



Environmental and Climate Change Policy Brief - MENA¹

This Environment and Climate Change Policy Brief aims to summarise the key environmental problems and opportunities for the Middle East and Northern Africa (MENA) region, related to poverty reduction and economic development and the Swedish government's thematic priority Environment and Climate which includes four focus areas; (i) climate change adaptation, (ii) energy, (iii) environment and security, and (iv) water. Together with the Water Concept Note², this Policy Brief is aimed at giving input to the process of developing a new Swedish Cooperation Strategy for the MENA region.

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1. Introduction

The MENA region includes 18 countries³, the Palestinian territories and West Sahara. The MENA region is in many ways a diverse region. It includes some of the world's largest reserves of oil and fossil gas, but is poor in water resources and arable land. The GDP per capita (PPP) ranges from \$2,500 in Yemen to a high of over \$41,800 in the United Arab Emirates.⁴ There are large income disparities in the region with many people living in poverty (less than \$2 per day). The Human Development Index (HDI) spans from a low ranking for Yemen (value 0.575; ranking 140), to Israel (value 0.935; ranking 27).⁵ MENA is currently home to over 320 million people and the population growth is steep with an average of over 2%. The urbanisation rate is high. As a whole, the population is expected to double in 40 years⁶.

¹ This Environmental and Climate Change Analysis was written in February-March 2010, at the request of Sida (Att: Hazme Akyol), by Gunilla Ölund Wingqvist and Olof Drakenberg at the Environmental Economics Unit (EEU), Department of Economics, University of Gothenburg, as part of Sida-EEU's institutional collaboration on environmental economics and strategic environmental assessment. Comments can be sent to gunilla.wingqvist@economics.gu.se. The views expressed in this Environmental and Climate Change Policy Brief are those of the authors and do not necessarily represent the views of Sida.

² Wingqvist, 2010.

³ Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, and Yemen.

⁴ CIA World Factbook.

⁵ Human Development Report 2009, HDI rankings. <http://hdr.undp.org/en/statistics/>

⁶ SIWI, 2009b.

Despite large differences, there are also some similarities between the countries: the MENA region has an arid to semi-arid climate. The region is considered one of the most arid in the world and most countries in the region are water stressed or water scarce. The water scarcity index is generally larger than 1, which means that the water use is larger than the minimum water recharge levels⁷.

After many years of political tensions and acute disputes (including violence) between and within countries in the region, regional cooperation is hesitant.

2. Key Environmental Problems, their Causes and opportunities⁸

The major environmental challenges that the region faces are water scarcity, land degradation (incl. desertification), coastal and marine environment degradation, air pollution and climate change.⁹ Scarcity of water and land (agricultural) resources stands out in particular.

Fresh water quantity and quality: Water scarcity is a major constraint to development. However, also water quality is emerging as an important issue and is of growing concern to the public and which is caused by industry, agriculture and untreated household sewage. Typically, fresh water resources are shared between two or more nations, the water dependency ratio is high, and there is a heavy reliance on groundwater resources. The low water availability, in combination with a fast-growing population and inefficient water use – especially in the agricultural sector – leads in many places to an average amount of water per capita that is far below the scarcity level¹⁰. Total water demand is forecast to increase by 50% between 2000 and 2025 and per capita water availability will fall by half by 2050¹¹.

Land degradation: The land resources of the MENA region face three main challenges: aridity, recurrent drought, and desertification. Desertification is posing the most pressing threat to productive lands in the region. Major causes of land degradation are overgrazing, deforestation, inappropriate agricultural techniques, and unregulated use of the soil in both rain-fed and irrigated agriculture¹². It is important to recognize that desertification is essentially a man-made phenomenon which is exacerbated by climate change. The amounts of desertified land, or land threatened by desertification, vary greatly from one country to another within the region. However, estimates indicate that desert has swallowed up more than two-thirds of total land area of the Arab region. The most desertified land area is in the Arabian Peninsula, followed by North Africa.

Coastal and marine environment degradation: The three major marine systems in the MENA region are the Mediterranean, the Red Sea Gulf of Aden (RSGA) and the ROPME (Gulf) regions. The marine and coastal environments are threatened by pollution, over-fishing, loss of biodiversity, climate change, and other problems. For instance, the Mediterranean Sea is threatened by large-scale industrial activity on its coasts: more than 200 petrochemical and energy installations, chemical industries, and chlorine plants are located along it. Egypt with a population of 84 million people who live and work in close proximity

⁷ UNEP GRID-Arendal, Water scarcity index.

⁸ If no other sources are stated, this section is based on AFED, 2008.

⁹ AFED, 2008.

¹⁰ An area is experiencing 'water stress' when annual water supplies drop below 1 700 m³ per person. When annual water supplies drop below 1 000 m³ per person, the population faces 'water scarcity', and below 500 m³ 'absolute scarcity'.

¹¹ UN ESCWA, 2006; and WB, 2007.

¹² UNDP, 2009.

to the Nile makes this region by far the largest polluter of the Mediterranean Sea. The main concerns in Occupied Palestinian include urban sewage, industrial wastewater and solid waste.¹³ Eutrophication¹⁴ is a chronic problem in certain areas of the Mediterranean, caused by agro-chemicals and non-treated industrial and urban wastewater discharges. The RSGA, one of the world's most unique coastal and marine environments, is threatened by a variety of human activities, such as dredging and filling operations, the disposal of domestic and industrial effluents, and the expansion of the tourism industry. The Gulf area is considered a high risk pollution area, due in particular to the large number of offshore oil and gas installations, transportation and leakages.

The main problems with over-fishing are the lack of information of transboundary stocks, inadequate cooperation in the management of shared stocks, and a lack of surveillance and enforcement of existing fishing regulations.

Air pollution: Although the Arab countries are among the world's largest producers of petroleum based energy sources, the levels of air pollution in the region are in general, low. However, locally, air pollution is a problem especially in urban areas, and air quality continues to steadily deteriorate. Only a few countries monitor air pollution levels sufficiently, systematically and consistently, which makes scientific research and policy recommendations difficult. Monitoring results in Egypt recorded levels of emissions in urban areas and coastal industrial complexes that have reached pollution levels between six to eight times higher than the limits set by the relevant Egyptian environmental laws. Similar results were collected in Lebanon and Syria. Transportation is the main cause of air pollution, but also industrial activities contribute to air pollution.

Climate change¹⁵: The region is struggling to cope with current climatic conditions, and the longer term impacts associated with climate change will pose additional stress and new challenges. The MENA region is particularly vulnerable to climate change given already scarce water resources, high levels of aridity and the long coastal stretch threatened by the rising sea levels. As expressed above, even without climate change, the region will exceed the limits of their economically usable land-based water resources before 2025. Projections assess that the warming in the MENA region will be higher than the global mean warming and rainfall across the region is likely to decrease leading to a general decrease in water availability. The main climate risk in the MENA region is thus related to increasing variability and extremes (in particular droughts), and resulting uncertainty in water availability¹⁶. The concept of "virtual water"¹⁷ is becoming increasingly important, and MENA is more rapidly than any other region in the world becoming dependent on virtual water imports, due to the increasing water scarcity. Virtual water is – and will be – the main climate change adaptation option for the region.

Besides posing threats of its own (e.g. coral bleaching and sea-level rise), climate change will act as a multiplier of the above mentioned already existing environmental stresses and

¹³ EC Mediterranean Hot Spot Investment Programme

¹⁴ Eutrophication is a process by which water is enriched with nutrients that stimulate primary aquatic production and cause excessive algal blooms and loss of oxygen.

¹⁵ Kjellen, 2007; IPCC, 2007; SIWI, 2008a; and AFED, 2009.

¹⁶ Holger Hoff, SEI, personal communication.

¹⁷ The total amount of water that is used to produce a product is referred to as *virtual water*. International trade in food and other goods imply trade in water, i.e. virtual water imports and exports.

exacerbate the problems of water scarcity and declining water quality, land degradation, and deterioration of the marine and coastal environments.

The transport sector is responsible for approximately 90% of total emissions of carbon oxides in Arab countries. The Gulf countries emit about 50% of the total of all Arab countries and have emission levels above the world average.

3. What are the effects of the environmental problems?

The MENA regions two most critical long term development issues are the creation of productive private sector jobs and management of scarce common resources, especially water.¹⁸ Climate change adds to existing environmental degradation and water scarcity.

Impacts include declining ability to produce food due to shrinking areas of arable land, rural unemployment, increasing health costs due to water, air and soil pollution; and risks for conflicts within different user groups such as farmers and pastoralists and tension between countries within a single river basin.

Vulnerability to environmental degradation and climate change differ in the region and in particular between the main oil exporting economies and those that are more dependent on agriculture. The rural poor with few assets beyond their own labor are particularly affected when ecosystems capacity to deliver services in terms of water purification, food, fodder and energy are reduced.

3.1 Impacts on Poverty

Poverty is relatively low in the Middle East and North Africa (MENA) - 17 percent of the region's population live below \$2-a-day in 2005. Due to rapid population growth the number of number of people in poverty has not declined since 1990.¹⁹

*Human Security*²⁰

The potential dangers of environmental shocks (including climate change) in the near future will be far graver in their consequences than the toll of armed violence in Arab countries, whether the source of conflict is foreign occupation or internal strife. Environmental degradation is a cumulative process in that a certain effect triggers others. Consequently, the impact of environmental change on human security varies from one country to another. At the regional level, it is essential for Arab countries to work together to confront the challenges posed by environmental degradation, especially the threats of water shortage, desertification, and pollution. Arab countries should move quickly to establish an Arab agency to coordinate specialised networks for environmental issues, collecting available information from Arab regional organisations, harnessing expertise and formulating the alternatives needed to tackle these issues.

¹⁸ Speech by Ms. Shamshad Akhtar, Vice President of World Bank Middle East and North Africa Region, "Navigating through the Global Recession" in October 2009.

¹⁹ World Bank
<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/EXTMNAREGTOPPOVRED/0,,contentMDK:22474973~menuPK:6407990~pagePK:34004173~piPK:34003707~theSitePK:497110,00.html>

²⁰ This section builds on UNDP, Arab Human Development Report 2009

Lack of human security undermines human development, and is brought on by the depletion of natural resources under pressure, by high population growth rates and by rapid climate change, which could threaten the livelihoods, income, food and shelter of millions of Arabs. It is ingrained in the predicament of one-fifth of the people in some Arab countries, and of more than half in others, whose lives are impoverished and cut short by hunger and want.

3.2 Impacts on economic development

In the Arab region as a whole, the cost of environmental degradation is estimated to be equivalent to five percent of GDP. Mainly these costs relate to health (mortality and morbidity) associated with polluted air, water and inadequate hygiene, see table 1. Lower agricultural productivity due to land degradation and reduced access to fodder is another key cost in many countries, whereas coastal zone degradation lowers tourist revenues. Poor health increases the costs of doing business and lowers the ability to participate in economic life and education. Health problems attributed to air pollution from the transport sector alone cost Arab countries over five billion dollars annually.

Table 1 Average annual damage costs of environmental degradation in MENA countries (percentage of GDP)

	Algeria	Egypt	Lebanon	Morocco	Syria	Tunisia	Iran
Air pollution	1.0	2.1	1.0	1.0	1.3	0.6	1.6
Lack of access to water supply and sanitation	0.8	1.0	1.1	1.2	0.9	0.6	2.82
Land degradation	1.2	1.2	0.6	0.4	1.0	0.5	2.5
Coastal zone degradation	0.6	0.3	0.7	0.5	0.1	0.3	0.15
Waste management	0.1	0.2	0.1	0.5	0.1	0.1	0.36
Subtotal	3.6	4.8	3.5	3.7	3.4	2.1	7.43
Global environment (CO ₂ emissions)	1.2	0.6	0.5	0.9	1.3	0.6	1.36
Total	4.8	5.4	4.0	4.6	4.7	2.7	8.8

Source: Hussein, adapted from World Bank, Beirut Meeting, June 2003

These costs do not take account of water scarcity per se or expected impacts of climate change on agricultural productivity, urban development or the attractiveness of the region for tourism.

Inadequate pricing of water and energy hinder efficient use and contributes to overuse and pollution. Substantial improvements can be made if the allocation of water between sectors and their pricing better reflect the contribution to poverty reduction and growth. Energy subsidies are frequent, particularly in oil rich countries and reduce the efficiency of the economy which particularly benefits the rich. The oil rich economies have the potential to use its natural wealth and invest in human capital and physical capital to diversify their economies. They also need to manage macroeconomic risks from volatile world market prices that generate boom and bust circles that can destabilize the economy and negatively affect growth.

3.3 Impacts on Public Health

Environmental health impacts are considerable and consequences are mostly felt by the poor. In Cairo and Alexandria, Egypt, damage from urban air pollution is estimated to cost almost 2

percent of GDP. This figure includes mortality, morbidity, and potential loss of tourism revenue. Problems from indoor air pollution in the region are smaller than in Sub Saharan Africa partly due to better access to electricity. Problems with diarrhoea are greatest in Egypt and Algeria whereas problems due to respiratory diseases are most pronounced in Egypt and Lebanon, see table 2.

Table 2 Environmental health impacts (morbidity and mortality) in selected countries

	Water, sanitation and hygiene (diarrhoea only)		Indoor air quality		Outdoor air quality	
	Deaths /year	DALYs/ 1000 cap /year	Deaths /year	DALYs/ 1000 cap /year	Deaths /year	DALYs/ 1000 cap /year
Algeria	8 000	6	400	0.2	2 100	0.5
Egypt	10 000	5	600	0,2	15 500	2
Israel	na	na	na	na	1 400	1.1
Iran	na	na	300	0.1	9 100	1
Jordan	400	3	-	-	700	1.1
Lebanon	200	1.7	-	-	400	1.6
Syria	1 600	3	700	1,1	1 800	0.9
Tunisia	800	3	100	0.2	800	0.6

Source WHO, 2004 http://www.who.int/quantifying_ehimpacts/national/countryprofile/en/

4. What are key actors doing to manage the environmental problems?

Many of the key environmental problems are international in character. Management of shared resources like the Nile river basin or the Mediterranean Sea calls for regional cooperation. Land degradation and local air quality is more of a national issue but emissions through both water and air may well have negative impacts on neighbouring states. Action is therefore needed on regional, national and local level.

Governments

Although the costs of environmental degradation are quite large, governments of the region have failed in addressing these mounting economic costs with clear and effective policies. Despite improved legislative frameworks and participation in Multilateral Environmental Agreements and conventions the political will and implementation capacity remains insufficient.²¹ The budgetary allocations for environmental purposes are well below one percent of GDP for any of the countries in the region and a sign of weakness is that funding is reliant on external funds.²² Large-scale economic development projects are not currently preceded by sufficient and transparent studies of their environmental impacts (strategic, cumulative and project). In addition, there is a lack of coordination between authorities in charge of the execution of environmental laws, contributing to non-compliance. Typically, legislation does not create sufficient economic incentives for the development and utilisation of clean technologies.

Furthermore, the Arab region lacks effective, and organised civil society groupings working on addressing key environmental challenges. An exception might be the Arab Forum for

²¹ UNDP, 2009; Petrides et al, 2009; World Bank, 2008

²² AFED, 2008

Environment & Development (AFED) that has been successful in bringing external resources to the region. AFED is playing a key role in bringing the public, private and NGO sectors together using funding resources from membership fees, contributions to AFED's Trust Fund, sponsorship of programmes by corporate partners and organizations, and income from the Forum's activities and services.²³

Suggested key areas for improvement include: i) To raise the awareness of decision-makers and citizens in general about the degree (present and future) and consequences of environmental degradation (including scientific research, communication and media), ii) to prevent and mitigate environment degradation through improved regulatory frameworks and enforcement activity, iii) create positive incentives for good environment practices; iv) integration of environment and climate change in national and sectoral planning (incl. use of environmental assessments).²⁴

Regional organisations

The Arab league is the leading regional organisation. It has established a Joint Committee on Environment and Development and hold council meetings of Arab ministers responsible for environment (CAMRE). Activities include collaboration on harmonizing environmental legislation and joint positions on issues for the multilateral environmental agreements e.g. a declaration on climate change in 2007. However, positions are not always adhered to as other groupings, such as G77 or OPEC may be preferred e.g. oil exporting countries lack incentives for contributing to reduced use of fossil fuels.

Other sub-regional forums include The Gulf Cooperation Council (GCC), Mediterranean Action Plan (MAP), Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) and the Regional Organization for the Protection of the Marine Environment (ROPME).

Key international initiatives

EU²⁵

- Euro-Mediterranean governments aim to tackle the top sources of Mediterranean pollution by the year 2020 through the Horizon 2020 initiative that is built around 4 elements:
- Projects to reduce the most significant pollution sources focussing on industrial emissions, municipal waste and urban waste water, responsible for up to 80% of pollution in the Mediterranean Sea
- Capacity-building measures to help neighbouring countries create national environmental administrations that are able to develop and police environmental laws.
- Using the Commission's Research budget to develop and share knowledge of environmental issues relevant to the Mediterranean.
- Developing indicators to monitor the success of Horizon 2020

²³ Petrides et al, 2009

²⁴ World Bank, 2008; UNDP, 2009

²⁵ For more information on EU regional cooperation see for instance http://ec.europa.eu/environment/enlarg/med/horizon_2020_en.htm

The EU also has a range of additional programs for Energy, Infrastructure, Water etc. including the European Neighbourhood Policy.

UNDP Regional initiatives²⁶

- UNDP supports Arab countries in capacity development to ensure that environment and sustainable development are taken into account in drawing up and implementing national policies, strategies and programmes. UNDP work has focused on the following:
- Combating Desertification. Working with the UNDP Dry lands Development Centre, we assist the Arab states in fighting poverty and encouraging development in the drier parts of the region by emphasizing their productive potential in the context of broad development planning.
- Mobilizing funding from the Global Environment Facility. GEF grants support projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. UNDP helps our country partners take advantage of this resource from the proposal stage to the implementation stage.

UNEP cooperates with the league of Arab states and have many programs in the region.²⁷

World Bank regional initiatives²⁸

MENA's environmental lending portfolio consists of:

- Operations in which environment is mainstreamed in other sectors. Examples are (i) the water sector through integrated water and environmental management programs at a water basin level; (ii) in the urban development sector by addressing the entire chain of solid-waste management; and (iii) inclusion of soil conservation and combating land degradation in rural development projects.
- □ Stand-alone environmental Bank operations addressing critical issues in specific sectors of both "green" and "brown" agendas. These include projects for protected areas, fisheries and industrial pollution, such as Egypt's Pollution Abatement Project.

The Gulf Environmental Partnership and Action Program (GEPAP), the objective of which being to preserve, protect and promote long-term sustainable development for the Gulf waterway. GEPAP would enhance cooperation among governments, the private sector, and civil society on environment through knowledge development and investments promotion.

The Bank has prepared a "Regional Business Strategy to Address Climate Change", which proposes to put climate change at the center of the dialogue that the World Bank holds on the overall development agenda with its partners in the region.

The World Bank also has extensive activities in Water and Sanitation, Energy, Transport and Climate change.

Other

For information about transboundary and national water management see the Sida commissioned paper "A Concept Note on Water in the MENA-region" dated March 9th 2010.

²⁶ For more information on UNDP see <http://arabstates.undp.org/subpage.php?spid=9>

²⁷ For more information on UNEP, see <http://www.unep.org/bh/Programmes/default.asp>

²⁸ For more information see on WB activities in MENA

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/0,,menuPK:247624~pagePK:146732~piPK:146814~theSitePK:256299,00.html>

5. Issues for Sida to consider

In conclusion, income poverty is relatively low in the MENA region. Parts of the region are extremely politically sensitive (e.g. Israel/Palestinian territories, Iraq) where the peace process/post conflict situation are the main focus. Water scarcity and land degradation, aggravated by climate change, are the main environmental issues that constrain growth, increase vulnerability of poor men and women in both rural and urban areas, and risk further destabilize the region. Regional environmental work e.g. on transboundary water resources may provide a means to bring different stakeholders to the table and enhance trust building. The EU, for instance through the Horizon 2020, is a key regional actor for the joint management of environmental challenges related to Mediterranean Sea (pollution, fisheries etc.).

Swedish Development cooperation in the MENA region has mainly focused on democratic governance and human rights, trade and water.

Based on this desk review we propose the following recommendations for Sida to consider during the strategy process and possibly in future dialogues.

Trade – Most countries in the region largely depend on food imports. More efficient pricing and allocation of water between sectors (agriculture, tourism, industry and households) will be increasingly important and food imports are considered a key climate change adaptation strategy (by reducing water use in agriculture). To increase sustainability of the supported programs (trade, export promotion etc), Sweden could help ensure that relevant information on environment and climate change risks and opportunities (expertise/strategies) are considered.

Water- Elaborated recommendations are given in the Sida commissioned paper “A Concept Note on Water in the MENA-region” dated March 9th 2010. In short, tentative activities focusing on water include; i) Help support transboundary water management by facilitating steps towards the formation of a River Basin Organisation, ii) support to ongoing activities relating to water economy, water demand management e.g. through regional research institutes.

Climate change- Although strongly linked to the two preceding areas: trade and water, strengthened regional capacity to assess and effectively communicate climate change risks and opportunities merits specific attention. Research institutes and existing regional institutions such as the Arab league need sufficient capacity on these issues. Regional capacity is important as many of the solutions must be implemented across nations to be effective. Bringing researchers and the users of the information, policy makers and planners in key sectors, together is important to ensure broad outreach of the information.

Democratic governance and human rights – The human rights to food, work, shelter, health, and water, entitle everyone to adequate nutrition, livelihood opportunities such as secure tenure, and sufficient, safe, accessible and affordable water for personal and domestic uses. Fulfilment of these rights is challenged by water scarcity and land degradation. Mobilization of civil society to hold governments accountable for provision of clean water and sanitation and reasonably clean air benefits the poor, particularly women, and strengthens democratic governance. Sweden could ensure that cooperation partners have access to relevant

environmental information, including climate change risks and opportunities and support accountability and transparency.

Last but not least Swedish development cooperation is encouraged to look for opportunities to see how other international partners with a lead on environment and climate change could inform Swedish cooperation, be mutually reinforcing and thus contribute to better outcomes.

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