

INTRODUCTION

At the beginning of the 21st century, it is clear that the most salient issue facing the world today is that of the environment. Environmental problems have featured heavily in scientific warnings, political agendas, public concern, and media attention. The Arab region is not isolated from the rest of the world when it comes to this topic. This report seeks to highlight in a holistic manner the most important environmental issues facing the Arab world, and attempts to offer advice for policymakers, citizens, scientific and academic institutions, and the media on how to mitigate the dangers created by environmental degradation.

The Arab world has undergone huge changes in the last century. Its population has risen from below 50 million a century ago to over 325 million today. During this same period, the environment has deteriorated and natural resources have dwindled, due to development patterns which were largely unsustainable. In most cases, policies were overwhelmingly sets of provisional short-term measures, meant to tackle momentary challenges rather than engage in long-term planning.

Some parts of the region have seen unprecedented growth, bringing both economic and social prosperity to millions of Arabs during the last decades, thanks, largely, to the rising income from oil. Has this economic development, however, come at a cost? Can the patterns of development which some Arab countries are experiencing continue, while sustaining livelihood and quality of life for future generations? We doubt.

Today, the state of the Arab environment stands at a pivotal juncture, with numerous environmental problems both current and imminent threatening the region. At the same time, awareness of the issues, as well as signs of political and social willingness to act, provide hope for timely intervention.

This report, the first of its kind to be compiled and authored by independent experts from across the Arab region, offers an overview of the state of the environment in the Arab world, highlighting environmental challenges, social, political, and demographic trends, progress in regional and sub-regional cooperation, and recommendations for future action.

THE REGIONAL CONTEXT

The Arab region, which stretches from Morocco and Mauritania in the west, through northern Africa and the Levant, to the Arabian Gulf in the east, is a region facing distinctive environmental circumstances and challenges. Although the region is endowed with unique and rich natural resources, there is insufficient awareness of the importance of the environment in fuelling and sustaining economic growth and human welfare. Environmental considerations are insufficiently integrated in national development plans and policies, resulting in the unsustainable use of natural resources for development programmes.

Climate change, high population growth rates, and in some countries, rapid economic growth and urbanisation, all amplify the region's vulnerability to environmental challenges and constrain its ability to manage them. Among the major challenges that the region faces are water scarcity, land degradation and desertification, inadequate capacities for waste management, coastal and marine environment degradation, air pollution and global warming.

THE COSTS OF ENVIRONMENTAL DEGRADATION

Although they are often largely invisible or ignored, the economic costs of environmental degradation in the Arab region are real, substantial, and growing. Natural resources are being used unsustainably, undermining economic development and poverty reduction efforts. The World Bank estimates that the annual cost of environmental degradation amounts to between four and nine percent of GDP for certain Arab countries. To place these figures into perspective, in Eastern Europe and the OECD countries the ratios are five and two to three percent of the GDP respectively. In the Arab region as a whole, the cost of environmental degradation is estimated at five percent of GDP.

At the same time, governments of the region have failed in addressing these mounting economic costs with clear and effective policies. The budgetary allocations for environmental purposes do not even come close to one percent of GDP for any of the countries in the region. Moreover, the environmental agencies that do exist have not been granted any real support or powerful legislative mandates, limiting their ability to be effective.

INSTITUTIONAL REFORM

It should be clear from this report that environmental issues urgently need to be recognized as deserving political and economic priority, on par with other major macroeconomic issues. Specifically, the issue of environmental sustainability needs to permeate into all aspects of development and macroeconomic policies. Currently, this is not the case.

Once the importance of environmental issues within the countries of the Arab region has been recognized and acknowledged, the capacities for action need to be strengthened. This has to be tackled through a two-pronged approach: firstly holistic, integrated, clear, and effective legislation needs to be created, and secondly it needs to be ensured that environmental agencies are endowed with both the resources and the political mandates to achieve the necessary progress.

Alongside strengthening official agencies and legislation, governments of the region need to support research and development efforts. The private sector should also take more initiatives to integrate environmental considerations into its planning, moving from the charity attitude towards the social responsibility concept and the environmental responsibility perception. None of this would work without the support of the people, which cannot be achieved in the absence of a real effort on the part of the media and the civil society, especially non-governmental organizations, to raise awareness.

WATER

Is it acceptable to drain groundwater to the last drop? Is it rational that the level of water consumption per capita in some of the most water-scarce Arabian Gulf countries is among the highest in the world? The unfortunate result of such unsustainable policies has been that these countries lost basic elements of water security.

The dilemma for the Arab region is that it is among the water-scarcest regions in the world. The average annual available water per capita in the Arab countries was 977 cubic metres in 2001, falling below the UN definition of water scarcity. The projections are bleak: by the year 2023, the figure is expected to decrease to 460 cubic metres. In fact, with the exception of Egypt, Sudan, Iraq, Lebanon, and Syria, all the Arab countries are projected to experience severe water stress by the year 2025.

Even at present, most countries in the Arab region find themselves with levels of renewable water resources far below the levels of other major regions in the world. In fact, for many, if not most Arab countries, renewable water resources cannot cover the sustainable human needs as defined by the United Nations. Projected global warming and consequently climate change have the potential of placing increasing pressure on already dwindling water supplies.

Policy issues remain a problem when it comes to water. Most of the available water supplies in the Arab region, surpassing 80%, are used for irrigation. In addition, water use efficiency levels are relatively low in the region, typically ranging between 37% and 53%. Water loss and inefficient technologies need to be corrected. As per capita water supplies get tighter, governments will have to implement strategic planning that can both increase water use efficiency and optimise the allocation of this scarce resource among the agricultural, industrial, and domestic domains. As this report thus suggests, water policies in the Arab region will require improved management of both the supply side and the demand side, together with dedicating more resources for developing local desalination technologies.

A particularly striking example of the conflict that exists between rapid economic development and scarce water resources is the recent boom in the construction of golf courses in certain parts of the region. In fact, most of the current and planned golf courses are in Egypt and the Gulf region, particularly the United Arab Emirates, where water resources are already low, even by regional standards. Expansion of water-intensive projects like grass golf courses cannot go on unchecked, especially with meagre investments to develop sustainable desalination technologies. There are plans to increase the sixteen golf courses operating in the GCC countries now to 40 in the near future. In most cases, golf courses in the region are irrigated with desalinated sea water, treated effluent or a combination of the two. A 2007 report released by the international consultants KPMG estimated the use of water for each golf course in the region at an average of 1.16 million cubic metres per year, reaching 1.3 million cubic meters in Dubai, enough to cover the water consumption of 15,000 inhabitants.

Using such an amount of water on leisure projects in an arid desert throws up questions about sustainability and how could this infringe on the water needs of the local community. This is not at all a call to impede development, but rather to allocate more resources towards inventing innovative environmentally-friendly desalination methods and reliable saline agriculture techniques, suitable for the arid desert environment.

CLIMATE CHANGE

Among global environmental issues, the one that has received most attention across nearly all domains (political, media, scientific, and civil society) is that of climate change. Although the Arab region does not contribute more than 5% to

the causes of global climate change, its effects on the region will be very severe. In fact, the region is particularly vulnerable given already scarce water resources, high levels of aridity and the long coastal stretch threatened by the rising sea levels. Natural and physical systems in the Arab world are already facing heavy pressures, and these will only be intensified as temperatures in the region get higher and/or precipitation gets lower.

According to recent modelling studies, the Arab region will face an increase of 2 to 5.5°C in the surface temperature by the end of the 21st century. In addition, this temperature increase will be coupled with a projected decrease in precipitation of between 0 and 20%. The results for the region include shorter winters, dryer and hotter summers, a higher rate of heat waves, increased weather variability, and a more frequent occurrence of extreme weather events. Clearly, adaptation and mitigation strategies need to be researched, discussed, and implemented.

Sea level rise, or SLR, due to rising temperatures, has the potential to cause the loss of significant portions of agricultural land in the Arab region. As an example, even a 1 m SLR could potentially cause the loss of 12% to 15% of agricultural land in the Nile Delta region, and could reduce Qatar's land area by 2.6%. In addition to the agricultural sector, the industrial and tourism sectors, urban areas and the GDP in a number of Arab countries are threatened to be negatively impacted by sea level rise.

Higher temperatures will also increase the incidence and impact of drought in the region, threatening water resources and productive land. As this report shows, drought frequency has already increased in Algeria, Morocco, Syria, and Tunisia. Recent droughts in Jordan and Syria were the worst recorded in many decades. In addition, increased precipitation variability and water resource availability directly related to climate change affect a number of the countries in the region. A warmer climate brings with it increased climate variability, higher risk of both floods and droughts, and exacerbates the already precarious situation created by chronic water scarcity faced by most Arab countries.

This report recognizes an alarming deficiency in scientific and technological capabilities, as well as the political will to address and face problems posed by climate change in the Arab region. Not enough scientific facilities exist to study this phenomenon, insufficient funds are allocated to such research, and the studies that are undertaken still leave gaps to be filled. Climate change mitigation and adaptation need to be integrated into development strategies, and issues of planning, scientific capacity, stakeholder involvement, and public awareness need to be urgently addressed.

AIR QUALITY

As the air quality in Arab cities continues to steadily deteriorate, the costs of health and environmental consequences are drastically rising. Health problems attributed to air pollution from the transport sector alone cost Arab countries over five billion dollars annually.

Countries in the Arab region are highly reliant on personal transport, a fact highlighted by the soaring car ownership rates. For example, the number of vehicles per 1000 inhabitants is 434 in Lebanon, 378 in Qatar, 357 in Kuwait, 336 in

Saudi Arabia, and 322 in Bahrain. The transport sector is responsible for approximately 90% of total emissions of carbon oxides in Arab countries. In spite of many welcome initiatives to ban it, lead remains an additive in petrol in some Arab countries, and still accounts for more than half of total lead atmospheric emissions. Some countries abruptly introduced unleaded fuel, without imposing the use of additives required for efficient operation of the old fleet of vehicles with older engines, which constitute the bulk of the cars in most countries. The inefficient combustion has consequently led to an alarming increase in the levels of ground ozone, a gas with devastating effects on health.

Per capita carbon oxides emissions have risen steadily in most countries of the region in the last three decades. Regionally, the Gulf countries emit about 50% of the total of all Arab countries; in addition, the countries in this Arab sub-region are the only ones with carbon dioxide emissions levels above the world average. To give a few examples, in 2003, emissions in the United Arab Emirates, Qatar, Bahrain, and Kuwait were respectively 13, 9, 8, and 7 times higher than the world average. Countries such as Libya, Oman, and Saudi Arabia also have per capita emissions higher than the world average, while the rest of the Arab countries are approximately equal or fall below it.

A major problem in the Arab region is that 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.

More action needs to be undertaken. In the transportation sector, engines need to be made more efficient, hybrid vehicles and cleaner fuels needs to be advocated, and public transport needs to be developed and promoted, alongside more sensible urban planning which reduces the use of cars to communicate between residential, work, commercial and leisure locations.

Energy generation and consumption in the Arab region tend to be inefficient in most countries. This report recommends for market-distorting subsidies to be phased out, thermal efficiency to be improved through technological advancement, hydropower resources to be fully utilised, renewable energy sources, especially solar and wind, to be widely used, and less polluting fuels, such as natural gas, to be increasingly utilized.

MARINE AND COASTAL ENVIRONMENT

Stretching from the Atlantic to the Indian ocean, and including the Mediterranean, the Red Sea, and the Gulf, Arab countries have over 30,000 kilometres of coastal line, 18,000 kilometres of which are populated areas. The fragile marine and coastal environment of the Arab region is threatened by pollution, over-fishing, loss of biodiversity, climate change, and other problems. However, such areas are of vital importance to the Arab countries, providing benefits to public health, food security, leisure and other economic and social benefits.

Within the Arab region, three major marine regions can be identified: the Mediterranean, Red Sea and Gulf of Aden (RSGA), and the ROPME (Gulf)

regions. The UNEP Regional Seas Programme classifies these three as the MAP, PERSGA, and RSA regions, and together they encompass twenty of the twenty-two member countries of the League of Arab States.

The semi-enclosed Mediterranean Sea lies off the coasts of North African and eastern Mediterranean Arab countries. Its fragile environment 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. Eutrophication – a process by which water is enriched with nutrients that stimulate primary aquatic production and cause excessive algal blooms – is a chronic problem in certain areas of the Mediterranean, where residues from agricultural, mainly chemical fertilizer, and non-treated industrial and urban wastewater discharges enter the marine environment. In addition, there is heavy tanker traffic in the Mediterranean, connecting major consumption centres in Europe with the oil production centres of the Middle East. The most important oil traffic lane is the Suez Canal, through which 90% of total oil tanker traffic passes.

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. Most of these environmental threats are relatively recent in origin, and can therefore at least partially be attributed to unsustainable development.

The RSA (ROPME Sea Area) is considered a high risk pollution area, due in particular to the large number of offshore oil and gas installations, tanker loading terminals, and the high volume and density of the marine transportation of oil. It is estimated that roughly 2 million barrels of oil are spilled annually from routine discharges of ballast, tanker slops, and from 800 oil and gas platforms.

Overfishing, the unsustainable exploitation of fish stocks, is a major problem in the Mediterranean and the RSGA regions. Primarily, the main problems are the lack of information on transboundary stocks, inadequate cooperation in the management of shared stocks, and a lack of surveillance and enforcement of existing fishing regulations. In addition, the coral reefs in the RSA and the RSGA, in the vicinity of which much fishing occurs, are threatened by a diversity of environmental stresses, particularly global warming.

Uncontrolled tourism and extensive urban development are the main contributors to the environmental degradation of coastal and marine environments, and this finding is applicable to all three regions. Several current or proposed marine protected areas (MPAs), especially in the RSGA, are under high pressure from overfishing and tourism.

Finally, in terms of legislation, not enough designated MPAs exist, and the ones that do exist are not in all cases adequately and efficiently managed. As is the case for much environmental legislation in the region, issues of efficient institutional capacity remain. Existing laws and regulations are not sufficiently implemented, compliance is not properly monitored, and regional/transboundary cooperation remains inadequate. It is unlikely that the state of marine environment in the Arab region is better today compared to three decades ago, when Arabs first started to join the international and regional seas conventions and programmes.

ARIDITY, DROUGHT AND DESERTIFICATION

A particularly pressing concern for much of the Arab world is the high degree of aridity and the associated increased vulnerability of lands to climate change as well as water scarcity and variability. In particular, the land resources of the Arab region face three main challenges: aridity, recurrent drought, and desertification.

The primal importance of the issue can hardly be overstated; as the productive capacities of Arab agricultural lands are compromised by land degradation, the bases of food security are undermined. As populations increase and economic growth causes per capita consumption rates to rise, the gap between production and consumption of food increases, and dependence on the importation of food grows.

The issue of aridity is closely related to that of the scarcity of water resources. In fact, all agriculturally productive lands in the Arab countries are fragile systems prone to degradation and highly vulnerable to desertification. This report recognizes desertification as posing the most pressing threat to productive lands in the whole Arab region. What is extremely important is to recognize that desertification is essentially a man-made phenomenon which is exacerbated by climate change. Meaningful measures are needed in every Arab country to reduce the human role in expanding desertification.

As for cooperation in international endeavours, a number of regional examples exist. Sudan formulated a national plan of action to combat desertification in 1976, as did Tunisia and Egypt shortly afterwards. However, the response of other Arab countries has so far been lacking, as an insufficient degree of priority has been attached to the formulation and implementation of plans and programmes for combating desertification.

What is needed in the Arab region is an integrated approach that recognizes the urgency of addressing the menaces of land degradation. Such an approach should comprise scientific, industrial, social, and legislative efforts. Institutes such as ACSAD (Damascus) and ICARDA (Aleppo) exist, as do dedicated university research units and national research centres on desertification. However, more resources need to be mobilised to support scientific research geared at devising solutions which find their way to implementation. Promising examples are the initiatives in Saudi Arabia, Qatar, the United Arab Emirates and Egypt to establish funds for supporting research, which will hopefully include programmes for the sustainable development and management of land and water resources.

BIOTECHNOLOGY, FERTILISERS AND PESTICIDES

Fertilisers and biotechnology play an important role in the agricultural sector in the Arab region. Except for a few products for health care, none of the Arab countries currently produce their own biotechnology products. However, thirteen Arab countries are parties to the Cartagena Protocol on Biosafety (CPB) which regulates the import and export of genetically modified organisms (GMOs). The issue is therefore limited to the import of biotechnology commodities by Arab countries, and the role of the Arab region in international negotiations on the issue should also be viewed from this perspective. At present, the main problem in the Arab region is one of insufficient implementation of the protocol, leading to situations in which certain GMO commodities (such as

maize, long grain rice, soybean seeds and cooking oil) are imported and available in Arab markets undeclared and unlabelled. The crux of the problem is a lack of regulatory and enforcement mechanisms, legislation, administrative structures, and technical expertise. As such, more resources need to be directed to the areas of biotechnology development, allowing Arab countries to take informed decisions on the products they import, as well as developing their own technologies in areas such as agriculture, medicine and chemicals.

Pesticides and fertilisers are widely used in the Arab region, and in many cases, misused. The use of NPK fertilisers in Arab countries quadrupled between 1970 and 2002, with the UAE and Egypt (more than 900 kg fertilisers per hectare), Oman (644 kg), and Lebanon (414 kg) using some of the highest quantities of fertilisers per hectare in the world. The heavy use of pesticides and fertilisers brings about concerns regarding food safety as a public health issue. What is lacking in most of the Arab region is regulation and control over the sale, handling, and use of pesticides. In addition, accredited pesticide residue analysis laboratories are not available in most Arab countries. As such, new legislation and institutional commitments are necessary in this regard. These issues need to be tackled at the regional level. Many countries in the region have the resources and capacities for a better performance; what is missing is clear awareness of the subject.

With several parts of the world moving towards organic farming, the demand for chemical fertilizers is expected to dwindle. This will pose a serious challenge to the big producers of fertilizers in the Arab petro-chemical industries, who will have to be ready for diversification into new products.

WASTE MANAGEMENT

The Arab region produces some 250,000 tons of solid waste every day, with most of it ending untreated in makeshift dumps. Less than 20% is properly treated or disposed of in landfills, and no more than 5% is recycled. The per capita production of municipal solid waste in some Arab cities, such as Kuwait, Riyadh, and Abu Dhabi, is over 1.5 kg per day, making it one of the highest levels in the world. Furthermore, parts of the Arab region that are undergoing rapid economic development and urbanisation are also producing a lot of demolition and construction waste. Therefore, a by-product of increasing economic development, and prosperity, is that per capita waste production levels are increasing.

This report identifies a number of weaknesses of waste management in the Arab region. In some countries, a significant proportion of the waste produced is not collected. In Egypt, for example, it is estimated that 35% of municipal solid waste is not systematically collected. Another issue is the improper handling, collection, and treatment of hazardous wastes originating from agricultural, industrial, medical, and urban activities. In this regard, however, the report recognizes a number of promising initiatives that are being undertaken in the Arab region, such as legislative initiatives in the GCC, Egypt, and Oman, as well as investments into facilities that can separate and handle hazardous wastes, and an increased private sector investment in recycling industries, especially in Saudi Arabia and UAE.

Ultimately, what this report suggests is that countries in the Arab region embark on projects towards creating an integrated system of waste management, capable of safely handling and disposing of the rising quantities of wastes that are being

produced, starting with reduction and reuse, and soon reaching a high percentage of recycling. As for industries, cleaner production technologies should be applied to reduce waste generated, instead of limiting efforts to end-of-pipe remedial treatment. New technologies are not a financial burden, as they have a very high rate of return on investments, in addition to meeting the social and environment responsibilities of industry and business in general.

URBANIZATION

Urbanisation is a phenomenon that can be observed across the Arab region, and is fuelled by such factors as high fertility rates, rural-urban migration, international labour migration, and the concentration of economic activity in urban areas. While the urban proportion of the Arab population is currently estimated to be 56%, this figure is projected to rise to 66% by 2020; urbanisation levels are especially high in Kuwait (97%) and Bahrain and Qatar (92%). Thus, in addition to rapid population growth levels, the countries of the Arab region struggle with bringing about the necessary improvements in infrastructure capacity in the growing urban centres. Main challenges include waste management, health care provisions, educational institutions, and transportation systems. One striking remark is that urban development is overwhelmingly based on models copied from other countries, largely ignoring the cultural and natural characteristics of the region.

The rapid rate of urbanisation in the Arab region brings with it many pressures on the environment. Large-scale economic development projects are not currently preceded by sufficient and transparent studies of their environmental impacts (strategic, cumulative and project). It therefore remains to be seen whether the high pace of urbanisation in the Arab region can be matched by equally high rates of human development and infrastructure provisions.

ENVIRONMENTAL SCIENTIFIC RESEARCH

Effective environmental scientific research stands at the very basis of combating environmental degradation. In simple terms, the basic indicators of scientific research can be reduced to inputs and outputs.

Inputs can generally be divided into the number of researchers and the rate of expenditure on scientific research, both in relative and absolute terms. While the number of researchers in the Arab world stands close to that in the rest of the world, and has been growing by 6-7 percent annually between 1994 and 1998, double the population growth rate, the rate of expenditure on scientific research as a percentage of GDP is abysmally low in the Arab region, at around 0.2%. The world average is 1.4%, with the rate being 4% in Japan. The Arab region's rate is the lowest regional rate in the entire world. Thus, the state of inputs into environmental scientific research can holistically be described as one in which many Arab scientists, whose number is increasing, are faced with drastically insufficient resources.

Exacerbating this situation, and a direct corollary to the situation just described, is the so-called "brain drain": vast numbers of Arab researchers are emigrating in search of better research conditions. For example, 12,500 Egyptian and 11,500

Lebanese researchers were working in the United States in 2000. This phenomenon can certainly in part be explained by the general financing crisis addressed earlier, combined in many cases with inadequate scientific and academic standards.

As for outputs of scientific research, these can be assessed by looking at the number of research studies and the number of patents. While the Arab world's share of the former is low, its contribution in the latter is entirely negligible.

In order to rectify the deficiency of environmental scientific research in the Arab region, this report offers a number of recommendations. First of all, it strongly recommends that Arab countries formulate clear and effective strategies specifically for environmental scientific research in addition to the existing strategies for scientific research in general.

As such, the great diversity of related fields, and the concurrent scattering of the available resources, can be made more effective by adequate management and integration, the setting of clear priority areas, and efforts of attracting and steering investments towards these strategic goals.

Regarding the issue of financing, this report recommends that both public and private agencies, bodies, and actors take their responsibility. High-level research critically depends on the sufficient availability of resources. While governments can contribute by directly providing financial support for research, legal and economic incentives must also be created in order to stimulate private sector participation in the provision of scientific research finance.

Finally, this report recommends that regional scientific databases be created and strengthened. Making environmental research accessible reduces the possibility of unnecessary repetition of the same research, and makes it possible for experts and professionals in any field and from various research institutions to have access to existing data. This would be even more effective if it can be undertaken on a regional scale, integrating the environmental scientific research efforts across the Arab region.

ENVIRONMENTAL EDUCATION

Closely related to the issue of environmental scientific research is that of environmental education at all levels. A number of initiatives have been taken in this regard in the Arab region. The report could trace 40 research centres on environmental studies, 27 undergraduate degree programmes and 24 graduate programmes on environment. Yet, those programmes are still in their infancy, and many disciplines are lacking, such as environmental legislation and management, as well as the integration of environment into development plans, programmes and projects. On the other hand, extracurricular activities for environmental education and awareness have been integrated into many school programmes. In addition, articles and material from environmental publications, such as *Al-Bia Wal Tanmia* (Environment and Development) magazine are widely used in schools as extra reading material. An Egyptian programme called the Egypt Environmental Education and Outreach Programme (E3OP) has been implemented and is designed to promote environmental education in primary and preparatory schools in Egypt, aiming to increase awareness and skills pertaining to the environment.

On the whole, the trend in the Arab world has been one of increasing attention in educational curricula – and in official policies in general – for environmental issues. However, more can still be done at various levels, mainly to expand the scope of environmental programmes offered in higher education, and make them more responsive to national requirements, strengthen the environmental content of basic education curricula, and provide credible textbooks.

THE ENVIRONMENT IN ARAB MEDIA

An important component of effective action towards environmentally sustainable development is the role of the media, in particular for disseminating information, providing environmental education, and critically observing the actions, or the lack thereof, taken nationally and regionally to address environmental concerns. In the Arab region, environmental issues have greatly proliferated in the media during the last decade, and the report traced 100 Arabic periodicals and newsletters with environmental titles. However, the subject is seldom dealt with in depth, and critical analysis and expert insights are rarely provided. Although the increase in interest for the environment is exhibited by greater reference to environmental issues in the Arab media, they are often limited to reporting disasters, and miss a critical, analytical perspective. This deficiency is illustrated, for example, by the fact that less than 10 percent of the Arab newspapers have full-time editors or reporters specialised in issues concerning the environment and sustainable development, with a similar percentage of all mass media (Press, Radio and TV) designating a weekly page or a regular programme for environmental issues. A positive development, however, is that an increasing number of television networks have started to include environmental issues as a part of their news bulletins.

ENVIRONMENTAL LEGISLATION

There exists a general weakness of environmental legislation in the Arab region. The environmental standards provided for in relevant laws in the Arab region are often set in conformity with effective standards applied in developed industrialised countries, and are in many cases unreflective of the specific environmental conditions as well as the technical and economic situation in Arab countries. This issue makes it difficult, from the economic perspective, to abide by these standards or make them functional. Furthermore, the legal standards are often rigid and uniform, applying to production and service activities irrespective of the particular pollution-combating costs and techniques.

Problems also exist in terms of environmental agencies and their personnel. Environmental affairs agencies and legislative responsibilities are often in the hands of non-specialists, as there is an absence of qualified personnel and expertise to draft and enforce environment related legislation. In addition, there is a lack of coordination between authorities in charge of the execution of environmental laws, contributing to non-compliance.

As for the legislation itself, it does not create sufficient economic incentives for the development and utilisation of clean technologies. Economic and fiscal tools and incentives can harness market forces with the aim of effectively achieving compliance with environmental legislation. Furthermore, such legislation is often lacking when it comes to punitive provisions, as apprehension exists regarding

the social ramifications of implementing such provisions. For example, fears regarding the fate of workers may impede the shutting down of major industrial facilities in breach of environmental regulations. In addition, there is rarely a specialised police force that is entrusted with ensuring environmental protection and monitoring adherence to environmental legislation in most Arab countries.

When it comes to multilateral environmental agreements (MEAs), the ratification and implementation thereof in the Arab region has not been ideal. In 49% of the cases, Arab countries have joined international treaties only after their entry into force; this can be attributed both to a lack of involvement of Arab countries in the drafting of such treaties, and the slow ratification processes in the respective countries. A particular point on which this report recommends further research is that of the link between the success and speed of implementation of MEAs and the availability of financial and technical resources allocated to this end and made available to the countries of the region. This report recognizes that the main impediments to the satisfactory implementation in the region of MEAs are inadequate national and regional resources, infrastructure and expertise.

In general, MEAs have spurred Arab countries into promulgating more environmental legislation and creating new environmental institutions. Arab involvement in MEAs has been most strong with the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, both during the negotiation and implementation stages, as the region is highly vulnerable to the potential impacts of climate change. However, some other MEAs that also deserve strong Arab involvement and interest have achieved limited success in the region, such as the United Nations Conventions on Biodiversity and the UN Convention to Combat Desertification (UNCCD).

FINANCING OF ENVIRONMENT PROGRAMMES

In the Arab region, efforts towards the financing and functioning of environment programmes must be made by governments, private, and non-governmental sectors. The public sector's main responsibility is to incorporate the environment into national development policies, including sufficient planning and budget allocation. The environment should be regarded as a necessary prerequisite for sustainable development, and considered as an important part within the overall macroeconomic picture. The current system of national accounts needs to be modified so as to provide a true indicator for sustainable development; in other words, the depletion and degradation of national environmental resources need to be reflected as costs instead of income.

A larger proportion of the budget needs to be dedicated to strengthening the capacities of environmental authorities, and the funding of environmentally sustainable projects should come to rely less on external funding, as aid flow is dependent on geopolitical circumstances. This report therefore recommends that environment, as a major component of sustainable development, be included as a priority area within funding mechanisms, with the long-term strategic goal of reducing the region's reliance on external funding.

As mentioned earlier, governments need to allocate more resources for research and development, focusing on technology, monitoring, laboratory and field

research, data collection, institutional and technical capacity of the public and private sectors and education. In addition, governments should strive towards promoting market incentives as a means of economically quantifying environmental and social costs and encouraging production and consumption patterns to move towards more sustainable models, with the aim of increasing efficiency, reducing waste, and encouraging innovation.

There is a lot of potential for private sector contributions to environmental and sustainable development initiatives in the Arab region. Unfortunately, this potential is not being fully utilised. Nonetheless, this report recognizes that there has been an increase in the number of private initiatives contributing to environmental protection.

A network of vibrant, effective, and organised civil society groupings working on raising awareness, with financial resources necessary to address key environmental challenges, is still largely lacking in the Arab region. In recent years, however, a limited number of Arab NGOs have become well established and successful.

ENVIRONMENT AND CONFLICT

An unfortunate, but nonetheless important factor in the Arab region is the impact of wars and conflicts on the environment. At present, there are in the Arab region at least two major ongoing international conflicts (the Arab-Israeli conflict and Iraq) and at least five internal conflicts (Algeria, Somalia, Sudan, Western Sahara/Morocco, and Yemen). Lebanon suffered a brief but major war in summer 2006, and some countries are suffering from a combination of international and civil conflict, such as in Iraq, the Palestinian territories, and Somalia. Although the social, political, and economic elements usually grab the spotlights when it comes to such conflicts, there are also negative environmental ramifications of conflicts in the Arab region.

Among the many causal factors behind conflicts are environmental factors, and in particular natural resources, also known as “ecosystem goods and services.” As discussed in this report, environmental degradation aggravates natural resource scarcity. In the Arab region, scarcity of water and land (agricultural) resources stand out in particular. It must of course be emphasised that the environmental link to conflict is not necessarily direct. It often acts in concert with other social, political, and economic stresses.

Besides analysing in detail the environmental impacts of conflict in the aforementioned cases, this report offers a number of suggestions for Arab states in this area. It is proposed that an Arab fund be launched to help countries deal with the environmental root causes of conflict, and also to address the most immediate impacts of war. In addition, more regional and international cooperation is recommended in order to provide early warning and assessment capacity of the linkages between conflict and the environment. Closer cooperation with international organisations, particularly the United Nations, is also recommended in order to draw on the available international scientific, technological, and financial resources and experience in analysing and mitigating the environmental impacts of war, specifically in areas which have not received enough attention like the impact of depleted uranium (DU) warheads, and mines.

CONCLUSION

In the past, short-term planning was a major obstacle to environment and sustainable development policy making. Today, some attempts go to the opposite extreme, ignoring pressing current environmental challenges while setting long-term grand plans, in a practice which could be termed 'fleeing forward'. While looking forward to the future is needed for sound environmental planning, ignoring current problems will not solve them, however noble the long-term goals might be. Problems unaddressed in the present will multiply, creating even bigger challenges in the future. Some excellent grand schemes announced in the region regarding key issues as renewable energy, water and coastal management, with global ambitions, should not divert attention from simple measures urgently required at the local level to ensure more efficient and sound use of resources.

What is needed is the implementation of long-term environmental management strategies, as well as powerful and effective environmental agencies and institutions backed up by clear political and legislative mandates in addition to sufficient resources. Long- and short-term planning should go hand in hand to solve today's and tomorrow's problems.

The situation is not entirely bleak. Most Arab countries now have either a Ministry of Environment, a state Environment Agency or both. The civil society and the private sector are getting more involved in environmental matters, though with varied levels of effectiveness. Some government bodies responsible for the environment have moved into strategic planning, spearheaded by the Environment Agency of Abu Dhabi (EAD), which launched in April 2008 an Environment Strategy for the Emirate. This model strategy sets two-year and five-year targets, covering ten priority areas: environmental sustainability, water resources management, air quality, hazardous waste, biodiversity, environmental awareness, safety systems, organizational efficiency, emergency management and information systems. Such initiatives are required all over the region, with significant emphasis placed on preparing for proper implementation over the long term.

The Arab region's fate is inextricably tied to the state of its environment, which in turn binds the region together internally as well as giving it a stake in global environmental initiatives. This report hopes to raise awareness in the Arab region, for governments, citizens, academic institutions, the private sector, and the media, of the urgency of incorporating environmental concerns into national development plans. As this report shows, a lot has been achieved in the Arab region when it comes to environmental awareness and initiatives, but much more is still needed.