

# **Eastern Mediterranean and Middle East Region Climate Change Initiative (EMME-CCI)**

**"Review of the Progress of the Initiative and  
the way forward "**

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**Advisor to the President of the Republic of Cyprus  
and Special Envoy on Climate Change**

**EMME-CCI Ministerial Meeting, 7 june 2022**

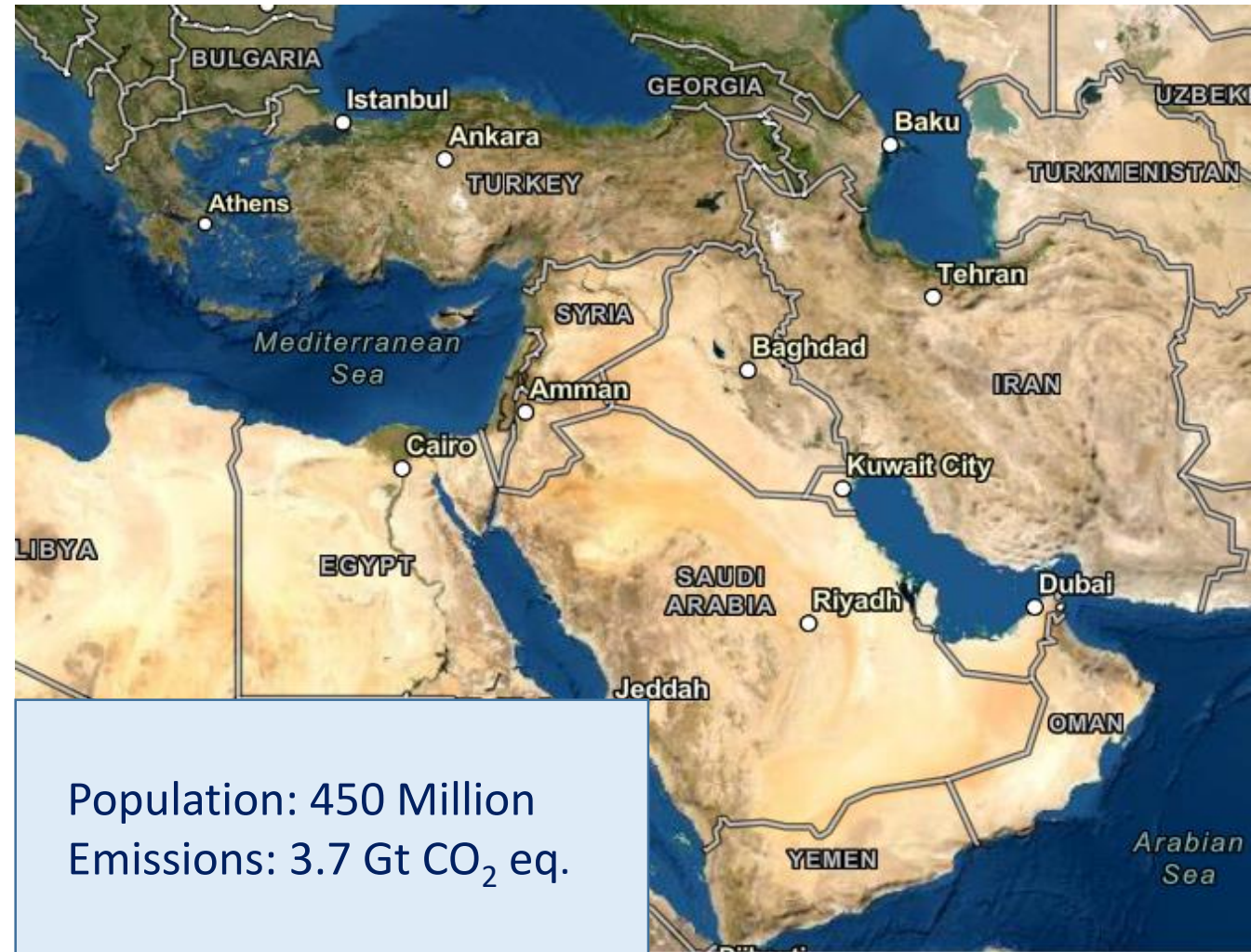


# Climate Change in the EMME Region

The EMME region is recognized as a climate crisis “**hot spot**”: Climate impacts will manifest themselves in a most intense way in a geopolitically sensitive and populous area.

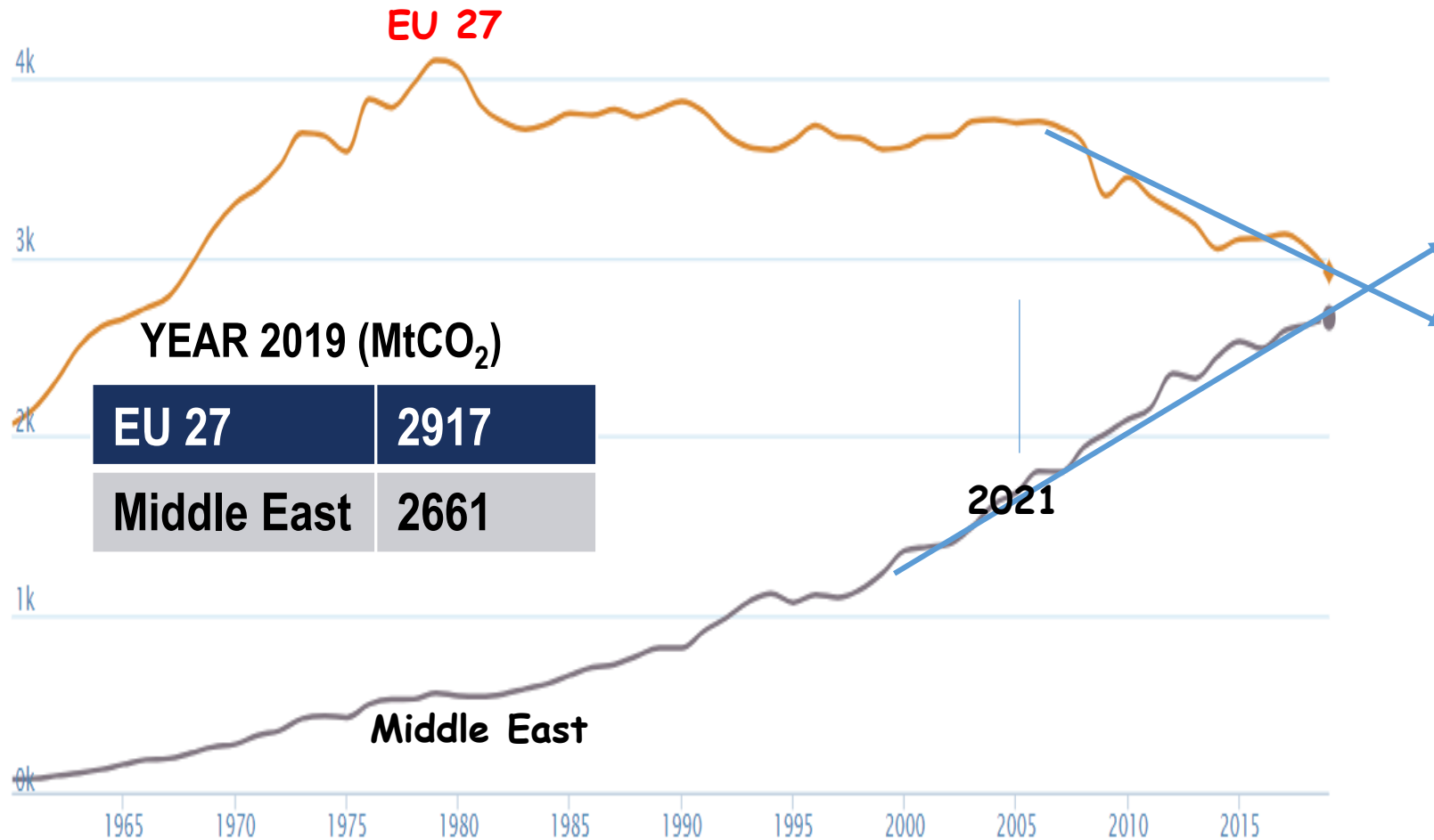
- Extreme heat waves; Shortage of water
- Risk: Collapse of Agriculture
- .....
- Migration

The **EMME countries** are Bahrain, Cyprus, Egypt, Greece, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates and Yemen



# Emissions of EMME region large and growing

Emission trends of CO<sub>2</sub> (1960-2019)



**EMME region  
emits more CO<sub>2</sub>  
than EU 27**

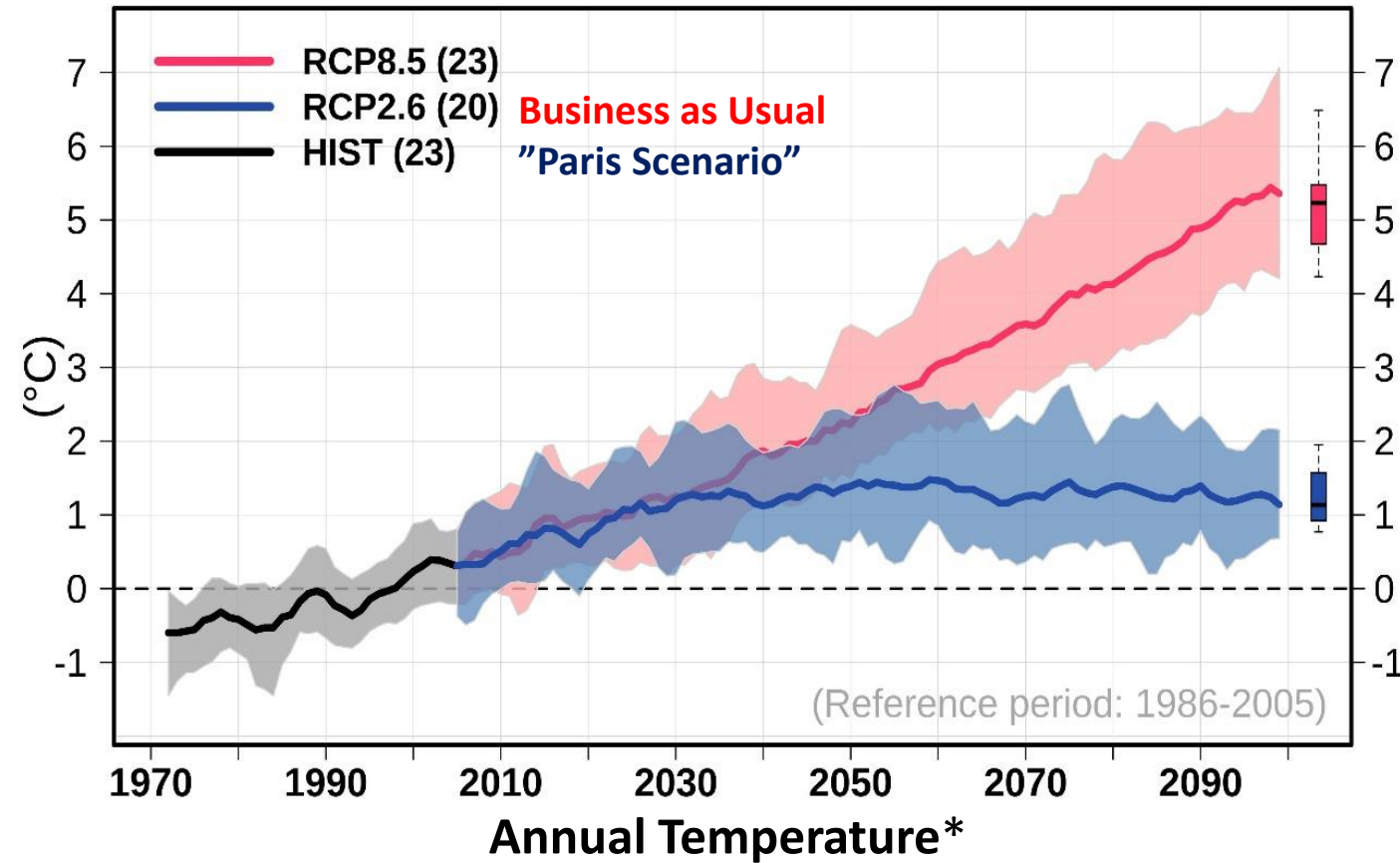
**MITIGATION ACTIONS  
ARE URGENTLY  
NEEDED**

**PARIS AGREEMENT**

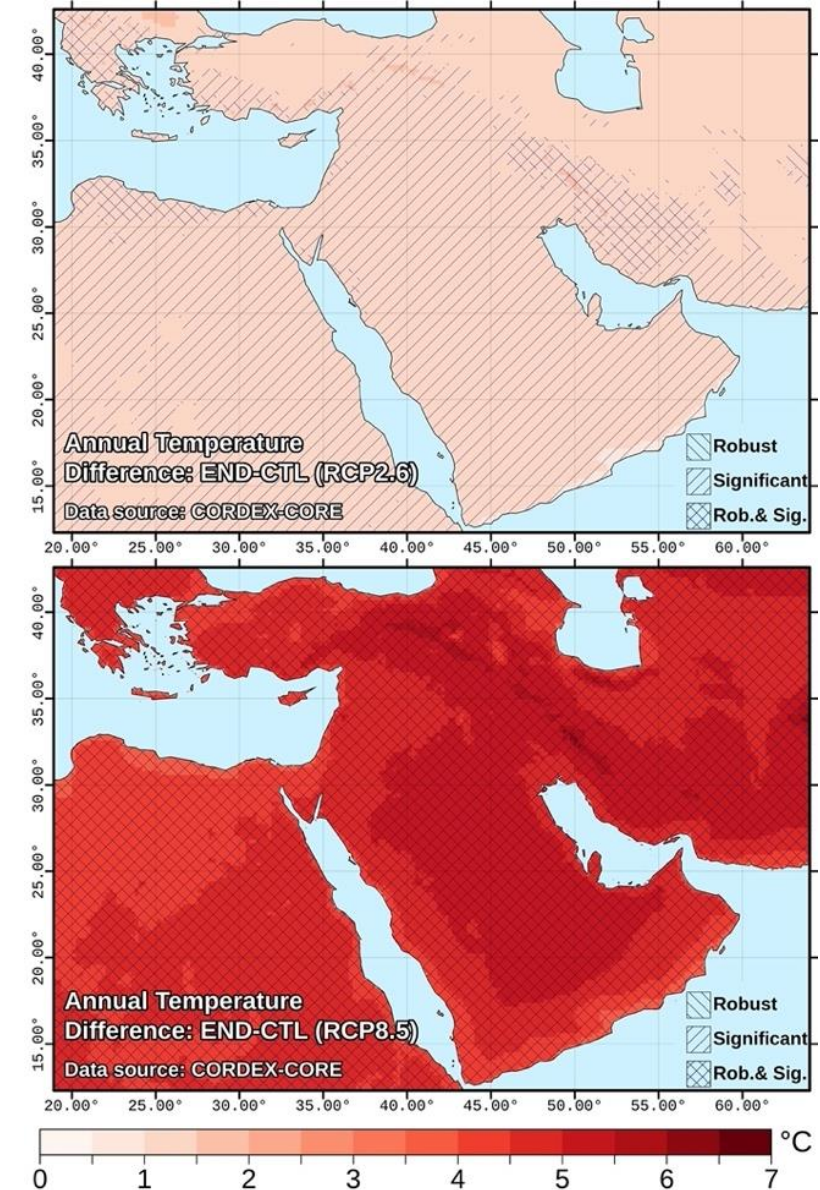
# Climate Projections

G. Zittis, J. Lelieveld et al. 2021

Mean annual temperature anomalies, EMME (land only)



**MITIGATION ACTIONS ARE URGENTLY NEEDED**  
**NO INTERNATIONAL OR REGIONAL FRAMEWORK IN PLACE**



**RCP2.6**

**RCP8.5**



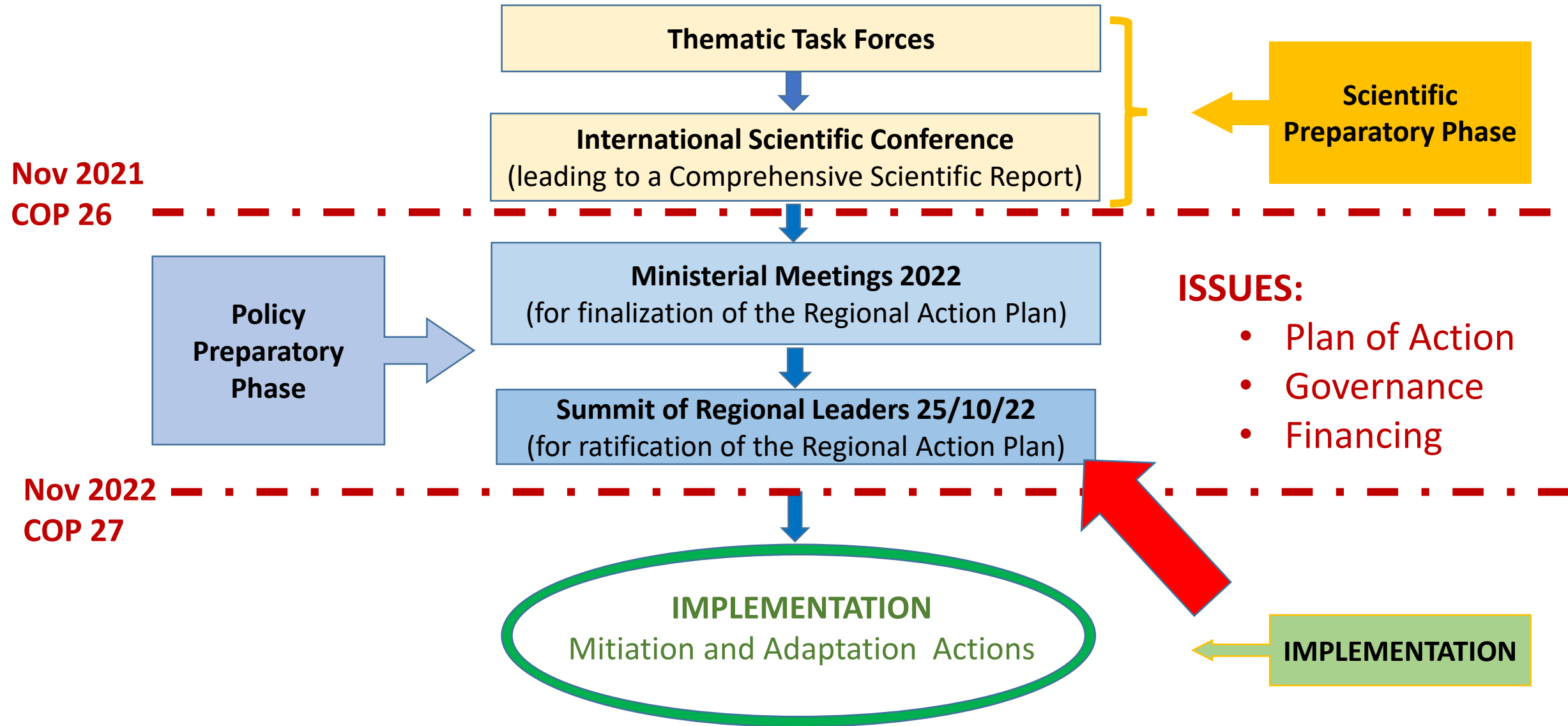
# **Climate Change Initiative in the EMME Region**

**Approved by the Cyprus Council of Ministers of the Republic in March 2019:**

**To coordinate a concerted effort by the countries of the Eastern Mediterranean and the Middle East (EMME) Region**

- To accelerate adherence to the stipulations of the Paris Agreement (mitigation) and**
- To address and ameliorate the effects of climate change in the region (adaptation)**

# Eastern Mediterranean and Middle East Climate Change Initiative (EMME-CCI): Work plan



# Work of the EMME-CCI Task Forces

- Produce Thematic Reports in their respective areas of scientific focus.
  - Collect and organize existing knowledge in order to assess the current situation
  - Identify gaps in understanding, research and policy needs
  - Provide a “toolkit” of possible actions to address the climate challenges in the region
- ***Propose: technologically mature and affordable solutions for addressing the impacts of climate change in different sectors.***

***The recommendations are the basis of the Regional Action Plan to be presented and discussed today***

# Annotated Catalogue of Recommendations towards an EMME Regional Climate Action Plan

Id	Name	Description	Objective(s)	Type	Axis	Regionality	SDGs	TRL	IML	Related Links (More details)
The following recommendations are based on the report of Task Force 1 "The physical basis"										
1.1	Monitor, Report & Verify GHG Emissions and Air pollutants	Create an EMME Observation Network and corresponding Data Repository for various GHG and air pollutants	Support national communications for anthropogenic emissions by sources and removals by sinks of all GHG not controlled by the Montreal Protocol Support Biennial Update Reports on national GHG inventories, mitigation actions, constraints and gaps,	F <sub>em</sub>	MRV	1	13	8	8	<a href="#">MRV GHG</a>
1.2	Atmospheric Observation of climate forcers in the EMME Region for a better verification of emissions	Leveraging a regional Center of Excellence Establish observations of climate forcers in MENA Use ground-based observations for Satellite observations calibration Use Satellite observations to verify and improve emissions from countries Develop a Scientific Regional Network and Leverage it to extend Observations of climate forcers	Better predict climate change in EMME and therefore better adapt. Independently quantify national emissions and better assess the impact of mitigation actions.	F <sub>em</sub>	MRV	3	13	8	8	<a href="#">Atmospheric Observation</a>
1.3	Forest fire protection and firefighting. Regional (inter-State) agreements	Short-term loans of equipment (and people) Data exchange Preparedness plans Technology exchange Experience sharing (Good and bad practices)	Effectiveness, efficiency, and cost reduction in forest fire fighting	A	OCA	3	13	8	8	<a href="#">6.2.2 Forest fires PPP-S&amp;T</a>
The following recommendations are based on the report of Task Force 2 on Energy										
2.1	Regional Energy	Development of a cost-optimization modelling tool	Assess cost-effective national and region-		CS		7, 12			EMME Energy Model: TF2

# Thematic Focii for the Scientific Task Forces

1. Physical Basis of the regional climate change

2. Energy

3. Built Environment

4. Health

5. Water Resources

6. Agroforestry and Food Chain

7. Marine Environment/Resources

8. Education and Outreach

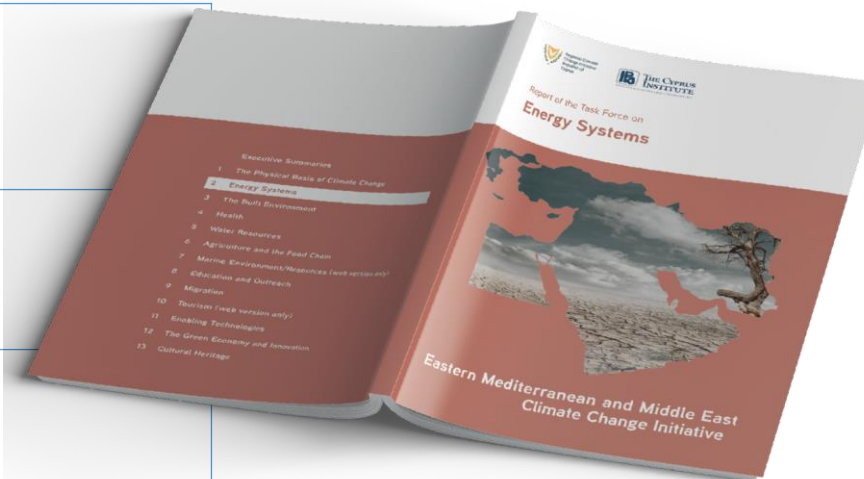
9. Migration

10. Tourism

11. Enabling Technologies

12. Development of Green Economy and Innovation

13. Cultural Heritage



**A collection of the Reports has been provided to you.**

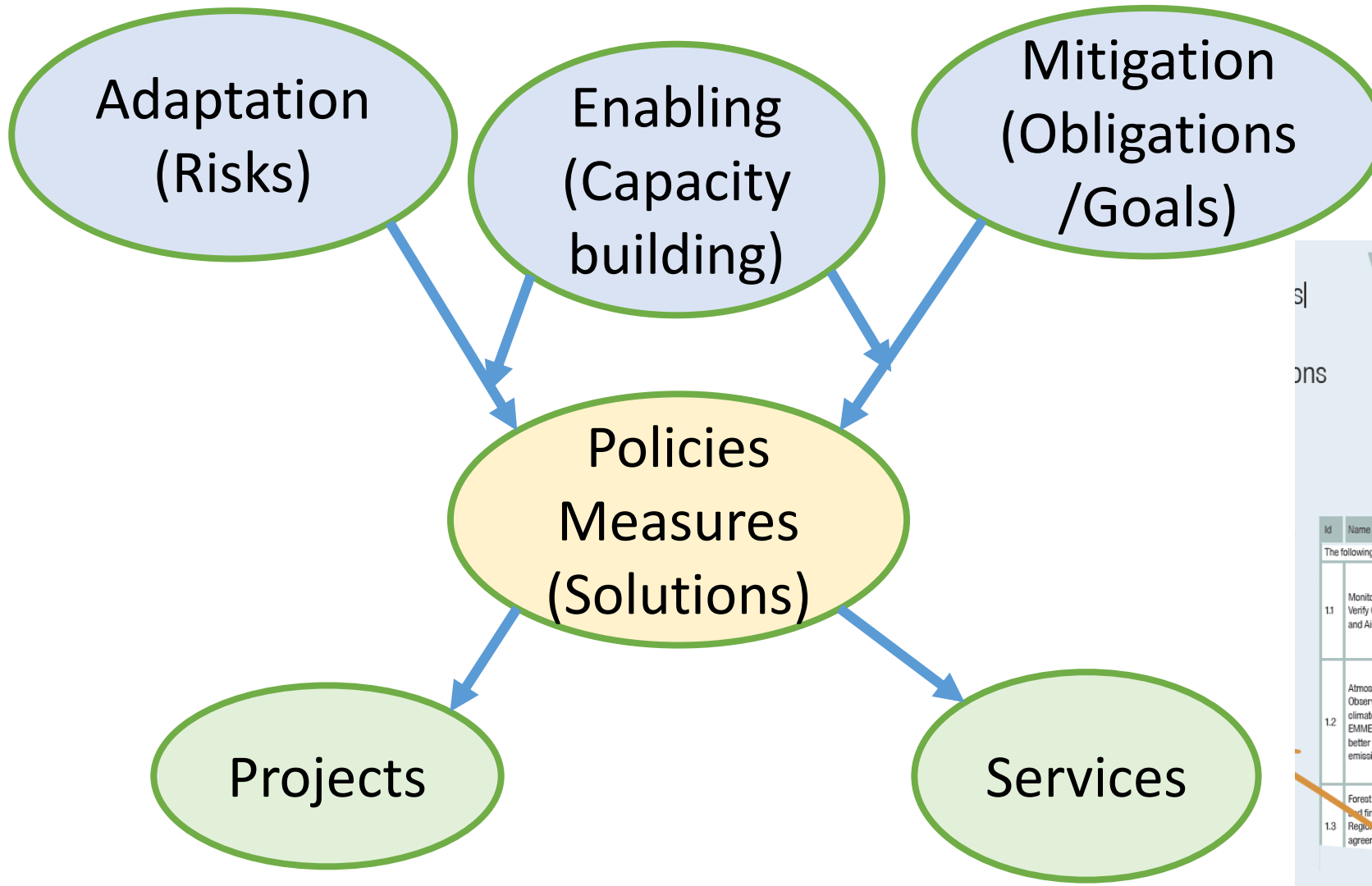
**The work of the Task Forces is intended to continue and expand.**



# EMME-CCI Findings from the scientific - technological phase

- **The situation is bad and worsening. Business as usual scenario – would result in a collapse, no adaptation possible.**
- Inadequate specific quality data
- Low level of national & regional funding for climate research
- Insufficient utilization of digitalization and enabling technologies
- Absence of regional collaborative research, projects or policies
- Generally unprepared to face the challenge
- Regional Collaboration is anaemic although badly needed

# From Science & Technology to Policies and to Projects and Services



# Annotated Catalogue of Recommendations towards an EMME Regional Climate Action Plan

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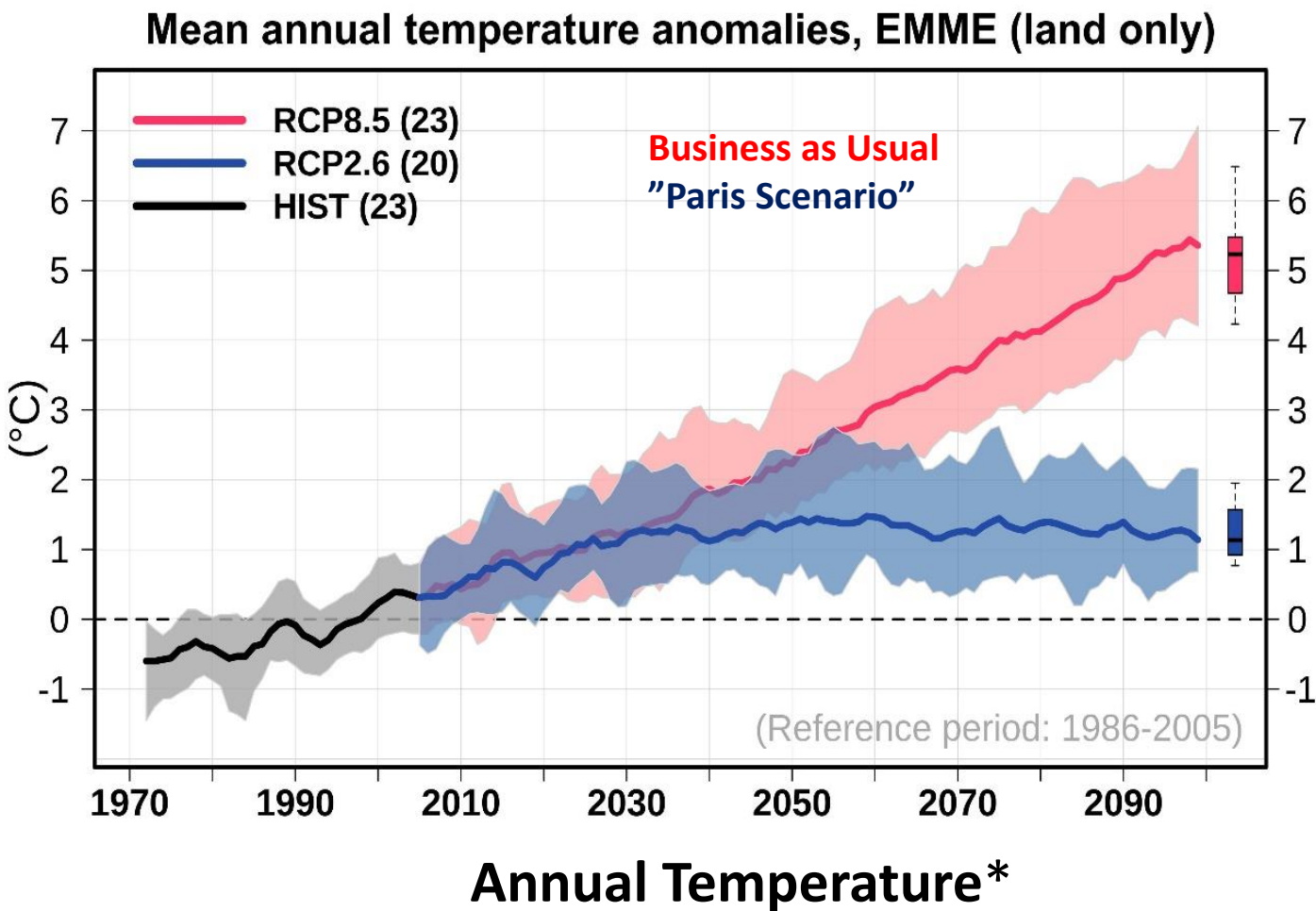
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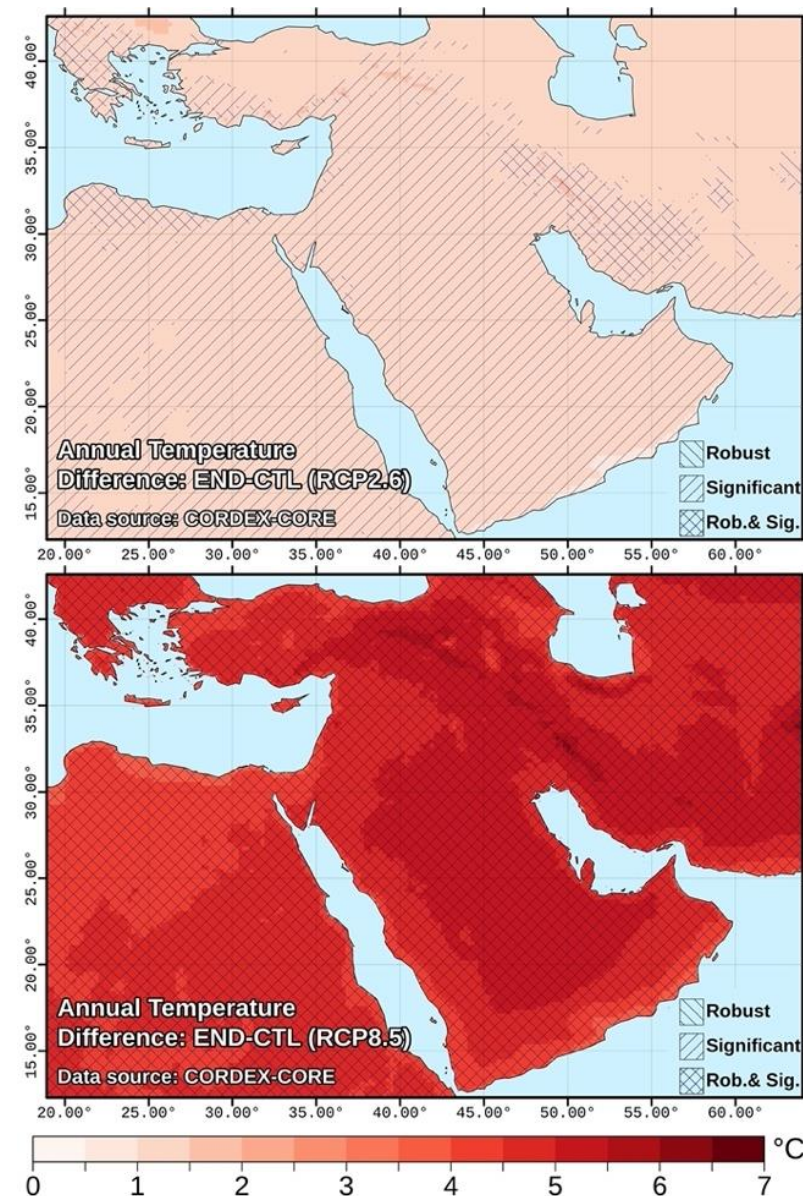
The following recommendations are based on [the report of Task Force 2 on Energy](#)

1.4	Regional Energy	Development of a cost-optimization modelling tool	Assess cost-effective national and region-	E	CS	7, 12,	7, 12,	8	8	EMME Energy Model; TF2
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# EXAMPLE OF ENABLING TECHNOLOGY: Modeling future evolution (temp, Rain Fall etc)



\*country level and seasonal information also provided



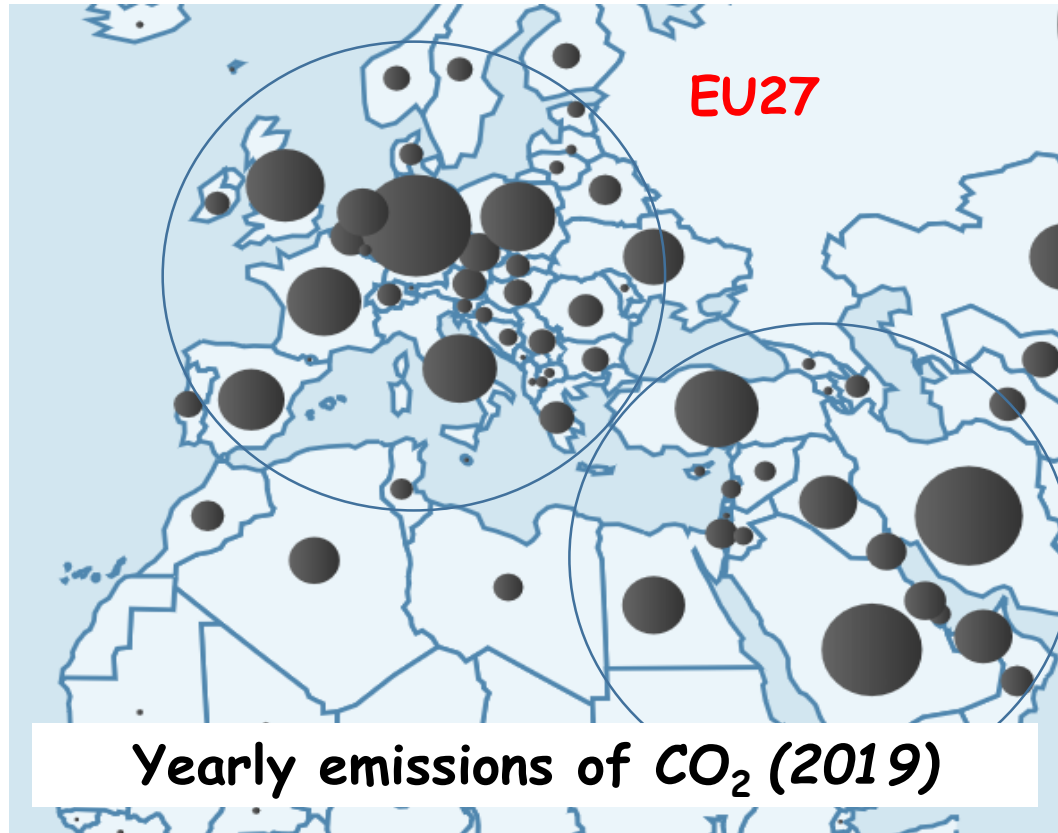
RCP2.6

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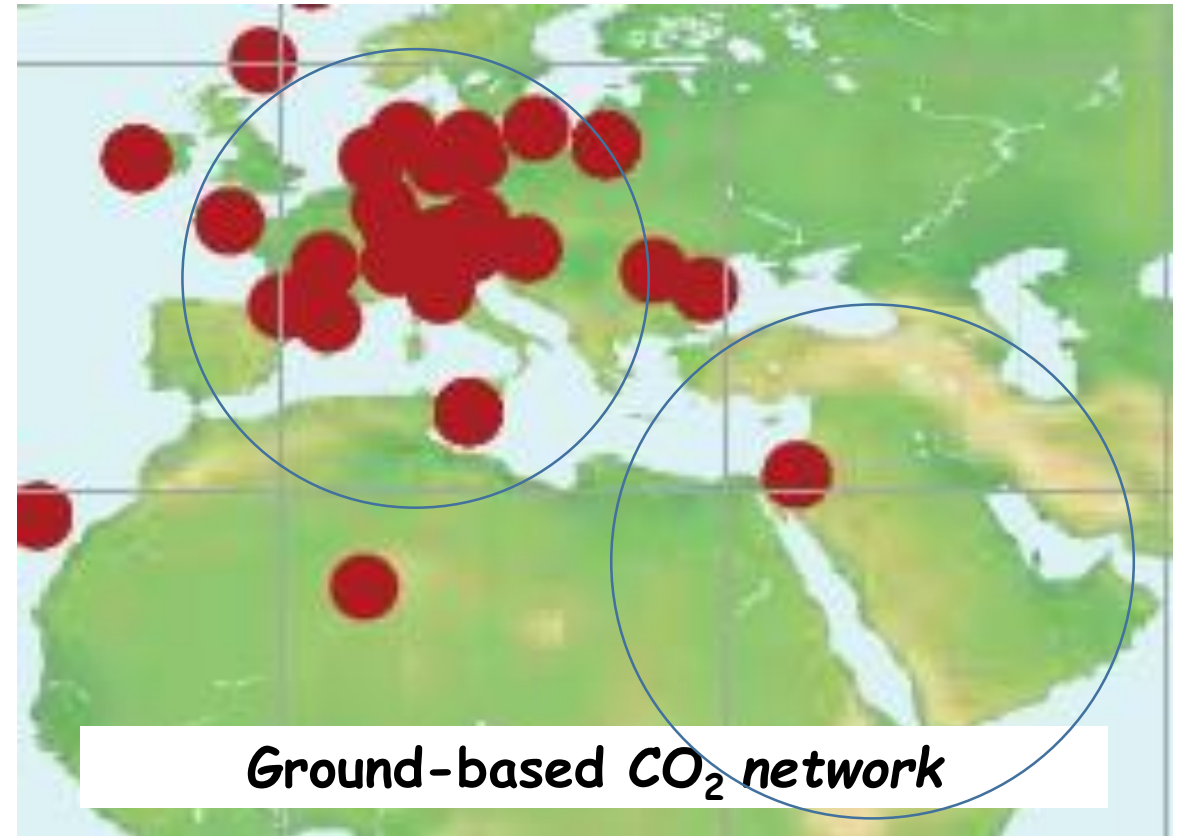


# OBSERVATIONS (CO<sub>2</sub>) are missing in the EMME

## EXAMPLE OF ENABLING TECHNOLOGY: Monitoring Emissions



<http://www.globalcarbonatlas.org/en/CO2-emissions>



Methane & CO<sub>2</sub> network observations in the EMME will enable effective planning to reduce them

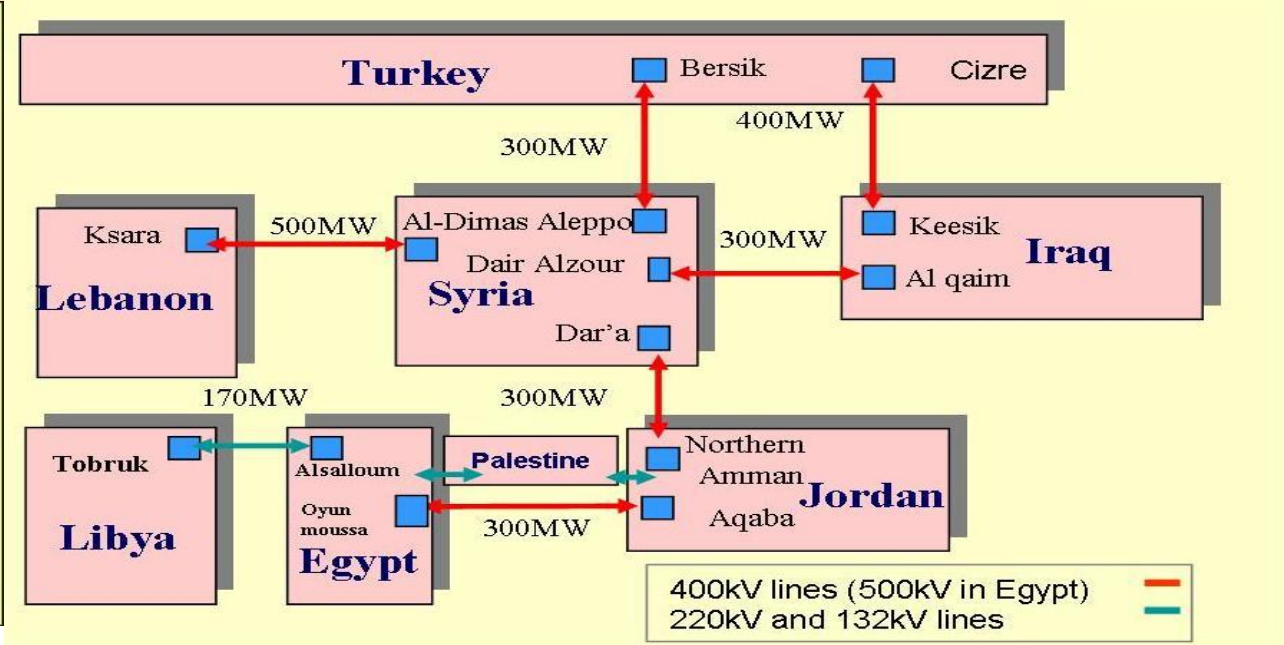
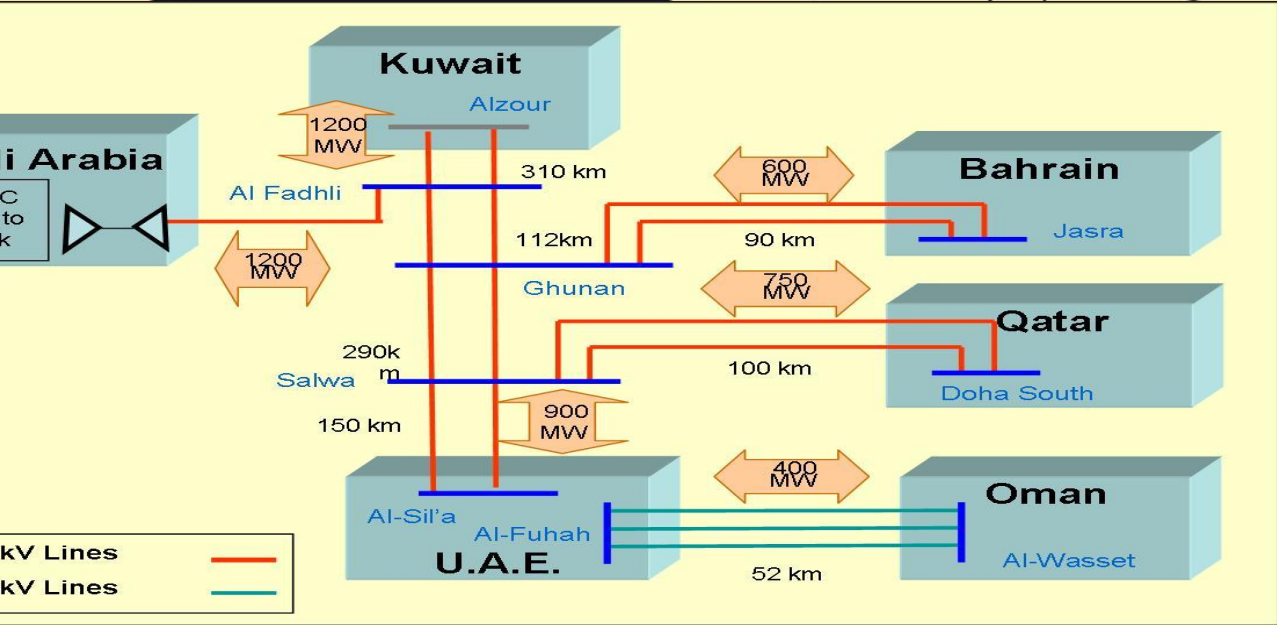
## **EXAMPLE OF TRANSBOUNDARY MITIGATION ACTION: Energy & Water Interconnections in the EMME Region**

- Reduction of GHG Emissions (Mitigation)
- Allows higher and cheaper penetration of renewables
- Energy Security
- Cheaper Energy

Can be Electricity, Natural Gas, Water

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# Electricity Interconnectors





# Next Steps ( towards the Oct 25 Summit)

- Deciding on projects and services
- Setting up and operating the Climate Service Hub within the Secreteriat
- Refining & firming up the Governance Scheme
- Setting up the Country offices, Activating the Council
- Financing the implementation phase

# EMME Climate Change Initiative

<https://emme-cci.org>  
[secretariat@emme-cci.org](mailto:secretariat@emme-cci.org)

**THANK YOU!**

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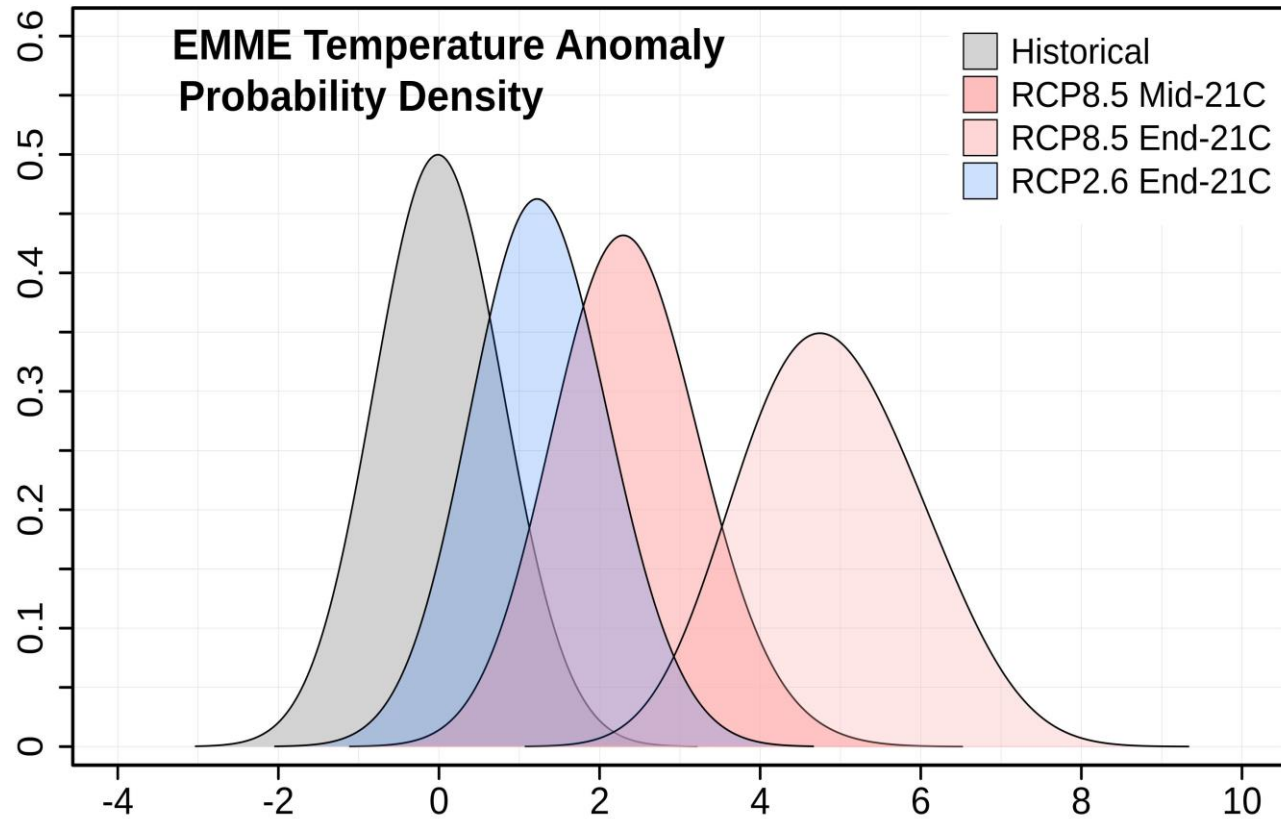




# Moving to the Implementation Phase

- The findings from The Scientific – Technological phase provide an excellent basis to move to implementation
- A large number of scientific sound, technologically feasible and affordable policies have been identified.
- A policy framework organizing the “toolbox of actions” has been proposed
- **Implementation: Governance and funding schemes urgently needed.**

# EMME Region - Climate Projections



Probability density curves of EMME region-averaged anomalies of annual temperature (w.r.t. 1986-2005 mean).

***“under a business-as-usual scenario, by the end of the century the coolest years will be significantly warmer than the warmest years of the reference period”***

***“the EMME region will be subjected to unprecedented heat extremes”***

G. Zittis, J. Lelieveld et al. 2021

# EXAMPLE OF ADAPTATION ACTION: Combating Forest Fires

- Minimize Occurance
- Share Planning & Good Practices
- Common Modeling capabilities (elaborate and high Tech)
- Share resources (e.g. firefighting aiplanes, helicopters)
- Management of post-fire actions

# The EMME CCI Policy Framework:

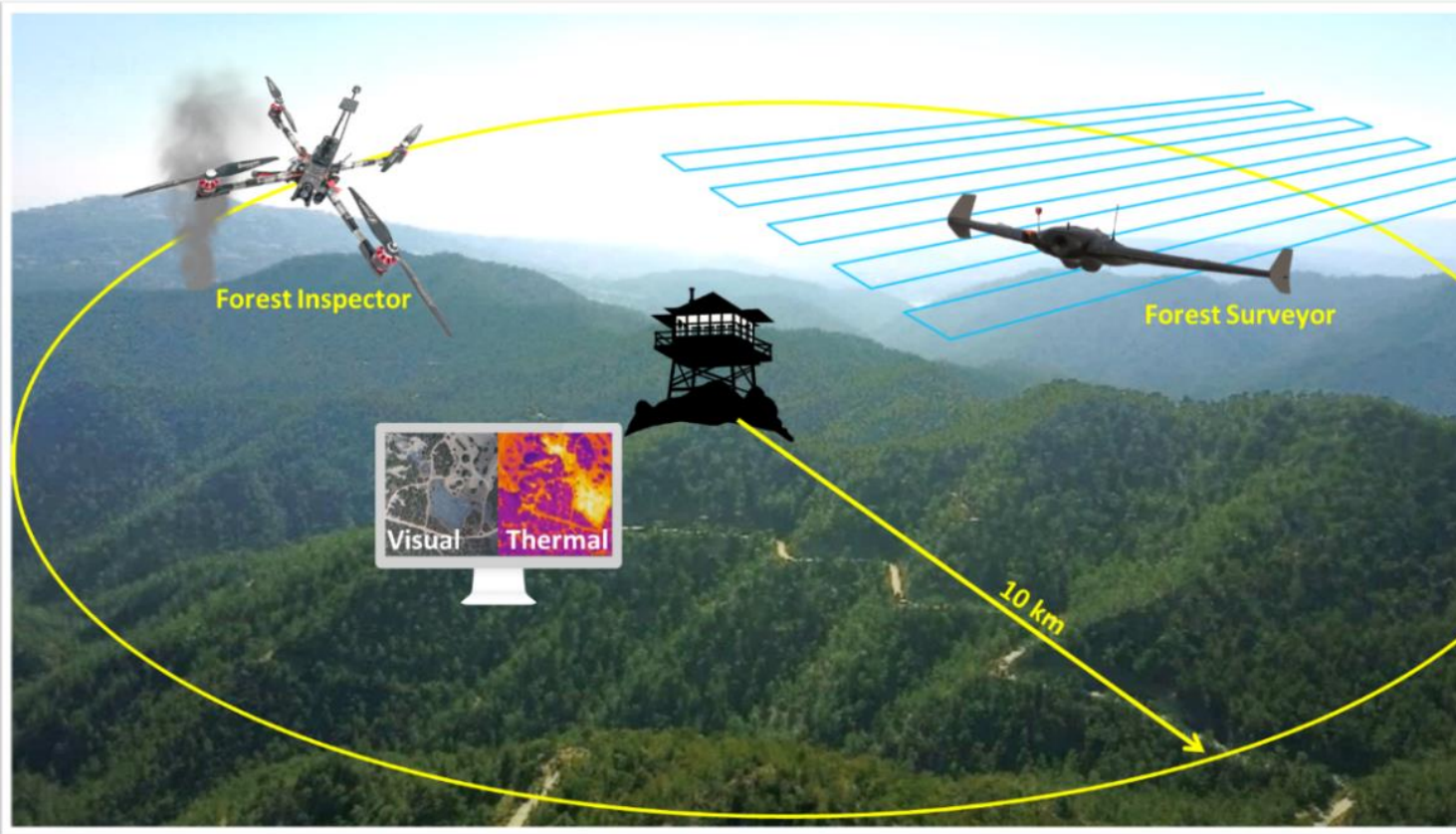
## a system of six thrusts

- Mitigation
- Adaptation
- Research & Development
- Observation networks & Data repositories
- Innovation and (Green) Development
- Education and Outreach



# Forest Fires: automated early detection using drones

Protection of Forests from Fires – Integrated System of Applied Technologies and Dispersion-Modelling for Environmental Pollutants



System is based on five phases:

1. Advance planning and strategy of prevention
2. Surveillance and Early Detection of Fire
3. Prediction of the spread of Forest Fires
4. Intelligent Management of firefighting resources
5. Post-Fires Management.



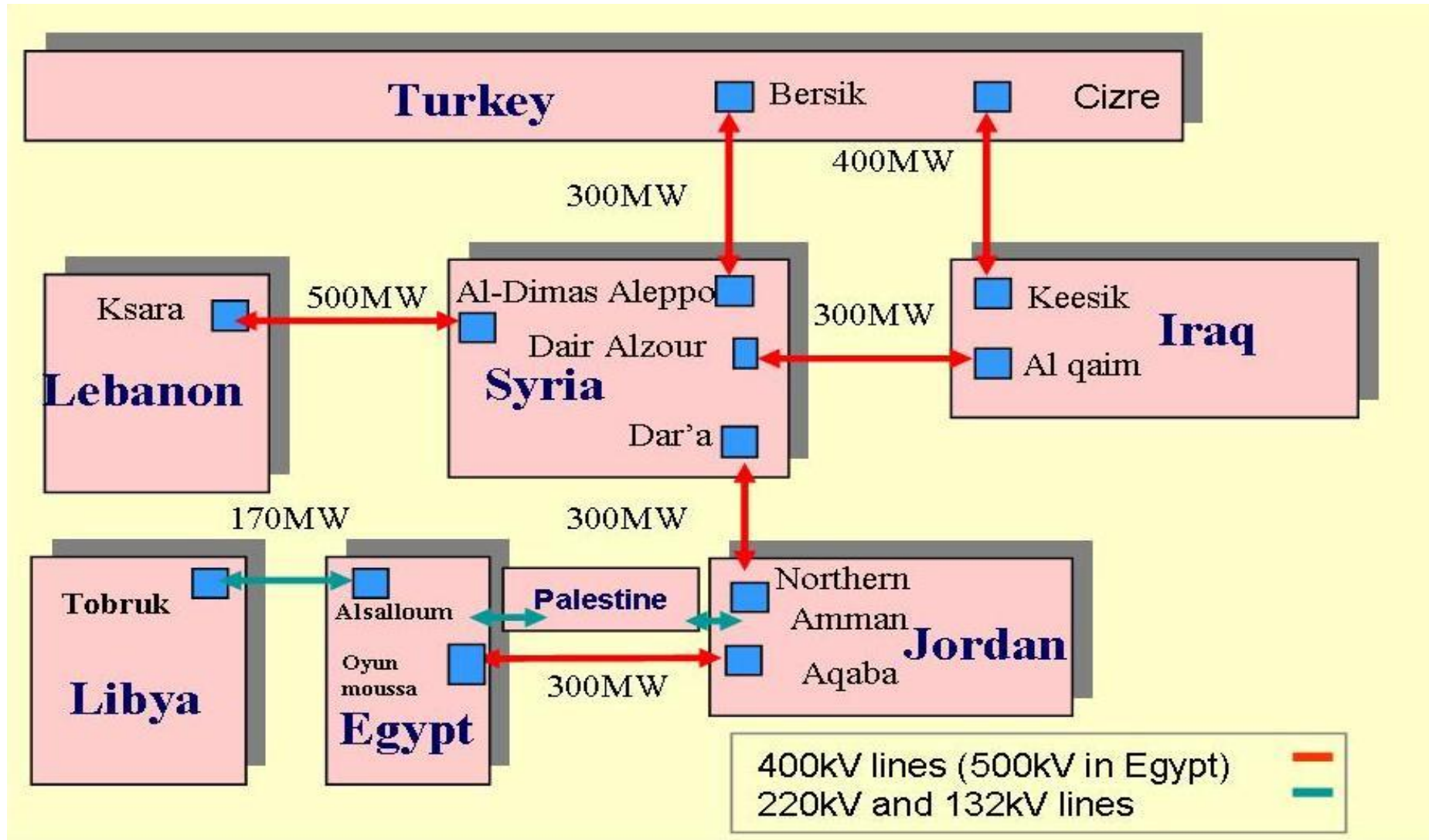
# Solar Desalination

Green Desalination  
with Zero Liquid  
Discharge

Mitigation  
&  
Adaptation



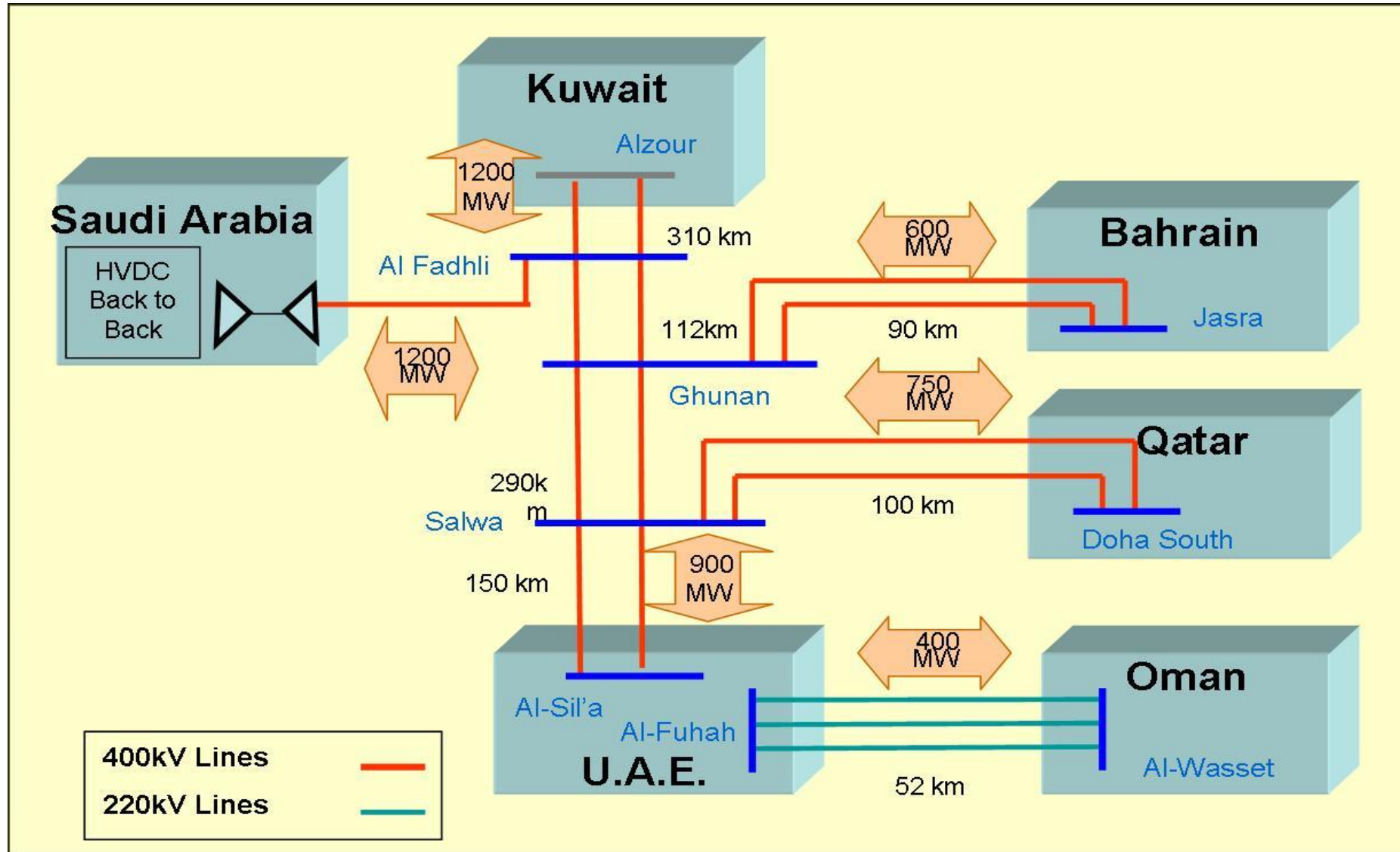
# The Eight-Country Electricity Interconnection (EIJLLPST)



Source: [Arab Fund for Economic and Social Development](#)



# Gulf Cooperation Countries Power Grid Interconnection



Source: [Arab Fund for Economic and Social Development](#)