

Policy Perspective

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OPTIONS FOR CLIMATE CHANGE POLICY IN MENA COUNTRIES AFTER PARIS

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- *Many economies in the MENA region are vulnerable to the negative impacts of climate change given their fragile ecosystems and high dependency on hydrocarbon resources.*
- *Like many other developing countries, MENA countries have framed their commitments as part of the COP21 climate change negotiations within the broader context of sustainable development and with a focus on adaptation.*
- *The key sources of greenhouse gas emissions avoidance and mitigation in their Intended Nationally Determined Contributions submitted by MENA countries are deployment of renewables, energy efficiency, and switching of fuel mix towards natural gas.*
- *The agreements at the Paris climate change summit raise a number of challenges to MENA countries that require thorough understanding and coordination among the policy makers in the region.*
- *However, countries such as Morocco, Tunisia and Algeria face challenges to meet the targets for renewable generations in their INDCs.*
- *MENA policymakers must use both demand side management and market-based policy instruments to take advantage of the enormous and cheap GHG emissions mitigation opportunities in MENA.*
- *MENA countries have significant potential for energy savings through elimination of inefficiencies and waste and a potential of cutting back the region's expanding carbon footprint.*
- *Market-based options are generally more efficient and cost effective than non-market based options, but the choice between the two depends on the specific country national circumstances.*
- *This Policy Brief examines the challenges and opportunities for MENA countries presented by both climate change and by policy responses to it. It reviews the history of intergovernmental climate change agreements over the past 20 years up to the Paris conference in 2015. It concludes with potential actions by MENA policymakers for both mitigation and climate change policy.*

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Introduction

Climate change is one of the principal threats facing the world today. Unchecked increases in the earth's temperature are expected to have disastrous impacts on the world's ecological balance. MENA is a diverse region characterized by fragile ecosystems and high dependency on hydrocarbon resources, which make the region vulnerable to both the physical impacts of climate change and the socioeconomic impacts of policies and measures to address climate change. On the physical impacts side, the region is vulnerable to water stress, desertification and rising sea levels. Global models predict sea levels rising from about 0.1 to 0.3 meters by the year 2050, and from about 0.1 to 0.9 meters by 2100. Research by the Intergovernmental Panel on Climate Change (IPCC) estimates that an additional 80–100 million people will be exposed by 2025 to water stress. Agriculture yields, especially in rain-fed areas, are expected to fluctuate more widely, ultimately falling to significantly lower long-term averages.

In urban areas in North Africa, a temperature increase of 1-3 degrees could expose 6-25 million people to coastal flooding. Climate models predict an overall drying of the climate in the region leading to water stress and changes in major river systems and food production. Agriculture production will be negatively affected as a result of land degradation and the increased need for irrigation. A recent modeling study (Pal and Eltahir, 2016)

predicted that future temperature for the Arabian Gulf region under the “business as usual” (BAU) climate change scenario would exceed a threshold for human adaptability.

On the policy side, many economies in the MENA region are vulnerable to the negative impact of climate change response measures on global demand and the price of hydrocarbons. Research has shown that changes in climate change mitigation activity by countries or regions that are net importers of crude oil can have significant changes in crude oil prices. A 1% change in carbon intensity is expected to cause a 1.6% change in crude oil prices in the short run and an 8.4% change in the long run. Given the fact that oil and gas revenues on average account for 70% of government budgets and contributed more than 35% to the region's GDP in 2010 (UNDP 2012), MENA exporters are exposed to significant risk. Two recent modeling studies (Leimbach et al., 2009, Massetti and Tavoni, 2011) simulating a global greenhouse gas (GHG) emissions mitigation scenario consistent with achieving the two degrees Celsius (2°C) stabilization showed that MENA bore the highest costs regardless of the policy design, with average loss greater than 10% in present value consumption from BAU compared with a world average loss of 1.5%.

Dealing effectively with climate change risks in MENA therefore requires an adaptation approach that jointly addresses both types of vulnerabilities. Such an approach would require, in addition to the domestic effort, a parallel international effort to help the MENA countries strengthen their ecological and the socioeconomic resilience.

At a national policy level, climate change provides challenges as well as opportunities for policy makers in the region. Rising per-GDP and per-capita energy and CO₂ intensities in the region (Babiker 2009, Babiker and Fehaid 2012) suggest large carbon

footprints for a number of MENA countries. Rising GHG emission trends pose a challenge to sustainable development in the region. Outdoor activities will be severely impacted by extreme temperatures, especially agriculture and tourism — two key sectors in the region. Rising temperatures are also likely to speed up the effects of drought, currently one of the latest environmental threats facing the region. The World Resource Institute says 14 of the world's 33 most water-stressed countries are in MENA, including Bahrain, Kuwait, Qatar, the United Arab Emirates, Palestine, Israel, Saudi Arabia, Oman, Iran, and Lebanon. The international pressure on many MENA countries to take on direct emissions mitigation commitments may compromise the region's future economic development.

Alternatively, the large carbon footprint of the region can be turned into opportunities if appropriate policies are enacted to advance low carbon development through energy efficiency and deployment of renewables and other clean technologies while taking advantage of low cost emissions abatement opportunities through bilateral and multilateral emissions trading potentials.

The rest of the brief will focus in turn on the global climate change policy developments, the Paris Agreement, the commitment, opportunities, and challenges to MENA countries, and concludes with investigating climate change policy options for the region's policy makers.

1. Global Climate Change Policy Developments

Climate change policies and regulations have gone through phases of negotiations, adoption and implementation. Over just two decades climate change issues have now moved to the top of national policy agenda in many countries of the world.

Increased global concerns about the risk of global climate change led to the creation of the United Na-

tions Framework Convention on Climate Change (UNFCCC) in 1992. The objective of the convention is the stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system without curtailing developing countries' aspirations to economic growth and sustainable development.

1.1 The Kyoto Protocol

The Kyoto Protocol was the first attempt towards meeting the UNFCCC objectives. The Protocol obliged industrial countries (Annex I) to reduce their GHG emissions by about 5% from their 1990 levels during the period 2008-2012. The Protocol was adopted in 1997 and entered into force in 2005. To help countries meet their emission targets, and to encourage the private sector and developing countries to contribute to emission reduction efforts, the Protocol included three market-based mechanisms (called flexibility mechanisms) – Emissions Trading (ET), the Clean Development Mechanism (CDM) and Joint Implementation (JI).

Annex I developed countries, including, the EU, Japan and Russia have signed and ratified the Protocol, while the US has only signed it and Canada and Australia have withdrawn their ratification. As part of the Kyoto Protocol, developed countries agreed to legally binding limitations/reductions in their emissions of GHGs in two commitment periods. The first period applied to emissions between 2008 and 2012, and the second period to emissions between 2013 and 2020. The extension of the Protocol to a second commitment period was agreed at the Doha Gateway climate talks in 2012. The Adaptation Fund, which was established under the Kyoto Protocol, has Egypt and Qatar as full board members.

1.2 Bali action plan

As part of the Bali Action Plan, adopted in 2007, all developed country Parties have agreed to quantify emission limitation and reduction objectives, while ensuring the comparability of efforts among them,

taking into account differences in their national circumstances. Developing country Parties agreed to take nationally appropriate mitigation actions (NAMAs) supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner. The post-Kyoto climate change negotiations track kicked off by Bali have unmistakably underscored the role of developing countries and their growth trajectories in the future containment of GHG emissions and that any future meaningful climate deal has to have developing countries on board.

1.3 Copenhagen accord and Cancún agreements

As part of the 2009 Copenhagen negotiations, a number of countries produced the Copenhagen Accord. The Accord stipulated that: the rise in global temperatures should not exceed 2°C; developed countries should transfer significant funds to support mitigation and adaptation in developing nations (\$100 billion a year by 2020); and that countries should provide unilateral GHG mitigation pledges to the UN secretariat. The Cancún agreements follow in the footsteps of Copenhagen in terms of ambition and funding and enhancing the architecture of the country level pledges system. The most important feature of the Copenhagen Accord and Cancún agreements is the departure from the Kyoto target and timetable top-down system to a pledge and review bottom-up system. The Cancún formally established the Green Climate Fund in which Egypt is a board member, and Saudi Arabia holds a developing country alternate position. The Technology Mechanism, which was also established by the Cancun Agreements, includes the UAE (which would share its seat with Iran) while Algeria has expressed interest in participating. Algeria and Iran are represented on the Adaptation Committee, which was also established in Cancun.

1.4 Durban platform and beyond

The Durban Platform for Enhanced Action (DPEA)

was based on UNFCCC negotiations that were held in Durban in 2011 and on the 2012 Doha Gateway agreement. The main element of the policy deal agreed to at Durban was to begin a new round of negotiations towards a new “protocol, another legal instrument or an agreed outcome with legal force,” to be concluded by 2015 and to take effect after 2020. The main elements characterizing the Durban Platform was the pursuit of a replacement to Kyoto Protocol that: is bottom-up; is based on pledges; should be legally binding; includes all parties; and should aim at limiting the global temperature rise to below 2°C.

The latest development in the global climate change policy process is the widely celebrated deal recently reached, in December 2015, named the “Paris Agreement.”

2. The Paris Agreement and Implications

In December 2015, representatives from 196 countries adopted a new international climate change agreement in Paris named “the Paris Agreement.” The Paris agreement has a hybrid structure consisting of bottom-up elements in the form of “Intended Nationally Determined Contributions” (INDCs) and top-down elements of governance and oversight in the form of binding reporting and monitoring requirements. The objective of the agreement was to limit average global temperature increase to less than 2°C with an aspirational goal of 1.5°C over the pre-industrial level. The agreement put forward two mechanisms to ramp up parties’ contributions towards achieving the global temperature goal: 1) “global stocktaking” in the form of assessing the gap between INDCs and the requirement to meet the goal; and 2) “progression” in the form of requiring countries to revisit their INDCs every five years and enhance them towards bridging the identified gap from the global stocktaking. The Paris Agreement is to be signed in 2016 and will enter into force

upon ratification by 55 countries representing more than 55% of GHG emissions.

The key elements of the Paris Agreement that have specific implications for developing countries include:

- The agreement applies to all members equally taking into consideration their national circumstances and capabilities. This effectively abolishes Common but Differentiated Responsibilities (CBDR) principle separating the parties into Annex vs. non-Annex under the Kyoto Protocol.
- Credible transparency requirements, including domestic monitoring, reporting and verification. All parties must eventually face the same monitoring and reporting requirements, regardless of their status as developed or developing.
- Finance for mitigation and adaptation is obligatory for developed countries but voluntary for developing countries. In addition, financing is also subject to periodical progression taking the current annual \$100 billion target as a floor.
- A flexibility mechanism including trading and other bilateral and multilateral exchange of carbon credits that is accommodated through a provision for “internationally transferred mitigation outcomes” (ITMOs).

In view of the current state of environmental policy and institutions in the region, these elements raise a number of challenges for MENA countries that require thorough understanding and coordination among policy makers in the region. These challenges include: the MRV (monitoring, reporting, and verification) requirements; the progression requirement to ratchet up INDCs over time; and the likelihood that a number of countries in the region will be asked to contribute to climate financing for developing countries instead of being on the receiving side as is the case under the Kyoto Protocol.

3. Paris Agreement and MENA: Commitments, Opportunities and Challenges

3.1 *The commitments of MENA countries*

At the time of the Paris Agreement, 196 countries had submitted their “Intended Nationally Determined Contributions” (INDCs) to the UNFCCC secretariat. The majority of MENA countries have already submitted their INDCs reflecting varying levels of time frames and commitments conditional on the level of financial and technical support provided by the international community. Like many other developing parties, MENA countries have framed their INDCs within the broader context of sustainable development and with a focus on adaptation.

Morocco submitted the most ambitious INDC among the region’s countries, offering an unconditional target of reducing its GHG emissions by 13% from their BAU level by 2030 and a stringent target of 32% conditioned on external financial support of \$35 billion. Lebanon offered an unconditional pledge of a 15% reduction of its GHG emissions compared to BAU and a 30% reduction conditional on international support. Tunisia offered an unconditional pledge to reduce its carbon intensity (carbon per unit of GDP) by 13% in 2030 relative to 2010 and by 41% conditional on external financial support of \$162 billion.

Algeria pledged an unconditional GHG emissions reduction target of 7% from BAU and a conditional target of 22% by 2030. In addition to mitigation targets, the INDCs for these countries also reported adaptation measures ranging from groundwater protection, surface water development, demand management and monitoring systems to addressing of soil erosion and enhancement of ecosystems.

Egypt, Oman, and Sudan have pledged INDCs that are conditional on international assistance in

terms of financial resources, capacity building and technology transfers. The Gulf Cooperation Countries (GCC) offered INDCs that are deeply focused on adaptation with mitigation co-benefits through economic diversification. The GCC INDCs identified actions and projects related to energy efficiency and deployment of renewables as well as outlying challenges and the needs for technology transfer to deal with agriculture, food security, protection of marine ecologies, and management of water and coastal zones.

3.2 Opportunities and challenges

The key sources of GHG emissions avoidance and mitigation in INDCs submitted by MENA countries are deployment of renewables, energy efficiency, and switching of the fuel mix towards natural gas. In addition to hydrocarbon reserves, the MENA region is characterized by a high potential for renewable energy deployment and use, especially solar power. Despite the differences between countries in terms of resources and availability of infrastructure, a shift towards clean energy production seemed to gain momentum in the region for reasons related to competitiveness of solar energy generation, conservation of hydrocarbon reserves, environment, energy security and strategic positioning. Throughout the region, in 2014 total non-hydro renewables amounted to about 2 gigawatts (GW) of installed capacity, 2.5 GW in the pipeline, and 2.5 GW under tendering.

The growth in renewable energy capacity has also been accompanied with developments related to the policy framework, institutional capacity, price reforms, and market structure of the power sector. The top performing countries in the region in terms of renewable energy deployment are Morocco, Egypt, Tunisia, and the UAE. Based on International Renewable Energy Agency (IRENA) data, the non-hydro renewable energy installed capacity grew from 300 megawatts (MW) to 800 MW in Morocco, from 550 MW to 650 MW in Egypt, from 50 MW to

250 MW in Tunisia, and from nil to 120 MW in UAE between 2010 and 2014.

In contrast to the opportunities and country ambitions on deployment of renewable energy, there are obvious challenges facing the scale-up of renewable generation and share to the levels indicated in the INDCs of many of the MENA countries. Examples include Morocco, which has pledged to scale up the contribution of renewable generation to 42% of total electricity generation by 2020; Tunisia, which plans to ramp up the share of renewables in total electricity generation from the current 4% to 14% by 2020; and Algeria, which has committed to scale up the contribution of renewables in total electricity generation to 27% by 2030. The principal challenges facing such ambitious short term plans to transit towards low carbon power generation in the region include transmission infrastructure, intermittency and storage requirements, economics, and availability of enabling regulations and institutions.

3.3 The regional policy response

A recent regional meeting aimed at articulating the region's response to climate change was held in Switzerland in May 2015 and was attended by a number of MENA countries. The meeting identified some of the gaps and challenges confronting the scale up of regional responses to climate change and made 14 recommendations to address these deficiencies. The main needs identified in these recommendations include adaptation as a priority for MENA, technology transfer, scale-up and access to international climate finance, and the enhancement of institutional capacity in the region.

4. Mitigation Potentials and Climate Change Policy Options for MENA

One study (Babiker and Fehaid, 2012) presented a detailed assessment of the mitigation potentials in the MENA region and the appropriate policy options to harness these opportunities. The study identified a large potential for energy savings by

eliminating inefficiencies and waste, and a potential for cutting back the region's expanding carbon footprint. The study employed a top-down analytical framework using Computable General Equilibrium (CGE) modeling and Marginal Abatement Cost (MAC) curves to demonstrate GHG emissions mitigation potentials available to the MENA region. The simulated MAC curves confirmed enormous and cheap GHG emissions mitigation opportunities in MENA particularly in the residential and energy intensive manufacturing sectors. To harness these potentials both demand side management and market-based policy options are appealing. Although market-based options are generally more efficient and cost effective than non-market-based options, the selection between the two depends on the specific country's national circumstances. The market-based instruments considered by Babiker and Fehaid included domestic emissions trading, carbon tax, and the Kyoto-type Clean Development Mechanism (CDM).

Simulations with sectoral CDM have pointed to very lucrative potentials in the region particularly in the final demand sector. Simulations with a domestic carbon tax of \$5 per ton of CO₂ have resulted in large co-benefits in the form of abatement of "criteria pollutants" — carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide — responsible for air quality and reductions of GHG emissions. Further modeling simulations with additional instruments to reduce the welfare costs associated with the carbon levy have indicated that a revenue-neutral environmental tax reform involving recycling the carbon tax revenue back to the consumer in the form of a targeted consumption subsidy achieves the goal. That result is referred to in the public finance literature as the "Double Dividends" hypothesis.

5. Conclusion

This Policy Brief has highlighted the importance of monitoring the MENA region's carbon footprint

and its implication for the transition to a low-carbon future. It is essential that policymakers understand the agreements signed and the institutions that are part of the climate policy framework that have been established as a result of the Paris Agreement and the decisions taken in Kyoto, Bali, Cancun, Copenhagen and Durban. In particular they should take account of the climate policy commitment made by individual countries and the region via the submission of their INDCs. Market-based policy instruments have a major role to play in pursuing climate change objectives in the region although the relative use of those instruments and non-market tools is an issue for each individual country and its economic structure. Green tax reforms can play a major role to improve the welfare economics of a domestic carbon policy.

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