

The Arab Environment in Ten Years. Instability Challenges Sustainability

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The state of the environment in Arab countries has been characterised by disparities. While the situation deteriorated in many aspects, there were advances in others, especially regarding governance. Despite the lack of real progress in several countries, mainly those facing political unrest and instability, others have made progress towards shifting to a more sustainable path, with major financial resources directed towards investments in environmental infrastructure. The shift towards a green and sustainable economy was largely sparked by the sheer need to address critical problems and shortages in resources such as water, food and energy. For example, phasing out subsidies and implementing major investments in energy efficiency and renewable energy have been driven by increased local demand for energy and budget constraints prompted by lower oil prices. Water shortages have also led to investments in water efficiency and in renewable sources of water, including wastewater recycling and reuse. In order to achieve food security, many Arab countries started introducing sustainable agricultural practices, including more efficient irrigation and increasing productivity. Moreover, adopting a nexus approach comprising water, food and energy is increasingly being considered in order to enhance synergies and complementarities between water, food and energy policies in the region. In general, experts agree with the public that the Arab environment has deteriorated over the last ten years, and that governments are not doing enough to tackle the challenges and manage the environment properly, as a main pillar of sustainable development.

Public Opinion

A vast majority of Arabs believe that the environment has deteriorated in their countries over the last decade, as an Arab Forum for Environment and Development public opinion survey in 22 countries in the first half of 2017 revealed. Results were compared to a similar survey carried out by AFED in 2006. 60% thought that the situation had deteriorated,

the same as in 2006, while 20% said it had improved, down from 30% in 2006, and 20% said it has not changed, reflecting a negative outlook. 95% think that their country is not doing enough to tackle environmental challenges, the same as in the earlier survey.

The most important environmental challenges were solid waste, weak environmental awareness, deterioration of water resources, climate change, food contamination and marine

pollution. Those fall in line with the previous results, except for air pollution, which was number one in 2006 and moved to nine in 2017.

The top causes for environmental deterioration chosen by those surveyed were bad environmental management, non-compliance with environmental legislation, weak environment institutions and inadequate government spending on the environment, all in line with 2006 results.

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Asked about what personal action they were prepared to take to protect the environment, 73% said they were ready to participate in environmental awareness campaigns and 65% were prepared to fully comply with environmental legislation. Regarding fiscal measures, 45% accept government taxes to protect the environment, while only 20% are willing to pay donations to an environmental protection fund.

Changes were evident on issues related to climate change in the past ten years, reflecting a higher level of awareness. 93% say that climate is changing due to human activities and 90% of the respondents believe that it poses a serious challenge to their countries. This represents a 6% increase over ten years. 75% thought that the government was not doing enough to deal with climate change, similar to previous results.

While 83% say they know what the aims of sustainable development are, 98% think that changing consumption patterns can impact the environment, and 95% believe that environmental protection helps economic growth. Results evidently show more understanding of

environmental issues among the public, including their interrelation with economic and social factors. The adoption of the Paris Agreement should have stimulated further recognition of the serious impacts of climate change.

Policies and Governance

Environmental initiatives at the regional level remain fragmented and largely ineffective. This can be attributed to problems hindering proper cooperation within regional Arab institutions, and the confusion caused by the inclusion of environment as an integral component of sustainable development.

The League of Arab States (LAS) attempted over the past decade to handle the inclusion of environment as a pillar of sustainable development. This was in line with the shift in global governance, which culminated in the endorsement of the Sustainable Development Goals (SDGs) in 2015. Historically, this task was handled by the Council of Arab Ministers Responsible for the Environment (CAMRE), which had a limited mandate to attract other players for developing regional policies. As this mechanism was not effective enough, a new department on Sustainable Development and International Cooperation was established in 2016 within LAS, whose effectiveness remains to be tested.

LAS adopted a regional Strategic Framework for Sustainable Development, in addition to regional strategies on water, agriculture, climate change and others. Those have not significantly influenced national efforts to achieve sustainable development.

At the national level, environmental institutions have generally been strengthened, resulting in some improvements in environmental management but with a limited ability to fully address all the three dimensions of sustainable development. In response, some Arab countries



Farmer Atef Gamal working in a Rural Development Project in Egypt (EU Neighbours South).

created certain forms of national councils for sustainable development, which remained ad hoc in nature.

On the public policy front, sustainable management of natural resources was introduced to the development agenda in many Arab countries. A major shift in public policy has been the recent reforms in energy and water prices across the region, including the major oil producing countries of the Gulf Cooperation Council (GCC). In addition to reforming subsidies, the region witnessed the adoption of sustainable energy policies such as energy efficiency targets and action plans, efficiency labels for appliances and cars, green building codes, and renewable energy policies, including targets, feed-in-tariff and net-metering. However, to achieve the global goals, regional institutions need to move from rhetoric decla-

rations to implementation on the ground, and Arab countries need to strengthen their legislative and institutional frameworks.

As the Arab region is one of those most vulnerable to the impacts of climate change, both economically and environmentally, the commitment of Arab countries to the international climate change process, culminating in the Paris Agreement, was evident. By June 2017, all 22 members of LAS, except Syria, signed the agreement, 12 countries ratified it and 10 submitted their first Nationally Determined Contributions (NDC). However, the regional approach to address climate change risks has been unsuccessful, due to lack of political commitments to regional cooperation.

Water, food and energy form a complex web of inter-linkages, and due to their strong interdependence, policies and subsidies in one

sector strongly influence the other two sectors. Arab policy-makers should therefore revisit their current and future development strategies and plans with a new nexus lens. This would help achieve the mandate and targets of the SDGs and the Paris Agreement.

Green Economy and Finance

The last decade has witnessed a rather significant transition of Arab countries to a green economy, from almost no country adopting a green economy or a sustainable strategy to more than seven countries that have either developed such strategies or have included green economy and sustainability elements in their plans. Green strategies have been translated in a package of regulatory and incentive measures introduced in these countries to facilitate such a transition. This gave a strong signal to the private sector to increase investments in green economy sectors many-fold, especially renewable energy, as had been evident in Morocco, Jordan and the United Arab Emirates (UAE), where billions have been invested in solar and wind farms. Morocco is implementing a plan to generate over half of its electricity from renewable resources by 2030.

Such a transition has been prompted by increased awareness and recognition by countries of the real economic, social and environmental gains resulting from transitioning to a green and sustainable economy. This is reflected in the increased job opportunities created by green investments, efficiency in the use of natural resources, competitiveness and market access. The economy can be diversified and revitalised by creating new activities and opportunities, such as: renewable energy, new renewable sources of water in the form of wastewater treatment and reuse of treated water and desalination, sustainable and organic agriculture, green industrial products, sustainable communities

and green buildings, green public transport system, ecotourism, alongside integrated solid waste management systems which can generate energy, produce organic compost, and re-use material.

Egypt, Morocco, Qatar and the UAE have already incorporated green building codes in new urban and coastal communities such as the Mount Galala and Al Alamein new cities in Egypt, Masdar city in Abu Dhabi, Mohammed VI Green City in Morocco, as well as a number of green buildings in other Arab countries. Some public policy strategies, such as the Saudi Vision 2030, endorsed natural capital accounting concepts of sorts. Fiscal measures introduced by the Central Banks in Lebanon, UAE and Jordan have led to sharp increase in the number and value of commercial loans given by banks to environmentally-friendly projects. Those included big projects executed by the private sector, as well as household installations boosting efficiency, mainly in the field of solar and renewable energy in general.

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The adoption of the Sustainable Development Goals (SDGs) in 2015 has provided another impetus for countries around the globe, including the Arab region, to intensify efforts aimed at developing sustainable and green strategies and policies for achieving the SDGs.

The amount of financial resources channelled to fund green investments in the Arab region has been steadily increasing, and an increasing share of total investments is expected to be directed to green and sustainable development projects in the region in the coming

years. One indication of the new trend is that financing for development operations coming from Arab national and regional development institutions during 2006-2016 amounted to \$51 billion, nearly 57% of total cumulative funding (\$90 billion) over the entire 40 year period since 1975.

However, much more is needed, as Arab countries must earmark an additional USD 57.38 billion annually, from domestic and external sources, to support the implementation of sustainable development goals. A small portion of this amount is available now.

Water

Water scarcity continues to intensify in the Arab region due to limited renewable freshwater resources and deterioration in quality, on the one hand, and population growth and lack of funds to finance water infrastructure, on the other. Moreover, water scarcity in the region has been exacerbated by increasing frequency of drought cycles. During the past 10 years, the combined average per capita freshwater availability of the 22 Arab countries dropped from about 990 to below 800 m³ per year (about one-tenth the world's average). If Mauritania, Iraq, Sudan and Lebanon are taken out of the total, the average per capita availability of freshwater drops to below 500 m³. Per capita water availability in nine countries is already below 200 m³. Thirteen Arab countries are among the world's 19 most water-scarce nations. This means that about 40% of the Arab population is already living in conditions of absolute water scarcity.

Most Arab countries continue to draw heavily on groundwater resources to meet their rising demands, particularly for irrigation and domestic uses. Currently, all renewable groundwater resources in the region are experiencing water level decline and quality deterioration,

while non-renewable groundwater basins are experiencing fast depletion. Desalination continues to emerge as a major water source in the region, especially in energy-rich countries. However, desalination technology and equipment are still imported, with limited added value to the economies of Arab countries.

Reuse of treated wastewater has been generally slow across the region, despite the scarcity conditions and the relatively large volumes generated, representing major lost opportunities. While 60% of wastewater is treated, more than half of the treated water is discharged and not re-used. In the past 10 years, a clear trend of sectoral water competition could be observed, where the region's overall percentages of sectoral water utilisation have been shifting from the agricultural sector towards the municipal and industrial sectors, reflecting rapid urbanisation and industrialisation trends in the region, which are expected to continue in the future.

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During the past 10 years, the proportion of the population with access to safe drinking water has improved from 85% to 90%, almost reaching the global average. This was achieved in most parts of the region, except in the Mashreq where the proportion of the population with access to safe drinking water has deteriorated during this period, from 94% to 88%. Challenges in these countries are attributed mainly to military occupation, civil conflicts and insufficient investments. Access to improved sanitation facilities has considerably increased in the past ten years, reaching 85% of the population.

As the supply side management has reached its technical and financial limits, several Arab countries have started to make a more effective shift in their water policies to demand management and conservation, with economic tools being increasingly used to materialise this shift. Water subsidies have been reformed in many countries from general to more targeted, a move which is expected to enhance water use efficiency and increase cost recovery.

The past decade has witnessed major regional and sub-regional initiatives. The Arab Ministerial Water Council (AMWC) was established in 2008 within the Arab League, and in 2010 it released the Arab Water Security Strategy 2010-2030. At the sub-regional level, in 2016 the GCC Unified Water Strategy 2016-2035 was launched. The development of both strategies represents a major milestone for coping with the water scarcity in the arid Arab countries. Success needs fast implementation and higher levels of regional cooperation.

Food Security

Agriculture and food production cannot function without a healthy environment and a conducive climate, while they have a severe impact on both. Food security has deteriorated further in several Arab countries over the last ten years, despite some advances in others. The Arab region continued to be the largest food deficit region in the world, with an ever-growing food gap between domestic production and consumption. In terms of monetary value, the total Arab food gap has increased drastically from USD 18 billion in 2005 to about USD 29 billion in 2010 and USD 34 billion in 2014. The growing food gap is due to several interrelated factors and developments in the Arab world. Specifically, those include high population growth (2.3% annually compared to 1.9% in developing countries); low agriculture

productivity due to poor investment in science and technology and in agricultural development; further natural resource degradation; climate change implications, generally less precipitation, more frequent droughts, higher temperatures, shorter growing seasons and seawater intrusion; high food wastage, at about 35%); widespread political instability and civil strife in several Arab countries in the last six years, and a resulting rural to urban and overseas migration. Due to the civil war in Syria, for example, the overall financial cost of damage and loss in the agriculture sector over the 2011-2016 period is estimated at over USD 16 billion.

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The quantity and quality of both surface and ground water resources deteriorated drastically due to climate change and poor water management, including non-sustainable utilisation. Salinity already contributed to exacerbated land degradation and desertification in vast areas of the Arab world. With the exception of Oman and Jordan, Arab countries invested less than 1% of their GDP in agricultural research and development (R&D). Despite their high agricultural growth potential, Algeria and Sudan seriously underinvested in R&D, each spending only 0.2% of their GDP on agricultural research, which is insufficient given the importance of agriculture for their national food security and economic growth.

While taking into account the current overall food security risk, Arab countries were categorised by IFPRI based on economic and social development. This categorisation is assessed following two major indicators: a macro-



Environmental Cleanliness Campaign in Egypt (EU Neighbours South).

economic status of the trade balance and a micro-household nutritional and health status level as measures of food insecurity. Another important forward-looking classification is based on the natural resources and agricultural potential of Arab countries to enhance food and nutritional security. Arab countries with high agricultural potential include Algeria, Egypt, Iraq, Morocco, Sudan and Syria; those with medium potential are Mauritania, Saudi Arabia, Tunisia and Yemen; limited potential countries include Jordan, Lebanon and Libya; while Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates fall in the extremely low potential category.

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countries to tap into their full agricultural potential to bridge the yield gaps and promote regional collaboration based on their comparative advantages to enhance food security. This will close the growing gap between domestic food production and consumption to reduce the growing food imports and enhance food security, while building collective cooperation.

Energy

The Arab region's rapidly growing domestic energy demand challenges the region's traditional energy policy. In 2014, the region accounted for 5.1% of the world's total primary energy supply, 7.8% of its carbon dioxide emissions, and 5.6% of its gross domestic product (GDP), much of it generated in the GCC countries.

This pattern has positioned some GCC states amongst the world's top carbon dioxide emitters.

Current trends of energy use put the Arab economies among the least efficient globally. Average losses in generation, transmission and distribution of electricity are 19.4%, which is more than double the world average. Growth in energy consumption has been 8%, which is twice as fast as average economic growth. Energy efficiency, therefore, presents ample opportunity for achieving energy savings in Arab countries.

For decades, the energy sector has been playing a crucial role in the Arab region's development, with oil and gas making up over 25% of the total Arab GDP. The sector represents more than 70% of the combined government revenues, reaching 90% in some countries. The petroleum industry plays an important role in the social and economic development of both Arab oil-exporting and importing countries, and offers job opportunities in exploration, production, transportation, refining and distribution. Fossil fuels also dominate the domestic energy mix, with oil and natural gas accounting for around 95% of the region's own energy needs. Still, over 50 million Arab people have no access to a modern energy service.

All Arab countries share a high vulnerability due to overdependence on oil, and have embarked on programmes to diversify the economy. Saudi Arabia launched Vision 2030, which aims to boost non-oil revenues six-fold to \$266 billion by 2030, along with bold plans to better manage natural resources, phase out subsidies and boost energy efficiency. Major energy subsidy reform plans were endorsed in eight Arab countries.

Although many Arab countries have made remarkable strides towards promoting renewable energy, its contribution in the energy mix remains marginal, at about 3.5%. However, the installed capacity from wind and solar energy

across the region increased around six-fold in ten years since 2014, from about 800 megawatts to over 4,500 megawatts

Most Arab countries have announced national renewable energy targets. Morocco's clean power target of 52% by 2030 stands out as the most ambitious in the Arab region. Twelve Arab countries have announced targets for renewable energy, including UAE, Jordan, Algeria, Egypt, Saudi Arabia and Tunisia, which announced ambitious targets in excess of 20%. In addition, several countries have adopted different kinds of policy measures to enhance energy efficiency.

Fast-growing energy demand in the Arab region, coupled with prospects of the Middle East becoming a global economic centre by 2030 alongside the Asia-Pacific region, necessitates diversifying energy sources, in order to move to a more sustainable energy sector

The outlook for wind and solar power in the Arab region is mostly positive, provided further policy reform continues to incentivise investment in new sources of energy. The IEA expects renewable generation in the Middle East to double in size over 2013-2020. Most new big developments are expected to be in Saudi Arabia, which announced plans to produce 9.5 gigawatts of electricity by 2023 and 54 gigawatts by 2040.

Fast-growing energy demand in the Arab region, coupled with prospects of the Middle East becoming a global economic centre by 2030 alongside the Asia-Pacific region, necessitates diversifying energy sources, in order to move to a more sustainable energy sector. However, the energy mix model does not need to be used as a pretext to introduce additional environmentally-harmful fuels such as coal. Nuclear energy is another source some Arab countries have been attempting to bring in,

under the label of energy mix. Both need to be examined with close scrutiny to evaluate real benefits and risks, at a time when the overwhelming global trend is to phase out existing coal and nuclear plants and hold back on new ones. Achieving sustainable energy requires decoupling economic growth from resource utilisation through efficient use, the decarbonisation of the energy mix to reduce the carbon footprint, and the eradication of energy poverty to achieve social equity and remove disparity in energy and economic indicators.

Air Quality

Air quality in Arab countries has deteriorated over the past few decades. Emissions of carbon dioxide (CO₂) increased from around 4 tons per capita to around 7.5 tons per capita between 1990 and 2013. Changes in the power sector were driven by strategies that have been successfully implemented in many countries in the region to improve energy access, leading to more fossil fuels being burnt in the thermal power plants to meet the increase in power demand. Electricity consumption increased by 75.5%, leading to a total amount of 766.5 million tons of CO₂ being emitted in 2015, compared to 436.6 in 2006. Emissions from the transport sector increased due to the substantial growth in the sector, with no effective mitigation measures and weak public transport in most countries.

A study conducted in major cities in the region claims that the unrest in some countries has led to a drop in emissions. If this is true for some gases due to slowing of industries and personal transport, dust and other pollutants related to war activities have obviously increased. MENA was among the regions that performed worst in air quality. Recorded levels of air pollution often exceeded 5 to 10 times the WHO limits, and several Arab cities are among the

20 most polluted cities in the world. Excessive emissions include carbon monoxide that results from the transport sector, oxides of sulphur and oxides of nitrogen, leading to the formation of acid rain, ozone, and volatile organic compounds (VOCs). Reduction of sulphur content in diesel fuel in most Arab countries has been achieved by tightening the standards, which resulted in a drop from levels as high as 1000 ppm to around 50 ppm. Also, a shift to unleaded petrol has been achieved by implementing cost differentials, followed by a complete ban on the use of leaded fuel.

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Mitigation measures that could be implemented to further reduce emissions from the power sector include enhancements of fuel quality and deployment of renewable technologies and energy efficient devices. Most Arab countries are developing a viable market for renewable energy investments. Between 2012 and 2015, total renewable installed capacity witnessed a 150% increase, exceeding three gigawatts, excluding hydropower, compared to 1.2 gigawatts in 2012.

Most sustainable transportation strategies fall into one of three categories: vehicle/fuel technology enhancement, road/vehicle operations improvements and demand management. A formal mass transport system is yet to be implemented on a wide scale in the region. Petrol engines generally produce less harmful emissions compared to diesel, thus tightening the standards related to petrol quality will lead to substantial emissions reduction.

The successful introduction of hybrid and electrical cars in Jordan over the past eight

years is a shining example of how targeted fiscal policies can influence the market. A package of tax exemptions on cleaner cars and greater levies on those with higher emissions helped within a few years to boost the number of hybrid and electrical cars in Jordan to half of those newly registered.

Environmental Research

The Arab world is facing many environmental pressures ranging from challenges in resource management and water shortage to pollution and climate change, demanding serious scientific research covering these areas. Arab nations contribute 1.7% of the total value of budgets allocated for environmental research worldwide. Egypt, Saudi Arabia, Morocco and Tunisia are the most active research countries in general science and environmental research. Scientific research has increased in the last ten years, with Egypt leading the Arab world followed by Saudi Arabia, for both the number and rate of publications produced. Egypt has contributed at least double the publications compared to other Arab countries since 2008, effectively contributing on average 26% of Arab world environmental publications cumulatively by 2015. This can be attributed in part to the size of Egypt's population, accounting for a quarter of Arab countries combined. Saudi Arabia has been enjoying a linear increase in research rates since 2008 (1.67% average annual document contributions per year), followed by Morocco (0.59%), Iraq (0.35%), and Qatar (0.18%).

Health and pollution as well as water science and technology are the fastest growing research subjects under environmental science in the Arab world, where research has increased two-fold on average since 2008, with Egypt leading the Arab world in both disciplines. The slowest growing subjects are climate change

and environmental policies, as well as biodiversity and conservation.

Beyond the numbers, results of research projects and publications in Arab countries are rarely reflected in policies, and they seldom contribute to solutions to environmental problems. In contrast to the weak contribution and impact of researchers working in Arab countries, Arab researchers working abroad contributed well in many areas related to environmental science, with a profound impact on society.

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The enhancement of environmental research to produce an impact in Arab countries requires the creation of conditions and a stimulating working environment, and linking research to policy. A fundamental step towards achieving this goal is building an infrastructure that links research institutions, industry and society and creating an integrated system that ensures sustainable development. Budgets allocated to environmental research should be enhanced, centres of excellence created, and research collaborations among Arab countries and with other centres worldwide strengthened. Publication mechanisms for research institutes have to be improved and modernised in order to facilitate the publication process. In order to fill a growing gap, research in the areas of policy development and climate change should be encouraged. Finally, the phenomenon of brain drain should be reversed by encouraging investment in researchers and intellectual capital.

Conclusion

In order to ensure a successful transition to a better environment as the main pillar of sustainable development, Arab countries urgently need to translate their many political declarations and adopted regional strategies into tangible programmes. Regional cooperation among Arab countries needs to be promoted, including joint projects in the fields of water, energy and food production, as well as research, education and capacity building.

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Environmental components and resources have to be valued as assets, attaching a mon-

etary value to resource depletion and pollution and including those in national budgets under natural capital accounting. It is necessary to adopt prudent governance which embraces stable and predictable fiscal policies, regulations and market incentives, and encourage domestic and foreign investment in green infrastructure projects.

Although only eight Arab countries have direct access to the Mediterranean, others can be considered as the backyard, with a direct connection to the Mediterranean coast. This necessitates serious trans-Mediterranean cooperation, extending to inland Arab countries, which can be the most efficient pre-emptive measure to challenge the flow of climate refugees. Ultimately, political stability and security in Arab countries is a necessary requirement for the formulation and implementation of long-term strategic sustainable development plans that embrace the environment.