>1</sup> (2016)

### Distribution is uneven

**94%** of bilateral<sup>1</sup> climate finance flows to the Arab region **went to 5 countries** (2016).

### Distribution is not need-based

**Arab LDCs received just 2%** of bilateral flows to the region (2016)

### Private sector is largest source

Accounting for **\$455 out of \$681 billion** in climate finance flows globally (2016)

Note 1: It is not possible to compare NDC need with flows reported by donors and MDBs, due to mismatch in supply and demand.

Note 2: Bilateral refers to “bilateral, regional, and other flows” from developed countries to Arab States, which are self-reported by developed countries to the UNFCCC. This does not include flows via multilateral development banks nor multilateral climate funds.

Note 3: Islamic Development Bank (IsDB) is not included in joint multilateral bank reported total. IsDB reported USD 351 million in 2018, of which 65% was dedicated to mitigation, 22% to adaptation, and the remaining 13% to dual-benefit projects.

Note 4: Regional data for multilateral development bank flows by instrument was not available. Globally, 80% of MDB finance was some sort of loan in 2018.

# Arab Centre for Climate Change Policies (ACCCP)



***The Arab Centre for Climate Change Policies** was established pursuant to resolution 329 (XXX) adopted at the 30th ESCWA Ministerial Session (Beirut, 28 June 2018)*

**The ACCCP** aims to strengthen the capacity of Arab States to better understand and address the implications of climate change for sustainable development in the Arab region

# ACCCP - Five pillars of work

## Technical Assistance & Advisory Services

Development Planning

Assessment & Adaptation

Mitigation

National Determined Contributions

Disaster Risk Reduction

## Capacity Building & Institutional Strengthening

Climate Modeling in Key Sectors (Water, Agriculture, Ecosystems, People)

Negotiations

Finance & Technology Transfer

Research & Applied Case Studies

## Regional Platforms & Policy Dialogue

Arab Group of Negotiators (under CAMRE)

Regional Preparations for Global Agreements

Arab Climate Outlook Forum

Stakeholder Engagement

## Integrated Responses

WEF Security Nexus

Science-Policy Interface

Vulnerable Groups

Means of Implementation

## Access to Regional Knowledge

RICCAR Regional Knowledge Hub

Intergovernmental Process & Stakeholders Support

GIS Tools & Applications

Data & Analysis to inform Policy

# ACCCP - Thematic Areas of Focus



## Assessment

[Read more](#)



## Adaptation & DRR

[Read more](#)



## Mitigation

[Read more](#)



## Other cross-cutting themes

[Read more](#)



## Negotiations

[Read more](#)



## Finance

[Read more](#)



## Technology & tools for climate analysis

[Read more](#)



# ESCWA Partnership on Climate Change

## Strategic Partner: League of Arab States



# Thank you

Economic and Social Commission for Western Asia



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الاسكوا  
ESCWA