

2016 Report of the Arab Forum for Environment and Development

ARAB ENVIRONMENT • 9

SUSTAINABLE DEVELOPMENT

IN A CHANGING ARAB CLIMATE

How Can Arab Countries Achieve Sustainable Development Goals by 2030

EDITED BY:
NAJIB SAAB
ABDUL-KARIM SADIK



المنتدى العربي للبيئة والتنمية
ARAB FORUM FOR
ENVIRONMENT AND DEVELOPMENT



ARAB ENVIRONMENT•9
**SUSTAINABLE
DEVELOPMENT**
IN A CHANGING ARAB CLIMATE

EDITED BY
NAJIB SAAB
ABDUL-KARIM SADIK

المنتدى العربي للبيئة والتنمية
ARAB FORUM FOR
ENVIRONMENT AND DEVELOPMENT



2016 REPORT OF THE ARAB FORUM FOR ENVIRONMENT AND DEVELOPMENT

© 2016 Arab Forum for Environment and Development (AFED)

Published with Technical Publications and Environment & Development magazine
P.O.Box 113-5474, Beirut, Lebanon

info@afedonline.org

<http://www.afedonline.org>

This report should be cited as follows:

AFED (2016). Arab Environment: Sustainable Development In A Changing Arab Climate. Annual Report of Arab Forum for Environment and Development, 2016; Saab, N. and Sadik, A. (Eds.); Beirut, Lebanon. Technical Publications.

If the reference is to a specific chapter, include also number of the chapter and respective author(s).

AFED and respective authors are solely responsible for opinions expressed in this report. The contents are based on best available data. Sponsors and supporting organizations do not necessarily endorse the views expressed in this report.

Editors: Najib Saab and Abdul-Karim Sadik

Chief Adviser: Mohamed El-Ashry

Lead authors: Abdul-Karim Sadik (Section 2), Ibrahim Abdel Gelil (Section 3), Hussein Abaza (Sections 4 and 5), Iman Nuwayhid (Background paper on Health), Mahmoud El-Solh (Background paper on Zero Hunger).

Graphics and Production Manager: Charbel Mahfoud

Copy Editor: Rosalyn Saab

Execution: Maguy Abou Jaoude

Printing: Chemaly & Chemaly, Beirut

Photos: *Environment & Development Magazine Archive - iStock photos*

ISBN: 978-9953-437-58-3

Contents

| | | |
|------------|--|----|
| 5 | PREFACE | |
| 8 | AFED 2016 REPORT | |
| | <i>Sustainable Development in a Changing Arab Climate</i> | |
| | I. Introduction | 9 |
| | II. Background on Sustainable Development | 15 |
| | III. Implementation of the SDGs in a Changing Climate | 21 |
| | IV. Requirements for the Implementation of the SDGs in Arab Countries | 46 |
| | V. Financing the SDGs | 56 |
| | VI. Conclusion | 64 |
| | References | 66 |
| 68 | ANNEX | |
| | Sustainable Development Goals and Targets | |
| 87 | OPINIONS AND CASE STUDIES | |
| 112 | HEALTH - <i>Background Paper</i> | |
| | Health: A Unifying Regional Sustainable Development Goal for Wellbeing and Survival in the Arab World <i>Iman Nawaybid; Rima R. Habib; Suzanne El Kbechen and Shelby Surdyk</i> | |
| 132 | ZERO HUNGER - <i>Background Paper</i> | |
| | Contributing to Zero Hunger in Arab Countries <i>Mahmoud El-Solh</i> | |
| 143 | CONTRIBUTORS | |
| 145 | ACRONYMS AND ABBREVIATIONS | |

List of Opinions and Case Studies

The Role of the World Bank in Implementing SDGs in Arab Countries

Mahmoud Mohieldin 88

The Role of Arab Development Institutions in the Implementation of the SDGs in Arab Countries

Abdulwahab A. Al-Bader 92

How Can OFID Contribute to Implementing SDGs in Arab Countries? Focus on Goal 7: Universal Access to Affordable and Modern Energy

Suleiman Al Herbish 96

Government and Private Sector Partnerships to Intensify the UAE's Response to the Sustainable Development Goals and the Paris Climate Agreement

Razan Khalifa Al Mubarak 99

The Challenges of Sustainable Education in the Arab World: AUB's Current and Future Roles

Saouma BouJaoude; Rima Karami Akkary and Fadlo R. Khuri 102

SDG 17: Strengthening the Means of Implementation and Revitalizing Partnerships for Achieving the 2030 Agenda for Sustainable Development in the Arab Region

Reem Nejdawi, Monia Braham and Fidele Byiringiro 105

Preventing Disease Through Healthy Environment: Assessment of The Burden of Disease from Environmental Risks in Arab Countries

Mazen Malkawi and Basel Al-Yousfi 108

Preface

Even if all conflicts and wars were to stop immediately, the Arab region cannot meet the target of achieving the Sustainable Development Goals (SDGs) by 2030 using traditional methods. Many Arab countries have experienced collapse at gigantic scale over the past years, which has largely reduced their hopes to no more than re-establishing the status quo which prevailed in 2010, rather than achieving the SDGs by 2030.

This AFED report recommends an alternative approach, based on integrating sustainable development principles within the anticipated rebuilding efforts. It calls upon local, regional, and international aid organizations not to limit their efforts to providing safety and basic necessities to those affected, but rather to use the relief plans as a launch pad for promoting new approaches to development, rooted in a transition to green economy.

This report, on prospects and challenges on the path towards achieving the SDGs, builds on the previous eight reports on the state of Arab environment, produced by the Arab Forum for Environment and Development (AFED) since 2008. AFED annual reports have so far addressed major development issues in the Arab region, including Water, Food Security, Energy, Green Economy, Ecological Footprint, Sustainable Consumption, and Climate Change. The report highlights the policy options available for the Arab countries to realize the Sustainable Development Goals by the 2030 target set by the United Nations, in light of the new political, economic, and social developments.

AFED annual reports have become main source of information and prime driver for policy reforms in Arab countries. The Energy-Water-Food Nexus proved specifically significant, especially with the growing impact of climate change. AFED reports have repeatedly emphasized the importance of promoting better efficiency and fair access to energy, water and food, and reducing waste, as there are tough limits to what Arab ecosystems can support.

AFED continues to engage many regional players, including public policy officials, corporations, academia, NGOs, and the media, on the question of sustainable development, mainly through its annual policy-oriented reports. The present report concludes with a set of messages tailored to specific actors with a stake in the critical implementation of SDGs in the Arab region.

The *first message* is that we need to *stop treating Arab countries* as a monolith. Individual countries have distinctive needs, priorities, and economic, political, and social contexts that must be recognized when developing implementation plans. Countries will need to identify their priority SDGs and develop national plans for their implementation, including policies and budgets. There certainly are many commonalities to build on, and regional cooperation is of paramount importance. However, this has to consider

and utilize the variety of natural and human resources in a vast region stretching over two continents. Sustainable development priorities and goals in Qatar, for example, are certainly different from those in Jordan. And for a country mired in strife, such as Yemen, the needs of a post-conflict era would be vastly different. Effective SDGs implementation requires deploying local knowledge based on an understanding that is relevant to a particular place and time, while utilizing generalized knowledge. Implementation without context would cause a distortion.

The *second message* revolves around some *common challenges* facing our region: a young population suffering from high rates of unemployment which is disproportionately greater for women, weak research and development capabilities, a lack of public participation in development decision-making, and inadequate institutional and policy-making capacities. Therefore, implementation plans for achieving SDGs must be linked to (1) effective participation of non-state sectors, (2) job creation, (3) home-grown science, data collection and monitoring capabilities, and (4) institutional and public policy capacity building. If we fail to address these problems in the course of SDGs implementation, we will have missed yet another opportunity, contributing instead to a state of perpetual dependence.

The *third message* is directed towards *partnerships for development*. This concerns financing, a key implementation ingredient. The ambitious SDGs need to be matched with revitalizing partnerships to mobilize sufficient resources. Inadequate financing was one of the impediments to full realization of the Millennium Development Goals (MDGs). In this respect, developed countries need to galvanize their efforts to fulfill their commitments to the UN long-standing target of 0.7 percent of gross national income as ODA to developing countries, pledged in 1970. But foreign aid has to be matched by local action. Therefore, there is a pressing need to mobilize local resources through reforms in subsidies and tax collection practices. Beyond that, our region boasts ten regional and national Economic and Social Development Funds, which have amassed tremendous experience in providing finance to development projects worldwide. These Funds have recently issued a joint declaration on their commitment to sustainable development and means of implementation, and created a Coordination Group on Sustainable Development. They can play an important role in assisting Arab countries in implementing the SDGs, including through fostering partnerships with other providers of development finance. Arab countries need to align their priorities with the framework of the post-2015 development agenda, to accelerate the process of resource mobilization for achieving the SDGs.

In its *fourth message*, AFED report calls upon Arab governments to adopt a genuine *cross-sectoral approach* to sustainable development. This entails the integration of climate change considerations in the implementation of the SDGs, mainly based on the *water-energy-food nexus*. This goes beyond establishing a multi-ministerial higher council for sustainable development, or any such council. This is a genuine integrative effort across disciplines and institutions, involving government, business, and third sector players, where members share knowledge, collaborate, and rise above, past or beyond official agency boundaries or jurisdictional territorialities.

The *fifth message* concerns the *state of conflict* in the region, demanding an approach to implementation that responds directly to the particular needs and priorities of areas suffering from armed conflicts and illegal military occupation. Beyond acting with multiple local, regional, and international aid organizations today to provide safety and basic necessities to those affected, it will be wise to lay the foundation for integrating SDGs implementation with the anticipated reconstruction efforts. We call upon local

and regional civil society organizations to develop capacity building programs that engage youth and women groups in conflict areas, so they would be prepared to take a strong leadership role in integrating SDGs implementation and climate action in the rebuilding process.

While we do not expect SDGs to provide a political solution in areas under military occupation, we do believe that the implementation of SDGs should create the enabling conditions for Palestinians living under occupation to exercise sovereignty over their water and resources.

One good news is that sustainable resource management is gaining stronger ground in various countries of the Arab region. Gulf states have recently initiated bold policies and measures to enhance water and energy efficiency and put a price tag on nature services. Voluntary energy and water efficiency programs have been enhanced and complemented with fiscal measures, including phasing out generous subsidies. Vision 2030 plan adopted by Saudi Arabia fully embraces sustainable development principles. While MASDAR in Abu Dhabi is a shining example of government-driven transformative initiative in renewable energy, Dubai was host to the world's cheapest kilowatt-hour of PV electricity, through private company applying a market-based investment model. On the westernmost side of our region, we have a star performer in Morocco when it comes to renewable energy investment, with a daring target of 52 percent of the energy mix by 2030. It is a model worthy of emulating.

However, the Arab region still has work to do. Renewable energy and energy efficiency are the low hanging fruits and their adoption has been driven by economics more than anything else. We have not yet made the leap to transforming the most energy consuming sectors, namely, housing and transportation. In addition, there is a need to focus public attention on the SDGs to facilitate their implementation. Public engagement and participation can have a direct impact on whether or not there will be policy changes that make the goals achievable.

This report highlights an urgent need to invest in people-centered development, which fosters integration of human rights, including the right to development, and the principles of genuine public participation, accountability, transparency, and non-discrimination, into the development agenda. This is what we can distill from the events of the past five years in Arab countries.

AFED wishes to thank all those who made this report possible, especially our organizing partner and host of AFED 2016 Annual Conference, the American University of Beirut (AUB), which celebrates its 150th Anniversary in 2016. Special thanks are due to our institutional partners: Islamic Development Bank (IDB), Kuwait Foundation for the Advancement of Sciences (KFAS), OPEC Fund for International Development (OFID), Food and Agriculture Organization (FAO), International Center for Advanced Mediterranean Agronomic Studies (CIHEAM), alongside all corporate and media partners who supported this endeavor.

AFED hopes that its report on Sustainable Development Goals will help Arab countries achieve successful implementation by the 2030 target.

Beirut, 10 November 2016

Najib Saab
Secretary General
Arab Forum for Environment and Development (AFED)

ARAB ENVIRONMENT•9

SUSTAINABLE DEVELOPMENT

IN A CHANGING ARAB CLIMATE

| | |
|---|----|
| I. Introduction | 9 |
| II. Background on Sustainable Development | 15 |
| Lead author: <i>Abdul-Karim Sadik</i> | |
| III. Implementation of the SDGs in a Changing Climate | 21 |
| Lead author: <i>Ibrahim Abdel Gelil</i> | |
| IV. Requirements for the Implementation of the SDGs in Arab Countries | 46 |
| Lead author: <i>Hussein Abaza</i> | |
| V. Financing the SDGs | 56 |
| Lead author: <i>Hussein Abaza</i> | |
| VI. Conclusion | 64 |
| References | 66 |

Section 1

INTRODUCTION



The 2030 Agenda for Sustainable Development was finalized during the United Nations Sustainable Development Summit in September 2015. The core component of the Agenda is the Sustainable Development Goals (SDGs), 17 cross-cutting goals which will guide global action and investment for sustainable development over the next 15 years.

Past strategies in Arab countries lacked the holistic and inclusive approach to development. The 2030 Agenda and its enshrined goals, embracing the economic, social, and environmental perspectives of sustainable development provide a historic and promising opportunity for the well-being of the world's future generations and the planet. In this context, it is critically important for the Arab countries to reinstate a positive track of development to meet the aspirations of their current and future generations for decent living with dignity. However, to achieve sustainable development Arab countries need to address a series of challenges they face, including:

- Political changes, manifested in the significant political turmoil in some Arab countries, are expected to have far-reaching repercussions on achieving the sustainable development goals. Similarly, the challenges of peace and security will pose additional impediment to the process.
- Scarcity of water, energy, and arable land,



aggravated by impacts of climate change, and high inefficient dependency of the region on fossil fuels to meet its energy needs, all resulting in extremely high Ecological Footprint.

- Food security threats due to land degradation, water scarcity, and inefficiency of water use in agriculture, and the reliance on imported food products to cover between 50 and 100 percent of the region's food needs.
- climate change impacts, mainly as emphasized in sea level rise, worsening water scarcity, land and biodiversity degradation, food security, and the economic impact on the oil producing countries due to the world's shift to renewable sources of energy.
- Unsustainable consumption and production as a result of extreme demographic changes, rising urbanization, changing lifestyles, and the subsidy policies.
- Population growth of about 2.2 percent, which represents a major driving force for high demand on limited natural resources.
- Heavy subsidies of energy, water, and food led to irrational consumption behaviors, depletion of finite natural capital, misallocation of resources, which have made it difficult to upscale sustainable energy and water options.

Progress on implementation of the SDGs will be greatly influenced by the extent of achievements related to the MDGs over the past 15 years. In this respect, there are notable differences in the region. Some countries have made strong progress on most indicators, such as those of the Gulf Cooperation Council (GCC), while others have witnessed limited or no progress. The Least Developed Countries (LDCs), Iraq, and Palestine have been the weakest performers due to their special circumstances. One of the most remarkable achievements of the region has been its progress towards education targets and extending access to improved sanitation. On the negative side, the region is nearly 20 percent below the target on reducing undernourishment and in providing access to drinking water. In addition, the divide between rich and poor Arab countries in health indicators is big. In addressing the issues, it is critically important to recognize the distinctive

features, priorities, political, and social contexts of Arab countries. Sustainable development priorities and goals in Qatar are certainly different from those in Jordan. And for a country mired in strife, such as Yemen, the needs of a post-conflict era would still be vastly different. Certainly, there are commonalities to build on, and regional cooperation is of paramount importance.

This report builds heavily on the previous AFED reports addressing the major development issues in the Arab region including Water, Agriculture, Food Security, Energy, Green Economy, Sustainable Consumption, and Climate Change. In light of the new political, economic, and social developments, this report highlights the policy options available for the Arab countries in order to realize the Sustainable Development Goals.

A. WATER-ENERGY-FOOD NEXUS

Water security, energy security and food security are inextricably linked in the Arab region. Generally, the region is energy rich, water and land scarce, and food deficient. These inter-linkages are intensifying in the region as demand for resources is increasing with population growth, consumption patterns are changing, and low efficiencies would be further compounded by the impacts of climate change. The current water-energy-food-climate policy landscape in the Arab region is complex and fragmented; this necessitates the crucial need to adopt the integrated nexus approach when addressing the management of those three vital resources.

B. POVERTY, AGRICULTURE AND FOOD SECURITY

Poverty is one of the major challenges in the region, which has been increasing since 2010 due to several factors including peace and security conditions, weak social safety nets and inability to create job opportunities. By shifting the poverty line from \$1.25 to \$2 and \$2.75 per capita per day, the poverty rate in the region increases from 4 percent to 19 percent and 40 percent respectively. Such a spectacular increase in poverty rate is a distinct feature of the Arab region compared to other regions of the world. The achievements on poverty however do not correlate with other indicators such as the undernourishment rate, noting that the Arab region is the only one in the

world to witness an increasing undernourished population. The number of undernourished people jumped from 30 million to over 50 million, between 1991 and 2011, mainly due to rapid population growth. It is to be noted that undernourishment is linked to the prevalence of hunger and lack of adequate levels of food security, which remain critical challenges in the region. In addition, the majority of the countries in the region suffer from double burden of malnutrition: the persistence of under-nutrition with a rise in overweight, obesity and diet-related chronic diseases with different scales according to the level of economic development. To address the challenges of poverty, hunger, and food security, the Arab countries have a number of policy options that include improving crop and water productivity, recycling and use of treated waste water, minimizing the high level of post-harvest losses, development of other high quality sources of proteins such as fisheries, considering the concept of virtual water in their national planning to foster cross-border cooperation, and last but not least, the inevitable regional cooperation based on the comparative advantage in agricultural and financial resources of different Arab countries.

C. WATER

The water situation in the region is critical. Scarcity of freshwater resources, high dependency on shared resources, inadequate levels of water management, low water tariff, irrational water consumption and production patterns, and deteriorated water quality, compounded with a changing climate, remain a major concern threatening the region's stability and food security.

Access to safe drinking water in the region reached 81 percent, where it has declined in some countries that are suffering from conflicts and instability such as, Iraq, Palestine, Sudan and Yemen. Improved sanitation coverage has risen to 75 percent, with increases in almost all countries. However, rural areas remain behind, especially in LDCs, where improved sanitation is only available to roughly one fifth of the population.

This critical situation is worthy of an urgent forward looking water reform process. To achieve water related SDGs, national water strategies should include making shifts in water allocation among different sectors based on the concept of

integrated water resources management (IWRM), introducing new pricing policies using progressive tariffs for drinking water, while demanding water pricing at actual cost in industry, and enforcing new regulations to address groundwater abstraction, and to protect public water ways from industrial wastes. These strategies should also foster water demand management, especially to improve the performance of the agriculture sector. Finally, there is an urgent need for changing the mindset, attitude and practices in the Arab societies through raising water awareness. In addition, Arab countries should recognize the importance of reaching the poor and expanding water services to all, particularly in rural areas.

D. ENERGY

Energy has been a major driver for development in the Arab region. Both oil exporters and importers are tied to the global oil market. The Arab region has recently become one of the major demand centers in the world. Growth of primary energy consumption has surpassed economic and population growth. With total reliance on fossil fuels, these trends would put the region in an unsustainable path. Except for the Arab LDCs, where about 50 million people have no access to modern energy services, most countries have achieved commendable high energy access rates. In addition to heavy energy subsidies, the region is characterized by low energy efficiency as well as slow pace to tap on the huge potential of solar and wind resources. The recent slump in oil prices has provided an opportunity for several countries to reform energy subsidies, including Egypt, Jordan, Saudi Arabia, the United Arab Emirates, Oman, Qatar, Bahrain and Kuwait.

To achieve the SDGs, energy efficiency and renewable energy are crucial factors to enhance energy security, lessen financial burdens of oil imports, and diversify energy mix. They can also offer reliable and sustainable solutions for access to modern energy services to rural and remote populations, contributing to poverty alleviation. While MASDAR in Abu Dhabi is a shining example of a government -driven transformative initiative in renewable energy, Dubai was host to the world's cheapest kilowatt-hour of PV electricity, through a private company applying a market-based investment model. On the westernmost side of the Arab region, Morocco

is a notable example of a star performer when it comes to renewable energy investment with a daring 52 percent by 2030. In addition, regional cooperation and energy integration is a viable means to achieve the SDGs.

E. EMPLOYMENT AND THE GREEN ECONOMY

The working age population throughout the Arab region has experienced significant improvements in education and skills, owing to the substantial investments in human capital development. However, it is alarming that unemployment in Arab states generally remains too high, with an average of around 12 percent, reaching 30 percent among the youth, according to ILO 2014 figures¹. It is estimated that unemployment soared further in 2015-16, due to conflicts and declining economic growth.

The youth group in the region (15 to 24 years old) is the largest demographic group, with rapidly growing rates. This group could provide good opportunities for development and could also constitute major challenges at the social, economic and political fronts, unless there are policies to create opportunities for education and work.

The education sector is essential in providing the training and knowledge necessary to build human capacity. Heightened commitment to education spending is necessary, with particular emphasis on green economy-related scientific, technical, engineering and social sciences disciplines. Whilst social security and income support schemes can help, the only lasting solutions are new jobs. Renewable energy and waste management provide two examples of offering "green jobs". Bringing electricity to the poor populations using decentralized renewable energy systems is one of the most tangible contributions that an inclusive green economy can offer, while also stimulating job creation and supporting social enterprise development.

F. SUSTAINABLE CONSUMPTION AND PRODUCTION

The rapid population growth, urbanization and rural migration, alongside inadequate subsidy policies, have resulted in an increased demand

on natural resources in the Arab region and have promoted unsustainable consumption and production patterns, causing environmental degradation. In order for the Arab countries to gradually shift to Sustainable Consumption and Production (SCP), every country, based on its respective socio-economic circumstances, needs to identify priority actions and enabling conditions necessary to facilitate that transition. These include: good governance, integrated policy planning, sound regulatory regime, use of market-based instruments, capacity development, access to finance and investments, research and development, public awareness, and green procurement. Furthermore, it is crucial to invest in education and social interactions, to change mind-sets, raise awareness of sustainable lifestyles, and facilitate change in consumers' behavior, especially amongst youth as agents of change, as users of social media, and as future entrepreneurs and decision-makers.

G. CLIMATE CHANGE

The Arab countries are among the most vulnerable to the potential impacts of climate change because of their existing vulnerabilities, notably water scarcity and recurrent drought. The Arab region's coastal zones – which are vulnerable to sea level rise – are of immense importance as most of the region's major cities and economic activities are in the coastal areas. Vastly fertile agricultural lands are located in low-lying, coastal areas such as the Nile Delta, where popular tourist activities depend on marine and coastal assets, like coral reefs and associated fauna. The predicted impacts of climate change place more stress on the limited fresh water resources. With around 85 percent of fresh water resources devoted to agriculture, food security in the Arab world has long been subject to environmental and socio-economic pressures.

Arab countries need to continue working on building national capacities to deal with different aspects of the climate change threats, adapt to the international climate regime, foster regional cooperation to adapt to the potential climate risks, and work closely with the international community to make use of the opportunities offered for climate finance, and climate friendly technology transfer.

H. REQUIREMENTS FOR THE IMPLEMENTATION OF THE SDGs IN ARAB COUNTRIES

A change in the mindset and culture of designing development strategies, policies, and plans, and their monitoring and assessment is essential if Arab countries are to achieve SDGs and address climate change concerns. Adopting an integrated approach to policy making is necessary to ensure policy coherence. This should be supported by a package of regulatory and market-based measures, in order to ensure that the proposed policies, plans, and programs are economically viable, socially equitable, and environmentally acceptable. Moreover, adopting a transparent, accountable, and participatory approach is a prerequisite for achieving this end. Building human capacity is one of the key requirements needed to make a qualitative shift towards sustainable development. It is recommended to reform the current institutional arrangements at the regional as well as national levels, such as establishing “High Councils for Sustainable Development”. This would ensure integrated policy formulation, adequate cooperation and coordination among different government entities, and between the government and non-state stakeholders. The councils would also be responsible for overseeing and assessing the implementation of the proposed strategies, suggest remedial actions as may be required, and ensure adequate communication between the government, the general public, the private sector and civil society.

I. FINANCING THE SDGs

The financial system as currently designed is not geared to supporting sustainable development. However, ensuring the financial sustainability of policies, plans and programs is key to achieving the SDGs. To support sustainable development in the Arab countries, an additional US\$ 57 billion would need to be specifically allocated annually for this purpose. There are many potential sources for international sustainable development finance and multilateral funds. However, apart from securing additional financial resources, focus should be on the mobilization and the redirection of existing local financial resources, both public and private, such as integration of

the informal sectors in the Arab economies, public-private partnerships projects, tax and subsidies reforms, philanthropic institutions, remittances, and private investments.

Arab country donors and their national and regional development institutions have over the past several decades played an important role in providing development and humanitarian assistance to Arab and other developing countries. A Coordination Group (CG) for development financing currently includes eight Arab national and regional development institutions, in addition to the Islamic Development Bank and the OPEC Fund for International Development. These institutions have amassed tremendous experience in development cooperation worldwide. Their combined contributions to financing development operations in over 140 countries across the globe amounted to about US\$ 147 billion at the end of 2014, with a share of over 55 percent for Arab recipient countries.

Arab national and regional development institutions have been supporting the financing of the Millennium Development Goals (MDGs), and have declared their strong

commitment to continue delivering assistance for financing the Sustainable Development Goals (SDGs) of the 2030 development agenda. Arab country recipients can attract more funding for their SDGs from the region's development financing institutions by orienting their development strategies towards the SDGs and setting their priorities accordingly in a sequenced manner based on well-prepared and feasible development operations and projects.

A pre-requisite to attract external assistance is to mobilize local resources through reforms in policies and revamping subsidies and tax collection practices, alongside promoting transparency and public participation.

Achieving the Sustainable Development Goals in Arab countries by 2030 cannot be done in isolation from the state of conflict in the region. Beyond acting with multiple local, regional, and international aid organizations today to provide safety and basic necessities to those affected, the AFED report recommends laying the foundation for integrating the SDG's implementation with the anticipated rebuilding efforts.

Section 2 BACKGROUND ON SUSTAINABLE DEVELOPMENT

ABDUL-KARIM SADIK



Sustainable development is a very old concept whose origin can be traced back to centuries ago, but it emerged and evolved within the United Nations (UN) system in the latter half of the 20th century through a series of summits, conferences, and commissions between 1972 and 2015. These initiatives were the precursors, which paved the way for the adoption of the post-2015 development agenda and the Sustainable Development Goals (SDGs) by the UN General Assembly in September 2015.

A. THE STOCKHOLM CONFERENCE: 1972

The UN Conference on the Human Environment, also known as the “Stockholm Conference”, held in Stockholm in 1972 was the first major international event that created considerable momentum for the recognition of sustainability at the global level, and led to the establishment of the UN Environment Program (UNEP). Since then, UNEP has been pursuing its mission: “To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations” (UNEP).

The Conference adopted the “Stockholm Declaration on the Human Environment”, which increased awareness of environmental issues worldwide through a set of forward-looking principles, such as principle 3: “The capacity of the earth to produce vital renewable resources must be maintained and, whenever practicable, restored or improved” (UN, 1972).

Despite its widespread popularity the Stockholm Declaration, with fragmented principles arrived at through compromise between different views and interests, did not strike a balance between the economic, social, and environmental issues of development, nor their interlinkages. As pointed out by Sohn, “the text [of the declaration] finally patched together from bits and pieces of various drafts does not show any real coherence of form or any uniform way of treating substance” (Sohn, 1973).

Following the Stockholm Declaration, development continued to be primarily equated with national economic growth in both developed and developing countries. This approach hampered the uptake of sustainable development

and posed an imminent threat to the exhaustion of natural resources “whether in terms of supply, [e.g. oil reserves] or quality [e.g., air or water pollution]” (Drexhage and Murphy, 2010).

B. THE BRUNDTLAND REPORT: 1987

“Concerned about the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development”, the UN General Assembly established in 1983 the World Commission on Environment and Development (WCED), “to make available a report on environment and the global problematique to the year 2000 and beyond, including proposed strategies for sustainable development” (UN, 1987). Four years later, in 1987, the WCED published its report entitled “Our Common

TABLE 1

THE EIGHT MILLENNIUM DEVELOPMENT GOALS

| | |
|---------------|--|
| GOAL 1 | Eradicate extreme poverty and hunger |
| GOAL 2 | Achieve universal primary education |
| GOAL 3 | Promote gender equality and empower women |
| GOAL 4 | Reduce child mortality |
| GOAL 5 | Improve maternal health |
| GOAL 6 | Combat HIV/AIDS, malaria and other diseases |
| GOAL 7 | Ensure environmental sustainability |
| GOAL 8 | Develop a global partnership for development |

Source: UN, 2015.

Future”, also known as the “Brundtland Report” after the name of the Commission’s chairman, the Norwegian Prime Minister, Gro Harlem Brundtland.

In its deliberations on new approaches to environment and development, the Commission recognized that “development cannot subsist upon a deteriorating environmental resources base; the environment cannot be protected when growth does not take into account the cost of environmental destruction. Fragmented institutions and policies cannot treat these problems separately. They are linked in a complex system of cause and effect” (WCED, 1987). Such a perspective, and others in the same vein expounded by the Commission underscored the synthesis of its most commonly adopted

definition of sustainable development, as an alternative approach to the narrow paradigm based on economic growth. Sustainable development is that which “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).

The “Brundtland Report” popularized the concept of sustainable development and created further momentum towards the institutionalization of sustainable development and the adoption of a plan of action for its implementation.

C. RIO SUMMIT (EARTH SUMMIT): 1992

The UN Conference on Environment and Development (UNCED), also known as the “Earth Summit” was held in Rio de Janeiro, in Brazil in June 1992. It was a landmark event, in terms of the number of participating stakeholders and the broad scope of its Agenda 21, incorporating a global plan of action for sustainable development.

The Rio Declaration, containing 27 principles, emphasized the implementation of national and global decisions to preserve the health of the planet and the integrity of its natural resources for the wellbeing of present and future generations. Principle 4 states: “In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it” (Rio Declaration, 1992). In its Summary of the Special Session, held in June 1997 to review the implementation of Agenda 21, the UN General Assembly (UNGASS) acknowledged a number of positive results and some progress made in certain areas, but at the same time it expressed deep concern “that the overall trends for sustainable development are worse today than they were in 1992” (IISD, 1997). Furthermore, the UNGASS recognized the continued deterioration of the global environment as noted in the UNEP’s Global Environment Outlook report. It pointed out that “increasing levels of pollution threaten to exceed the capacity of the global environment to absorb them, increasing the potential obstacles to economic and social development in developing countries” (IISD, 1997).

The Rio Summit succeeded in forging a political standpoint through the active engagement and participation of almost all world leaders in its deliberations. However, much remains to be done for the implementation of the goals set out under Agenda 21. This unfolding outcome of the Rio Summit prompted an unending quest for sustainable development through a set of specific goals and targets to be achieved over a time-bound period, an endeavor by the UN, which gave birth to the Millennium Development Goals (MDGs) in September 2000.

D. THE MILLENNIUM DEVELOPMENT GOALS: 2000

With a background of too little implementation of the goals in Agenda 21 of the Rio Summit, and persistent poverty and hunger at an unacceptable level, the international community launched the Millennium Summit in September 2000 to chart a vision to eradicate extreme poverty and address other various issues hampering the progress of sustainable development.

The Summit’s vision was shaped by what has become the “Millennium Declaration”, embracing eight Millennium Development Goals (MDGs), accompanied by a set of targets and indicators to monitor the progress of their implementation. The MDGs are described in Table 1.

It is to be recalled that the Rio +5 Summit in 1997 created the Commission on Sustainable Development (CSD) to review and monitor progress towards Agenda 21 every five years, including a review of the financial resources available for implementation. On the means of implementation, Agenda 21 noted that in addition to Official Development Assistance (ODA) as a main source of external funding, substantial new and additional financial resources were required for sustainable development and implementation of Agenda 21. However, two years following the adoption of the MDGs, the International Conference on Financing for Development, also known as “Monterrey Consensus” was held in Monterrey, Mexico in March 2002 to address the challenges of financing for development around the world, particularly in developing countries (UN, 2003). The conference noted with concern the dramatic

shortfalls in the currently estimated resources required to implement the internationally agreed development goals, including the MDGs. With the passage of time, growing concern about lack of progress on environmental issues, shortfalls in the resources required to implement the action plan under Agenda 21, and the unlikely prospects for the achievement of the MDGs in 2015, prompted the UN to call for a new conference to consider the evolving challenges.

E. THE RIO+20 CONFERENCE: 2012

Considering the progress made on agreed goals as enshrined in previous declarations, the United Nations Conference on Sustainable Development (Rio+20), was held in Rio de Janeiro in June 2012 on the eve of the 20th anniversary of the conference in Rio in 1992. In Rio +20, member states reached an agreement to launch a process to develop a set of sustainable development goals (SDGs) that build upon the MDGs, and that are limited in number, aspirational, easy to communicate, and address in a balanced way the three dimensions of sustainable development.

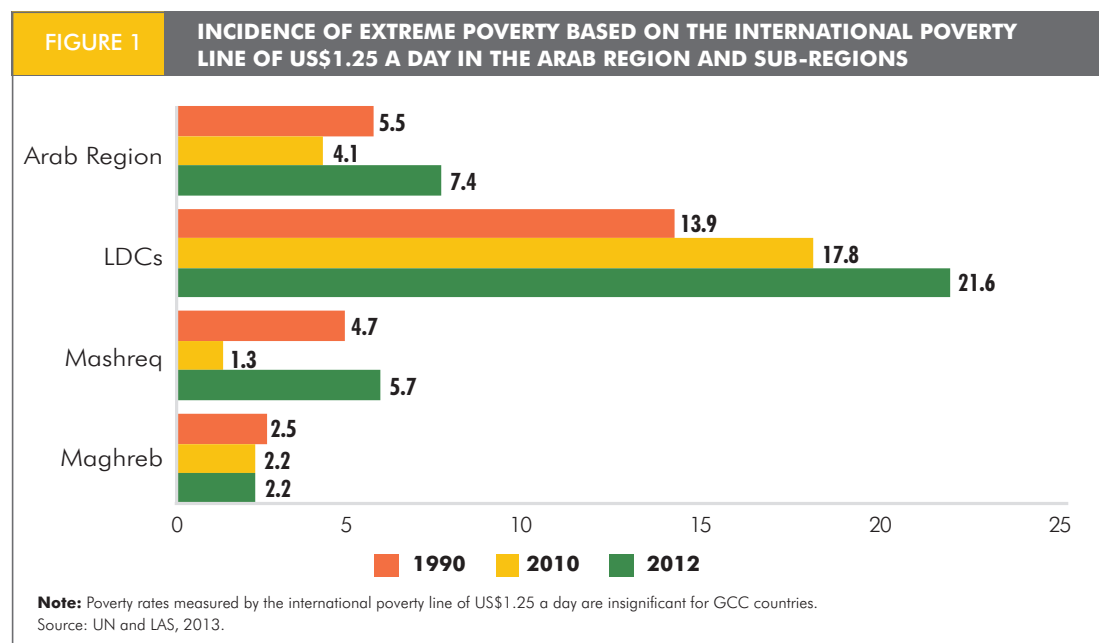
In its Annex, the outcome document of Rio+20 entitled “The future we want” contains 283 statements, including the vision of the conference. It reaffirmed the Rio principles and past action plans and developed a comprehensive framework

for action and follow-up on thematic areas and cross-sectoral issues to secure renewed political commitment for sustainable development, to address the themes of a green economy in the context of sustainable development and poverty eradication, as well as expressing commitment to address the shortfalls in the implementation of action plans of the major summits on sustainable development (UN, 2012).

The conference recognized the approaching expiry target date in 2015 for the MDGs and their uneven progress in reducing poverty across regions, and the continued increase in the number of people living in poverty, especially in the least developed countries, and particularly in Africa. The need for a new development paradigm to fill the gaps and address the shortcomings identified in previous action plans, and build upon commitments already made, enhanced consensus in the conference for initiating a process for sustainable development goals, integrating the economic, social and environmental dimensions.

F. THE SUSTAINABLE DEVELOPMENT GOALS: 2015

The Rio+20 document called for the establishment of an Open Working Group (OWG) to develop a set of SDGs that should be “action-oriented, concise and easy to



communicate, limited in number, aspirational, global in nature and universally applicable to all countries, while taking into account different national realities, capacities and levels of development and respecting national policies and priorities” (UN 2012).

An Open Working Group (OWG), with 30 members of the UN General Assembly was established in January 2013, and was mandated to decide on its methods of work, including modalities for the full representation of relevant stakeholders and expertise in order for the SDGs to be more inclusive and developed on the basis of a diversity of perspectives and experience.

Through a series of meetings between 2013 and 2014, and input from practically all walks of life, including representatives from developed and developing countries, international organizations, expert groups, the private sector, and NGOs, the OWG concluded its task and submitted its proposal on the SDGs, which were adopted by the UN Summit in September 2015 within the framework of the Post-2015 Development Agenda. The 17 SDGs, accompanied by 169 targets, are described in the Annex of the report. These goals are comprehensive, ambitious, and wider in scope than the MDGs, whose progress and outcome will help in shaping the road for the implementation of the SDGs as stipulated in “Transforming Our World – the 2030 Agenda for Sustainable Development”. They, inter alia, reaffirm in goal 13 the “urgent action to combat climate change and its impacts”, while “acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change” (Annex).

To combat the negative consequences of climate change and its most dangerous impact of rising global temperatures, the UN Climate Change Conference in Paris reached an agreement in December 2015 to limit global temperature rise to below 2 degrees Celsius by the end of the century.

This agreement is critically important for the achievement of the SDGs, because of its intertwined links with them. “A strong climate agreement backed by action on the ground will

help us achieve the Sustainable Development Goals to end poverty, build stronger economies and safer, healthier, and more livable societies everywhere. There are 12 of the 17 Sustainable Development Goals that directly involve taking action on climate change in addition to climate change having its own goal” (UN, Sustainable Development Goals).

G. THE SDGs AND ARAB COUNTRIES

The SDGs are the successor to the MDGs, and will build on the progress made towards the latter. Not only this, but the level of progress related to the MDGs will shape the road to the SDGs, in terms of both the scope of the agenda to be implemented and the required resources for its implementation.

The fourth and last progress report² on the Millennium Development Goals (MDGs) for the Arab region³ was released in 2013, two years prior to the 2015 MDGs deadline. It considered progress made on the MDGs between 1990 and 2012. It shows that: “The Arab region has made impressive progress towards some MDGs. But achievements are uneven. The region lags behind on some important targets, particularly those related to combating hunger. Political, social and economic transitions since 2010 have had significant impacts including halting or reversing MDG gains in some countries of the region.



Least developed countries (LDCs) remain behind on many fronts” (UN and LAS, 2013).

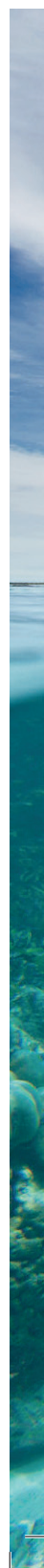
Extreme poverty in the Arab region declined considerably from 5.5 percent in 1990 to 4.1 percent in 2010, but this ratio re-bounced again to reach 7.4 percent in 2012, as shown in Figure 1.

Based on the estimated percentages in Figure 1, the number of people under extreme poverty and hunger increased from about 12 million in 1990 to about 27 million in 2012. While the Arab countries were making significant strides in reducing poverty, the trend of progress in some countries was reversed due to political transition and conflicts. For example, a decade (1997-2007) of progress in Syria was wiped out as a result of the conflict. Extreme poverty in Syria was estimated at 7.9 percent in 1997 and fell to 0.3 percent in 2007, but rose again to 7.2 percent in 2012-2013 (UN and LAS, 2013).

The Arab countries are committed to the SDGs against a backdrop of inadequate progress towards the MDGs, on-going conflicts, and political

instability in some countries. “Development in the Arab region cannot be addressed separately from regional realities. With the continued Israeli occupation of Palestine, the region is suffering from the only remaining occupation in modern history. Conflicts and instability in the Arab region continue to take their toll on economic, social and political life” (UN and LAS, 2013).

Boosting the prospects of making steady progress towards the SDGs in the Arab countries will depend largely, inter alia, on adopting national development strategies with full recognition of the inseparable links between the social, economic, and environmental dimensions of sustainable development, including giving due consideration to unlocking the developmental benefits of cooperation and regional integration. Arab conflict countries, however, need to exert extraordinary concentrated efforts for peace building and restoration of political stability in order to establish a post-conflict environment conducive to the implementation of the Post-2015 Development Agenda and the achievement of the SDGs.



Section 3 IMPLEMENTATION OF THE SDGs IN A CHANGING CLIMATE

IBRAHIM ABDEL GELIL



Achieving sustainable development in the Arab region faces a series of challenges, including::

1. Political Turmoil, Wars and Conflicts

Since early 2011, the Arab region has been experiencing political turmoil that is expected to have far-reaching repercussions on sustainable development and on the transition to a green economy. In 2015, the Arab region ranked as the least peaceful part of the world, suffering under the Israeli occupation of Palestine and the dramatic worsening of conflicts in Iraq, Libya, the Syrian Arab Republic and Yemen. This was well acknowledged in the Arab Strategic Framework for Sustainable Development (ASFSD), which identifies peace, security, and political stability as a necessary enabler to achieve sustainable development.

2. Scarcity and Volatility of Natural Resources

Water, energy, and arable land are major challenges for development in the Arab region. Water scarcity and aridity, aggravated by potential impacts of climate change, and dependency of the Arab region on fossil fuels to meet its energy needs, characterized with low efficiency, constitute major challenges to a transition to green economy. This is compounded by the high vulnerability of both oil exporting and importing countries to the volatility of the oil market.

3. Food Security Threats

Arab countries are adversely affected by the volatility of the global food market as well as reliance on imported food products to cover between 50 and 100 percent of their food needs including wheat, which represents the main strategic crop in the region. The Gulf countries import around 100 percent of their staple food needs, but are less vulnerable than non-oil exporting countries in the region owing to surplus revenues generated by the oil sector. The most vulnerable countries to global food price volatility are those with relatively high poverty rates such as Iraq, Palestine, and Yemen. Food security is also threatened by land degradation, water scarcity, and inefficiency of water use in agriculture.

4. Climate Change and Extreme Weather Events

The Arab region is a prime example of the potential adverse impacts of climate change on a number of social, economic and environmental levels. Arab countries will be directly impacted by climate change: mainly sea levels rise will threaten the economic and natural assets of coastal areas, water scarcity and land degradation will be more acute, and biodiversity will be adversely impacted. The social impact will be severe, as many workers will lose their jobs in agriculture and fishing, alongside some oil industries as a result of a world shift toward renewable energy sources. However, jobs created by renewable energy are likely to offset those to be lost in the agriculture and oil industry. The economic impact on the oil producing countries will be more severe, as they mainly depend on revenues from oil and gas exports. If the world shifts fast to renewable sources of energy, those countries will suffer seriously (ASFSD, 2015). Lower oil prices in recent years, and the signal to the markets from the Climate Change Agreement at COP21 in Paris, gave a strong signal that prompted oil-exporting countries to launch deep changes to re-structure and diversify the economy.

5. Unsustainable Consumption and Production

Demographic changes, rising urbanization, changing lifestyles and subsidy policies, among others, contributed to the emergence of unsustainable consumption patterns in the Arab region, which is one of the most urbanized regions in the world. In 2010, the Arab population reached 352 million residents, 56 percent of which live in cities. By 2050, the population will reach 646 million residents, of which 68 percent will live in urban areas. Rapid population growth and migration from rural to urban areas are key factors that have contributed to the high demand on energy and other natural resources in the Arab region. Hydrocarbon exports revenues caused dramatic changes in lifestyles and consumption patterns in oil exporting countries, as witnessed in the GCC.

6. Population Growth

Population in the Arab region varies between

small, as in all the GCC except Saudi Arabia, to large as in the case of Egypt, accounting for almost 30 percent of the total Arab population. The population of the Arab countries grew by 2.2 percent between 2005 and 2012, which represents a major driving force for demand on limited natural resources.

7. Heavy Subsidies of Energy, Water, and Food

The region is characterized by heavy subsidies, based on two sets of rationale: in the oil exporting countries, energy subsidies are intended to allow citizens to share in their countries' natural-resource wealth as in the case of GCC countries. This is well reflected in the high rate of access to electricity. On the other hand, subsidies were promoted as a means to make essential energy services available to the poor in resource-scarce countries such as Egypt, Morocco, and Syria. In addition to promoting unsustainable

consumption patterns, energy subsidies have been a major barrier to improving energy efficiency in the region as well as up-scaling renewable energy market. Recently, many Arab countries have taken bold steps to reform energy and water prices.

Since the Rio conference in 1992, the League of Arab States (LAS) has adopted a large number of regional strategies addressing different issues of sustainable development. These strategies, which were supported by a number of political declarations, reflected political commitments of the Arab countries to sustainable development. Yet, shifting from political statements to implementation on the ground has been slow. This situation was manifested in the 2011 political turmoil and unrest across the region. Although economic growth rates in the region were acceptable in the post-1990s reforms, and despite the significant gains in human development – particularly in education and health – as illustrated in the Arab MDG Report



(UN & LAS, 2013), the Arab uprising, coined as the “Arab Spring”, has shown that economic development is not enough and that development and real progress are not only about wealth creation but also about sustainability, wealth distribution, social inclusions, strong institutions and effective political participation (ESCWA, 2014). It is acknowledged that the root causes of that uprising were mainly socio-economic and governance failures leading to exacerbated inequality, and the presence of educated but dissatisfied populations, especially educated middle class youth (ILO & UNDP, 2012).

In the meantime, some Arab countries have developed national strategies for sustainable development, ranging from specific goals such as green economy and poverty eradication, to a wider scope covering the whole spectrum (Box 1).

Egypt has already started to take tangible actions to institutionalize the implementation of the SDGs. These early actions include the recently launched Social Housing Program, which aims to improve the affordability of formal housing for low-income households and is expected to reach more than 3.6 million beneficiaries in the lowest income groups by replacing 150 thousand housing units in slum areas. Another example is the establishment of a national inter-ministerial committee to coordinate and follow up on the implementation of the SDGs, and the creation of a Sustainable Development Unit (SDU) within the National Statistical Agency (CAPMAS) to lead the monitoring and evaluation of the implementation of the SDGs and Egypt Vision 2030 (Egypt, 2016).

Thus, the starting point for the Arab countries to realize the SDGs is their level of achievements of the MDGs. There are notable differences in MDG achievement in the region. Some countries have made strong progress on most indicators, such as the GCC, while others have witnessed limited or no progress. The Least Developed Countries (LDCs), Iraq, and Palestine have been the weakest performers due to their special circumstances. One of the most remarkable achievements of the region has been its progress towards education and health targets, and extending access to improved sanitation. This means that the region is well placed to meet the challenges of sustainable

development that lie ahead. On the negative side, the region is nearly 20 percent below the target on reducing undernourishment, and in providing access to drinking water. In addition, the divide between rich and poor Arab countries in health indicators is clearest.

ACHIEVING THE SDGs

This section draws heavily on previous AFED reports in order to discuss different options available to the Arab countries on the road to achieve the SDGs.

1. Poverty, Agriculture and Food Security

The Arab countries are generally facing enormous challenges to achieve their goals of eradicating hunger and malnutrition while managing and using their natural resources in an environmentally sustainable manner. Due to high population growth rates, averaging over 2.2 percent annually, a higher urbanization rate and dramatic changes in consumption patterns, demand for food has been under severe pressure. At the same time, the limited and fragile natural resource base and the low rate of agricultural productivity constitute major limitations to the supply of food. The AFED 2015 report shows that the Arab region has seen an increase in both the number of undernourished and prevalence of undernourishment. The majority of countries in the region suffer from double burden of malnutrition: the persistence of under-nutrition with a rise in overweight, obesity and diet-related chronic diseases with different scales according to the level of economic development.

Sustainable Development Goal 2 (SDG 2) aims to: “End hunger, achieve food security and improved nutrition and promote sustainable agriculture” (Annex).

a. State of Agriculture and Food Security

Agriculture is an important sector for many Arab countries, contributing for example to 33.8 percent of the GDP of Sudan in 2013 (Figure 2). The Arab region is seeking to achieve a higher level of food self-sufficiency, to enhance food security, contribute to employment (23 percent of the Arab work force are in agriculture), exports

BOX 1

EXAMPLES OF RECENT NATIONAL DEVELOPMENT STRATEGIES IN ARAB COUNTRIES

- Qatar's National Vision 2030 (2009) and National Development Strategy 2011-2016
- Saudi Arabia's Vision 2030 (2016)
- The United Arab Emirates' National Agenda Vision 21; National Green Growth Strategy; and Abu Dhabi Economic Vision 2030
- Jordan's National Resilience Plan 2014-16 (2014) and National Vision 2030 (in preparation)
- Lebanon's National Sustainable Development Strategy (in preparation)
- Bahrain's Vision 2030 (2007)
- Development Strategy of the New Tunisia (2012); National Sustainable Development Strategy 2016-2020 (2014); Guidance Note for the Strategic Development Plan 2016-2020 (in preparation)
- Iraq's National Development Plan 2010-2014 (2010)
- Egypt's Sustainable Development Strategy (2030)
- Algeria's National Strategy for the Fight Against Poverty (2005-2015) and Five-Year Plan (2010-2014)
- Sudan's Interim Poverty Reduction Strategy Paper (2012)
- Djibouti's Poverty Reduction Strategy Paper (2009)
- Morocco's National Sustainable Development Strategy (2015)

Source: ESCWA, 2015d

(60 percent of the non-oil exports proceeds), and industry.

Agriculture policies have targeted food security leading to expansion of cultivated lands, adoption of intensive production systems, investments in agricultural machinery and agro-chemicals. Though Arab agriculture productivity has improved during the last decades, there has been a continuous trade deficit in agriculture commodities of 4.5 percent, or nearly USD 70.4 billion in 2012 (LAS, AFESD, AMF, 2014). Food self-sufficiency varies widely in the Arab region. At country level, it ranged between 9.9 percent in Qatar and 86.8 percent in Sudan, as shown in Table 2.

Regionally, the Arab countries were nearly self-sufficient in fruits, vegetables and fish, but had a self-sufficiency ratio of 45.55 percent in cereals, 54.35 percent in oils and fats, and 36.85 percent in sugar in 2011 as indicated in Table 3.

Agriculture, characterized by low irrigation efficiency and crop productivity, remains the primary user of freshwater in the region, consuming nearly 84 percent of available resources (Figure 3). According to the Food and Agriculture Organization (FAO), countries are in a critical condition if they use more than

40 percent of their renewable water resources for agriculture and could be defined as water-stressed if they extract more than 20 percent of these resources. Accordingly, 19 Arab countries could be defined as water-stressed because their current abstraction rates from their renewable water resources for agriculture greatly overshoot the defined limits (FAO, 2015).

Although the Arab region has made impressive progress towards some MDGs, it lags behind on many important targets, particularly those related to combating hunger. It is far behind on meeting the target of halving undernourishment. The proportion of people below the minimum level of dietary energy consumption increased from 13.9 percent in 1991 to 15.3 percent in 2011 (Figure 4), as the number of undernourished people jumped from 30 million to above 50 million, mainly due to rapid population growth. Undernourishment increased from 6.4 percent in 1991 percent to 10.3 percent in 2011 in Mashreq countries, while it decreased elsewhere.

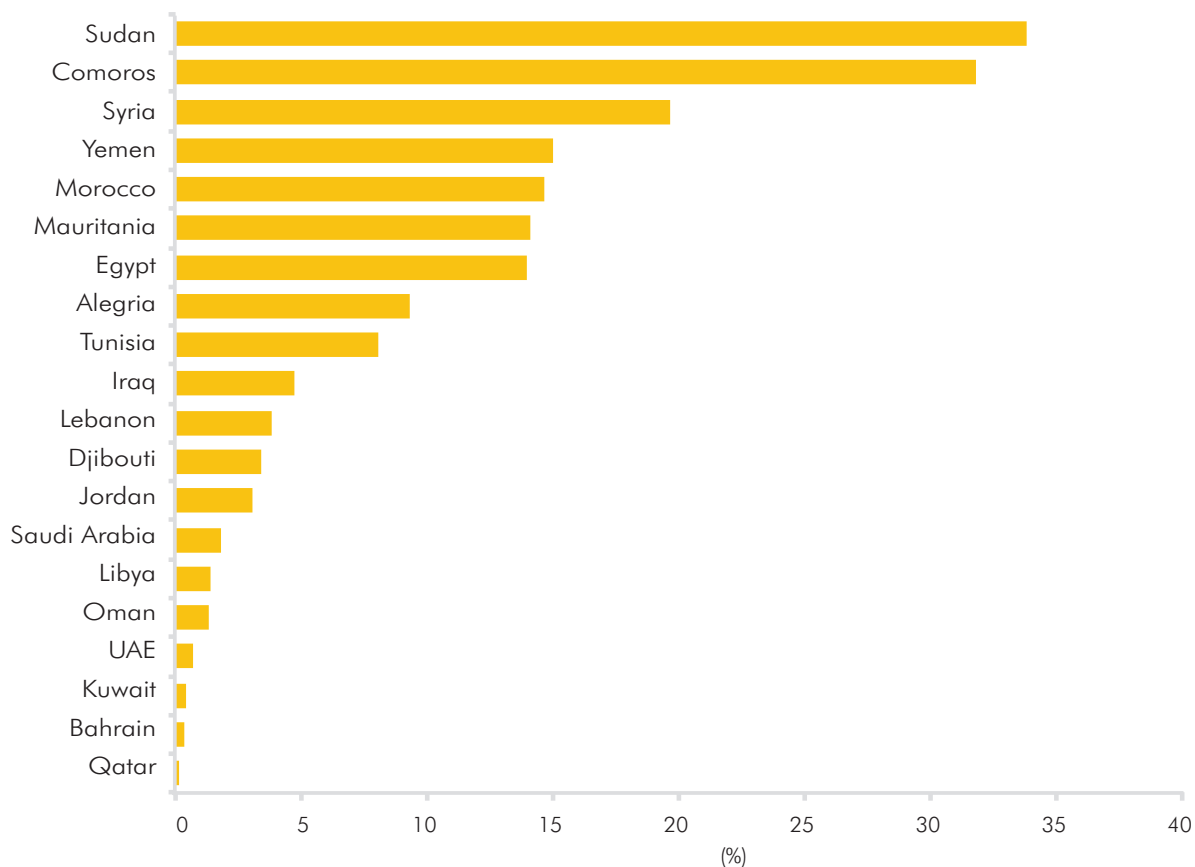
Undernourishment is particularly problematic in nine Arab countries; together, they account for 40.4 million of the region's undernourished people (Table 4). It is most widespread in the Comoros and Somalia, where more than 60 percent of people suffer from it, but there are

high rates of undernourished people of around 30 percent in Iraq, Palestine, Sudan and Yemen. It is to be noted that undernourishment is linked to the prevalence of hunger and inadequate food security levels, which remain critical challenges in the region.

Poverty is one of the major challenges in the region, which has been increasing since 2010 due to several factors including peace and security situations, weak social safety nets and inability to create job opportunities. The definition of poverty determines and greatly changes the rate of poverty in the Arab countries. By shifting the poverty line from \$1.25 to \$2 and \$2.75, the poverty rates for the region increase from 4 percent to 19 percent and 40 percent, respectively. Such a spectacular increase in poverty rate is a distinct feature of the Arab region compared to other regions of the world (ESCWA, 2015b)⁴.

By the \$1.25 a day poverty line, the regional poverty incidence was only 4 percent in 2010. The achievements on poverty, however, do not correlate with other indicators such as the undernourishment rate, which can be seen as a manifestation of poverty. In fact, the Arab region is the only region in the world to witness an increasing undernourished population. Extreme poverty in the Arab region had decreased from 5.5 percent in 1990 to 4.1 percent in 2010, mainly due to progress in Egypt, Jordan and Syria. Most recent data and projections suggest that it may now surpass the 1990 level, with an extreme poverty incidence in 2012 estimated at 7.4 percent (Figure 5). Within the region, LDCs register the highest rate of extreme poverty: the rate increased from 13.9 percent in 1990 to 21.6 percent in 2012. The situation has certainly deteriorated more between 2012 and 2016, due to widespread wars and conflicts, which

FIGURE 2 CONTRIBUTION OF AGRICULTURE TO GDP (2013)



Source: AMF, 2014, data of Syria for 2010.

TABLE 2 LEVEL OF FOOD SELF-SUFFICIENCY

| Country/Sub-Region | Food Self-Sufficiency Ratio (%) | | | |
|------------------------|---------------------------------|--------------|--------------|--------------|
| | Total Food | | Cereals | |
| | 2005 | 2011 | 2005 | 2011 |
| Bahrain | 12.96 | 12.81 | 0.00 | 0.00 |
| Kuwait | 28.38 | 21.68 | 3.88 | 2.56 |
| Oman | 45.21 | 34.52 | 1.17 | 9.22 |
| Qatar | 12.18 | 9.90 | 3.12 | 0.37 |
| Saudi Arabia | 44.52 | 34.49 | 26.75 | 11.15 |
| United Arab Emirates | 21.13 | 18.66 | 0.85 | 1.06 |
| GCC | 37.40 | 29.45 | 20.25 | 9.12 |
| Yemen | 51.53 | 31.45 | 22.59 | 10.92 |
| GCC & Yemen | 39.74 | 29.74 | 20.54 | 9.46 |
| Iraq | 75.34 | 82.84 | 55.51 | 95.42 |
| Jordan | 56.26 | 53.09 | 5.05 | 3.66 |
| Lebanon | 73.23 | 61.03 | 18.05 | 10.96 |
| Syria | 85.23 | 80.62 | 74.00 | 57.98 |
| Palestine | 81.55 | 72.26 | 19.69 | 10.00 |
| Levant | 77.20 | 75.52 | 54.86 | 56.48 |
| Egypt | 83.68 | 78.96 | 69.63 | 56.30 |
| Sudan | 91.15 | 86.84 | 75.74 | 70.59 |
| Nile Valley | 85.51 | 80.80 | 70.74 | 59.09 |
| Algeria | 53.48 | 70.04 | 29.88 | 31.96 |
| Libya | 44.95 | 43.09 | 10.79 | 7.06 |
| Mauritania | 68.49 | 70.03 | 19.17 | 36.04 |
| Morocco | 89.60 | 80.40 | 46.09 | 58.91 |
| Tunisia | 71.78 | 68.49 | 47.82 | 46.79 |
| North Africa | 66.87 | 71.58 | 35.75 | 43.19 |
| Comoros | - | - | - | - |
| Djibouti | 4.04 | 2.00 | 0.00 | 0.00 |
| Somalia | 69.17 | 74.26 | 32.89 | 33.00 |
| African Horn | 64.80 | 63.52 | 28.46 | 26.70 |
| Arab Countries | 70.48 | 71.69 | 49.74 | 45.55 |

Source: AFED, 2014.

TABLE 3 SELF-SUFFICIENCY OF FOOD COMMODITY (%)

| Food Commodity | 2005 | 2011 |
|---------------------|--------------|--------------|
| Cereals | 49.74 | 45.55 |
| Sugar | 38.47 | 36.85 |
| Fats & Oils | 28.12 | 54.35 |
| Meat | 80.80 | 76.19 |
| Fruits & Vegetables | 98.49 | 106.19 |
| Fish | 103.09 | 98.19 |
| Other Commodities | 77.78 | 82.50 |
| Average | 70.48 | 71.69 |

Source: AFED, 2014.

transformed vast productive areas into wasteland and generated millions of displaced and refugees.

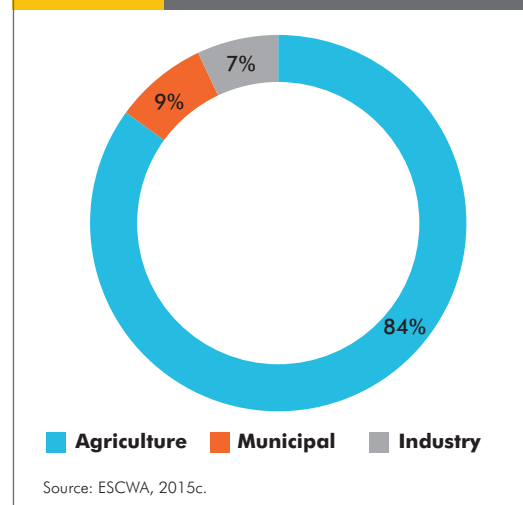
b. The Road to Achieving SDG#2: Zero Hunger

To address these challenges, the Arab leaders adopted the Tunisia Declaration on Sustainable Agricultural Development and Food Security in 2004. Furthermore, the Arab Summit in Riyadh in 2007 adopted the Arab Strategy for Sustainable Agricultural Development for the period 2005-2025.

The AFED report on “Food Security in the Arab Region” (AFED, 2014), while recognizing the limitedness of land and scarcity of water, has highlighted a set of options which have considerable potential to enhance food self-sufficiency in Arab countries. These options underscore the adoption of appropriate agricultural policies and best practices in order to preserve the integrity of land and water resources and their biocapacity to regenerate their services and maintain their sustainability.

These options focus on, among others, boosting crop productivity, especially for cereals with an average yield of less than half that of the world average in most Arab countries. In this respect, the prospects for substantially enhancing productivity in irrigated and rain-fed areas lie in the application of best agricultural practices, including the optimization of the use of fertilizers, pesticides,

FIGURE 3 WATER USE BY SECTOR



improved seeds, innovative crop protection techniques, and effective extension services.

Improving water productivity through more ‘crop per drop’ is of vital importance under water scarcity. About 85 percent of water withdrawals in the Arab region is allocated for an inefficient irrigation, with almost 50 percent of irrigation water wasted due to major dependence on traditional irrigation applications. More modern, efficient, and water saving techniques are needed to boost irrigation efficiency.

Releasing pressure on fresh water resources and the environment through promoting the use of suitably treated wastewater for agricultural, industrial and household activities, and cutting down post-harvest losses through establishing efficient food value chains can play an important role in augmenting water resources and increasing food supplies.

Other options include the development of livestock and fisheries. Well integrated crop and livestock production systems at various levels provide opportunities to increase overall production, diversity, and economic sustainability of both sectors. Development of the fisheries sector through shared governance of fisheries stocks in Arab countries is not only crucial for the health of entire watersheds, but availability of fish for consumption can reduce dependence on red meat as a source of protein, underpinned by economic and health reasons.

Regional cooperation among Arab countries based on comparative advantage in agriculture and financial resources remains a key option for enhancing food security at the regional level.

2. Water

Water is vital for socio-economic development as well as for supporting the ecosystem. Clean water and sanitation are essential for basic human health, while access to adequate water resources is needed to support agriculture, industry and other economic activities. The Sustainable Development Goal on water (SDG 6) includes targets, which “ensure access to water and sanitation for all, “universal access to safe and affordable drinking water” and “adequate and equitable sanitation” (Annex). These new goals align with the United Nations’ formal acknowledgement that clean drinking water and sanitation are encompassed in the realization of human rights. Water appears frequently across five of the 17 SDGs. Water is also connected to climate change, biodiversity, food security, energy security, health, urbanization, and sustainable consumption and production.

a. Water Situation in the Arab Region

The importance and value of water in the Arab countries is even more pronounced, as most of these countries are located in a region considered to be one of the world’s most water-stressed. Rainfall scarcity and variability coupled with high evaporation rates have characterized this part of the world with a limited availability of renewable freshwater. Although the Arab region covers about 10 percent of the total area of the world and its population accounts for more than 5 percent of the world’s population, it receives only 2.1 percent of the world’s average annual precipitation and contains as little as 0.3 percent of the world’s annual renewable water resources (AFED, 2015). Water shortages have compelled a number of Arab countries to rely heavily on desalination for the bulk of their municipal and industrial water needs as they have over 50 percent of the world’s desalination capacity.

Furthermore, one of the major challenges facing the Arab region is the high overall dependency ratio on shared water resources. As more than 60 percent of surface water resources originate from

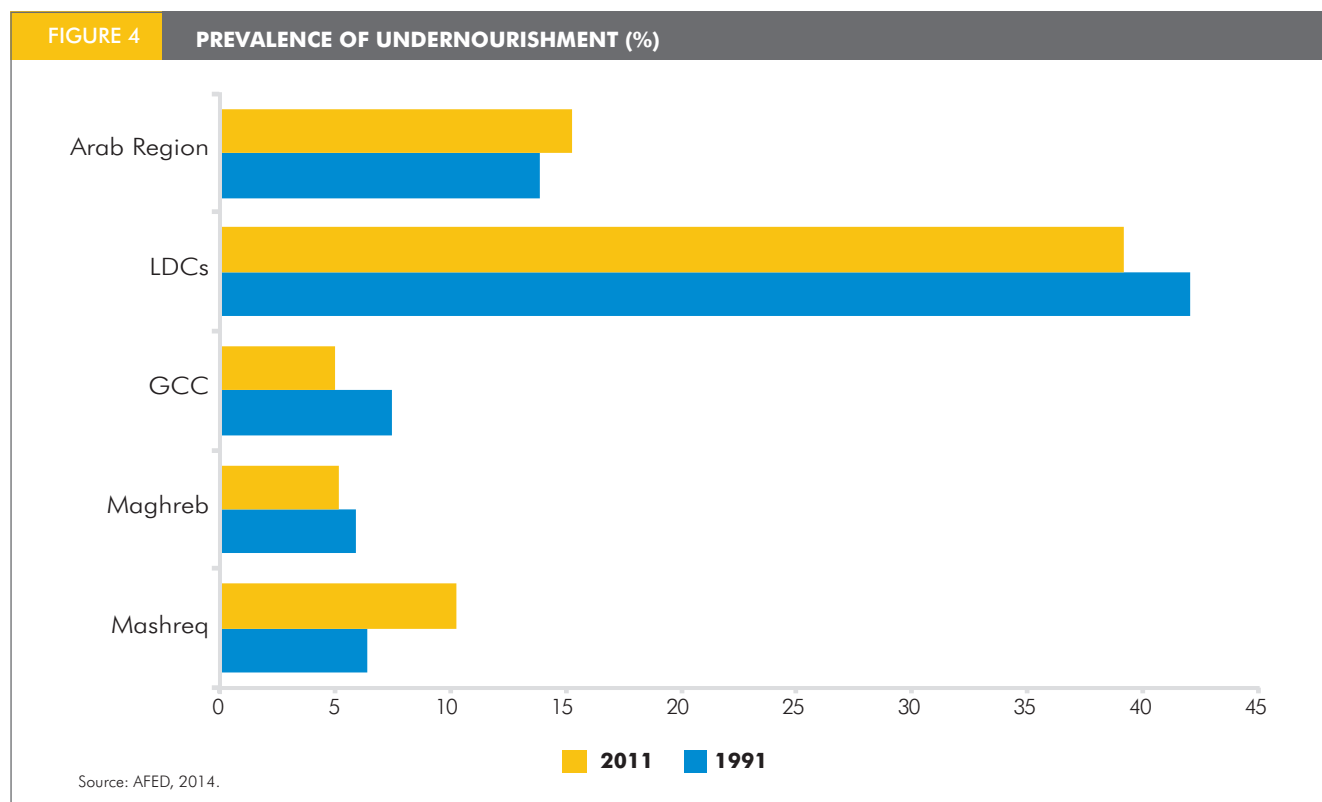


TABLE 4 UNDERNOURISHED PEOPLE IN THE NINE MOST AFFECTED ARAB COUNTRIES (MILLIONS)

| | 1990 | 2000 | 2011 | Difference (1990 and 2011) |
|------------------------|-------------|-------------|-------------|----------------------------|
| Comoros | 0.2 | 0.4 | 0.5 | 0.3 |
| Djibouti | 0.4 | 0.4 | 0.2 | -0.2 |
| Iraq | 2.0 | 4.7 | 8.6 | 6.6 |
| Mauritania | 0.3 | 0.3 | 0.3 | 0 |
| Morocco | 1.8 | 1.8 | 1.8 | 0 |
| Palestine | 0.4 | 0.7 | 1.2 | 0.8 |
| Somalia | 4.8 | 5.2 | 6.3 | 1.5 |
| Sudan | 8.9 | 8.9 | 13.5 | 4.6 |
| Yemen | 3.6 | 5.6 | 8.0 | 4.4 |
| Total | 22.4 | 28.0 | 40.4 | 18 |
| Prevalence rate | 25.0 | 24.2 | 28.3 | 3.3 |

Source: Arab MDG Report, 2013.

outside the Arab region, this issue remains a major concern threatening the region's stability and food security, and complicates the management and planning of national water resources.

Climate change would worsen the water situation in the Arab region as it is particularly vulnerable given the already scarce water resources, high levels of aridity and the long coastal stretch threatened by sea level rise. Higher temperatures will also increase the incidence and impact of drought in the region, threatening water resources and productive land.

However, the increasing scarcity of renewable water resources is not the only characteristic of the region. Inadequate levels of water management, irrational water consumption and production patterns, and the region's deteriorated water quality have become equally distinguishing features over the past decades.

To meet the rising demand for food, many countries have prioritized food security and socio-economic development through policies to expand agricultural land and irrigated cultivation. Despite this, they have failed to consider water scarcity and the need for water use efficiency. While agricultural water consumption is being driven by national agricultural development and food policies, the sector consumption is underscored by a number of factors that include:

- 1) the predominance of traditional irrigation methods, mainly flood irrigation;
- 2) unrestricted surface water and groundwater abstraction;
- 3) absence of water tariff for water use in agriculture, and
- 4) cultivating high water consuming crops.

Surface irrigation is the most widely used method in the region and is practiced on 80 percent of the irrigated area. Some studies estimate that irrigation efficiencies in the Arab region are as low as 30-40 percent (AFED, 2010). Such waste leads to weak agricultural performance and, more dangerously, salinization and ground water level decline due to overuse. It becomes imperative for Arab countries to focus their efforts on improving water efficiency in agriculture, where the prospect to save water is notably higher than in other sectors.

Access to improved water sources in the Arab region reached 82 percent over the period 1990-2014 (Figure 6). Access has declined in some countries such as Iraq, Palestine, Sudan and Yemen. Challenges in those countries can generally be attributed to conflicts and instability, water shortages, inadequate water management, lack of financial resources and insufficient investment (ESCWA, 2015d).

During the same period, the region has performed better on access to sanitation than on access to water. Improved sanitation coverage has risen

from 64 percent in 1990 to 75 percent in 2010 (Figure 7), with increases in almost all countries. However, rural areas remain behind, especially in LDCs, where improved sanitation is only available to roughly one-fifth of the population. It is to be noted that conflicts and instability in countries such as Libya, Somalia, Iraq, the Syrian Arab Republic and Yemen may have caused substantial changes, as infrastructure may be destroyed and new investments delayed.

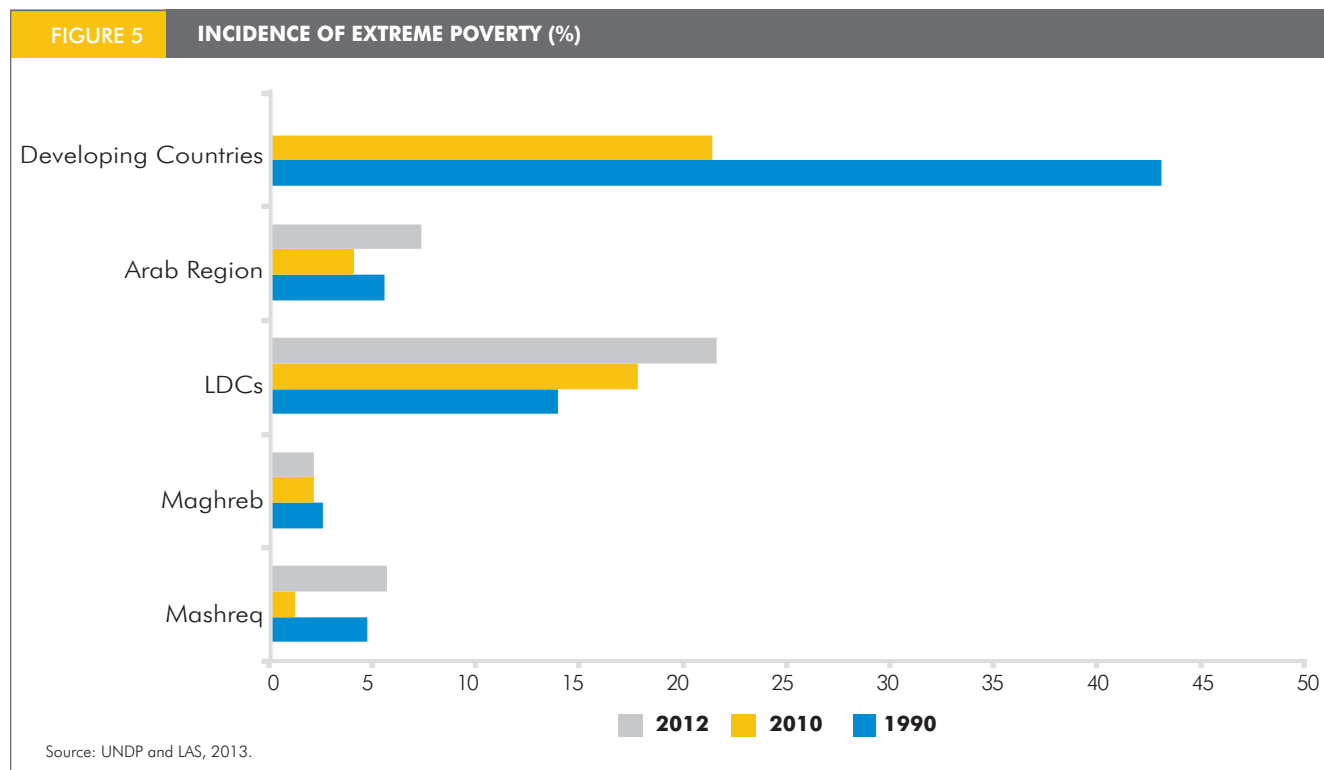
b. The Road to Achieving SDG#6: Water

Water policies in Arab countries have allowed for unrestricted use of scarce water resources. Low water tariffs have compromised the financial situation and physical conditions of urban and rural water supply networks. A key motive for water reform is the intensifying competition among domestic, agricultural, and industrial uses. These concerns are worthy of careful examination by Arab decision-makers, who should articulate appropriate policy frameworks to guide a forward looking water reform process. National strategic goals for the water sector should be articulated including making shifts in water allocation among sectors, introducing new pricing policies,

drafting new rules and regulations to address groundwater abstraction, and designing plans to clean public water ways from industrial waste and pollution (AFED, 2010).

While the importance of the supply side cannot be overstated, the effectiveness of demand management is now universally accepted, particularly where water is scarce and unnecessarily wasted. Ensuring the efficient use of available supply may yield significant benefits and proves to be more cost-effective than traditional supply side measures. Demand management is often less capital-intensive and, therefore, more cost effective, but it is also better adapted to addressing 'emergency' situations. This requires effective policy guidelines to be developed to improve the performance of the agriculture sector as discussed earlier.

A more aggressive water allocation policy, based on the concept of integrated water resources management (IWRM), could be coordinated with land use policies to regulate unwanted growth in already crowded urban centers. Incentives in water allocation can be used to encourage local industries and housing projects to target poor



regions, where they can create jobs and develop economic opportunities.

Artificially low prices and heavy subsidies to water services are at the root of inefficiency, overuse, excessive pollution, and environmental degradation. For example, the average price charged for water in the region is about 35 percent of the cost of production, and in the case of desalinated water it is only 10 percent. While water pricing has been advocated for a long time, especially in irrigation, it is seldom enacted, except for some new developments in pricing announced by Saudi Arabia, the UAE, Bahrain and Kuwait.

While pricing is being looked at as the most effective method to foster conservation, a major governance issue is how to provide the public with adequate and inexpensive water from a human rights perspective. An answer lies in imposing progressive tariffs for drinking water and rationing water in agriculture, while demanding water pricing at actual cost in commercial activities and industry. A progressive water tariff ensures that basic human needs for fresh water are met at a low, subsidized price, while excessive use is priced at a tariff that reflects actual cost.

In the agricultural sector, which is the major water consumer, incentives are needed to improve irrigation efficiency. Managing irrigation water demand, including adopting water-saving technologies and crops, is essential. Economic and financial mechanisms include permits, rebates, tax incentives, targeted subsidies, price controls and water rights. Relevant research and development (R&D) must also be promoted and properly targeted.

There is an urgent need for changing the mindset, attitude and practices in the Arab societies through raising water awareness and the application of appropriate social change instruments and incentives, resulting in a widespread culture where water resources are not wasted, polluted or overused (AFED, 2015).

Water governance in Arab countries should be strengthened by building partnerships with beneficiaries and the private sector. Governments should encourage joint investment by the private sector and the community of beneficiaries in

modern, well monitored and metered water delivery services. Increased decentralization and empowering water user associations should be promoted in order to devolve responsibilities to manage and operate local services to user communities.

In addition, Arab countries should recognize the important goal of reaching the poor and expanding water services to all communities, particularly in rural areas. Priority should be given to expanding water services to vulnerable communities and encouraging local initiatives in building and managing such services.

3. Energy

Energy is essential for sustainable development and poverty eradication. Nevertheless, it is estimated that about 50 million Arab people still have no access to modern energy services. Though energy was not explicitly considered in the Millennium Development Goals, the Sustainable Development Goals (SDGs) included a dedicated and stand-alone goal on energy. SDG 7 calls to “ensure access to affordable, reliable, sustainable and modern energy for all” (Annex). Energy continues to stand at the core of global efforts to induce a paradigm shift towards low-carbon energy systems, green economies, poverty eradication and sustainable development.

a. Energy Situation in the Arab Region

For decades, the energy sector has been playing a crucial role in the Arab region's development. According to the Arab Monetary Fund (LAS, AFESD, AMF, 2014), the oil and gas sector made up about 26.5 percent of the total Arab gross domestic product (GDP) in 2014. The sector represents more than 90 percent of the government revenues of Libya, Iraq, and Kuwait (Figure 8). In addition, the petroleum industry plays an important role in the social and economic development of Arab oil-importing countries, which benefit indirectly through worker remittances, trade, and funding of bilateral or joint Arab projects. In addition, the Arab oil and gas sector offers job opportunities in exploration, production, transportation, refining, and distribution.

Both net energy exporting countries and net

energy importing countries in the region share a high vulnerability to the volatility of the global hydrocarbon markets, as both groups have their economy strongly tied to the global energy markets, and can inversely benefit from or be hindered by its volatility.

Driven by population growth, economic development, and dramatic changes in consumption patterns, and supported by low energy prices, the Arab region has recently become one of the major energy demand centers in the world. Over the past decade (2003-2013), total primary energy consumption in the Arab countries has been steadily increasing at an average annual rate of 5 percent, with a slightly higher rate for the Gulf Cooperation Council (GCC) countries at 6.3 percent (ESCWA, 2015). With total reliance on fossil fuels, these energy consumption trends would put both Arab energy exporters and importers on an unsustainable path.

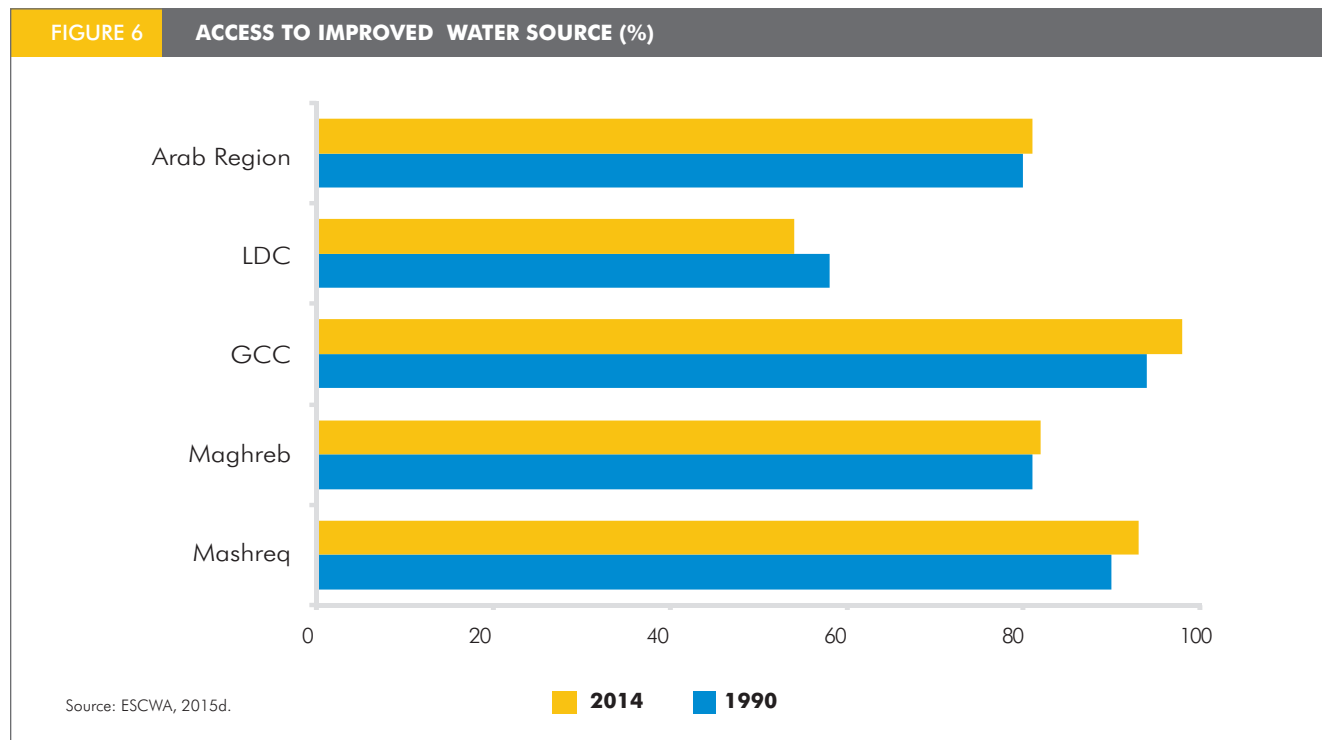
For energy exporters with economies relying on oil export revenues, more domestic consumption means reduction in surplus for exports and consequent reduction in exports revenues. This is a major development risk for those countries

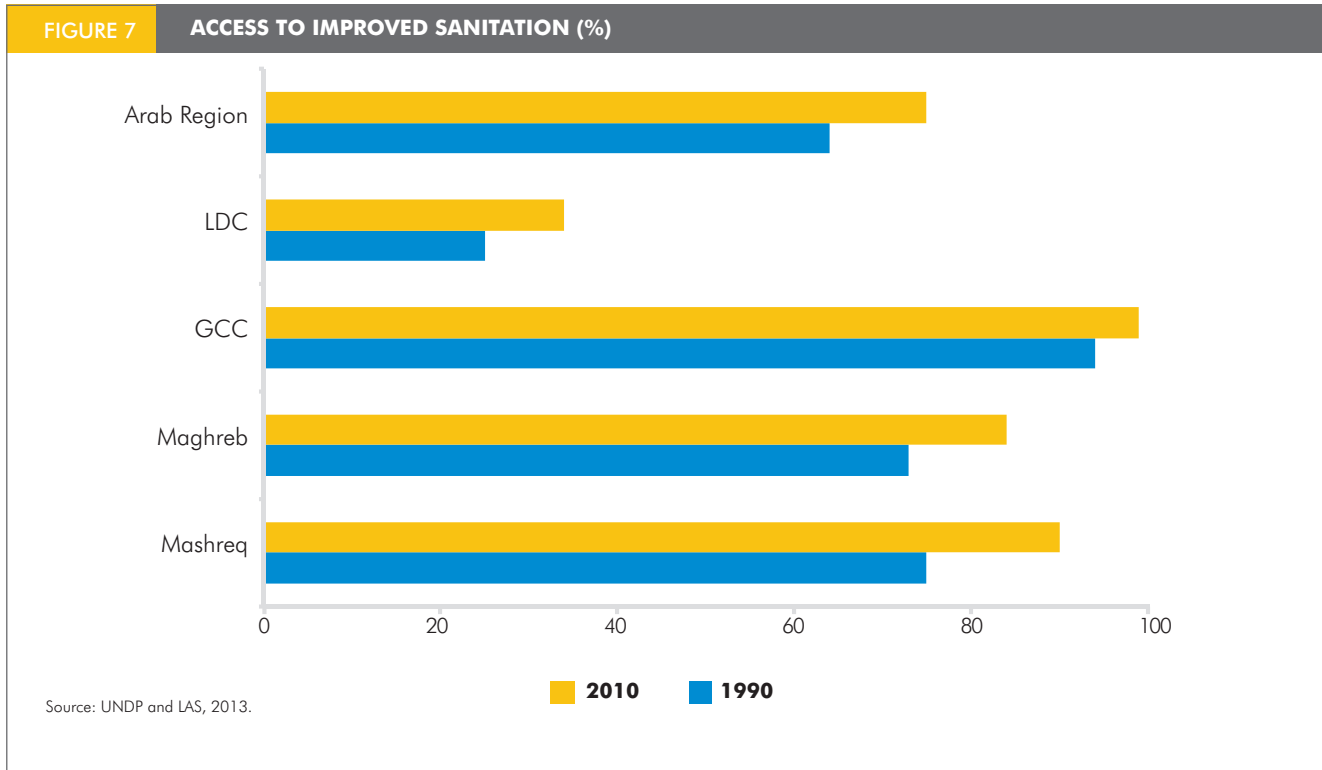
as it would erode their global market power, as evidenced by the current decline of oil prices that puts the GCC economies in a tight economic situation as never before. Recently, Saudi Arabia embarked on an applauded bold step to get ready for the post-oil era. Saudi Arabia's Vision 2030 aims to boost non-oil revenues six-fold to \$266 billion by 2030. The Vision aims to give a much greater role to the private sector, boosting its share of the economy to 65 percent from 40 percent (Vision 2030 KSA, 2016).

On the other hand, for Arab net energy importers, current growth rates in energy consumption will increase their energy bill and their vulnerability to oil market volatility, leading to an insecure energy future.

Energy needs of the Arab countries are met dominantly by fossil fuels (Figure 9). This pattern has led to position some GCC states amongst the top carbon dioxide emitters. Energy is consumed in industrial activities (29.2 percent), transport (26.1 percent), residential and commercial sectors (42.1 percent), and agriculture (2.6 percent).

Driven by the high urbanization rate and low electricity prices in many Arab countries, the





residential and commercial sectors are the major electricity consumers in the region. In 2013, they accounted for nearly 60 percent of the total electrical consumption. Buildings are major electricity consumers, for lighting, air-conditioning, and for other energy services.

b. Energy Access

Access to modern energy services is essential in meeting basic human needs, such as cooking, refrigeration, lighting and hygiene (domestic hot water and ventilation) as well as providing thermal comfort (heating and/or cooling), supporting education and public health and power economic activities. Access to electricity in the Arab region (86.2 percent) is slightly better than the world average (84.6 percent) (ESCWA, 2015d). According to the International Energy Agency (IEA) database for 2013 (IEA, 2015), most Arab countries have a national electrification rate of about 98 percent or higher, except for Mauritania, Sudan, Yemen, and Syria.

Table 5 indicates that about 44 million people in the Arab region have no access to the electrical grid.

Access to electricity poses a major development challenge in the Arab least developed countries (Mauritania, Somalia, Sudan, Yemen, Djibouti, and Comoros). It is also noted that about 50 million people are relying on biomass for cooking, posing a significant health hazard.

c. Energy Efficiency

The region has been characterized by low energy efficiency in the supply and demand sides. Average Arab electric energy losses in generation, transmission and distribution (19.4 percent) are higher than the world average (8.3 percent) and much higher than the EU average (5.8 percent), presenting ample opportunity for achieving energy savings (AFED, 2015). In addition, current trends of energy use put the Arab economies among the least efficient ones in global comparisons. Growth in energy consumption has been faster than economic growth; average annual GDP growth was around 4 percent, while the increase in primary energy and electricity demand has been about 8 percent. The average primary energy intensity in the region in 2010 was estimated at about 0.2 tonnes of

oil equivalent (TOE)/\$1000, which is slightly above the world average of 0.19 and about 31 percent higher than the European average of 0.14 TOE/\$1000.

The high level of energy consumption in most Arab countries and the inefficiency of use can be attributed to, among others, the historically pervasive adoption of energy subsidies. In most countries of the region, fuel and electricity are subsidized at rates averaging in excess of 50 percent of the economic cost. The recent slump in oil prices has provided an opportunity for several countries to either cut or abolish fuel subsidies, including Egypt, Saudi Arabia, the United Arab Emirates, Oman, Qatar, Kuwait and Bahrain (Box 2). Arab countries urgently need to embrace the principles of green economy by decoupling growth from resource depletion. Any consideration of meeting the region's growing demand for energy must include a focus on energy efficiency.

d. Renewable Energy

There is a significant untapped potential for developing renewable energy (RE) applications in the Arab region, especially solar and wind. RE can play a crucial role in enhancing energy security for both Arab oil exporting and importing countries. For energy exporters, RE is a sustainable mean to economic diversification, saving depleted hydrocarbon resources, and alleviating high carbon footprint. For energy importers, utilization of indigenous RE resources would enhance energy security, lessen financial burdens of oil imports, and diversify the energy mix. RE can also offer reliable and sustainable solutions for access to modern energy services to rural and remote populations, contributing to poverty alleviation.

Current market trends of RE technologies characterized by declined costs and improved systems efficiency have made them economically competitive with fossil-based technologies. Though many Arab countries have made remarkable strides towards promoting RE, contribution of RE in the Arab energy mix remains marginal, at about 3.5 percent. Figure 10 shows that hydropower has the largest share of RE technologies in the region, followed by wind energy.

To utilize the untapped RE resources, most of the Arab countries have announced national renewable energy targets. Morocco's clean power target of 42 percent installed capacity by 2020, which was raised to 50 percent at COP21 in Paris, stands out as the most ambitious target in the Arab region. Algeria, Egypt, Qatar, Saudi Arabia, and Tunisia have also announced ambitious targets in excess of 20 percent of electricity generated at different time horizons. In addition, several countries have adopted different kinds of policy measures as exhibited in Table 6.

e. The Road to Achieving SDG #7: Energy

In order to “ensure access to affordable, reliable, sustainable and modern energy for all”, the Arab region needs urgently to translate its many political declarations and adopted regional strategies to tangible programs. The League of Arab States has already adopted the Arab Regional Strategy for Sustainable Consumption and Production, the Arab Renewable Energy Framework, the Pan-Arab Renewable Energy Strategy 2030, and The Arab Guideline for Improving Electricity Efficiency and Rationalizing its Consumption at the End User. The Regional SCP strategy identified a set of strategic objectives, among which are improving energy efficiency, increasing the share of renewable energy in the fuel mix, and disseminating renewable energy technologies especially in rural and remote areas. The same strategy pinpointed a whole list of needed policy interventions to achieve those objectives. These include reforming existing energy tariffs so as to integrate environmental and social costs while maintaining energy subsidies for the poor; improving energy efficiency, particularly in energy intensive industries, transport, and electricity generation; developing wide use of renewable energy technologies; and supporting air quality management through better urban planning and land use. A number of options need to be expediently pursued. These include decoupling economic growth from resource utilization through efficient use of such resources, the decarbonization 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. These sustainable energy options have many other co-benefits that would contribute to achieving other SDGs. Those include:

FIGURE 8 OIL REVENUE AS PERCENT OF GOVERNMENT REVENUES (2013)

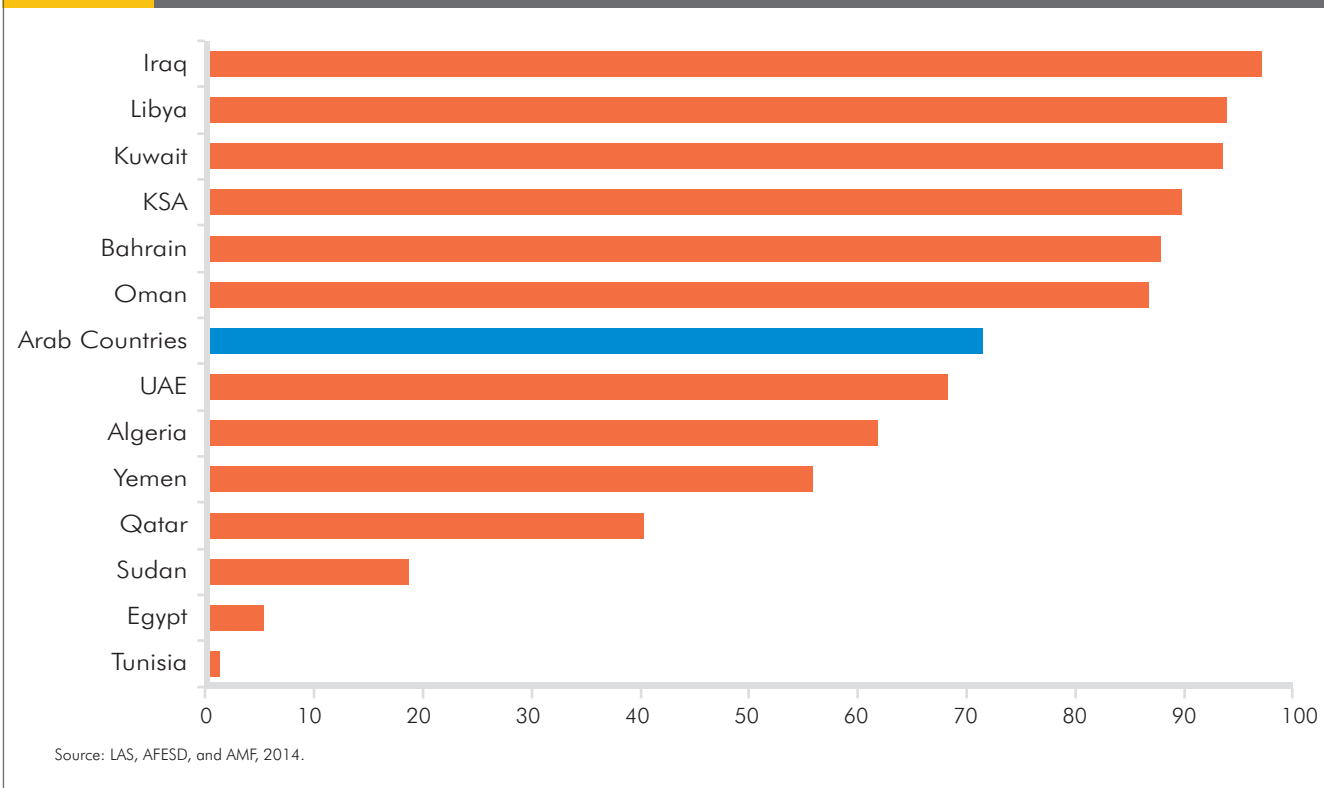
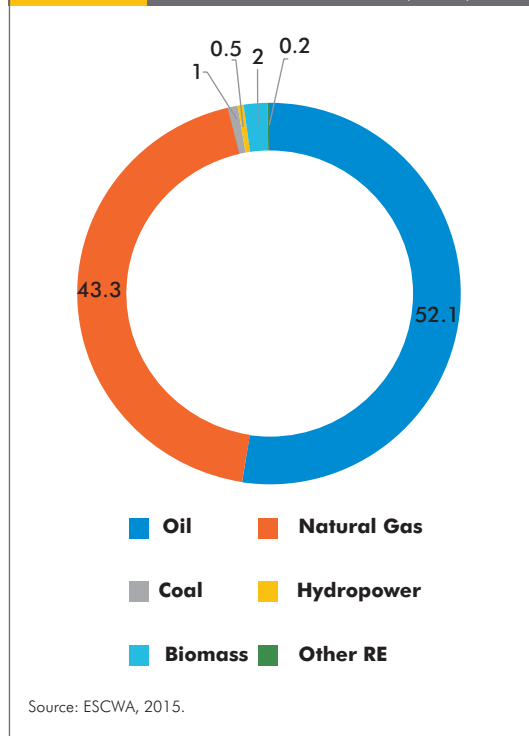


FIGURE 9 PRIMARY ENERGY CONSUMPTION IN THE ARAB REGION (2013)



- Improving public health and well-being by reducing pollution
- Improving economic competitiveness
- Creating an important number of green Jobs
- Alleviating poverty by reducing the energy bills
- Reducing the financial burden of energy subsidies on state budgets
- Meeting obligations of the Paris agreement.

In addition, regional cooperation and energy integration is a viable means to achieve SDGs. There are several regional institutions and programs already fostering regional cooperation. These include ESCWA, the League of Arab States, IRENA, the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE), AFED, and others. Additionally, the region has few cross-border gas networks that include the Arab Gas Pipeline connecting Egypt–Jordan–Lebanon–Syria, and the Dolphin pipeline

connecting Qatar to UAE and Oman. However, the inter-Arab natural gas trade is limited to about 13 percent of the total Arab gas exported. As the gas demand is increasing in the region for electricity generation, there is a need to overcome barriers that hinder the inter-Arab gas trade, in addition to more developed regional electricity interconnections in the region. These are the Maghreb interconnection (connecting Morocco, Algeria, Tunisia, Libya and Mauritania), the interconnection between Egypt, Iraq, Jordan, Lebanon, Libya, Palestine, Syria, and Turkey, and the GCC interconnection connecting the six GCC countries (ESCWA, 2015). It is hoped that Arab countries would work toward a regional energy integration strategy to achieve SDG 7.

4. Water-Energy-Food Nexus

Water security, energy security and food security

are inextricably linked in the Arab region, perhaps more than in any other region in the world. Generally, the region is energy rich, water and land scarce, and food deficient. These inter-linkages are intensifying in the region as demand for resources increases with population growth, changing consumption patterns, and low efficiencies in both supply and demand in these three sectors would be further compounded by the impacts of climate change. Attempting to achieve the security in one of these sectors independently without addressing trade-offs with the other two sectors will endanger their sustainability and security.

This necessitates the crucial need to adopt the integrated nexus approach when addressing the management of those three vital resources. Utilizing the nexus approach has the potential to benefit all three sectors and reduce poverty

TABLE 5 ELECTRIFICATION RATE IN THE ARAB COUNTRIES

| Country | Population without electricity (million) | National electrification rate (%) | Urban electrification rate (%) | Rural electrification Rate (%) |
|--------------|--|-----------------------------------|--------------------------------|--------------------------------|
| Algeria | 0 | 99 | 100 | 97 |
| Bahrain | 0 | 100 | 100 | 100 |
| Comoros | 0 | 69 | 89 | 62 |
| Djibouti | 0 | 50 | 61 | 14 |
| Egypt | 0 | 99 | 100 | 97 |
| Iraq | 1 | 99 | 100 | 95 |
| Jordan | 0 | 100 | 100 | 100 |
| Kuwait | 0 | 100 | 100 | 100 |
| Lebanon | 0 | 100 | 100 | 99 |
| Morocco | 0 | 99 | 100 | 97 |
| Mauritania | 3 | 28 | 47 | 2 |
| Oman | 0 | 98 | 100 | 93 |
| Somalia | 9 | 15 | 33 | 4 |
| Sudan | 25 | 35 | 63 | 21 |
| Syria | 2 | 93 | 100 | 84 |
| Saudi Arabia | 0 | 99 | 100 | 98 |
| Tunisia | 0 | 100 | 100 | 100 |
| Qatar | 0 | 100 | 100 | 100 |
| UAE | 0 | 100 | 100 | 100 |
| Yemen | 13 | 46 | 72 | 32 |

Source: IEA, 2015.

through the improvement of livelihoods and job creation. Adopting a water-energy-food (WEF) nexus approach would provide an opportunity for minimizing security risks and maximizing opportunities and enhancing resource efficiency. It will also serve the Arab region in moving towards the achievement of the sustainable development goals (SDGs) and shifting to a low carbon climate resilient economy.

The current water-energy-food-climate policy landscape in the region is complex and fragmented; the sectors have been developed independently of each other. The current low pricing policies in the majority of Arab countries have been promoting unsustainable consumption and production patterns leading to more resources depletion. Low pricing and non-targeting subsidies have resulted in irrational domestic consumption behaviors and the absence of incentives to promote resource efficiency. Reforming pricing schemes would improve efficiency, enhance economic and

climate resilience, lessen burdens on governments' budgets, and help achieve the SDGs.

However, integrated resources planning and management can only be delivered through appropriate and effective institutions. National and regional efforts to address climate change offer an unprecedented opportunity for the needed institutional reform in order to mainstream the nexus thinking in policy development and implementation. The UNFCCC and the Paris agreement along with existing institutions and different forms of multi-stakeholder bodies already formulated in many Arab countries, could serve as a catalyst to mainstream the nexus approach at all levels of policy development. This situation could be the driver for institutional reform and policy integration of the nexus. Enabling existing institutions could be more important and appropriate than establishing new institutions to achieve the targets for both the SDGs and the climate change mandate that

BOX 2

ENERGY SUBSIDY REFORMS IN SELECTED ARAB COUNTRIES

| Country | Subsidies reforms |
|--------------|--|
| Egypt | In July 2014, Egypt introduced long-awaited energy subsidy cuts, seen as a positive signal by external investors. The most significant step was a 64 percent hike in diesel prices but similar increases affected electricity and many other refined products (LPG being one exception). These initial reductions were set out as the first step in a five-year program to eliminate entirely all energy subsidies, except LPG |
| Bahrain | The Bahraini government raised the price of super gasoline from USD 0.27/liter to USD 0.42/liter and confirmed the implementation of its four-year plan to increase the cost of diesel by 5 cents/liter each January to USD 0.32/liter in 2016. It also raises the price for Natural Gas from 2.25 \$/mm Btu to 2.5 \$/ mm Btu. The price will then rise 25 cents on April 1 each year until it reaches \$4 per mm Btu by April 1, 2021. Bahrain also raises the price of electricity and water. |
| Oman | In January 2016, the Omani government increased the price of premium gasoline from USD 0.31/liter to USD 0.42/liter and prices for diesel were raised from USD 0.38/liter to USD 0.42/liter. The prices of these fuels will be set on the basis of a pricing formula that would take into account international levels as well as levels in neighboring UAE. |
| Qatar | In 2015, Qatar increased the price of gasoline (super 97 Octane) by 30 percent from USD 0.27/liter to USD 0.36/liter. In April 2016, it announced that petrol and diesel prices would be liberalized from May onwards, with frequent adjustments each month thereafter, based on 'global and regional factors, and costs linked to fuel production and distribution. |
| Saudi Arabia | In Saudi Arabia, premium gasoline prices were raised by 50 per cent to USD 0.24/liter, while diesel for commercial transport was raised to USD 0.12/liter. Electricity and water have also been raised. |
| UAE | In August 2015, the UAE fully liberalized its gasoline and diesel prices, introducing a pricing mechanism where domestic prices are set on a monthly basis and are directly linked to international prices. |

resulted from the Paris Climate Summit in 2015.

It is to be noted that the nexus approach was recently well recognized in the Arab Strategic Framework for Sustainable Development (ASFSD). The ASFSD aims at addressing the key challenges faced by the Arab countries in achieving sustainable development during the period (2105-2025). The ASFSD is promoting the nexus approach to water-energy-food sustainability in the Arab region, and encouraging the transition towards a green economy in order to address the interdependencies between water, energy and food to make the nexus work for the poor.

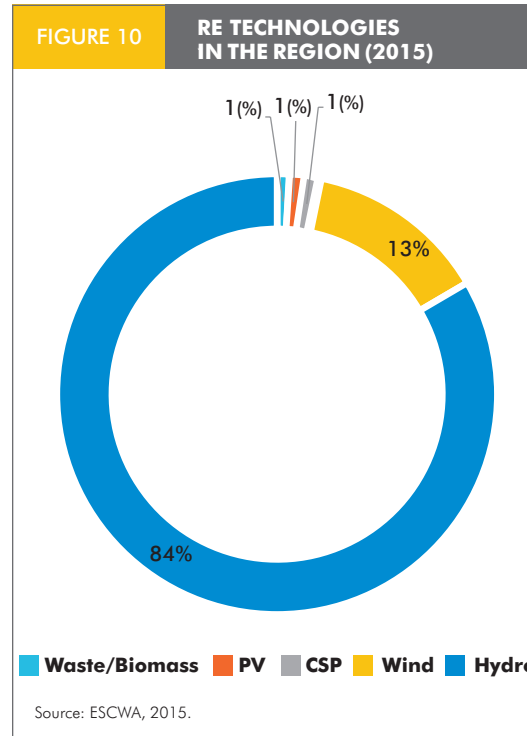
Some Arab countries have already practiced the nexus approach; there are some good examples on the adoption of innovative solutions within the nexus. These include: the Sahara Wind Power Project in Morocco; renewable energy for wastewater treatment and reclaimed water use in agriculture in Jordan; solar desalination in Saudi Arabia; and an engineered wetland/aquaculture project in Egypt. These cases demonstrate the potential and benefits to be unlocked if technology and innovation are fully harnessed within the WEF nexus.

5. Employment and the Green Economy

The Rio+20 Summit in 2012 recognized for the first time that a green economy is an important tool for achieving sustainable development. The Summit's declaration stated that a Green Economy should contribute to poverty reduction, sustained growth, social cohesion, and employment without compromising the ability of ecosystems to function. The declaration emphasizes that – considering the differing situations and priorities in each country – there are different paths and models for sustainable development.

One of the key challenges for the Arab countries is to determine the entry points into a green economy that would ensure that strategies and programs are coherent with, and responsive to, national conditions and challenges, namely water scarcity, unemployment, food insecurity, droughts and desertification, climate change, and technology transfer.

Natural endowments offer a solid foundation for



the development of substantial green enterprises in the region. The frequency and duration of sunlight, coupled with the availability of extensive stretches of land, offer a promising environment for the development of substantial solar power generation. If potential synergies were realized between such power generation, and investment in research and development and manufacturing, there is a realistic prospect of the region emerging as a center for solar power industries.

The international community solidified its recognition of the inter-linkages between decent work and sustainable development. The outcome document of the UN Conference on Sustainable Development (Rio+20), entitled 'The Future We Want', addressed labor and employment issues significantly more than the 1992 Rio Earth Summit or the 2002 Johannesburg Summit. An entire section of the document was devoted to 'promoting full and productive employment, decent work for all, and social protections', highlighting the importance of these areas in achieving sustainable development.

According to the ILO, "jobs are green when they help reduce negative environmental impact ultimately leading to environmentally, economically and socially sustainable enterprises

TABLE 6 RENEWABLE ENERGY POLICIES IN THE ARAB COUNTRIES

| Country | RE target | RE Strategy ^{a/} | FIT | Net metering | Biofuel obligations | Heat obligation | Capital Subsidy | Investment tax credits | Reduction in taxes | Public investment | Tendering | RE Fund ^{a/} |
|----------------------------------|-----------|---------------------------|-----|--------------|---------------------|-----------------|-----------------|------------------------|--------------------|-------------------|-----------|-----------------------|
| Algeria | √ | √ | √ | √ | | √ | | √ | | | | √ |
| Bahrain | | | | | √ | | | | | | | |
| Djibouti | | √ | | | √ | | | | | | | |
| Egypt | √ | √ | √ | √ | | √ | | √ | √ | | √ | √ |
| Iraq | | √ | | √ | | | | | | | | |
| Jordan | √ | √ | √ | √ | √ | √ | | | √ | √ | √ | √ |
| Kuwait | √ | | | √ | | | | | | | | |
| Lebanon | √ | √ | √ | √ | √ | √ | | | | | √ | |
| Libya | √ | | | | | √ | | | | | | |
| Morocco | √ | √ | √ | √ | √ | | | | | | √ | |
| Oman | | | | | | | | | | | | |
| Palestine | √ | √ | | √ | | √ | | | | | √ | √ |
| Qatar | | | | | | | | | | | | |
| Saudi Arabia | | | | | | | | | | | | |
| Sudan | √ | | | | | | | | | √ | | |
| Syria | √ | | | √ | | √ | | | | | √ | √ |
| Tunisia | √ | √ | √ | | √ | √ | | √ | | | √ | |
| UAE | √ | √ | √ | √ | √ | | | | √ | | √ | |
| Yemen | | √ | | √ | | | | | | | | |
| Total number of countries | 12 | 11 | 7 | 11 | 7 | 8 | 0 | 3 | 3 | 2 | 8 | 5 |

Source: ESCWA, 2015.

and economies”. The ILO goes on to elaborate that: “Green jobs are decent jobs that contribute to preserve or restore a sustainable environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency.” (ILO, 2013a).

The global transition to a green economy could create huge opportunities of green jobs in the different economic sectors, such as employment in the fields of renewable energy generation, energy efficiency, ecosystem rehabilitation and protection, ecotourism and waste management. Such transition brings solutions to eradicate

unemployment in the Arab region. According to the latest studies of the ILO many green sectors require a more sizeable workforce than the less environment-friendly alternatives (for instance, organic farming versus traditional farming).

The AFED report on Green Economy (AFED, 2011) argued that greening the economy secures a sustainable transition in a changing Arab world. The report estimated that over 30 million jobs could be created within a decade by employing efficiency measures, mainly in energy, water, agriculture, transportation, buildings and waste management. This entails the shift from the ‘virtual economy’ based on speculation in real

estate, money markets and sale of raw extractive resources, to a real economy rooted in sustainable production and services offering added-value, and more jobs.

There is a wide consensus that the increased working age population throughout the Arab region has also experienced significant improvements in education and skills, owing to the substantial investments throughout the Arab world in human capital development. However, it must remain a source of concern – if not alarm – that youth unemployment in Arab states generally remains too high (ILO, 2014b).

Employment is one of the most important development challenges in the Arab region. The unemployment average is around 13 percent and the region needs to create some 50 million jobs by 2020, mostly from the youth, in order to reach full employment (Figure 11). High unemployment, lack of decent work and low wages are today's hallmarks of the Arab labor market. As the majority of investment is directed towards the capital-intensive oil sector, low value-added services, and construction and real estate, demand for skilled employment is low, even as the supply of skilled labor is relatively high. Further, unemployment trends have worsened in recent years as rural income has fallen in face of low agricultural productivity, drought, land degradation and depletion of groundwater resources. These trends have fueled rural to urban migration and the expansion of informal settlements and social unrest.

The youth group in the region (between the ages 15 and 24 years old) is the largest demographic group, with rapidly growing rates. This growth could provide good opportunities for development and could also constitute major challenges at the social, economic and political fronts unless there are policies that help to make the best use of the youth and create opportunities for education and work.

ESCWA, the League of Arab States (LAS) and UNEP (2011) noted that the high number of youth in the populations of the ESCWA countries “represents a new opportunity for development provided that youth receive enlightened education and are provided with sustainable production capacities.” Despite

the improved educational outcomes for GCC youth, and despite the increasing focus on technical skills relevant to green economy occupations, matching of labor supply and labor demand will continue to be imperfect. Uncertainty remains about whether the skills and education possessed by workers and job seekers fit the types of skills required.

a. The Road to Achieve SDG#8: Work & Growth

Increased labor demand is the key to breaking the cycle of low productivity and low-skill economies in the Arab region, and that requires public action (ILO and UNDP 2012, 2013). The elements necessary are macroeconomic policy coherence, promotion of social dialogue, expanded social protection, improved migration management, active labor market programs, more focused education and training, and better data for policy-making. Industrial policy and investment policy should more consciously emphasize measures to advance decent work; to improve workforce skills and to generate higher value added processes. Incorporation of international labor standards into planning will protect individual workers and yield productivity improvements. National plans for environment, education and economic development should be closely coordinated. Good policy requires improved data and its more systematic use for planning. That in turn suggests the value of strong and representative workers' organizations and a solid culture of industrial relations. Governments should take steps to develop legal, regulatory and practical means for embodying international standards of freedom of association for workers and collective bargaining.

The education sector is essential in providing the training and knowledge necessary (ESCWA, 2013). Heightened commitment to education spending is necessary, with particular emphasis on green economy-related scientific, technical, engineering and social science disciplines.

Whilst social security and income support schemes can help, the only lasting solutions are new jobs. The good news is that new job opportunities in an inclusive green economy are significant, but they need to be identified early, and the education and skills training needed to

fill them ought to be an early priority for the region. Renewable energy and waste management provide two such examples. Bringing electricity to the poor populations through the use of mini grid renewable energy systems is one of the most tangible contributions that an inclusive green economy can make to vulnerable communities, while also stimulating job creation and supporting social enterprise development.

6. Sustainable Consumption and Production

Sustainable consumption and production (SCP) is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty. It involves engaging consumers through awareness-raising and education on sustainable consumption and lifestyles, providing consumers with adequate information through standards and labels and engaging in sustainable public procurement, among others.

One of the SCP's main goals is to 'decouple' economic growth and environmental degradation by improving resource efficiency in the production, distribution and use of products, and aiming to keep the energy, material and pollution intensity of all production and consumption activities within the carrying capacities of the natural ecosystems. Further, SCP promotes "lifecycle thinking" to enhance sustainable management of resources.

SCP is an integral part of the 2030 Agenda for Sustainable Development. It is identified as a stand-alone Sustainable Development Goal (SDG 12) and as a central component of many of the 17 goals. SDG 12 calls for implementing the 10-year framework of programs on sustainable consumption and production (Annex).

a. Regional Contexts: Sustainable Consumption and Production

The rapid population growth, urbanization and rural migration, and subsidy policies have resulted

in an increased demand on natural resources in the Arab region and have promoted unsustainable consumption and production patterns causing environmental degradation. Due to heavy reliance on fossil fuels, intensive subsidies of oil, gas, and electricity, and irrational consumption behaviors, the energy sector in Arab countries is unsustainable on economic, environmental, and social fronts. Similarly in the water sector, consumption rates increased as a result of rapid population growth and escalating socio-economic development. Water consumption rates are increasing in the GCC countries despite water scarcity and reliance on desalination, due to inefficient water governance system.

During its 2009 meeting, the Council of Arab Ministers Responsible for Environment (CAMRE) endorsed the Arab Regional Strategy for Sustainable Consumption and Production. This strategy has been developed with the support of the Marrakech Process on SCP and responds to the call of the first Arab Roundtable for Sustainable Consumption and Production. The strategy aims to promote the concept of Sustainable Consumption and Production in the Arab region by encouraging the utilization of products and services that ensure environmental protection and conserve water and energy as well as other natural resources, while contributing to poverty eradication and sustainable lifestyles. The strategy's main priority areas include:

- Energy for sustainable development
- Water resources management
- Waste management
- Rural development and eradication of poverty
- Education and sustainable lifestyles
- Tourism

The strategy emphasizes the importance of approaching SCP from a multi-stakeholder perspective including: governments, business and industry, media, Non-Governmental Organizations (NGOs) and civil society, individuals and regional and international intergovernmental organizations.

Consequently, the Arab region moved forward and became the first region to develop and adopt a Roadmap for Implementation of the 10YFP on SCP at the regional level in June 2013. However, as is the case in most Arab regional strategies, both the roadmap and the SCP regional strategy are far from being implemented at national levels. Development and implementation of SCP strategies in most Arab countries are still lagging (AFED, 2015). Some elements of SCP policies are integrated in national development plans or strategies aimed at achieving sustainable development (Box 1). Many Arab countries, according to their respective circumstances, have adopted policies that focus on energy, water, food, waste, and poverty eradication. Civil society organizations (CSOs), such as AFED, have also played a key role in making sure that SCP remains on both government and business agendas. AFED's flagship reports on energy, water, food security, climate change, green economy and sustainable consumption shed light on SCP priorities of the Arab region and contribute to achieving the objectives of Arab regional strategy on SCP. Other NGOs have also been contributing to these goals.

It is remarkable that although the Arab SCP strategy identified energy, water, and food as regional priorities, the nexus concept was not matured enough at that time of the year 2009. The strategy addresses the efficiency of those three resources independently, a situation that was rectified afterwards in the ASFSD in 2013. AFED has repeatedly called for the nexus approach, starting with its annual report on water in 2010.

b. The Road to Achieving SDG#12: Consumption & Production

In order for the Arab countries to gradually shift to SCP, every country, based on its respective socio-economic circumstances, needs to identify priority actions and enabling conditions necessary to facilitate that transition. As identified in the AFED 2015 Annual Report, these enabling conditions include: good governance, integrated policy planning, sound regulatory regime, use of market-based instruments, capacity development, access to finance and investments, research and development, public awareness, and green procurement (AFED, 2015). Furthermore, it is crucial to invest in education

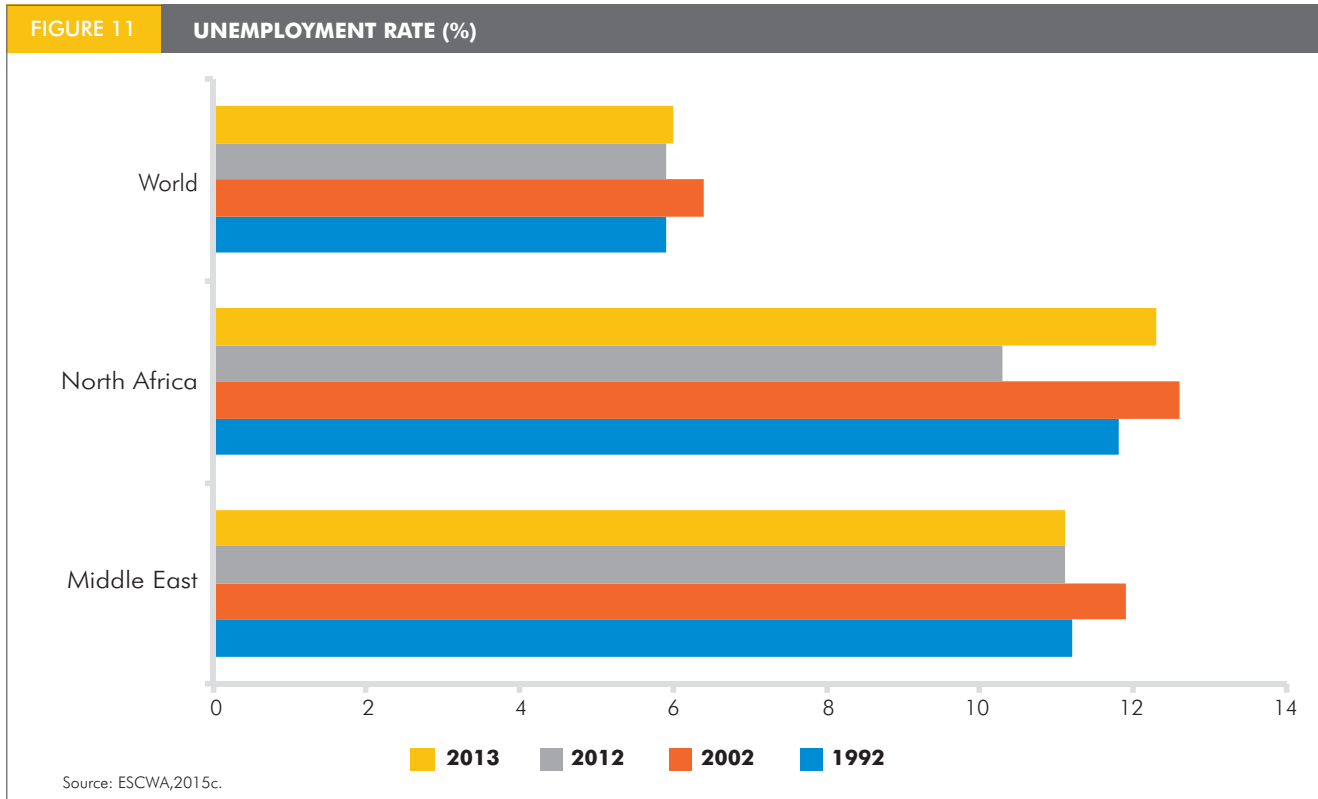
and social interactions, to change mind-sets and social practices and incorporate the concept of environmental sustainability in daily life, raise awareness of sustainable lifestyles, and facilitate change in consumer behaviors, especially amongst youth as agents of change, as users of social media, and as future entrepreneurs and decision-makers. The Arab SCP and its road map have identified a whole list of policy options for the Arab countries to pursue. The real challenge is to transform these options from paper to tangible actions on the ground. Political will and commitment are crucial to embed these policy options in national development strategies.

7. Climate Change

Climate change is one of the major challenges facing mankind for decades to come. It affects all aspects of the development agenda, from poverty eradication to health care, and from economic growth to disaster risk reduction. The poorest and most vulnerable people globally are likely to be most affected, unless significant efforts are made to create models of development that can mitigate and adapt to the impacts of climate change. There are therefore strong links between climate change and the SDGs. SDGs will help in promoting and implementing the Paris climate agreement and equally the agreement will help to achieve the SDGs.

The long-term goal of the Paris Agreement is to limit global warming to 1.5°C above the pre-industrial average and to achieve net zero GHG emissions by 2100. The agreement recognizes that all countries must contribute to the solution, while still accounting for the fact that countries are at different stages of development with different capacities to act and to provide climate finance. It provides a clear policy framework and the legal basis for action on climate change, promotes international cooperation, and mobilizes additional finance and resources for mitigation and adaptation activities that support low carbon, climate compatible development. These resources can in turn have substantial impacts on the development pathways of many countries and therefore achieving the SDGs.

Strengthening the resilience and adaptive capacity of more vulnerable regions, such as the Arab region, must go hand in hand with efforts to raise



awareness and integrate climate friendly measures into national policies and strategies. It is still possible, with the political will and a wide array of technological measures, to limit the impacts of climate change on the Arab countries, and to adapt to the remaining consequences.

Thus, it is impossible for sustainable development to take place without tackling climate change. Though addressing climate change is only one of 17 global sustainable development goals (SDGs) that make up the 2030 Agenda for Sustainable Development, all of its 17 goals and 169 targets will ultimately fail if the global community does not adequately address the realities of a rapidly warming world. Stronger connection and coherence is vital for success. That success hinges on the ability of the developed countries to realize the long-standing target of devoting 0.7 percent of the Gross National Income (GNI) as Official Development Assistance (ODA) to developing countries and mobilize additional US\$100 billion annually by 2020 for climate change.

a. Arab Countries and Climate Change

The Arab countries are among the most vulnerable

to the potential impacts of climate change because of their existing vulnerabilities, notably water scarcity and recurrent drought. In the Arab region, the vulnerabilities to the potential impacts of climate change are high, current capacities and actions in some countries are inadequate, and effective strategies for mitigating and adapting to climate change have been developing. The Arab region's coastal zones, vulnerable to sea level rise, are of immense importance. The total length of the coastal zone in the Arab region is 34,000 km, of which 18,000 km is inhabited. Most of the region's major cities and economic activities are in the coastal zones. Vastly fertile agricultural lands are located in low-lying, coastal areas such as the Nile Delta, and popular tourist activities depend on marine and coastal assets, like coral reefs and associated fauna. The predicted impacts of climate change place more stress on the limited fresh water resources. Both the quantity and quality of fresh water resources are in danger. With around 85 percent of fresh water withdrawals devoted to agriculture, food security in the Arab world has long been subject to environmental and socio-economic pressures. The dominant arid conditions, limited water resources, erratic cropping patterns, intensive grazing, population

growth, and low knowledge and technology levels all affect food production systems in the region. The dominant agricultural system in Arab countries is rain-fed agriculture; as such, annual agricultural productivity and food security are highly correlated to the annual variability of precipitation (AFED, 2009). In a country such as Egypt crop yields could drop by up to 30 percent by 2050 if temperatures rise by 1.5 to 2°C. All capital cities in the region could face many more exceptionally hot days each year compared to the rest of the world (World Bank, 2014).

Further, the health impacts of climate change cannot be understated; climate change plays an important role in the spread of vector-borne infectious diseases, such as malaria. It also affects the seasonal concentrations of some allergens in the atmosphere, causing allergic reactions and pulmonary diseases, and worsens the public health impact of heat waves especially in Arab countries with hot summer climates. Heat waves are projected to become more intense, frequent, and prolonged due to climate change, causing increased mortality.

In addition, climate change can have a direct impact on people's lives and livelihoods. A clear example is the migration induced by climate change in the Syrian Arab Republic between 2006 and 2011, when nearly 60 percent of the population suffered the worst drought and crop failure in the country's modern history. By 2011, almost one million Syrian had become exposed to food insecurity, and in 2010, an estimated 200,000 people migrated from their farms to urban areas (ESCWA, 2015d).

Contributions of the region to global GHGs emissions are minimal. However, per capita carbon emissions (5.3 metric tons) are higher than the world average (4.9 metric tons) (ESCWA, 2015d). The involvement of the Arab countries in the climate change negotiations started from the beginning of the process and evolved in parallel with the evolution of the international climate regime. All Arab countries ratified the UNFCCC and the majority had ratified the Kyoto protocol. On the road to Paris, all Arab countries, except Syria and Libya, had submitted their "Intended Nationally Determined Contributions" (INDCs). They identified the actions a country intends to take under the

Paris agreement and once the Agreement goes into force, the switch from INDC to NDC would occur with the dropping of "intended", and switching from pledges to commitments. New guidance under the Agreement on NDC submissions will have to harmonize how Parties specify their NDCs (e.g., baselines and metrics). Arab countries need to continue working on building national capacities to deal with different aspects of the climate change threats and the evolution of the international climate regime. They need to foster regional cooperation to adapt to the potential climate risks and work closely with the international community to make use of the opportunities offered for climate finance and climate friendly technology transfer.

b. The Paris Climate Agreement and the SDGs

The Paris climate agreement highlighted the need to coordinate the global efforts to combat climate change while achieving sustainable development. There are many connections between the UNFCCC and the SDGs. The ultimate objective of the UNFCCC and any related legal instruments that the Conference of the Parties adopts, such as the Paris agreement, is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. Article 4, paragraph 1(c) of the UNFCCC requires the parties to cooperate to reduce greenhouse gas emissions in the energy, transport, industry, agriculture, and forestry sectors. These correspond to SDG 7 (energy), SDG 11 (cities), SDG 9 (industrialization), SDG 2 (agriculture), and SDG 15 (forests). Further, Article 4, paragraph 1(d) of the UNFCCC requires the parties to cooperate with respect to biomass, forests and oceans, and other terrestrial, coastal and marine ecosystems. These correspond to SDG 14 (oceans, seas and marine resources) and SDG 15 (terrestrial ecosystems, forests, desertification, land degradation and biodiversity). The Arab region needs to recognize those interrelationships between the SDGs and the Paris agreement, while planning for sustainable development.

Section 4 REQUIREMENTS FOR THE IMPLEMENTATION OF THE SDGs IN ARAB COUNTRIES

HUSSEIN ABAZA



Some necessary requirements are needed for achieving the SDGs in Arab countries, covering strategies, policies, planning and governance. Those include:

A. LONG-TERM STRATEGIES AND MEDIUM-TERM PLANS

Developing a long-term strategy with a clear vision, action plan, and indicators are essential requirements for achieving sustainable development. Water, energy and food continue to be among the main challenges facing Arab countries. This is further aggravated by rapid population growth, increased rates of poverty and the widening gap between the rich and poor, combined by increased levels of unemployment, illiteracy and poor health services, particularly for low income groups, the poor and under privileged communities.

SDG1 “End poverty in all forms everywhere”

SDG2 “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”

SDG6 “Ensure availability and sustainable management of water and sanitation for all”

SDG7 “Ensure access to affordable, reliable sustainable and modern energy for all”

The outbreak of revolutions in several Arab countries since 2011 was mainly attributed to deteriorating social and economic conditions in these countries. Social injustice, reflected in inequitable distribution of wealth and social services, including sanitary and health facilities, education, and access to job opportunities were among the main causes for the Arab uprising, and they continue to be the main challenges facing these countries.

Moreover, it should be emphasized that a necessary requirement for achieving sustainable development is a secure, stable, and predictable macro-economic environment. Conflicts and wars in some Arab countries, particularly in Syria, Libya, and Yemen have claimed a heavy toll on their MDG gains. Launching action plans for the implementation of the SDGs requires first

and foremost restoring political stability and the rule of law. Some other Arab countries are still grappling with political governance issues that need to be resolved to prevent sparking further uprisings and unrest.

B. GOOD GOVERNANCE, TRANSPARENCY AND ACCOUNTABILITY

Good governance represented mainly in national institutions that function in an effective and efficient, transparent and accountable manner are necessary for achieving sustainable development. These are lacking in most Arab countries, thus requiring corrective actions and reform in the existing institutional set-ups of governments. Lack of public participation, transparency and accountability represent one of the main constraints for the development and implementation of strategies, policies, and action plans. Adopting more transparent, accountable, and participatory approaches in the formulation and implementation of policies enhances the confidence of the public in the government, creates a sense of ownership on the part of citizens, thus contributing to a more positive attitude towards the government. This ultimately contributes to increased productivity and a more efficient use of resources. Good governance may therefore be regarded as a requirement for an outcome of sustainable development policies.

SDG16 “Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels”

SDG17 “Strengthen the means of implementation and revitalize the global partnership for sustainable development”

Public participation is key in achieving sustainable development. Effective actual engagement of different stakeholders in the formulation, development, and implementation of strategies, policies, and plans is a necessary prerequisite for the successful realization of SDGs. Public participation ensures that priorities and concerns of the different segments of the population are taken into account in the formulation of policies,

plans and programs. It also promotes transparency, accountability, and the empowerment and effective engagement of different stakeholders, and consequently the successful implementation of proposed policies, plans and programs. Adopting top down approaches to development have proven their shortcomings, as they fail to reflect local priorities and concerns and the involvement of different stakeholders in the implementation process and the successful achievement of set targets and goals. Public participation may take different forms, including public policy dialogues, public hearings, surveys and questionnaires. What is also important is that governments should make the public aware of the status of implementation of the proposed programs, successes, failures, bottlenecks and proposed measures for corrective actions.

C. INTEGRATED POLICYMAKING

Policy development and implementation in most Arab countries lack integration of social, environmental, and economic aspects. In many instances emphasis is mainly laid on economic considerations without giving due attention to social and environmental considerations. Government policies may not only neglect these two dimensions, but may also result in negative implications on them. Adopting an integrated approach in policy development is therefore crucial in achieving sustainable development. Integrated policies that ensure complementarities and supportiveness of the three dimensions of sustainability should be developed. There is a need to depart from the assumption that there is always a tradeoff between the three dimensions of sustainability, which may still be the case at some point, but this should not be the starting point in the policy formulation process. Starting from this premise is apt to render environmental and social considerations a low priority as compared to the economic aspects. Adopting the proposed approach requires full understanding of the interlinkages and feedback loop between the three dimensions of sustainability. It will also benefit from the use of a modeling exercise that clearly shows the implications of the different weights and priorities given to specific goals on other parameters and objectives. It has been proven that countries following an integrated approach in policy formulation have been better able to achieve sustainable economic development that is

inclusive and socially acceptable, while at the same time ensuring the integrity of the environment.

Integrated policymaking is not only meant to ensure the integration of social, environmental, and economic aspects in policy design, but is also intended to ensure the integration and coherence between different sectoral policies. This is particularly relevant when addressing the water-energy-food nexus and the close relationship and interlinkages between them. It is therefore essential that the design of a long-term vision and strategy for water, energy, and food considers closely those linkages and implications in order to optimize the outcome of the proposed policies, plans and programs, including the development and social component associated with them.

The general practice in most Arab countries is to develop policies in an isolated, segregated manner without proper coordination and integration between different sectors. This has resulted in a lack of coherence, coupled with shortsighted and deficient policies. It is therefore imperative that a proper mechanism is put in place to ensure proper coordination and integration of policies across sectors. Moreover, the increased number of ministries with unclear and sometimes overlapping responsibilities in most Arab countries further aggravates the situation. In almost all countries of the region, ministries of environment are the least budgeted with a restricted mandate confined to deal mainly with pollution related issues in isolation from mainstream economic sectors

Since the Arab world faces a water, energy, and food challenge, priority should be given to addressing these challenges with a focus on how integrated policymaking will help achieve water, energy and food security for the region. Emphasis in policy design should also be laid on how the proposed policy would help revitalize and diversify the economies of Arab countries, promote resource efficiency, enhance competitiveness and market access, create jobs, reduce poverty and improve human welfare of the population.

D. POLICY COHERENCE

Regulations supported by market-based incentives, if properly designed, can be quite effective in realizing sustainable development objectives. However, the general practice in

most Arab countries is the development of regulations, market incentives, as well as trade and finance policies along sectoral lines without taking into account the implications of one policy tool on the other and their implications across sectors. Moreover, the full social, economic and environmental implications of the proposed policy package is not properly assessed and analyzed. That is to say regulations related to buildings and new communities do not necessarily take into account their social, economic, and environmental considerations and in most cases their implications on resource consumption and on other sectors such as, for example, roads and transportation. It is therefore essential that the different policy tools are developed in such a way to ensure their supportiveness and coherence, and consequently their effectiveness in achieving sustainable development objectives.

Moreover, promoting tools and concepts such as the ecosystem approach, full lifecycle assessment, producers' responsibility, as well as consumers' responsibility can go a long way in promoting resource efficiency and reducing waste by producers and consumers. Adopting such approaches in the building and construction sector, for example will necessitate that the full social and environmental together with the economic aspects are taken into account in the construction of buildings. This includes accounting for the carbon footprint resulting from the production of building material, the construction and operation processes, as well as the demolition phase. Social factors to be considered include the number of decent jobs created and the health implications resulting from the building and construction process.

Moreover, other necessary enabling conditions such as research and development, education, public awareness, and capacity development policies should all be designed to support the overall strategic vision and direction of the country.

E. HIGH COUNCIL FOR SUSTAINABLE DEVELOPMENT

In order to ensure proper integration of policies and coordination between sectoral policies, policy coherence, as well as monitoring and follow up, it is proposed that a High Council for

Sustainable Development attached to either the Head of State or the Prime Minister is established. It is proposed that such an entity includes the membership of all ministries concerned. This body should function in tandem with another entity that represents the private sector, industry, academia and civil society, and minority groups. The main mandate of this institution will be to ensure integrated policy formulation, adequate cooperation and coordination between different government entities, and between the government and all other stakeholders in the country. It will also be responsible for overseeing and assessing the implementation of the proposed strategy, action plan and programs, suggest corrective or remedial actions as may be required, and ensure adequate communication between the government, the general public, the private sector and civil society.

F. FOLLOW-UP, MONITORING AND IMPLEMENTATION

Though most Arab countries do not lack development plans, the main flaw lies in the lack of the sustainability element. This is in addition in many instances to lack of implementation, follow up, and an assessment mechanism as an integral part of the plan. In many countries of the region proposed strategies, plans and programs are mainly associated with a specific cabinet or minister which are not necessarily subject to being seen through by subsequent cabinets and ministries. This practice has led to the waste in the use of resources, and the disruption and delay in achieving the set government objectives. This practice should be discontinued, with successive cabinets and ministers building on previous set strategies, plans, and programs and introducing necessary corrective actions as appropriate to address changing circumstances and emerging issues. Adopting such an approach will save scarce resources, ensure continuity and consistency of strategies, plans, and programs, building and capitalizing on success stories and learning from mistakes.

An important requirement for sound decision making, follow-up, monitoring and implementation is the availability of high-quality reliable qualitative and quantitative data. This should be supported by adequate national capacities for data gathering, analysis and

interpretation. Though the role of data gathering and dissemination is normally assigned to national statistical systems, close collaboration should be maintained between them and other government institutions, including academia, the private sector, and civil society (Third International Conference, 2015).

G. HUMAN RESOURCE DEVELOPMENT

Investing in human capital is one of the key requirements needed to make a qualitative shift towards sustainable development. Apart from few countries in the region giving high priority to education, most countries in the region give education a low priority.

SDG 4 “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”

Investing in human resources includes reforming the education system in Arab countries to produce a future generation of highly qualified calibers of scientists, researchers, policy makers, practitioners and skilled workers needed to support sustainable development efforts. This requires making an emphasis on an education system that encourages innovative thinking, research and development. A reform that ensures the integration of sustainability considerations (environmental and social) across sectors. The education system needs to result in the production of calibers that are capable of supporting a transition to a green economy as a tool to achieve sustainable development. Particular attention should be given to vocational training to generate a caliber of skilled labor capable of introducing and applying resource efficient techniques, and handling new innovative environmental friendly technologies. The new generation of calibers include policy makers and practitioners that would be able to support integrated policy making across sectors (agriculture, industry, tourism, housing and construction, and transportation), in addition to water and energy efficient policies, the use of renewable water and energy resources, and integrated waste management.

H. INVESTING IN THE ENVIRONMENT

Investing in environmental and natural resources with a view of how such investments would support economic and social development should be the main guiding principle in developing national development strategies and action plans in the Arab region.

There is a need to depart from the conventional belief that environmental considerations represent a constraint and an impediment to development, to perceiving them as opportunity for achieving inclusive and equitable sustainable development.

I. PHYSICAL INFRASTRUCTURE DEVELOPMENT

An efficient physical infrastructure is necessary to support sustainable development. Priority should be given to electricity and water networks and services, road network, transportation system, wastewater treatment and sewage facilities with emphasis given to the construction of biogas production units in villages and remote communities. Priority should be given to investing in renewable sources of energy and water, including water recycling and desalination using renewable sources of energy. This should be supported by a package of regulations and incentive measures that encourage the shift towards sustainable production and consumption patterns, thus promoting efficiency in the use of water, energy, food, and other factor inputs, and a shift towards renewable water and energy sources and integrated waste management techniques and practices.

SDG12 “Ensure sustainable consumption and production patterns”

Emphasis in the design of road and transportation systems should be given to the development of environmental friendly public transport systems vis-à-vis private car ownership. Apart from reducing CO₂ emissions, this will also contribute to promoting social justice by catering for the needs of the middle and low income families. This is further achieved by laying emphasis on planning for road construction and transportation systems for

rural and remote areas, thus providing access to economic and job opportunities and markets for these communities.

J. RESEARCH AND DEVELOPMENT

Innovative approaches and environmentally sound technologies are key in achieving sustainable development objectives and addressing climate change concerns. There is a need for a clear long-term research strategy to support the realization of sustainable development objectives. Such a strategy which should be socially acceptable, environmentally sound, and economically viable is thus significantly important for contributing to sustainable development and GDP growth.

SDG13 “Take urgent action to combat climate change and its impacts”

Areas of research may include innovative technologies for renewable sources of water and energy, the use of renewable sources of energy for water desalination, waste to energy, environment friendly public transport systems, water saving and efficient crops, building and construction material and techniques, green industrial technologies, and waste recycling equipment. The potential of industry and the private sector, academia, and national research institutions should be tapped into and close linkages between them established.

K. METHODOLOGICAL APPROACHES AND TOOLS

Transitioning into a green economy is one of the most effective tools to achieve sustainable development. The concept was launched by UNEP in October 2008 in response to the financial and economic crisis facing the world. It emphasizes investing in environmental resources as a means to improve human well-being and social equity. It also emphasizes investing in the environment as a means to achieving sustainable economic growth. Rather than considering the environment as a constraint to development, it should be viewed as an opportunity for achieving sound and sustainable development. Adopting a green economy approach promotes the revitalization and diversification of economies, efficiency in the use of natural resources

and factor inputs, reduces waste, promotes innovation, enhances competitiveness and market access, creates new jobs, and improves health and human welfare.

“A green economy is one that results in improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities”
(UNEP 2010)

Promoting sustainable consumption and production patterns is essential in enhancing resource efficiency and reducing waste. It is estimated that about one third of produced food is wasted worldwide. This figure is expected to be higher in the Arab world, given their current consumption practices. Wasteful food, water, and energy consumption in Arab countries is attributed to cultural and traditional considerations, as well as to the low price level of these resources. Subsidies provided by most Arab countries for water, energy and food induce wasteful consumption of these resources. However, a number of countries in the region have already started taking steps to phase out subsidies on these resources.

The main tool for measuring economic performance continues to be the system of national accounts (SNA). It is used by governments to provide an indicator for the performance of an economy. It was introduced in the 1930s mainly to measure the value of goods and services produced in a country. However, the SNA is not a correct indicator for measuring sustainable development and human welfare. It does not reflect the depletion and degradation of resources and provides a distorted picture regarding the performance of the economy. It reflects damage, and the cost of selling natural assets such as oil and natural gas as an income. Attempts to provide an alternative measurement or indicator started in the early 1980s when UNEP, together with the World Bank, started off an initiative exploring the introduction of environmental accounting as a genuine measure for the real performance of an economy.

Since the early eighties a great deal of work has gone into the development of methodologies for green and environmental accounting or what is referred to by the Statistics Division of the United

Nations Division of Economic and Social Affairs (DESA) as “Integrated Environmental and Economic Accounting”. The need to go beyond the GDP has been further stressed in the Stiglitz Commission Report on the Measurement of Economic Performance and Social Progress established in 2008 to identify the limits of GDP as an indicator for human wellbeing. The proposed system for green accounting is reflected in «The Handbook of National Accounting: Integrated Environmental and Economic Accounting 2003». The Handbook brings together economic and environmental information in a common framework to measure the impact of the economy on the environment and vice versa. This has been followed by the preparation by the United Nations Department of Economic and Social Affairs (DESA) of a revised version of the System of Environmental and Economic Accounting (SEEA). The final version of the SEEA Central Framework was published in February 2014.

Apart from several developed countries who have developed green accounting systems such as the Netherlands, Germany, and France, developing countries introducing the system include China, Indonesia, and the Philippines (Sustainable and Green Growth for Egypt, 2011). There is little or no evidence that Arab countries have taken steps towards introducing environmental or green accounting as an indicator for achieving sustainable development.

L. THE ROLE OF DIFFERENT STAKEHOLDERS IN IMPLEMENTING SDGs

Achieving sustainable development requires the concerted efforts of different stakeholders in a coordinated manner. The role of governments should continue to be mainly regulatory and supervisory, and providing the enabling and facilitating conditions for different entities to contribute to sustainable development. One of the main roles of governments, as stated earlier, is to provide the right kind of institutions that function in an efficient, transparent and accountable manner. They should provide a predictable and secure macroeconomic environment that encourages and attracts local and external investment. A stable macroeconomic environment is represented in stable

and predictable fiscal policies, including exchange rates, policies related to investment requirements, the registration and creation of new companies, laws governing the allocation of land, transfer of funds, and import of technologies and equipment required for investment projects. Governments also play a critical role in the design of policy packages that promote sustainable production and consumption and the transition to a green economy and consequently the achievement of sustainable development objectives.

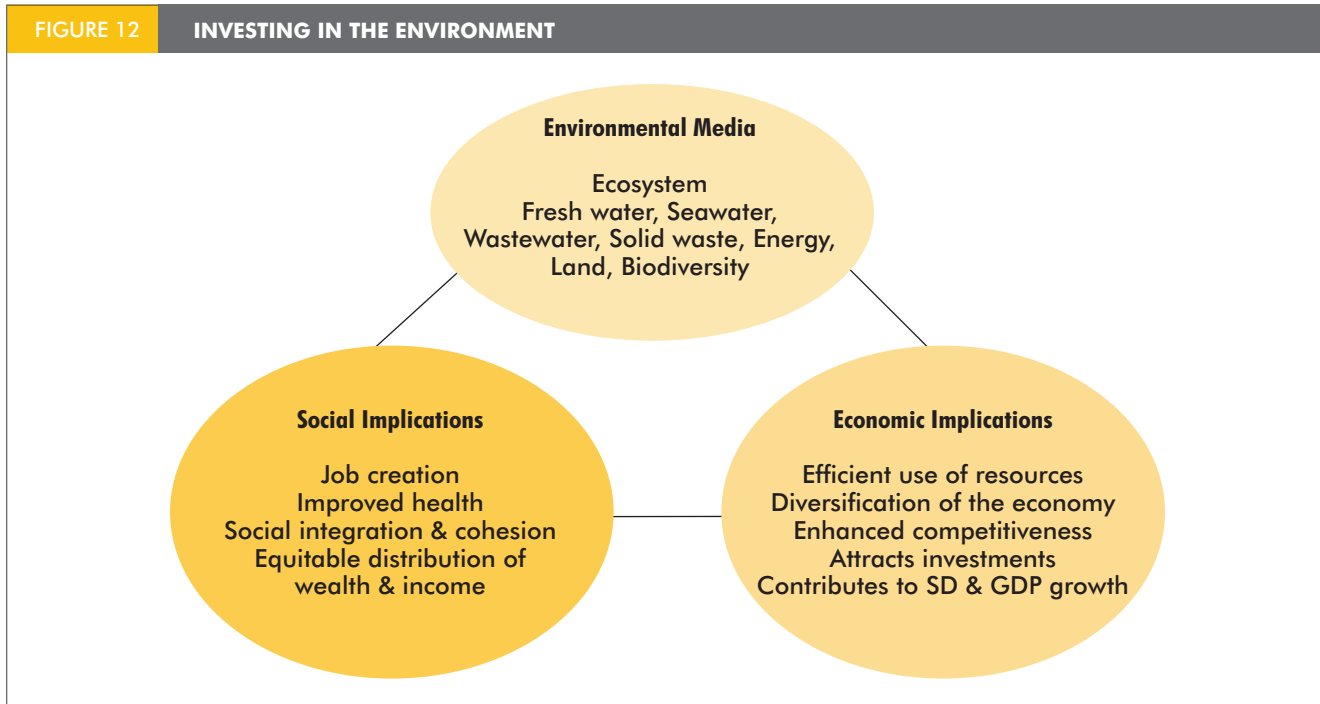
1. The Private Sector

Governments alone cannot address the challenges facing achieving the sustainable development goals. The private sector has an important role to play in the implementation of proposed strategies and the achievement of sustainable development. Characterized by more efficient and accountable operating structures, qualified technical and operating staff and efficient and flexible administrative structures, technical and financial capabilities, the private sector can play an effective role in supporting governments in achieving sustainable development. Governments need, though, to provide the necessary enabling environment to encourage private sector engagement. Public-Private-Partnership (PPP) provides an effective arrangement for utilizing the potential of the private sector in investing in different sectors, including the housing sector, transportation, water, energy, agriculture, industry and tourism. PPP should therefore be promoted, where governments would, apart from providing the necessary enabling conditions for the private sector to operate in different sectors, provide the framework and guiding principles for that sector to ensure that the development component is taken into account in the implementation of projects. This is while at the same time allowing the latter to fully utilize their full technical and operational capabilities and expertise to realize governments’ sustainable development objectives.

2. Research Institutions

The development of a long-term R&D strategy to support the implementation of sustainable development, achieve SDGs and address climate change concerns is essential. In order to develop an effective R&D strategy, there should be close

FIGURE 12 INVESTING IN THE ENVIRONMENT



collaboration between research institutions, academia, and the private sector. Researchers in research institutions and universities should be fully aware of government policy directions as well as the needs of the different sectors in order to direct their research accordingly. Close coordination between relevant institutions should therefore be maintained in order to ensure that R&D is consistent with government policies and is designed to support sustainable development objectives.

3. Civil Society

Civil society has an important role to play in promoting and implementing sustainable development. This is mainly due to their knowledge of realities on the ground, priorities, concerns and actual needs of local communities. Moreover, civil society organizations through effective stakeholders' engagement have gained the confidence and trust of local communities, and consequently have greater potential in implementing sustainable development programs, plans and projects. Governments should therefore capitalize on the potential of civil society organizations by providing the necessary enabling conditions for their effective engagement. This may be achieved by facilitating the registration and creation of civil

society organizations, reducing cumbersome and complicated registration requirements, encouraging their involvement in the implementation of sustainable development plans, programs, and projects by assigning them specific activities in support of government efforts in the various sectors. Specific activities that civil society organizations would be most effective in undertaking include the following:

- Designing and implementing public awareness campaigns, including the development of communication packages targeting different stakeholders..
- Undertaking a needs assessment for capacity building requirements for the different target groups, including policy and decision makers, practitioners, skilled labour needed to support the transition to green economy and sustainable development.
- Organizing and conducting national workshops and seminars aimed at promoting sustainable development in different sectors.
- Conducting training and sensitization courses and sessions for different target groups aimed

at enhancing local capacities in achieving SDGs and implementing sustainable development policies, plans and programs.

- Implementing projects on the ground, which may include capacity building and public awareness related projects, training the trainers programs. Other activities may include the implementation of sustainable development related projects, such as organic and sustainable agricultural projects, cleaner production related activities, integrated solid waste, including waste to energy, and the production of compost from municipal solid waste and agricultural waste.

4. Media

The role of media in awareness raising and communicating the benefits of greening national economies and transition to a green economy and a sustainable development path cannot be ignored. The potential of media in reaching out to the different segments of the population with their different backgrounds, levels of education, priorities and concerns should be adequately utilized to support the transitioning to a green economy and the achievement of SDGs. The media has also the potential of reaching out to the general public in different geographic locations and in remote areas. There is a great need, in the first instance to communicate and make explicitly clear what is behind the different concepts and approaches, what are their implications, advantages, and what actions are needed to achieve the desired outcomes. To many, the term sustainable development for example is still an ambiguous term and has different meanings for different people. It is therefore essential that there is a common understanding at the national level of the meanings of the different concepts and approaches. The media should thus also have a full understanding of the concepts and terminologies and should be fully versed and updated about the main sustainable development related issues on the international agenda.

Lack of knowledge and understanding by media is likely to result in communicating the wrong message with negative implications, including failure to mobilize different stakeholders to support sustainable development efforts. It is therefore essential that the media is properly

briefed about the main concepts, issues involved and their implications for the different stakeholders and the country as a whole. It should be emphasized that the sensitization of media should not be confined only to those responsible for the environment portfolio, but should be extended to those covering economic and development matters due to the inter linkages and interconnectedness of the issues. This will also allow for a broader coverage and outreach.

5. Development Institutions and Donor Agencies

Development and donor funding can play an important role in supporting sustainable development activities if properly utilized. However, the lack of adequate coordination of activities by development and donor institutions at the national level can sometimes result in the duplication of efforts and the inefficient use of donor funding, and consequently the ineffectiveness of donor funded activities. Though attempts have been and continue to be made by donors to properly coordinate their activities at the national level, a great deal is yet to be desired to achieve this end. It should be emphasized, however, that coordination of activities by donor and development institutions should be the role of governments. It is essential that proper coordination is maintained between activities supported by development institutions and donor agencies in order to avoid duplication of efforts, ensure the supportiveness and complementarities of activities and enhance the effectiveness of efforts at the national level.

6. Financial Institutions

Making available the needed financial resources is necessary to support the implementation of sustainable development activities, including achieving the SDGs and addressing climate change concerns. Financial institutions should be directed towards providing funds and soft loans for supporting sustainable development activities. Emphasis should be given to providing soft loans to support priority areas including water, energy, and food production for small and medium size enterprises (SMEs). Priority should also be given to funding activities contributing to capacity development and education, public awareness, and health. Seeking loans from

international financial institutions and donor agencies to meet public deficits, payment of subsidies and salaries should be avoided to the maximum extent possible. This is because such loans are not directed towards investment projects that will result in financial returns and that will enable the repayment of loans and the servicing of the debt, hence placing financial burdens on current and future generations.

A change in the mindset and culture of designing strategies, policies, plans and programs, and their monitoring and assessment is essential

if Arab countries are to achieve sustainable development and address climate change concerns. Adopting an integrated approach to policy making is a necessary requirement for achieving sustainable development. This should be supported by a package of regulatory and market-based measures in order to ensure that the proposed policies, plans, and programs are economically, socially equitable, and environmentally acceptable. Moreover, adopting a transparent, accountable, and participatory approach is a necessary requirement for achieving this end.

Section 5 FINANCING THE SDGs

HUSSEIN ABAZA



Although a series of measures have been introduced to stabilize the financial system at the global level, it still remains vulnerable and continues to be unstable. Access to finance by many groups continues to be limited and the financial system remains weak in directing savings to meet long-term investment needs (UNEP, 2015). This in turn has a direct negative effect on financing sustainable development and the achievement of SDGs. Ensuring the financial sustainability of policies, plans and programs is key for achieving sustainable development.

The financial system as currently designed is not geared to supporting sustainable development. Efforts are therefore needed to align the financial system at the international and national levels to support sustainable development. It is becoming increasingly recognized that there is a need to integrate sustainability into the financial system in order to yield short and long-term benefits (UNEP, 2015).

“Sustainable financial system is therefore one that creates, values and transacts financial assets in ways that shape real wealth to serve the long-term needs of an inclusive, environmentally sustainable economy.”

UNEP Inquiry Report, 2015

The financial and economic crisis that emerged in 2008 has underscored that the current development paradigm has its shortcomings. This has prompted UNEP to launch the Green Economy Initiative, which emphasizes investing in environmental and natural resources as an essential requirement for achieving sustainable development.

It has been estimated that the financial requirements needed to transition to a green economy and implement sustainable development activities worldwide is in the tune of US\$ 1.05-2.59 trillion annually. This figure is less than one tenth of the total annual global investment (measured by global Gross Capital Formation). If we were to allocate an annual level of funding of US\$ 1.3 trillion, a 2 percent of global GDP will be required to finance sustainable development (UNEP, 2011). Applying the same percentage of 2 percent for Arab countries to support sustainable development activities, an additional amount of US\$ 57.38 billion (GDP US\$ 2.869 trillion – 2014) annually would need to be allocated for greening the Arab economies.

According to the United Nations Conference on Trade and Development (UNCTAD), it is

estimated that US\$ 5-7 trillion annually is needed to finance the SDGs (World Investment Report 2014). Developing countries alone will require US\$ 3.9 trillion annually. Currently US\$ 2.5 trillion are being provided leaving a gap of US\$ 2.5 trillion (UNEP, 2015). It is estimated that the financing gap in Arab countries for achieving SDGs is between US\$ 80-85 billion annually in 2015 and 2016. These estimates should be considered as indicative as they do not take into account possible synergies between SDGs and variations in level of spending and commitment to the SDGs in Arab countries (ESCWA, 2015).

However, it should be emphasized that apart from securing additional financial resources, focus should be on the mobilization and the redirection of existing local financial resources, both public and private, towards supporting sustainable development activities. Moreover, policy coherence and harmonization will go a long way towards achieving this objective, as it does not make any economic sense to maintain conventional investment options, while at the same time aiming to channel funds to support new and innovative environment-friendly sustainable investments.

A. GOOD GOVERNANCE

Adopting sustainable development policies, if properly designed and implemented, is likely to generate sufficient funding to support sustainable development activities. Domestic resource mobilization supported by public policies are key for achieving sustainable development. These policies include good governance, adequate fiscal space, countercyclical fiscal policies, and measures to combat corruption (UN-DESA, 2015).

One of the challenges facing several Arab countries is illicit finance flows and money laundering. Efforts should be made to reduce and eventually eliminate these practices, including combating tax evasion by national and transnational corporations. The International Monetary Fund (IMF), the World Bank, and the United Nations should be called upon to assist in that matter. International and regional institutions may be called upon to publish estimates on the composition and volume of illicit financial flows. As per paragraph 25 of the Declaration of the Finance for Development Conference held in Addis Ababa in July 2015, Arab countries should be encouraged to ratify and accede to the United

Nations Convention against Corruption as a means to detect, deter, prevent and counter corruption and bribery, and recover stolen assets to the country of origin (UN-DESA, 2015).

“Governance architecture can promote the development of a financial system that is sensitized to sustainable development.”

UNEP Inquiry Report, 2015

Efforts should be made to introduce regulatory frameworks that increase transparency and accountability of private companies and financial institutions, as well as the public sector. Moreover, investing in research and development and efficient data gathering, analysis and dissemination systems are critical in supporting sustainable development efforts.

B. SUSTAINABLE CONSUMPTION AND PRODUCTION

Arab countries import about a third of traded cereals worldwide (World Bank and FAO, 2012). With increased population levels and water scarcity, Arab countries are faced with a rather serious food security problem. Adopting more sustainable consumption and production patterns would result in the more efficient use of natural resources and other factor inputs in the various sectors. Efficiency in food consumption for example will result in savings in food consumption as well as energy and water consumption. About 85 percent of water consumption in Arab countries is used for agriculture. Adopting efficient and sustainable agricultural practices in the agriculture sector will result in a large amount of water savings. Moreover, reducing the import of food in subsidies for food products, energy and water can generate financial resources that can be directed towards financing sustainable development activities, realizing the objectives of SDGs, and addressing climate change concerns.

C. PRIORITY INVESTMENT AREAS

1. Investing in Human Capital

A necessary prerequisite for achieving sustainable development and encouraging domestic and foreign investment is the availability of professional and skilled labor needed to support sustainable development. Investing in modern education systems that emphasize research and innovation is

critical in making a transition towards a green and sustainable economy. Investing in the education system should be complemented by investments in the health system. Additional investment needs for education for developing countries is estimated at US\$ 22 billion, while for health the estimated amount is about US\$ 24 billion annually to meet the SDGs. Funding required at the global level for addressing climate change mitigation is estimated at US\$ 380-680 billion and for climate change adaptation US\$ 60-100 billion annually (Schmidt-Traub and Sachs, 2015). It is estimated that Arab countries would need between US\$ 110 billion to US\$ 150 billion annually to address climate change adaptation and mitigation (ESCWA, 2015).

2. Investment in Natural Capital

In addition to the importance of investing in human capital, investing in natural capital is considered to be a cornerstone for achieving sustainable development. Apart from oil, the export of natural resources represents a major source of income. The sound management of natural capital is therefore essential to maintain the sustainability of natural assets in the region. This includes investing in ecosystem services, as well as agricultural products, sub-soil mineral resources, surface natural resources such as phosphate, marble, and sand. In order to enhance the value of these resources, efforts should be made to invest in value addition and processing of natural resources. Governments should provide the necessary incentives and regulatory framework to encourage public and private sector investment in natural capital. It is estimated that investment in ecosystem services and biodiversity alone requires US\$ 6 billion annually at the global level (Schmidt-Traub and Sachs, 2015).

3. Investment in Infrastructure

One of the constraints for attracting investments in sustainable development projects is the lack of adequate infrastructure. It is therefore important that Arab countries allocate sufficient funding for investment in infrastructure. This includes investment in water and sanitation, renewable energy, sustainable communities, and environment friendly road and transportation networks. This can partly be achieved by providing incentives for private sector investment and through PPP. It is also proposed that Arab countries develop a long-term transboundary program for infrastructure

INTEGRATING SUSTAINABILITY CONSIDERATIONS IN THE FINANCIAL SYSTEM

- Integrate sustainability risk factors into credit analysis
- Introduce requirements to disclose policies on sustainability
- Introduce requirements for reporting on sustainability performance annually
- Create green investment funds and banks
- Enhance sustainability capabilities of policymakers and financial regulators
- Develop financial literacy programmes to include sustainability considerations
- Incorporate sustainability considerations into financial markets and asset purchase programmes
- Integrate environmental and social considerations in lending operations
- Promote diversity of financial institutions in terms of geographical coverage, size and business model
- Restrict financial transactions that result in social and environmental costs
- Facilitate lending for priority sectors, green investment
- Facilitate lending for private sector, including SMEs
- Align fiscal incentives for savings, lending, investment, and insurance with sustainability
- Introduce standards and regulations to facilitate capital raising such as green bonds
- Promote knowledge and training on sustainability to undertake fiduciary responsibility

Source: UNEP Inquiry Report, 2015

development that promotes linkages and trade between Arab countries. Blended finance through PPP, combined with clear accountability mechanisms encourages private sector engagement in sustainable development projects.

4. Subsidies

In addition to their market distorting effects, subsidies represent a major burden on government budgets in most Arab countries. This is in addition to the negative impacts on resource use represented in the inefficient allocation and use of resources and increased volumes of generated waste and pollution.

At the global level, fossil fuel consumption subsidies amounted to US\$ 493 billion in 2014, lower by US\$ 39 billion from the previous year. This amount is more than four times the value of subsidies for renewable energy (International Energy Agency, 2015). Energy subsidies in the MENA region (including Iran) amounted to US\$ 237 billion in 2011, which is equivalent to 22 percent of government revenues (IMF, 2014). Energy subsidies amounted to US\$ 43.52 percent in Saudi Arabia, 20.28 percent in Egypt, 18.15 percent in UAE, and 10.59 percent in Algeria (AFED, 2015).

“Sustainable development requires changes in the deployment and relative value of financial assets and their relationship to the creation, stewardship and productivity of real wealth.”

UNEP Inquiry Report, 2015

As for food subsidies as a percentage of GDP, it represented 2.1 percent in Syria, 1.8 percent in Jordan, 1.3 percent in Egypt, and 0.7 percent in Morocco (World Bank, FAO, IFAD, 2009). Several Arab

countries have already taken steps to phase out energy subsidies. Those included Bahrain, Egypt, Jordan, Kuwait, Oman, Morocco, UAE, and most recently the Kingdom of Saudi Arabia (Ministry of Finance, Budget document, Kingdom of Saudi Arabia, 2016). Phasing out subsidies in the Arab region, apart from contributing towards more sustainable consumption and production and consequently the efficient use of resources, is expected to save billions of dollars annually that can be used to support sustainable development activities.

5. Taxes

Taxes are one of the main income generating sources for governments. According to the IMF, there is a need to enhance the national capacities in Arab countries to enable more efficient tax collection systems in the region. Arab countries with relatively high tax effort include Morocco and Tunisia, followed by Egypt, Jordan, Lebanon, and Algeria (ESCWA, 2015). However, tax systems need to be designed not just simply to raise funds for government coffers, but also to influence attitudes towards more sustainable patterns of consumption and production.

Regressive tax systems harm people, particularly poor income groups, women, minority groups and under privileged communities. In order to ensure the equitable distribution of wealth and that the tax system does not represent a burden on middle and low income families, a progressive tax system should be introduced. Tax systems need to be reviewed to ensure that they are pro-poor and pro-environment.

Moreover, the informal sector constitutes a high percentage of the economy in most Arab countries.

Five steps are proposed to embed financing for sustainable development at the heart of tomorrow's global financial system and deliver the much-needed transformation. These steps build on country-level experience in advancing ambitious plans to ensure that the financial system fulfils its historic purpose of meeting long-term needs, engages key international institutions effectively and develops the new generation of methods and standards that can institutionalize sustainable development in the governance and practice of financial and capital markets worldwide.

ACCELERATORS OF TRANSFORMATIVE FINANCE

1. National financial market reform and development plans to embrace consideration of the Sustainable Development Goals and Paris climate commitments, and vice versa.
2. Financial technology mobilized to support the accelerated alignment of the financial system with sustainable development, particularly for developing countries.
3. Public finance to undergo a disciplined analysis and, as required, redeployment to align to the Sustainable Development Goals and Paris climate commitments.
4. Investing in awareness-raising and building key capabilities, so that the financial community can effectively implement new approaches and plans.
5. Development of common methods, tools and standards to enable sustainable development priorities to be measured and incorporated into financial practice.

Source: UNEP (2016). Financing Sustainable Development

It is estimated that the informal sector in Egypt constitutes 45 percent of the economy, and in Jordan it is 20 percent (ESCWA, 2015). Measures should be taken to integrate the informal sector in order to broaden the tax base. This should further be supported by enhancing the efficiency of the tax collection system. Governments should set national targets for enhancing domestic revenues as part of national development strategies (AFED, 2015). Moreover, Arab countries should seriously consider the introduction of a carbon tax due to its positive impacts on the environment and on addressing climate change concerns.

6. Trade

Revenue from export represents one of the main sources of income and finance. Trade policies, if properly designed, can be a main source for foreign exchange earnings needed to support sustainable development, job creation and growth. However, trade policies need to be designed to ensure the sustainable management of natural resources. On the other hand, investing in green products could enhance the competitiveness and market access opportunity for locally produced products, equipment, and technologies. To achieve this end, the long awaited Arab Trade Agreement should be negotiated and finalized to support Arab efforts in achieving SDGs and the implementation of other international environmental agreements.

7. Reviewing the Current Financial System

Mobilizing financial resources for SDGs requires introducing sustainability measures in the financial system. This is justified due to the following reasons:

- a. Managing risk: Intervention in the financial system may be justified due to insufficient risk management resulting in negative environmental and social impacts.
- b. Promoting innovation: This may be generated through the issuance of green bond markets by setting green standards to enhance investor confidence and improve market performance.
- c. Strengthening resilience: It is estimated that losses due to natural disasters worldwide amount to US\$ 250 billion to US\$ 300 billion annually, which is likely to negatively impact the financial system, thus requiring an intervention.
- d. Policy coherence: It is important to ensure that the financial system is in line with government policies aiming for a transition to a green and sustainable economy (Schmidt-Traub and Sachs, 2015).

8. Financial Institutions

Regulatory frameworks should be developed and introduced along with risk mitigation mechanisms to encourage and govern lending for sustainable development projects. These regulatory frameworks should be supported by incentive measures to support financial market stability. Equity considerations should be taken into account in introducing regulatory reforms making finance available to women, and middle and low income groups. This includes supporting micro finance cooperatives, development banks, agricultural banks, mobile network operators, mobile banking, and postal banks (UN-DESA, 2015).

9. International Public Finance

International public finance, both concessional and non-concessional, has an important role to play in supporting national efforts to finance sustainable development activities. It should also be used to encourage domestic public and private finance. However, there is a need to ensure that funding secured should be properly deployed in order to have the desired impact on sustainable development. In spite of the long standing commitment of developed countries to provide 0.7 percent of national income for Official Development Assistance (ODA), an average of only 0.3 percent has been achieved (ESCWA, 2015). The Addis Ababa Declaration has called upon developed countries to achieve the target of 0.7 percent of ODA/GNI and 0.15 to 0.2 percent ODA/GNI to least developed countries within the timeframe of the post-2015 agenda (UN-DESA, 2015).

Among the top Arab ODA receiving countries in 2014 were Syria US\$ 4,330 million, Egypt US\$ 3,532 million, Jordan US\$ 2,699 million, and Morocco US\$ 2,228 million. Yemen received US\$ 1,150 million, Tunisia US\$ 930 million and Sudan US\$ 866 million in the same year (Development Aid at a Glance (2016), Statistics by Region, 6 edition, OECD).

It should be noted however, that over the last four decades, Arab aid has continued to represent an increasing percentage of total global aid. It is estimated that Arab Official Development Assistance accounts for 13 percent of total ODA and three quarters of non-DAC ODA (World Bank, 2015a). Not only this, but Arab Aid in the form of ODA, particularly from Saudi Arabia, Kuwait, and the United Arab Emirates to Arab and other developing countries averaged 1.5 percent of their combined Gross National Income (GNI) during the period 1973-2008 (World Bank, Arab Development Assistance: Four Decades of Cooperation, 2010).

10. Foreign Direct Investment

Net foreign direct investment (FDI) in most Arab countries is negative, which is mainly attributed to weak governance systems (ESCWA, 2015). FDI as a percentage of GDP was estimated at 27.73 percent in Mauritania and 19.64 percent in Djibouti, while in Lebanon and Libya it reached 6.39 percent, and in Egypt 2.04 percent (World Development Indicators, Doing Business 2015 - The World Bank Group).

Arab countries should design policies that encourage foreign direct investment with emphasis given to investments in innovative green technologies and sectors, and the engagement of local enterprises, especially SMEs. Priority for FDI should be directed to sectors that are not attractive for private sector investment, and with the highest potential for creating new jobs. Priority should be given to investment in areas that contribute to the diversification of the economy in industry, agriculture, and infrastructure. Arab countries in need of FDI should consider the use of insurance, investment guarantees, including through the Multilateral Investment Guarantee Agency to encourage FDI (World Bank, 2015a).

11. Arab National and Regional Development and Financial Institutions

National and regional banks have an important role to play in financing sustainable development. Efficient national and regional financial institutions, with sound lending frameworks and compliance and appropriate environmental and social safeguards can play an effective role in financing sustainable development, particularly in credit markets which experience financing gaps (World Bank, 2015a). This includes financing sustainable infrastructure, such as roads and transportation systems, water, energy, agriculture industry, tourism, housing and urban development, and technology development.

Financing SMEs should be encouraged in order to promote their integration in the development process in the Arab region. This can be achieved by allowing them to use collateral substitutes, reduce entry and exit costs, and provide exceptions to capital requirements.

Innovative financial mechanisms include development-oriented venture capital, blended finance, risk mitigation instruments, and innovative debt funding structures combined with risk management and regulatory frameworks (World Bank, 2015a). Arab national and regional development institutions established a Coordination Group (CG)⁵ in 1975, which can provide an important source of funding for sustainable development goals in the Arab region. These institutions have been playing an important role in delivering development assistance to Arab and other developing countries. Their combined financing operations benefited over 140 countries

across the globe with a total cumulative amount of about US\$ 147 billion at end 2014, with a share of over 55 percent for Arab countries (Coordination Group Secretariat, Arab Fund for Economic and Social Development).

The CG institutions have pledged their support to achieving the SDGs in developing countries. The Arab countries can greatly benefit from the financing operations of the CG, covering various economic and social sectors, with due consideration to environmental concerns. Moreover, they have gathered vast experiences in the area of development cooperation, and they can help partner countries in the adoption and application of best practices in the preparation, evaluation, and implementation of development operations to ensure their sustainability and effectiveness.

12. United Nations, International Conventions and Funding Mechanisms

The United Nations and Bretton Woods organizations and multilateral agreements offer another potential source of funding sustainable development. Meeting commitments with respect to international conventions offer funding opportunities for Arab countries. This includes the Global Environment Facility (GEF), global Strategic Plan for Biodiversity for 2011-2020 and its Aichi Biodiversity Targets, The United Nations Convention to Combat Desertification, the Montreal Protocol on Substances that Deplete the Ozone Layer, and the Climate Change Convention. In the latter case the Green Climate Fund (GCF) with a US\$ 100 billion of pledged funding provide a funding opportunity for Arab countries. The challenge is developing well-designed and credible projects that qualify for funding through the GCF.

Arab countries should join calls for supporting efforts for governance reform in both the IMF and the World Bank to adapt to changes in the global economy, including supporting the implementation of SDGs and responding to the needs of Arab countries.

13. Civil Society and Philanthropic Organizations

Civil society has an important role to play in providing technical and financial support for sustainable development activities. Financial and non-financial

contributions by philanthropic institutions can also play an important role in supporting sustainable development. Governments should encourage civil society and philanthropic organizations to provide financial and technical contributions towards sustainable development and aligning their activities with government policies, plans and programs. Development and humanitarian finance offer an opportunity for channeling those funds to support sustainable development activities. Arab countries, particularly those in post conflict situations, should create mechanisms for the management of development and humanitarian finance in the most efficient and effective way. This should be supported by capacity building efforts to strengthen national capacities and institutions to deal with conflict stricken areas in affected countries (World Bank, 2015a).

14. Remittances of Migrant Workers

In a number of Arab countries such as Egypt, remittances of nationals working abroad represent a considerable percentage of foreign exchange earnings. Governments are therefore encouraged to make available adequate financial services to nationals working abroad and migrants and their families in both home and host countries to facilitate the transfer of funds to their respective countries. This includes reducing average transaction costs. According to paragraph 40 of the Addis Ababa Declaration, countries should aim at bringing transaction costs to less than 3 percent of the amount transferred.

15. Private Sector

As referred to in section III on Implementation of the SDGs, the private sector has a very important role to play in investing in sustainable development. This is particularly so, as in several Arab countries existing public institutions neither have the technical nor the financial capacity to support sustainable development activities. The private sector has the financial and human resources and managerial skills to support sustainable development activities. It also has the practical experience and knowledge about existing situations, opportunities and constraints on the ground and how best to deal with them. The physical presence of the private sector and its direct contact with local communities and realities on the ground provide the private sector with first-hand information and knowledge

about local circumstances, how best to engaged local communities and respond to their needs and priorities. The private sector, both domestic and foreign should be encouraged to support government efforts in designing and implementing sustainable development policies, plans, and programs, including through PPP. Providing the right incentive package for the private sector is expected to tap onto large financial resources that can be channeled to support sustainable development activities. This is particularly important in Arab countries, where government budgets are already overstretched.

Lack of human capacities and skills and innovation is one of the necessary requirements for achieving sustainable development. The role of the private sector in this regard cannot be but overemphasized. Arab countries should therefore encourage the private sector through a package of incentives to invest in capacity development and R&D.

Moreover, in most Arab countries domestic savings channeled through the banking sector and capital markets need to be stimulated (ESCWA, 2015). This can be achieved by ensuring stable and more predictable banking and exchange rate regulations that encourage savings by individuals and institutions. These savings can in turn be channeled to support sustainable development activities.

It should therefore be emphasized that regulatory frameworks supported by incentive measures should be introduced that direct private sector investment towards sustainable development projects. This is also in line with Monterrey that recommended the building up of transparent, predictable, and stable investment environment, with adequate enforcement of contracts, respect to property rights, sound macroeconomic policies and institutions (UN-DESA, 2015).

16. Debt Sustainability

Borrowing is another source of funding, that many countries in the Arab region rely on to support national development plans. Several Arab countries have reached a high level of public debt to GDP. In Lebanon the public debt reached 145 percent, while in Egypt it is 95 percent, Jordan 86 percent, and Morocco 77 percent (ESCWA, 2015). However, debt servicing and repayment represents a burden on several Arab countries, resulting in what may be referred to as a debt crisis situation. It is therefore

essential to ensure debt sustainability through coordinated policies aimed at strengthening debt management through debt relief, debt restructuring, debt and financing. Analysis and principles such as those provided through the IMF-World Bank debt sustainability analysis, UNCTAD's principles on responsible sovereign lending and borrowing should be considered to ensure debt responsibility (ESCWA, 2015). Arab countries may consider developing guidelines for debtor and creditor responsibilities by borrowers and lenders to manage borrowing in a more sustainable way.

D. Innovative Finance Mechanisms

1. Results-based financing: Results-based financing offers an innovative source of finance which provides funding based on the results achieved from a project or activity. This approach promotes transparency, accountability, improved management and efficiency, and ownership (World Bank, 2015b).
2. Financial risk management mechanisms: These mechanisms are intended to leverage public funds and create incentives for private sector engagement by correcting market failures, reducing macroeconomic and climate-driven vulnerabilities. This may be achieved through government guarantees, blended finance, and derivatives. Such mechanisms provide insurance against risks, through risk sharing or full risk transfer (World Bank, 2015b).
3. Green Funding: New innovative funding can be generated through taxes, fees, and charges levied by governments to finance green investments and sustainable development. Green bonds to finance green investments are also increasingly being introduced in capital markets worldwide, where it reached US\$ 40 billion in 2014 (ESCWA, 2015). Ethical finance based on the religious beliefs that are very much in line with sustainable development provide another untapped source of funding in the Arab region. Promoting green bonds and Ethical funding in Arab countries should therefore provide a reliable source of funding green and sustainable development activities. This should be supported by efforts by Arab countries to green their financial systems thus directing more funds towards sustainable development activities.

CONCLUSION



Since early 2011, the Arab region has been experiencing political turmoil that is expected to have far-reaching repercussions on sustainable development and on the transition to a green economy. AFED ninth annual report concludes that implementing the 2030 Agenda and achieving the Sustainable Development Goals (SDGs) in Arab countries cannot be done in isolation from the state of conflict in the region.

More than 10 of the 22 Arab countries are either under occupation or experiencing war or conflict, tens of millions of people are refugees or internally displaced, and many people lack basic needs and rights at various levels. Almost all Arab countries are experiencing or are adjacent to countries experiencing significant instability, which undermines the potential advantages of regional cooperation and the critical role it can play in enhancing the implementation of national development goals.

Even if cessation of all conflicts and wars can be realized immediately, the Arab region cannot achieve the SDGs by 2030 using traditional methods. Those Arab countries that have experienced severe damage and deep disarray in physical and social infrastructure over the past years, have largely decimated the prospects even for re-establishing the status quo prevailing in 2010, let alone achieving the SDGs by 2030.

AFED ninth annual report recommends an alternative approach, based on integrating principles of sustainable development within the anticipated rebuilding efforts. The report calls upon local, regional, and international aid organizations not to limit their efforts to providing safety and basic necessities to those affected, but to use the relief plans as launch pad for promoting new approaches to development, rooted in a transition to green economy.

The report further calls upon national and regional development funds and finance institutions to direct their support to projects which help realize the sustainable development goals and targets, both at the public and private sectors levels.

Boosting the prospects of making steady progress towards the SDGs in the Arab countries will depend, largely, on adopting national development strategies with full recognition of the inseparable links between the social, economic, and environmental dimensions of sustainable development, including giving due consideration to unlocking the developmental benefits of cooperation and regional integration. Arab conflict countries, however, need to exert extraordinary concentrated efforts for peace building and restoration of political stability in order to establish a post-conflict environment conducive to the implementation of the Post-2015 Development Agenda and the achievement of the SDGs.

A change in the mindset and culture of designing strategies, policies, plans and programs, and their monitoring and assessment, is essential if Arab countries are to achieve sustainable development and address the major challenge of water scarcity and aridity, aggravated by climate change. This can be best achieved by embracing the water-food-energy nexus approach. Adopting an integrated methodology to policy making is a necessary requirement for achieving sustainable development. This should be supported by a package of regulatory and market-based measures, including fiscal and tax systems which promote mobilization of domestic resources and better consumption and production practices, in addition to revamping subsidies to put price on natural capital and boost efficiency.

AFED report recommends greening the financial system to promote investment in human capital, natural capital, and adequate infrastructure. This includes creating the suitable conditions to attract private sector investment in a direction which helps achieve the SDGs. Arab countries can attract more funding from development financing institutions by orienting their development strategies towards the Sustainable Development Goals, and setting their priorities accordingly in a sequenced manner, based on well-prepared and feasible development operations and projects. However, adopting a transparent, accountable, and participatory approach is a necessary requirement for achieving this end.

REFERENCES

- AFED (2010). Arab Environment: Water - Sustainable Management of a Scarce Resource. Annual Report of the Arab Forum for Environment and Development (AFED), El-Ashry, M., Saab, N. and Zeitoun, B. (Eds.). Beirut, Lebanon. Technical Publications.
- AFED (2011). Arab Environment: Green Economy. Annual Report of the Arab Forum for Environment and Development, 2011; Abaza, H., Zeitoun, B. and Saab, N., (Eds.); Beirut, Lebanon. Technical Publications
- AFED (2012). Arab Environment: Survival Options. Annual Report of the Arab Forum for Environment and Development (AFED), Abdel Gelil, I., El-Ashry, M., Saab, N. and Zeitoun, B. (Eds.). Beirut, Lebanon. Technical Publications.
- AFED (2013). Arab Environment: Sustainable Energy. Annual Report of the Arab Forum for Environment and Development (AFED), Abdel Gelil, I., El-Ashry, M. and Saab, N. (Eds.); Beirut, Lebanon. Technical Publications.
- AFED (2014). Arab Environment: Food Security. Annual Report of the Arab Forum for Environment and Development, 2014; Sadik, A., El-Solh, M. and Saab, N. (Eds.); Beirut, Lebanon. Technical Publications.
- AFED (2015). Arab Environment: Sustainable Consumption. Annual Report of Arab Forum for Environment and Development, 2015; Abdel Gelil, I. and Saab, N. (Eds.); Beirut, Lebanon. Technical Publications.
- AOAD (2007), Arab strategy for sustainable agriculture development
- ASDSD (2015), Arab strategic framework for sustainable development
- Citigroup (2015). ENERGY 2020: Independence Day, Global Ripple Effects of the North American Energy Revolution - Citi GPS: Global Perspectives & Solutions.
- Drexhage, J. and Murphy D. (2010). Sustainable Development: From Brundtland to Rio 2012. Background paper prepared for consideration by the High Level Panel on Global Sustainability at its first meeting, 19 September 2010, United Nations Headquarters, New York. http://www/un.org/wcm/webdav/site/climatechange/shared/gsp/doscs/GSP1-6_Background%20on%20Sustainable%20Dev.t.pdf (Accessed 10/2/2016).
- Dyer, Paul. 2008. 'Demography in the Middle East: Implications and Risks.' In *Transnational Trends: Middle Eastern and Asian Views*, edited by Amit Pandya and Ellen Laipson, 62–90. Washington, D.C.: Stimson.
- Egypt (2016). Available from <https://sustainabledevelopment.un.org/hlpf/2016/egypt>. Accessed 21 June 2016
- ESCWA (2013), Mapping Green Economy in the ESCWA Region. Version 1.
- ESCWA (2014), An Arab Perspective on the Post 2015 Agenda: National targets, regional priorities and global goals
- ESCWA (2015), Analysis of energy policy trends in the Arab region.
- ESCWA (2015). Arab Sustainable Development Report, Financing Sustainable Development in the Arab Region.
- ESCWA (2015b), Economic growth, Employment and Poverty in Developing Economies: A focus on Arab region
- ESCWA (2015c), Arab Development Outlook.
- ESCWA, LAS and UNEP (2011). Green Economy in the Arab Region: Overall Concept and Available Options. Reference Paper.
- FAO (2015), Food Security and Sustainable Agriculture in the Arab Region, http://www.irena.org/DocumentDownloads/Publications/IRENA_Pan-Arab_Strategy_June%202014.pdf
- Guido Schmidt-Traub and Jeffrey D. Sachs (2015). Financing Sustainable Development: Implementing the SDGs through Effective Investment Strategies and Partnerships, Sustainable Development Solutions Network (SDSN).
- IEA (2015): World Energy Outlook: Energy access database. Available from: www.worldenergyoutlook.org/resources/energydevelopment/energyaccessdatabase/
- IISD (1997). International Institute for Sustainable Development. Summary of the Nineteenth United Nations General Assembly Special Session to Review Implementation of Agenda 21: 23-27 June 1997, Negotiations Bulletin, Volume 5, Number 88, 30 June 1997. <http://www.iisd.ca/csd/enb0588e.html> (Accessed 13/2/2016)
- ILO (2013a). 'What is a Green Job?' www.ilo.org/global/topics/green-jobs/
- ILO and UNDP (2012). ILO and the United Nations Development Programme. Rethinking Economic Growth: Towards Productive and Inclusive Arab Societies. Beirut.
- ILO (2014b). The ILO at Work: Development Results 2012–2013. Geneva
- IMF (2014). Energy Subsidies in the Middle East and North Africa (2014), Lessons from Reform, International Monetary Fund.
- International Energy Agency (2015), World Energy Outlook.
- IRENA and League of Arab States (2014). Pan-Arab Renewable Energy Strategy 2030: Roadmap of Actions for Implementation. Available from:
- LAS, AFESD, Arab Monterey Fund (2014), The Joint Arab Economic report.
- OECD (2016), Development Aid at a Glance: Statistics by Region.
- Rio Declaration (1992). The United Nations Conference on Environment and Development, Rio de Janeiro 3-14 June 1992. http://www.unesco.org/education/nfsunesco/pdf/RIO_E.PDF. (Accessed 6/2/2016).

Sohn, L. (1973). The Stockholm Declaration on the Human Environment. Reprinted from the Harvard International Law Journal, Volume 14, Number 3, summer 1973. <http://resources.spaces3.com/631e9a3e-f2f1-4fd8-ba02-2d8e46e215cc.pdf> (Accessed 12/2/2016).

Sustainable and Green Growth for Egypt (2011), Egyptian National Competitiveness Council.

Third International Conference (2015), Financing for Development, Addis Ababa Action Agenda

UN (1972). United Nations, Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972. <http://www.un-documents.net/aconf48-14r1.pdf> (Accessed on 3/2/2016).

UN (1987). United Nations, Report of the World Commission on Environment and Development. <http://www.un.org/documents/ga/res/42/ares42-187.htm> (Accessed on 6/2/2016).

UN (2003). United Nations. Monterrey Consensus of the International Conference on Financing for Development, Monterrey, Mexico, 18-22 March 2002. <http://www.un.org/esa/ffd/monterrey/monterreyConsensus.pdf> (Accessed on 14/2/2016).

UN (2012). United Nations, Conference on Sustainable Development Rio+20, Rio de Janeiro, Brazil 20-22 June 2012. <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N11/476/10/PDF/N1147610.pdf?OpenElement> (Accessed on 8/2/2016).

UN (2015). United Nations, the Millennium Development Goals Report, United Nations, New York, 2015. [http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%2015\).pdf](http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%2015).pdf) (Accessed 12/2/2016).

UN and LAS (2013). United Nations and League of Arab States. The Arab Millennium

Development Goals Report, Facing Challenges and Looking Beyond 2015. http://www.undp.org/content/dam/rbas/doc/MDGS%20publications/Arab_MDGR_2013_English.pdf (Accessed 20/1/2016).

UN-DESA (2015). Third International Conference, Finance for Development, Addis Ababa Action Agenda, Addis Ababa, Ethiopia, United Nations Department of Economic and Social Affairs.

UNEP (2011). Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication.

UNEP (2015). The Financial System We Need; Aligning the Financial system with Sustainable Development, The UNEP Inquiry Report.

UNEP (2016). Financing Sustainable Development: Moving From Momentum to Transformation in a Time of Turmoil. UNEP Inquiry into the Design of a Sustainable Financial System and UNEP Finance Initiative. October 2016.

UNEP. United Nations Environment Programme Mission Statement. <http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=43> (Accessed 6/2/2016).

Vision 2030, (2016) Kingdom of Saudi Arabia, <http://vision2030.gov.sa/download/file/fid/417> (Accessed 21/7/2016)

WCED (1987). World Commission on Environment and Development. Report of the World Commission on Environment and Development: Our Common Future. <http://www.un-documents.net/ocf-01.htm> (Accessed on 6/2/2016).

World Bank (2014), Turn Down the Heat: Confronting the New Climate Normal

World Bank (2015a). Middle East and North Africa, Forty Years of Development Assistance from Arab Countries.

World Bank (2015b). Post-2015 Development Agenda.

Notes

1. Source: International Labour Organization, Key Indicators of the Labour Market database. World bank 2015, World Development Indicators, <http://data.worldbank.org/indicator/SL.UEM.1524.ZS> (Accessed June 2016).
2. The report was jointly prepared by the League of Arab States, the United Nations Organizations members of the Regional Coordination Mechanism (RCM) and the Regional United Nations Development Group for the Arab States, and coordinated by the Economic and Social Commission for Western Asia (ESCWA).
3. The Arab region is divided into four sub-regions according to similarities in their characteristics and in concordance with the previous Arab MDG reports. Mashreq: (Egypt, Iraq, Jordan, Lebanon, Palestine and the Syrian Arab Republic). Maghreb: (Algeria, Libya, Morocco, and Tunisia). The Cooperation Council for the Arab States of the Gulf (GCC): Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. Least Developed Countries (LDCs): the Comoros, Djibouti, Mauritania, Somalia, the Sudan and Yemen.
4. The World Bank has updated the international poverty line to \$1.90 as of October 2015 (see www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq). However, data for the Arab region based on the new line is not available.
5. The CG institutions include: Abu Dhabi Fund for Development, the Arab Bank for Economic Development in Africa, the Arab Fund for Economic and Social Development, the Arab Gulf Program for Development Organizations, the Arab Monetary Fund, the Islamic Development Bank Group, the Kuwait Fund for Arab Economic Development, the OPEC Fund for International Development (OFID), the Qatar Development Fund, and the Saudi Fund for Development.

ANNEX: Sustainable Development Goals and Targets

END POVERTY IN ALL ITS FORMS EVERYWHERE



TARGETS

1.1

By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day

1.2

By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

1.3

Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable

1.4

By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

1.5

By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

1.a

Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions

1.b

Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions

END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE



TARGETS

2.1

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

2.2

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

2.3

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

2.4

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

2.5

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

2.a

Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries

2.b

Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.c

Adopt measures to ensure the proper functioning of food commodity markets

and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES



TARGETS

3.1

By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

3.2

By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

3.3

By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

3.4

By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

3.5

Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

3.6

By 2020, halve the number of global deaths and injuries from road traffic accidents

3.7

By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

3.8

Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

3.9

By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

3.a

Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate

3.b

Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all

3.c

Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing states

3.d

Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL



TARGETS

4.1

By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

4.2

By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

4.3

By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

4.4

By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

4.5

By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

4.6

By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

4.7

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

4.a

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

4.b

By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing states and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries

4.c

By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states

ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS



TARGETS

5.1

End all forms of discrimination against all women and girls everywhere

5.2

Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

5.3

Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation

5.4

Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

5.5

Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life

5.6

Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences

5.a

Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws

5.b

Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women

5.c

Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL



TARGETS

6.1

By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2

By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

6.4

By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6.5

By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

6.6

By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a

By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b

Support and strengthen the participation of local communities in improving water and sanitation management

ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL



TARGETS

7.1

By 2030, ensure universal access to affordable, reliable and modern energy services

7.2

By 2030, increase substantially the share of renewable energy in the global energy mix

7.3

By 2030, double the global rate of improvement in energy efficiency

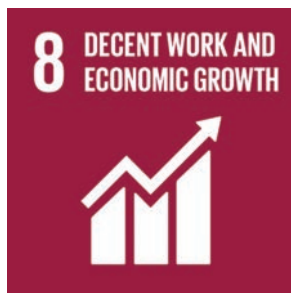
7.a

By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

7.b

By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing states, and land-locked developing countries, in accordance with their respective programmes of support

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL



TARGETS

8.1

Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

8.2

Achieve higher levels of economic productivity through diversification,

technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

8.3

Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.4

Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead

8.5

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

8.6

By 2020, substantially reduce the proportion of youth not in employment, education or training

8.7

Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms

8.8

Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

8.9

By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products

8.10

Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

8.a

Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries

8.b

By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION



TARGETS

9.1

Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

9.2

Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

9.3

Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets

9.4

By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

9.5

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

9.a

Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing states

9.b

Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities

9.c

Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES



TARGETS

10.1

By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

10.2

By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

10.3

Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

10.4

Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality

10.5

Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations

10.6

Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions

10.7

Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies

10.a

Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements

10.b

Encourage official development assistance and financial flows, including foreign direct investment, to states where the need is greatest, in particular least developed countries, African countries, small island developing states and landlocked developing countries, in accordance with their national plans and programmes

10.c

By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent

MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE



TARGETS

11.1

By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

11.2

By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

11.3

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.4

Strengthen efforts to protect and safeguard the world's cultural and natural heritage

11.5

By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

11.6

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

11.7

By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

11.a

Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

11.b

By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

11.c

Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS



TARGETS

12.1

Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

12.2

By 2030, achieve the sustainable management and efficient use of natural resources

12.3

By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

12.4

By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

12.5

By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

12.6

Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

12.7

Promote public procurement practices that are sustainable, in accordance with national policies and priorities

12.8

By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

12.a

Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production

12.b

Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

12.c

Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities

TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS*



TARGETS

13.1

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2

Integrate climate change measures into national policies, strategies and planning

13.3

Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

13.a

Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible

13.b

Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing states, including focusing on women, youth and local and marginalized communities

CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT



TARGETS

14.1

By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

14.2

By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

14.3

Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

14.4

By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.5

By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.6

By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation

14.7

By 2030, increase the economic benefits to small island developing states and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

14.a

Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing states and least developed countries

14.b

Provide access for small-scale artisanal fishers to marine resources and markets

14.c

Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want

PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS



TARGETS

15.1

By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

15.2

By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

15.3

By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

15.4

By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

15.5

Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

15.6

Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

15.7

Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

15.8

By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species

15.9

By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

15.a

Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

15.b

Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation

15.c

Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS



TARGETS

16.1

Significantly reduce all forms of violence and related death rates everywhere

16.2

End abuse, exploitation, trafficking and all forms of violence against and torture of children

16.3

Promote the rule of law at the national and international levels and ensure equal access to justice for all

16.4

By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime

16.5

Substantially reduce corruption and bribery in all their forms

16.6

Develop effective, accountable and transparent institutions at all levels

16.7

Ensure responsive, inclusive, participatory and representative decision-making at all levels

16.8

Broaden and strengthen the participation of developing countries in the institutions of global governance

16.9

By 2030, provide legal identity for all, including birth registration

16.10

Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

16.a

Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime

16.b

Promote and enforce non-discriminatory laws and policies for sustainable development

STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT



TARGETS

Finance

17.1

Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection

17.2

Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries

17.3

Mobilize additional financial resources for developing countries from multiple sources

17.4

Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt

restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress

17.5

Adopt and implement investment promotion regimes for least developed countries

Technology

17.6

Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

17.7

Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed

17.8

Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology

Capacity-Building

17.9

Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation

Trade

17.10

Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda

17.11

Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020

17.12

Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access

Systemic Issues

Policy and Institutional coherence

17.13

Enhance global macroeconomic stability, including through policy coordination and policy coherence

17.14

Enhance policy coherence for sustainable development

17.15

Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development

Multi-stakeholder partnerships

17.16

Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries

17.17

Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

Data, monitoring and accountability

17.18

By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing states, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

17.19

By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

Opinions and Case Studies

- 88 THE ROLE OF THE WORLD BANK IN IMPLEMENTING SDGs IN ARAB COUNTRIES**
Mahmoud Mohieldin
- 92 THE ROLE OF ARAB DEVELOPMENT INSTITUTIONS IN THE IMPLEMENTATION OF THE SDGS IN ARAB COUNTRIES**
Abdulwahab A. Al-Bader
- 96 HOW CAN OFID CONTRIBUTE TO IMPLEMENTING SDGS IN ARAB COUNTRIES? FOCUS ON GOAL 7: UNIVERSAL ACCESS TO AFFORDABLE AND MODERN ENERGY**
Suleiman Al Herbish
- 99 GOVERNMENT AND PRIVATE SECTOR PARTNERSHIPS TO INTENSIFY THE UAE'S RESPONSE TO THE SDGS AND THE PARIS CLIMATE AGREEMENT**
Razan Khalifa Al Mubarak
- 102 THE CHALLENGES OF SUSTAINABLE EDUCATION IN THE ARAB WORLD: AUB'S CURRENT AND FUTURE ROLES**
Saouma BouJaoude; Rima Karami Akkary and Fadlo R. Khuri
- 105 SDG 17: STRENGTHENING THE MEANS OF IMPLEMENTATION AND REVITALIZING PARTNERSHIPS FOR ACHIEVING THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT IN THE ARAB REGION**
Reem Nejdawi, Monia Brabam and Fidele Byiringiro
- 108 PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENT: ASSESSMENT OF THE BURDEN OF DISEASE FROM ENVIRONMENTAL RISKS IN ARAB COUNTRIES**
Mazen Malkawi and Basel Al-Yousfi

THE ROLE OF THE WORLD BANK IN IMPLEMENTING SDGS IN ARAB COUNTRIES

Mahmoud Mohieldin

INTRODUCTION

The Sustainable Development Goals (SDGs), define a comprehensive vision of sustainable development that acknowledge the interconnectedness of the economic, social, and environmental dimensions of development and the importance of multisectoral solutions.

The SDGs are universal, applying to rich and poor countries alike, and include a commitment to collective action on global challenges. Peace, stability, economic progress, and human development in the Arab world have regional and global implications, thus the ability of these countries to make progress towards the SDGs is contingent upon global support. Yet, the challenges to achieving them are mostly country-specific.

WORLD BANK GROUP SUPPORT FOR THE SDGs

The World Bank Group's (WBG) country-level engagements are at the core of its operational model and will be the primary means through which it will support the SDGs. This is greatly facilitated by its field offices in almost every country in the Arab world.

The WBG offers integrated solutions to complex, multifaceted challenges. This approach is critical to achieving the SDGs given their interconnected nature. The support of the WBG on the SDGs is based on four main themes of engagement: data and evidence; financing; implementation; and monitoring, evaluation and reporting.

Regarding data and evidence, there is a pressing need for improved data both to monitor progress, diagnose problems, and help design policies and programs that will be needed to find solutions and make progress towards the SDGs. Traditional sources remain important, but new opportunities to collect data must be pursued, especially those made possible by new technology. On this front, the WBG is especially active in three areas:

- Ensuring availability of household budget surveys. The WBG has committed to ensuring that by 2020, a

household budget survey is taken every three years in the 78 poorest countries.

- Harnessing the data revolution for development solutions. The WBG, together with the Global Partnership for Sustainable Development Data, is supporting innovative approaches for lasting changes in data production, accessibility, and data use for high quality analytics.
- Statistical capacity building for monitoring progress. The WBG is providing technical and financial support to improve production of key statistics that track progress on the SDGs.

Regarding financing, the WBG has identified the following areas of focus:

- Technical assistance and policy advice on how to better mobilize domestic resources;
- Leveraging private sector resources for development; and,
- Addressing the resource needs of global and regional public goods.

Regarding implementation, the WBG's operating model has aimed to:

- Strengthen country engagement by facilitating the global flow of knowledge to support development solutions in client countries;
- Broaden and strengthen operational instruments; and,
- Leverage an approach that draws on the strengths of the entire WBG, including the private sector arm – the International Finance Corporation (IFC) – and the political risk insurance arm – the Multilateral Investment Guarantee Agency (MIGA).

Regarding monitoring, evaluation and reporting, the WBG has recognized the importance of data and policy analysis for monitoring and evaluating progress. During the Millennium Development Goals period, it produced knowledge products such as the World Development

indicators and the Global Monitoring Report, and the WBG will continue to do so for the SDG period.

CURRENT GLOBAL CHALLENGES AND THE ARAB WORLD

The current global economic context is defined by economic headwinds and a continued slowdown in key emerging markets, leaving the global economy somewhat fragile. Many oil exporters remain under pressure in an environment of low oil prices and eroded reserves and fiscal buffers, while at the same time many oil importers are experiencing an easing of pressures on their external balances, inflation, and government budgets.

In addition to a challenging global economic context, many Arab countries are confronting the challenge of increased violence, fragility, and instability. With conflicts in the region, the Arab world has seen a tremendous rise in human suffering due to loss of life, injuries, and forced displacement. In light of these developments and given their diversity, there is an urgent need to implement new strategies to improve the chance for progress on the SDGs. Each country has a unique situation and set of challenges which must be confronted with commensurate and specific policy recommendations and tailored solutions.

Gulf Cooperation Council (GCC) countries, for example, might seek support from the WBG in the form of technical advice, knowledge products, and policy recommendations on how to make progress towards the SDGs and create a vision for a prosperous future. Solutions to challenges such as economic diversification and youth employment can likely draw on other countries' experiences.

On the other hand, countries confronting issues of fragility and conflict face reversal of development gains and substantial stress on their resources, leading to increased poverty and suffering for many people. These countries can draw on direct WBG programmatic support to address more rudimentary development challenges. Even within this group of countries, there are significant differences among countries and the solutions which may best support their pursuit of the SDGs. The most urgent focus of WBG support is on countries confronting challenges related to fragility and civil conflict. The interconnectedness between peace and development – and its importance for societies to prosper – is explicitly recognized in the 2030 agenda, in particular through the incorporation of SDG 16.

Beyond the core comparative advantage of supporting the SDGs at the country level, the WBG engages on critical

challenges related to global public goods, notably issues related to climate change, as well as crisis prevention, preparedness, and response. These crosscutting challenges are especially salient in the Arab world, and addressing them is a prerequisite for achieving the SDGs. Progress on these challenges requires working with multiple stakeholders in different countries, connecting and aligning efforts to global initiatives, and applying multiple instruments.

While Arab countries are going through a transition, the conflicts in the region have had devastating consequences. The WBG, in collaboration with the United Nations, the European Union, and other bilateral and multilateral organizations, is mobilizing an international coalition to address these challenges. To do so, the WBG is going beyond its traditional, country-based approach and emphasizing its function as a global institution with convening power.

While it has become apparent that Official Development Assistance (ODA) alone is insufficient to finance countries' SDG needs, ODA remains critical, particularly for the most vulnerable countries. It is also evident that some small middle-income countries facing crises are in need of targeted support as well.

WBG SUPPORT FOR ARAB COUNTRIES

World Bank lending for the MENA region increased from US\$ 2.8 billion in FY14, to US\$ 3.5 billion in FY15 and will account for US\$ 5.2 billion in FY 2016. The increase in FY16 lending reflects a higher level of development policy financing in Iraq and Egypt, and an emergency operation for Iraq to support the reconstruction of conflict-affected infrastructure and to restore public services in areas brought under government control.

The WBG has also established a new financing initiative, in partnership with the Islamic Development Bank and the United Nations, to mobilize the international community in support of Lebanon and Jordan, which are the countries in the Arab world most affected by the Syrian refugee crisis, conflict, and economic instability. The financing initiative is comprised of two distinct, yet complimentary, facilities:

- A Concessional Financing Facility, which aims to provide additional development assistance on concessional terms to Jordan and Lebanon; and,
- A Guarantee Facility, which aims to provide the

large volumes of financing needed for post-conflict reconstruction and economic recovery across the region.

The proposed Concessional Financing Facility aims to combine grants from supporting countries with loans from Multilateral Development Banks (MDBs), bringing down the interest rate on the loans to highly concessional levels. It provides Arab middle-income countries most affected by large numbers of refugees with access to urgently needed concessional development aid. This facility establishes a sustainable long-term and predictable financing platform, and addresses the problems associated with gaps in multi-year and medium-term financing for development and emergency humanitarian interventions. This facility represents a coordinated response by the international community to provide concessional financing through various MDBs and UN agencies already operating in the region.

The proposed Guarantee Facility will provide guarantees which can be used through three tools:

- Guarantees on MDB loans or guarantee options, opening up space in the balance sheet of MDBs to lend additional amounts to countries in the region;
- Guarantees to support the issuance of a special type of World Bank bond, providing additional financing to Arab countries by leveraging the capital markets [this would be above what could be achieved through tool a)]; and,
- Guarantees to support the issuance of a special type of Sukuk, administered by the Islamic Development Bank.

In addition to new financing mechanisms specifically supporting Arab countries, the World Bank Group has established a new strategy for the region, divided into four pillars. The first two address the underlying causes of violence and conflict and focus on:

- Improving governance and inclusion; and,
- Regional cooperation.

The latter two tackle the urgent consequences by addressing:

- Resilience to shocks of refugees and internally displaced persons (IDPs); and,
- Recovery and reconstruction.

WBG support for improving governance and inclusion is focused on three areas:

- **Quality jobs:** In light of the “elite-capture” obstacle to private-sector job creation in the past, designing “capture-proof” policies in the business sector would be a priority. Next would be policies that build skills through a market orientation. Finally, in some countries, labor regulations need to be improved to promote formal-sector job creation.
- **Quality services:** In the social sectors, governments could build on local success stories, including cases of non-state providers and local governments providing quality services. Mechanisms that strengthen students’ and patients’ ability to hold teachers and doctors accountable, such as vouchers, could be piloted. Regarding infrastructural services, replacing subsidies with targeted cash transfers could improve efficiency, equity, and strengthen citizens’ voice, and fostering infrastructure investment by the private sector can enforce greater accountability. The primary role of the government sector would be to create the policy and regulatory environment to ensure accountability and efficient use of resources.
- **Citizen engagement:** Some countries revised their constitutions in the direction of greater citizen engagement and inclusion. The WBG can help improve transparency and accountability by:
- Enabling cross-cutting reforms and legislation, setting up independent accountability institutions, and greater internet access;
- Improving sectoral institutions, such as accountability in social service delivery; and,
- Incorporating citizen feedback and beneficiary engagement in all WBG projects.

Not only will these actions support peace and social stability, but they will support countries’ ability to implement the SDGs while growing inclusively and sustainably.

Despite a common language, history, culture, and threats, the Arab world remains the least integrated region in the world. Potential gains from regional integration are significant, including the capture of trade benefits and building trust, which will likely lower the level of conflict. The WBG will initially focus on three areas:

- **Energy:** Studies indicate that investment costs to meet the growing electricity demand in the region would be reduced by 35 percent with a fully integrated electricity grid. The region would also benefit from increased trade in solar power and participation in the growing international gas market. Subsidized energy tariffs, which have been the main detriment to the financial viability of the gas and electricity sectors in the region, are another priority of the WBG strategy in the region.
- **Water:** Arab countries are the most water scarce in the world, with some of the lowest water productivity rates, largely because water tariffs are among the lowest in the world. Arab governments are providing the highest level of subsidies globally, with disproportionate capture by the wealthiest. The WBG will attempt to advise countries on how to:
 - Introduce tariffs and technology for water and energy efficiency;
 - Introduce integrated communities through rapid delivery programs with strong citizen engagement;
 - Introduce integrated urban water management and agricultural water productivity systems that simultaneously address sustainability of water services and water resources; and
 - Expand international water management agreements.
- **Education:** Quality is the main regional concern and there is wide variation by socioeconomic status, geography, and gender. Regional cooperation offers an opportunity for reform. This would build on the regional initiative Education for Competitiveness, which is currently being undertaken in partnership with the Islamic Development Bank.

These regional approaches directly address Arab countries' collective capacity to make progress on many of the SDGs, both directly and indirectly. While directly addressing SDG 4 (education), SDG 6 (water), and SDG 7 (energy), successful policies can also contribute to progress on SDG 1 (poverty), SDG 5 (gender), SDG 8 (jobs and economic growth), SDG 10 (inequality), and SDG 16 (peace and justice), among others. The WBG strategy determines that there are certain sectors which may be better addressed collectively to set the region on a faster development track.

The welfare of migrants, IDPs, and host communities is a global public good. As such, it will take a global effort to address the problem. The goal of the resilience pillar will be to address this global public good. To do so, the WBG will follow three principles:

- Support national or local governments so they can, in turn, promote the welfare of host communities, refugees, and IDPs;
- Orient development assistance towards helping migrants and IDPs build assets, in terms of human, physical, and institutional capital, and with a special emphasis on preventing the erosion of human capital (health and education) among displaced populations; and,
- Rely on the international community, and donor community in particular, for financing.

The WBG approach to reconstruction and recovery in the Arab world aims to regain citizens' trust in the state and therefore must begin before the conflicts are over. This will require working with non-traditional partners and requires substantial financial support, which the WBG is seeking to address with the aforementioned financing plan.

The WBG strategy in support of the Arab world is a new approach which attempts to tackle the underlying causes of fragility and conflict, while simultaneously supporting resilience, reconstruction, and recovery efforts. A fundamental component of implementing this strategy is doing so in partnership with other regional and global institutions like the UN and the Islamic Development Bank.

Although the WBG relies on its country engagement model, the regional approach – particularly when done in partnership – has the potential to be transformative. These efforts work toward creating inclusive societies and are critical to countries' ability to implement the SDGs. They can be a testament to the ability of countries suffering from fragility and conflict to overcome their structural and sometimes existential threats in favor of a holistic and multi-sectoral path toward sustainable development, embodied in the SDGs. Without peace, there is no development. And while specifically articulated in SDG 16, peace is a fundamental prerequisite for countries who wish to meet all 17 Sustainable Development Goals.

THE ROLE OF ARAB DEVELOPMENT INSTITUTIONS IN THE IMPLEMENTATION OF THE SDGS IN ARAB COUNTRIES

Abdulwahab A. Al-Bader

Development cooperation has been recognized as an essential endeavor to help developing countries relieve their people from poverty and hunger, and acquire the capacity and means to sustain their livelihoods and well-being through decent work.

A core activity of development cooperation is the provision of financial resources to developing countries to help them in achieving their desired development goals. Among the providers of development assistance at the global level is a group of institutions, collectively known as the Coordination Group (CG)¹. The Coordination Group comprises Arab national and regional development institutions, the Islamic Development Bank, and OFID – the OPEC Fund for International Development – who in 1975 launched an initiative to coordinate their development activities and related policies and procedures to make delivery of assistance to partner recipient countries more efficient and effective.

The CG has become an important and long-standing actor in the landscape of development cooperation. Over the past several decades the group has provided assistance to over 140 countries across the globe with a total value of around \$ 147 billion at the end of 2014. These funds were channeled to help recipient countries implement development operations in various economic and social sectors according to country priorities.

Over the last fifteen years the CG institutions have made concerted efforts to support their developing country partners in achieving the Millennium Development Goals (MGDs) adopted by the international community at the turn of the 21st century, in September 2000. Today, the CG institutions are positioned to help Arab and other developing countries in their endeavors to achieve the sustainable development goals (SDGs) and associated targets – the successors to the MDGs, agreed by the United Nations in September 2015.

The CG institutions have recently pledged support and commitment to the SDGs through their Declaration in January 2016 which includes, inter alia, the CG's

emphasis on “the need for a partnership between developed and developing countries that goes beyond a mere transfer of limited financial resources and embraces all the identified means of implementation of the 2030 development agenda”. Having embraced the MDGs, the CG institutions stand ready to continue pursuing their efforts to help partner countries in achieving the SDGs within the framework of the post-2015 development agenda. Furthermore, the Declaration encourages the CG institutions to engage partner countries to develop partnerships supportive of the national SDGs.

The Arab countries, along with countries around the world, have committed themselves to implement the post-2015 development agenda and the 17 Sustainable Development Goals (SDGs). These goals, to be achieved by 2030, are ambitious, aspirational, broad-based, and visionary. They aim, inter alia, to eradicate poverty and hunger and leave no country or person behind, based on the development paradigm that recognizes the interlinkages between the social, economic and environmental dimensions of sustainable development. In this context, development operations need to be selected and prioritized in line with the concept of sustainable development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”, as defined by the United Nations.

In this respect, achieving the 17 SDGs, accompanied by 169 targets and their associated indicators, is a challenging endeavor that requires concerted efforts to become a reality. In their quest for achieving the SDGs, the Arab countries need to adopt development strategies encompassing policies and action plans that enable speedy uptake of the SDGs at the national level, and can enhance unlocking the inherent development benefits of cooperation and integration at the regional level.

ASSISTING ARAB COUNTRIES IN ACHIEVING THE SDGs

A first step on the path towards achieving the SDGs is the full recognition and understanding of their complexity, diversity, broadness, interdependence, and inclusiveness. Their implementation requires revitalizing the global

Abdulwahab A. Al-Bader, Director-General, Kuwait Fund for Arab Economic Development (KFAED).

partnership for sustainable development. This goal embodies achieving 19 targets in five areas: finance, technology, capacity-building, trade, and systemic issues. As a finance development institution and a member of the CG, the Kuwait Fund has provided Official Development Assistance (ODA) to developing countries since its establishment fifty-five years ago. By the end of 2015 recipients spanned 105 countries across the globe, including 16 Arab countries, whose share in total loan commitments of over \$ 18.5 billion, exceeded 50 percent. With a view to assisting developing countries' partners in their endeavors to achieve the SDGs, the Kuwait Fund cooperates with them through the following policies and activities:

- Respect for government development priorities, including projects in various economic and social sectors with due consideration to environmental protection.
- Priority projects will be approved for financing based on the appraisal conducted by expert Fund staff to confirm their justification, with regard to the projects' technical soundness, economic viability, and financial feasibility, in addition to assessing environmental impact.
- Finance for project implementation is provided on concessional terms to reduce the burden of debt service on recipients.
- Technical assistance grants are extended to needy countries to finance various activities and services, such as project feasibility studies, capacity building, training, and other similar activities conducive to effective implementation and operation of projects.
- Providing advice to development assistance recipients throughout the project life cycle, monitoring progress on implementation, and consulting with country partners on any problems and difficulties during project implementation and helping to resolve them.
- As a member of the CG, the Kuwait Fund coordinates its activities and the project financing with other members of the CG. It applies the CG's simplified and unified procedures for the procurement of goods and services related to project implementation, and adopts generally the partner country's procedures.
- Besides its joint coordination and co-financing with CG members, the Kuwait Fund welcomes

cooperation with other development institutions and country donors in co-financing projects, especially large projects whose requirements are beyond the means of one financier.

STAGGERING CHALLENGES

Achieving the SDGs in Arab countries at the national level depends on recognizing the significant variations in country circumstances, including, inter alia, level of development, the availability and state of natural resources, manpower, means of implementation, governance, and multi-stakeholder partnerships. In addition, the state of progress on the MDGs in Arab countries is of crucial importance in shaping the road to the post-2015 development agenda and its means of implementation.

Progress on the MDGs over the past 15 years has been uneven in the Arab region. With the exception of the Gulf Cooperation Council (GCC) countries, progress was modest in some Arab countries, lagging behind, or sharply reversed in others. Those Arab countries that underwent political transition and encountered uprisings in recent years witnessed economic downturn, and others with on-going conflicts and war experienced a severe blow to progress on the MDGs. The huge devastation of economic and social infrastructure in these countries will take a high toll on their endeavors to achieve the SDGs. Once peace and security is re-established in the conflict-affected and war-torn countries, activities there will be concentrated on reconstruction and development to facilitate the pathway towards the SDGs. Nevertheless, Arab countries face staggering challenges to the achievement of the SDGs, owing to constraints imposed by scarcity of water and limited land, coupled with inefficient use, low productivity and heavy footprint on their bio-capacity to regenerate their services for sustainable development. Under these circumstances, Arab countries need to galvanize unprecedented efforts to tackle the challenges and ensure the required means for implementing the SDGs, including adequate financing to be mobilized from various development partners.

PARTNERSHIPS FOR THE SDGs

Recognizing that each country has the primary responsibility for its own economic and social development implies that embarking on the pathway towards the SDGs calls for each country to adopt a clear strategic action plan which takes account of its specific circumstances, and to ensure the means for implementation. In this regard,

development finance stands out as a critical factor for successful implementation of the SDGs. On its part, the Kuwait Fund, as a development finance institution and a long-standing partner in development is committed to help country partners in their quest to achieve the SDGs.

In this respect, Arab countries need to develop integrated action plans encompassing the economic, social, and environmental dimensions of sustainable development, with project priorities sequenced for implementation over time and means of implementation defined, including required resources, their sources and quality.

Having pledged its commitment and support to the SDGs, the Kuwait Fund envisages that its role in the implementation of the SDGs in Arab countries will be underpinned by the following policies and activities:

- As in past years, the share of Arab countries will be no less than 50 percent of total loan commitments to all recipient countries.
- All loans will be extended at concessional terms.
- The level of a loan concessionality will be determined with due consideration to development level, project sector, and a country's economic circumstances.
- Lending terms will be most favorable to projects with the potential to enhance the achievement of the SDGs, particularly eliminating poverty and hunger, such as agricultural projects contributing to food security. Other projects in sectors as water, sanitation, health and education are also of critical importance for reducing poverty and enhancing the livelihoods of the beneficiaries.
- Supporting the activities of small and medium enterprises is essential for creating job opportunities to counteract the rising trend of unemployment in Arab countries, and to help in calming down social unrest. In this regard, the Fund will continue to extend lines of credit to national development banks and social development funds to support their lending programs to finance small and medium size projects implemented by the private sector.
- Besides loans, the Fund will, as usual, provide technical assistance to support capacity-building and upgrading technical skills to help recipient countries improve managerial capabilities for the effective implementation of development operations.
- Having pledged their support to the SDGs, CG members, including the Kuwait Fund will deepen their cooperation with various development institutions and country donors, and other partners in development to ensure adequate means of implementation of the SDGs, particularly co-financing of priority projects in Arab and other developing countries.
- On their part, in addition to their commitments to the SDGs, Arab countries need to adopt policies and take actions to facilitate implementation, including, inter alia, the following:
 - As there is no-size fits-all development agenda, each Arab country needs to develop its own development action plan depending on its national circumstances and level of development.
 - Such development plans should be consistent with the transformative vision of the SDGs, and the associated targets.
 - National development plans should recognize the interdependencies and synergies between sectors, such as the food, water, and energy sectors whose inextricable links require balancing trade-offs to ensure their security.
 - Ensuring financing for the SDGs in Arab countries is of critical importance for their achievement. In this respect, Arab countries need to mobilize adequate resources from various sources, particularly from domestic sources, providers of development assistance, and the private sector.
 - Domestic resources can play a significant role in augmenting the required resources for development finance. Their mobilization requires revisiting existing subsidization policies and implementing reforms to make them target group-oriented, more efficient and effective. On the other hand, strengthening compliance with taxation rules, introducing effective and efficient mechanisms for revenue collection, and adopting measures against tax evasion can be significantly important in enhancing the mobilization of domestic resources.
 - Most Arab countries will need external official development assistance (ODA) resources to meet the challenges of the SDGs, especially conflict-affected, post-conflict, and low-income countries,



in view of their massive financing requirements for reconstruction and development. In order to attract a better share of the global ODA resources, Arab countries need to reflect their leadership in setting up clear, transparent, and implementable action plans, with goals and targets alongside those of the SDGs. ODA providers will be more responsive to well-prepared projects based on comprehensive feasibility studies addressing the economic, social, and environmental impacts, in addition to other well-conceived aspects related to project implementation and operation.

- The private sector can play a significant role in financing the SDGs, provided the business environment is ripe for its activities. Unleashing the potential of the private sector requires a policy to level the playing field, creating promising market opportunities for profitable investments, providing incentives and using financing mechanisms to reduce barriers and risks, in addition to developing critical infrastructure and social services needed for doing business.

In conclusion, a critical requirement to achieving the SDGs in Arab countries is strengthening development partnerships among all stakeholders. Their cooperation

and fulfilment of commitments to the SDGs – including mobilization of resources for investments, technical assistance for capacity-building, suitable technology transfer, and promotion of trade – can play a role of significant importance for accelerating the progress towards the SDGs.

On their part, the CG members, as mentioned earlier, have already pledged their strong support to the SDGs. They will continue to fulfill their commitments to development cooperation including strengthening partnerships with providers of development finance to help Arab and other developing countries in their aspirations for the SDGs.

Note

1. The CG institutions include: Abu Dhabi Fund for Development, the Arab Bank for Economic Development in Africa, the Arab Fund for Economic and Social Development, the Arab Gulf Program for Development Organizations, the Arab Monetary Fund, the Islamic Development Bank Group, the Kuwait Fund for Arab Economic Development, the OPEC Fund for International Development (OFID), the Qatar Development Fund, and the Saudi Fund for Development.

HOW CAN OFID CONTRIBUTE TO IMPLEMENTING SDGs IN ARAB COUNTRIES? FOCUS ON GOAL 7: UNIVERSAL ACCESS TO AFFORDABLE AND MODERN ENERGY

Suleiman Al Herbish

My introduction to the global development debate came early in my career, when I attended the 1968 United Nations Conference on Trade and Development as part of Saudi Arabia delegation. Looking back, I can confidently say that none of the eloquent debaters at that gathering mentioned energy. In the following forty years, I have become closely involved with the energy industry, first through my association with the oil and gas industry and the Organization of the Petroleum Exporting Countries (OPEC), and more recently in my capacity as head of the OPEC Fund for International Development (OFID).

It was my last post which made me rethink the subject of energy and development, especially since the Millennium Development Goals (MDGs) – which had been guiding the global development agenda since 2000 – were, crucially, lacking a goal relating specifically to energy access. My thoughts were influenced by the fact that since its conception at the first OPEC Summit in Algiers in 1975, its Member Countries had repeatedly reaffirmed OFID's development mandate. However, in 2007, at the third OPEC Summit in Riyadh, this mandate was more explicit. The historic Riyadh Declaration recognized unequivocally that energy was essential for poverty eradication, sustainable development, and the achievement of the Millennium Development Goals (MDGs).

At OFID, we picked up on this gap and publically called for energy poverty alleviation to be seen as the "Missing Ninth MDG". In 2011, this pioneering role resulted in OFID joining the United Nations Sustainable Energy for All (SE4ALL) initiative and its Advisory Board. We raised our voice and backed it up with concrete action on the ground; and we pushed with all our might to bring the plight of the energy-poor to the attention of the global community.

This is why we were delighted at OFID that the framework of the recently adopted 2030 Development Agenda is the integration of the economic, social and

environmental dimensions of sustainable development, and that within this new framework energy is firmly entrenched as Goal 7, in a set of 17 Sustainable Development Goals. The inclusion of universal access to affordable, reliable and modern energy services as the first target under SDG 7 implies recognition of OFID's belief by the entire global community. We are proud that our efforts – and those of other like-minded institutions and individuals with whom we worked in partnership – have finally paid off.

ENERGY KEY TO IMPLEMENTING SDGs

Due to its central and enabling role, energy was considered one of the main areas that the SDGs had to address. According to the International Council for Sciences and the International Social Science Council, energy directly links to each of the adopted goals, and 56 out of the 169 targets.

Without energy (SDG7) it is impossible to deliver on primary health (SDG3), poverty eradication (SDG1), climate change (SDG13), hunger and nutrition (SDG2), education (SDG4), gender equality (SDG5), clean water and sanitation (SDG6), productive opportunities (SDG8), cities (SDG11), infrastructure and industrialization (SD11) and sustainable consumption (SDG12). At the same time, SDG7 must be delivered within the parameters set by the other SDGs.

OFID'S INVESTMENT STRATEGY: LINKING THE INTERVENTIONS

Naturally, development issues boil down to the bottom line of finance. Practitioners debate how to finance development and how to raise the necessary resources. Attaining universal energy access, and indeed achieving all of the objectives of the 2030 Agenda, is no exception.

However, long-term sustainability requires acknowledging that many of the resources that support development – such as water, land, and materials – are finite and are also needed to support ecosystems.

Suleiman Al Herbish, Director General, OPEC Fund for International Development (OFID)

Development can only be sustainable if it works within those constraints, over time and across sectors and locations.

In the execution of its mandate, OFID recognizes the necessity of an overall perspective that does not ignore the complex links between the SDGs, their targets and interventions. This approach is reflected in the adoption of the energy-water-food nexus as the theme of OFID's Corporate Plan 2016–2025. The strategic direction laid out by the Corporate Plan recognizes that the optimal use of natural resources requires that the three sectors be treated holistically, thus aligning with the 2030 global development agenda.

ACTION ON THE GROUND

On the ground, OFID has taken concerted action with its partner countries to give special attention to access to modern energy services. OFID considers both conventional and renewable energy sources to be viable and pursues both in the quest for solutions that will satisfy the basic energy needs of the poor.

OFID's efforts were enhanced in June 2012, when its finance ministers issued a Declaration on Energy Poverty and committed a minimum of US\$1bn to help fund its Energy for the Poor Initiative. One year later, following operational success and high demand from partner countries, this commitment was converted from a one-time obligation to a revolving pledge.

Since 2008, OFID has expanded the number of energy projects in its portfolio, providing a total US\$2.9bn in financing through its various operating windows, including public, private and trade. Among other initiatives, this sum has included support to 75 projects worldwide with a combined total cost of over US\$21.6bn. Collectively, these projects provided more than 14,400 MW of power and extended electricity grids by 38,000 km.

In fighting energy poverty, OFID delivers a wide range of solutions to suit all kinds of circumstances: From large, capital-intensive investments to innovative, small-scale community schemes and from gas pipelines and power plants to solar lanterns and clean cook stoves. The technology utilized is based on the need and a country's policy and not on any preference by OFID. This is in line with the principles

agreed within the Global Partnership for Effective Development Cooperation and SDG 17.

OFID believes that covering energy solutions should also be in line with SDG 8 of inclusive and sustainable economic growth with full and productive employment. That is why it offers support to governments and parastatals as well as the private sector, civil society, NGOs and entrepreneurs.

In the Arab world we have funded 7 renewable and 13 conventional energy projects since 2008 in countries such as Egypt, Sudan, Jordan, Morocco, Palestine, Tunisia, and Yemen. All these illustrate the principles that OFID follows in implementing the SDG Agenda.

Egypt, for example is richly endowed with gas resources, hence OFID supported increasing the reliability of energy access by contributing to the financing of seven efficient combined-cycle gas-based power plants through the public sector funds.

In Sudan, water resources are abundant, but the country has the lowest rate of electrification in the Arab world. OFID helped finance the Upper Atbara Dam Complex, a renewable hydropower energy plant. To complement these efforts, we made the use of biomass more efficient and cleaner by extending a grant to manufacture efficient LPG cooking stoves. This will help reduce the number of casualties caused by exposure to smoke from other cooking methods and will engage NGOs and civil society in providing and maintaining these stoves by creating more employment opportunities.

Jordan's policy has created a positive environment for investment in renewable energy. OFID has been part of one of the largest private sector solar initiative in the MENA region. A US\$25m loan provided through its private sector window has supported the Jordan Solar One and Falcon Ma'an power plants. Together, the two projects have a combined capacity of 102MW and will generate 98GW/h of electricity annually.

In Yemen, where a very low rate of electrification exists especially in rural areas, OFID supported the government to build its first wind power plant, with the objective of increasing the generation capacity required to supply electricity to selected rural areas.

At the same time, we are helping to cut the pressure on the national grid from electric water heating by providing a grant to build local capacity to manufacture solar water heaters in cooperation with the German society for international cooperation (GIZ), once more to provide decentralized solutions and create more jobs.

OFID helped to build a natural gas distribution pipeline in Tunisia to support the country's economy; this project will serve a number of existing hotels in the tourist cities of Zarzis and Jerba Island. At the same time, we are helping the country to meet its power demand in a cost-effective, environmentally friendly and sustainable manner through the construction of a gas combined-cycle power plant.

Morocco was supported by OFID by providing enhanced access to modern energy to the poor through financing gas turbine power generation units. OFID also helped the country to provide better access to energy in rural areas and increase the share of clean and renewable energies in the energy mix through the implementation of medium and low voltage distribution lines and transformers.

The country also benefited from the OFID trade facility window – we supported the import of crude oil and refined petroleum products to meet domestic demand.

In Palestine, we are working with the Arab Fund for Economic and Social Development to supply solar water heating systems to support hospitals during power cuts. We are also supporting a UNDP program by providing a grant to generate renewable energy through solar panels for public education, health and water facilities in the Gaza Strip. Furthermore, we provided a grant to support the provision of renewable energy and energy efficient systems for St Joseph's Hospital in East Jerusalem to address the electricity supply shortage and reduce the power bill.

All in all, the list of OFID's partner countries includes 13 Arab countries that benefited from more than 21 percent of OFID's total commitments since inception. In addition, by the end of 2015, three Arab countries are among the top five countries where OFID resources are invested. This clearly demonstrates OFID's continuing commitment to partnering with Arab countries for development.



GOVERNMENT AND PRIVATE SECTOR PARTNERSHIPS TO INTENSIFY THE UAE'S RESPONSE TO THE SUSTAINABLE DEVELOPMENT GOALS AND THE PARIS CLIMATE AGREEMENT

Razan Khalifa Al Mubarak

With the ratification of the Sustainable Development Goals (SDGs) at the United Nations General Assembly in September 2015, and with the signing of the Paris Climate Agreement in April 2016, it is time for nations to start implementation. It is therefore essential for nations to understand the full scope and implications of both the SDGs and the Paris Agreement.

Although the SDGs build on the Millennium Development Goals (MDGs), there are big differences. The MDGs addressed major humanitarian issues and were mainly focussed on improving conditions in developing countries. The UAE played a significant role in supporting the MDGs as the largest donor of foreign aid globally as a percentage of gross nation income. The SDGs address challenges associated with both 'developing' and 'developed' nations and will impact both domestic and foreign policies. They will impact almost every government department and will need to be integrated into government policies and plans at all levels and across all disciplines.

The Paris Climate Agreement is far-reaching and ambitious. The key elements of the agreement are to limit the global temperature increase to below 2°C with an aspiration to limit the increase to 1.5°C above pre-industrial levels. Countries have submitted Intended Nationally Determined Contributions (INDCs), which will form Nationally Determined Contributions (NDCs) once the agreement is ratified. Every five years after 2020 the NDCs should be revised and made progressively more ambitious. The mitigation co-benefits of economic diversification are recognised within the agreement and the UAE has put economic diversification at the cornerstone of their INDC, stating that the country will "expand its ambitious actions to limit emissions and improve resilience through economic diversification".

The UAE leadership demonstrated real commitment to act on climate change and economic diversification during the recent government restructure and the

creation of the Ministry of Climate Change and Environment (MoCCE) – previously the Ministry of Environment and Water – and with the establishment of a UAE Council of Scientists to review national policy in science, technology and innovation. The MoCCE now has the outward facing role of participating in the UN-led climate negotiations. It also has the lead role for future development of the INDCs/NDCs domestically, and for the implementation of the Federal Green Growth Strategy designed to diversify economic growth to a knowledge based, low carbon, high value economy.

Both the SDGs and climate change represent significant challenges and the UAE government must prioritise the areas that require the greatest focus based on the local context. As the UAE economy continues to diversify, the government will increasingly need to partner with the private sector and create the right enabling conditions for the private sector to innovate and invest in solutions that are needed. There already are some good examples of partnerships that are producing results.

PARTNERSHIPS CONTRIBUTING TO SDG 8 (DECENT WORK AND ECONOMIC GROWTH), 11 (SUSTAINABLE CITIES AND COMMUNITIES), 13 (CLIMATE ACTION) AND THE UAE INDC THROUGH ENERGY EFFICIENCY AND CREATION OF GREEN JOBS

The UAE government has been removing subsidies and increasing tariffs for energy and water to promote resource efficiency and support low-carbon development. This has made energy efficiency more attractive to the private sector due to improved return on investment from energy efficiency initiatives.

In Dubai, where the tariff reforms started earlier, there has been a growth in Energy Service Companies (ESCO's) regulated by the Dubai government. The Dubai government seeks to improve energy efficiency by 30% by 2030, which according to the UAE National Strategy for Green Growth would avoid the need for 15,000MW of new power supply by 2030 –

roughly half the current installed capacity in the entire country. ESCOs make a valuable contribution to energy efficiency, working through a performance contract where the ESCOs assume some risk for the delivery of the energy saving measures they propose to a client. ESCOs are also a good source of green jobs, adding to economic diversification.

There are opportunities to do even more than this. An air conditioning pilot study in Abu Dhabi in 2012 found that there is potential to reduce electricity use for cooling by approximately 31 percent if appropriate measures are taken. The Abu Dhabi government is implementing the Pearl Rating System, a green building rating system that is part of the sustainable development initiative Estidama. With the right enabling conditions the private sector could help accelerate implementation in order to realize environmental benefits and generate high value jobs.

The Abu Dhabi Sustainability Group (ADSG), with 48 members from the government and private sector, facilitates the development and implementation of sustainability initiatives. The ADSG Energy Management Programme was launched in 2015 and provides accredited training for energy management. As tariffs increase, these early adopters of good energy management will have a competitive advantage.

PARTNERSHIPS CONTRIBUTING TO SDG 14 (LIFE BELOW WATER), SDG 15 (LIFE ON LAND) THROUGH ECOTOURISM AND FISHERIES POLICIES

Fish stocks in the UAE, as in many other parts of the world, have collapsed. The UAE government is currently embarking on a comprehensive review of its fisheries policy in close consultation with the fishing community, aimed at restoring healthy fish stocks whilst preserving livelihoods and cultural traditions. However, as the human population grows there will be a growing demand for dietary protein and a need for good jobs. To try and balance these competing demands, the Environment Agency - Abu Dhabi (EAD) have developed a policy and supporting regulations for aquaculture that promotes opportunities for private aquaculture operators to produce food and create jobs whilst achieving high environmental standards.

EAD has also opened two protected areas to the public, Al Wathba Wetland Reserve and the Mangroves National Park. Private operators now take kayaking

tours into the mangroves, allowing residents and visitors to appreciate the wildlife that Abu Dhabi has to offer, which will both promote healthy lifestyles and create jobs in the ecotourism sector. One important benefit of this approach is that when people enjoy wild spaces they will value and want to protect them.

Based on the success of these two pilot sites an Ecotourism Framework Study has been developed which aims to extend ecotourism and the participation of the private sector within an effective regulatory framework.

PARTNERSHIPS CONTRIBUTING TO SDG 7 (ALTERNATIVE AND CLEAN ENERGY) AND THE UAE INDC THROUGH GOVERNMENT POLICY AND TECHNOLOGICAL ADVANCEMENTS

The UAE government has set an official target of 24% of energy coming from clean energy sources (nuclear and renewables) by 2021 and has announced an intention to extend this to around 30% by 2030. Dubai is encouraging the take up of photovoltaics by private property owners through a Distributed Renewable Resource Programme. This programme encourages householders and building owners to install photovoltaic solar panels for private consumption, with excess electricity being exported to the grid. Abu Dhabi has taken the approach of developing large-scale solar projects implemented by Masdar. This clear policy signal from the government should help build confidence within the private sector to invest in renewables.

PARTNERSHIPS CONTRIBUTING TO SDG 6 (CLEAN WATER AND SANITATION), SDG 7 (ALTERNATIVE AND CLEAN ENERGY), SDG 9 (INDUSTRY, INNOVATION AND INFRASTRUCTURE), SDG 13 (CLIMATE ACTION) AND THE UAE INDC THROUGH ENERGY DIVERSIFICATION AND INNOVATION

Masdar, supported by local government and private sector partners, is embarking on a renewable energy desalination pilot programme to research and develop energy-efficient, cost-competitive desalination technologies that will be mobilised at a commercial scale within the UAE in the future, decoupling water desalination from greenhouse gas emissions.

In addition, Masdar Clean Energy, through a company called Al Reyadah, is exploring and developing commercial-scale projects for carbon capture, usage

and storage (CCUS) aiming to develop a national network that captures carbon from power generation and industry.

EAD is creating the conditions for innovation in water efficiency by promoting the water budget approach. The water budget approach changes the planning for water from a demand-led to a supply-led exercise where the government defines a volume of water that can be supplied sustainably from an economic and environmental stance. This would in effect turn desalinated water into a limited resource, creating the conditions to accelerate innovation and solutions to drive efficiency.

PARTNERSHIPS CONTRIBUTING TO SDG 12 (RESPONSIBLE CONSUMPTION AND PRODUCTION) THROUGH THE PROMOTION OF SUSTAINABLE PRODUCTS

The UAE government is working with the private sector to promote sustainable products and limit the availability of less sustainable products. In July 2014 a UAE lighting standard came into force that bans the import and sale

of poor quality and inefficient light bulbs, achieving significant energy savings.

Another partnership project between the Ecological Footprint Initiative and the private sector aims to develop a fuel economy label and standard for light duty vehicles. The potential for emissions reduction resulting from the development and implementation of vehicle fuel economy policies is estimated to be 10 million tonnes CO₂ equivalent per year in the UAE market.

CONCLUSION

The UAE government and the private sector are currently partnering to progress sustainable development and reduction in carbon emissions. With economic diversification the private sector will become an increasingly important partner to implement and accelerate actions under the SDGs and the Paris Climate Agreement. Both the government and private sector will benefit from partnerships that create high value green jobs, in a diversified low carbon economy, which protects and where possible enhances quality of life.



THE CHALLENGES OF SUSTAINABLE EDUCATION IN THE ARAB WORLD: AUB'S CURRENT AND FUTURE ROLE

Saouma BouJaoude, Rima Karami Akkary and Fadlo R. Khuri

Sustainable education in the Arab world is facing a growing challenge owing to a combination of factors that require urgent solutions. There is a significant population bulge in the region among the under-25 age group, a shortage of access to quality education for young people as well as limited opportunities for economic and political empowerment after they qualify, and all against a backdrop of political upheaval and violence raging across the region in multiple disparate or connected theatres of conflict. Little wonder therefore that only four percent of Arab students who are able to go outside the Middle East and North Africa (MENA) region to improve their educational prospects return after they graduate. At the same time, higher education is becoming increasingly unaffordable for most people, worsening social cohesion and increasing economic disparity. Tuition increases have accelerated in recent years at many universities, including the American University of Beirut (AUB). All this puts the major not-for-profit universities in the region in danger of being transformed from places of sustainable intellectual distinction to places of indefensible economic elitism.

Recognizing these concerns and seeking to positively impact them, the United Nations Education, Scientific and Cultural Organization (UNESCO) pre-emptively named 2005-2014 as the Decade of Education for Sustainable Development. In 2012, UNESCO issued the report UN Decade of Education for Sustainable Development, in which all stakeholders in education were urged to "ensure inclusive and quality education for all and promote lifelong learning"¹; a report that set the groundwork for rallying stakeholders to the concept of sustainable development as a new discipline which has yet to be validated. These principles have begun to

be developed in selected Arab countries, such as the United Arab Emirates (Dubai in particular), Saudi Arabia, Kuwait, and Lebanon, establishing aspirational goals for other Arab states. Despite the challenges, recent years have seen an improvement in indicators of accessibility to education at all educational levels in the Arab states.

However, the Arab states still have large pockets of illiteracy and remain beset with serious problems in the quality of education, as indicated in the results of international comparisons² such as PIRLS, PISA and TIMSS³ and as demonstrated in reports by UNESCO, the World Bank and other educational organizations⁴. Educational reform in Arab countries has been conceptualized as large scale and top-down: initiated, funded, managed, and evaluated exclusively at the highest level of ministries of education or other governmental institutions such as centers of educational research and development (Karami-Akkary, 2014). Those groups most closely affected by reform, like teachers, principals, students, and parents, have no active role in conceptualizing, reviewing, or providing feedback on the reform plans. This approach endures even though notions of decentralization, private sector involvement in education, school-based reform, local community responsibility for education, distributed leadership, and teachers' rights and duties have become the norm rather than the exception in countries with efficient and productive educational systems. Centralized approaches are also predominating despite research evidence that suggests bottom-up approaches are more effective than top-down ones in strengthening community participation in decision-making, and involving all stakeholders is necessary for the success and sustainability of the impact of educational reform.

There is also a shortage of research on educational reform in Arab countries. As such, educational reformers

Dr. Saouma BouJaoude is a professor of science education at the Department of Education, American University of Beirut. His research focuses on instructional methodologies and the nature of science.

Dr. Rima Karami Akkary is an associate professor of educational administration and policy studies at the Department of Education, American University of Beirut. Her research focuses on professional development and school improvement.

Dr. Fadlo R. Khuri is the 16th president of the American University of Beirut. He has more than two decades of experience mentoring outstanding students, faculty and staff in science and medicine, and his research focuses on the biology, prevention and treatment of tobacco related cancers.

are bound to rely on an international knowledge base that offers solutions that do not respond to local, culturally grounded needs (El-Amine, 2005). In an attempt to engender meaningful educational change, it is necessary to adopt new reform perspectives with the potential to move the Arab region in more productive and sustainable directions where research is symbiotically wedded to policymaking and practice, and where knowledge production is directed to serve development to improve the quality of education for Arab youth.

Based on experience in projects being led or implemented at AUB – such as TAMAM⁵, a school-based reform project implemented to date in Algeria, Egypt, Jordan, Lebanon, Oman, Qatar, Saudi Arabia, and Sudan, a project on education for sustainable development with UNESCO, the Developing Rehabilitation Assistance to Schools and Teachers Improvement (DRASATI) project which involved work with the Ministry of Education and Higher Education and a review of the existing literature on educational reform – we propose that educational reform adopt a perspective that combines research and development aimed at sustainable school-based improvement.

To surpass the results of reform approaches that have been implemented in Arab states to date, we recommend a paradigmatic shift towards educational reform at the pre-university level. This reform should be as transformative in its approach to leadership, teaching and learning (Karami-Akkary, Saad, & Katerji, 2012). The focus should be on changing beliefs and habits of the mind (BouJaoude & Jurdak, 2009) rather than simply focusing on technical changes in behavior and practices that might not be sustainable and transferable into new contexts, and should adopt a systemic approach to focus on complexity rather than simplicity through targeting both the structural arrangements as well as the adopted organizational norms. A variety of stakeholders should be involved at the school, community, university and ministerial level who bring a variety of experiences and opinions to bear on the reform agenda. Additionally, this reform should be grounded in the local context and linked to the challenges faced by the practitioners in charge of its implementation. Building capacity for leading change should constitute an integral part of the reform design, emphasize dialogue and collaborative learning, be experiential and rooted in inquiry, reflection and experimentation to increase the possibility of sustaining the reform and its impact.

Education for sustainable development requires that

reforms target transformation in the organizational and cultural arrangement of schools. Those in which sustainable development is the focus should be designed as learning organizations characterized by self-renewing qualities that produce grounded knowledge with the potential to influence policy. They should adopt self-organizing governance structures that embed innovative ideas through adaptation and transformation and should espouse a culture of collaboration where decision making is participative and where everybody is intimately involved. These schools should be securely connected to their local communities in a productive two-way relationship investing in their assets and serving their needs.

And what of higher education and the roles that the major universities in the Arab states can play in education for sustainable development and in reversing the brain drain that currently continues to plague much of the region? Over 150 years, AUB and its predecessor the Syria Protestant College, has graduated the finest physicians, engineers, businesswomen and men, classicists, political innovators, nutritionists, and public health specialists in the region. AUB's value to the region remains unquestionable as it recruits, trains, and graduates the very best and the very brightest.

However, while financial aid has increased by threefold over the last decade at AUB, the cost of higher education has spiraled upwards. Political instability and economic recession have impacted incomes in Lebanon and across the Arab world, making it significantly more difficult to provide a world-class higher education for the top students. Addressing this problem, complex as it may be, will require that AUB help provide new opportunities for



future leaders to make a difference in Lebanon, in the region, and in the world.

The university has proposed piloting a national service and teaching model for higher education in Lebanon, coupled with a debt-forgiveness approach in collaboration with the government of Lebanon, to restrict the brain drain. This could help transform education by enabling graduates to go out into the community and teach in public and private schools while defraying their loans. This would ensure at least three years of valuable service in areas of the country badly in need of outstanding educators.

To prepare students optimally to find work in the competitive global job market, increasing internship opportunities, especially within regional industries, aligned with sustainable development as outlined by UNESCO, would encourage students to serve the underprivileged and empower educators. In order to achieve this, AUB proposes to strengthen its partnerships with remarkable institutions around the world already aligned with sustainable development goals such as Earth University in Costa Rica, which embodies the same service model on which AUB is based, and whose founding president, Dr. José Zaglul, is an AUB alumnus.

The philosophy of we learn in order to serve has found its object in the many turbulent periods of the past 150 years and is as relevant today as ever at AUB: providing transformative educational opportunities for those in deprived areas of Lebanon, and the growing numbers of refugees; treating the sick in the finest medical facilities in the region; providing complex, multidisciplinary expertise needed to help rebuild and restore shattered societies recovering from war and conflict.

To encourage AUB students to make a difference in the community, the university is proposing to develop the service and leadership components of the curriculum. These would become mandatory components of an AUB education. Already, the medical school's impact curriculum places the same emphasis on the development of character and values than it does the mastery of medical science. Its vision is to graduate physicians who will impact and transform society as healers, scholars, educators, and advocates.

Finally, as exemplified by its leadership in TAMAM, AUB

must also be a leader in pedagogy. This will serve to build the educational foundations for students who desire an AUB education, but are not yet fully prepared for its rigorous curriculum when they graduate from high school. By addressing the needs of pupils from the tenth grade, by offering the over-50s the chance to develop new skills and pursue new intellectual interests in its highly regarded University for Seniors, and by expanding its popular online educational programs, AUB seeks to be a model for impactful learning opportunities for students from age 16 to 95.

These goals will not be easily attained. But looking back at the history of the university from its founder Daniel Bliss onward, AUB has repeatedly embraced challenges in order to transform itself and the region. The challenge of leading innovation in sustainable education in the Arab states is one that we must, and will, take up.

References

- BouJaoude, S. & Jurdak, M. (2009). The Impact of Collaborative Action Research on Inquiry Skills (technical report 1). Retrieved from <http://www.tamamproject.org/documentation/publications>.
- El Amine, A. (2005). Executive summary. In A. El Amine (Ed.), *Reform of general education in the Arab world* (pp. 321–368). Beirut: UNESCO.
- Karami-Akkary, R. K. (2014). Facing the challenges of educational reform in the Arab world. *Journal of Educational Change*, 15(2), 179-202.
- Karami-Akkary, R., Saad, M., & Katerji, R. (2012). Building leadership capacity for school-based reform: TAMAM professional development journey in phase I. (technical report 4). Retrieved from <http://www.tamamproject.org/documentation/publications>.

Notes

1. Refer to <http://www.un.org/sustainabledevelopment/education/>
2. Refer to <http://timssandpirls.bc.edu/>
3. PIRLS - Progress in International Reading Literacy Study, PISA (Programme for International Student Assessment) and TIMSS - Trends in International Mathematics and Science Study.
4. Refer to http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/ED_new/pdf/ARB_EN.pdf and <http://en.unesco.org/gem-report/sites/gem-report/files/157267E.pdf>
5. The name TAMAM is based on the following Arabic title (تمام: التطوير المستند الى المدرسة).

SDG 17: STRENGTHENING THE MEANS OF IMPLEMENTATION AND REVITALIZING PARTNERSHIPS FOR ACHIEVING THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT IN THE ARAB REGION

Reem Nejdawi, Monia Braham and Fidele Byiringiro

The Sustainable Development Goals (SDGs) are ambitious and comprehensive, calling for action on many development fronts. Atop these goals are ending poverty and hunger, reducing inequality, enhancing access to basic services, protecting the environment, and promoting peace and justice. While means of implementation targets have been included under each of the 16 SDGs, one dedicated goal will play an enormous role in the achievement of each and every goal: that is SDG 17 on strengthening the means of implementation and revitalizing the global partnership for sustainable development. Goal 17 is ubiquitous, as it acts both as a “substrate” for the other goals and a “glue” binding them together through a set of five crucial components: (i) finance, (ii) technology, (iii) capacity building, (iv) trade and (v) the so-called systemic issues, which encompass policy and institutions, partnerships and data, monitoring and accountability. As such, Goal 17 brings together all development stakeholders, including developed and developing nations, public and private sector entities and civil society. Achieving SDG 17 will require each of these actors to conduct an introspective analysis of their strategies with a view to reforming them to make them commensurate with the means needed for implementing the new Development Agenda within the next 15 years.

THE ARAB REGION STRIVING FOR PARTNERSHIPS TO IMPLEMENT THE 2030 AGENDA

The Arab region needs to step up its efforts to achieve the SDGs by 2030. At the outset, its development framework must be redefined. While historically the region relied heavily on public programs and institutions to achieve development, the approach proved to have limitations regarding capacity, sustainability and efficiency. Although the 2030 Agenda stipulates that the states are in the drivers’ seats, the efforts of all stakeholders are needed to successfully implement the ambitious agenda. Through strategic partnerships the region can better harness the required capitals – human, natural, financial, physical

and social – to achieve the SDGs and targets. Supporting the dedicated partnerships could help spur development efforts in the region at a lower cost and with greater efficiency.

Partners could include governments, both donors and recipient countries, public and private entities as well as civil society, the academia and research institutions and business associations, to name a few. Globally, development partnerships have gained currency over the years as a result of increased globalization, rising business opportunities in developing country markets where efficient public infrastructure is lacking, decreasing official development assistance (ODA), and enhanced overall governance and project management in developing countries. These partnerships come in various forms and have differing tasks and objectives and as such also have mixed performances. Regionally, although limited, examples exist of successful partnership building, but also of failed ones.

Intra regional partnership development presents an opportunity that the region can make use of. The Arab countries have a lot in common, including a shared language and culture. However, Arab countries also display a wide diversity in terms of political and economic structures, resource endowment and income level. Another point of divergence between countries is the level of involvement by the private sector and civil society organizations.

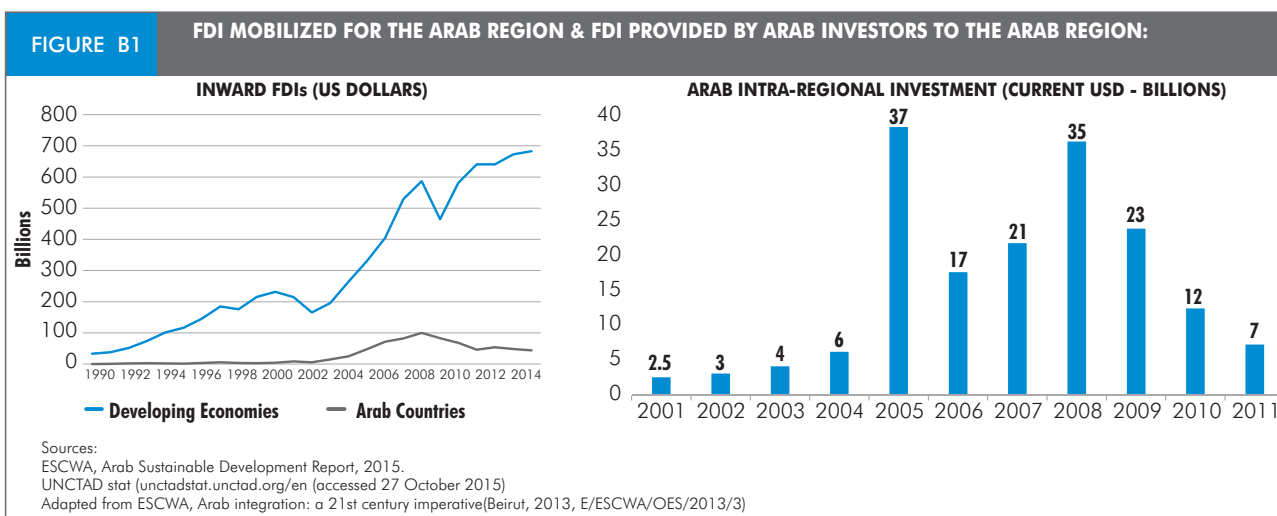
REVIEW OF POTENTIAL IN THE ARAB REGION

Below is a short review that highlights possibilities in revitalizing partnerships in the Arab region as part of Goal 17 and the achievement of SDGs.

PARTNERSHIPS FOR FINANCING DEVELOPMENT

Arab countries face a large financing gap. ESCWA estimates that \$3.6 trillion might be required for selected Arab countries to achieve sustained economic growth over the period 2015 to 2030¹ and the gap will be much larger if the costs of conflicts are counted. The

Reem Nejdawi, Chief of the Food and Environment Policies Section; Monia Braham, Economic Affairs Officer; and Fidele Byiringiro, Economic Affairs Officer, ESCWA.



region, with the exception of the resource-rich countries, faces difficulties in bridging the gap through internal processes due to multiple reasons including inefficient tax collection systems, huge subsidies and sizeable military expenditures. To complete the picture of the financing gap, a closer look at other sources of funding is needed, in particular official development assistance (ODA), foreign direct investment (FDI) including intra-regional investments, and remittances². ODA is a major source of financing for the region with \$22 billion received in 2013, i.e. \$60 per capita, however, now shifting to humanitarian aid rather than development. Intra Arab ODAs are also considered an important financing resource, however volatile due to political considerations and oil revenue swings³. The picture is darker when it comes to investments that dropped sharply due to current instability. Intra-regional direct investment dropped from \$35 billion in 2008 to \$7 billion in 2011⁴. FDIs mobilized for the region declined in 2014 to \$44 billion, which is less than half of what it was in 2008⁵ (see Figure b1). Moreover, the region's remittances are still considered relatively low with \$53 billion brought in through remittances in 2015⁶, however, mainly used for financing education and housing.

With such prospects, distinctive frameworks for financing development have to be identified. Supporting partnerships for development seems to provide a great opportunity to tap on, provided that the region offers a more attractive environment, including political and social stability. Arab partnerships could bring together investors, private foundations, sovereign and development funds and large corporations to implement the 2030 Agenda and develop the region.

PARTNERSHIPS FOR SCIENCE, TECHNOLOGY AND INNOVATION (STI)

Arab countries exert efforts towards developing science, technology and innovation, improving their education systems, and promoting technology transfer. However, they continue to be users rather than generators of STI. According to UNESCO, when it comes to expenditure on STI the region is extremely low – even for the standards of developing countries – with an average gross domestic expenditure on research and development reaching only 0.2 percent. This is merely one fifth of the average expenditure of developing countries and 12 percent of the worldwide average expenditure on research and development. Unless a 'demand-pull' for STI is created through a vibrant economy, 'supply-push' will only lead to unemployment and brain drain⁷. In order to ensure sustained economic growth in such an increasingly competitive global market and to take full advantage of the knowledge-economy, a greater adoption and utilization of STI is required if the Arab region is to stay at the forefront of development. Greater cooperation and partnerships in STIs should allow countries of the region to address common challenges including those related to environmental degradation and growing natural resource scarcity with fewer capital resources. An inducing climate is needed to enhance regional collaborative partnerships and funding mechanisms through the establishment of regional incubators and science parks, and the provision of grants and special contracts for STI development and acquisition.

PARTNERSHIPS FOR INTRA-REGIONAL TRADE DEVELOPMENT

The Arab region is one of the least economically

integrated regions in the world. According to UNCTAD data, intraregional trade amounted to only 9 percent of total exports in 2012, despite the numerous trade agreements that have been signed including the Agadir Agreement (2004), the Greater Arab Free Trade Area (2005) or the Gulf Cooperation Council Common Market (2008). While intra regional trading and the creation of large markets through regional trading blocs supports economic development, the regional trend of advancing rapidly with other regions and countries instead can be attributed to several political and economic reasons. Trading blocs as well as special trading partnerships can help Arab countries pursue export-led growth strategies, which could act as one of the main drivers of development in the region, creating employment opportunities and alleviating poverty.

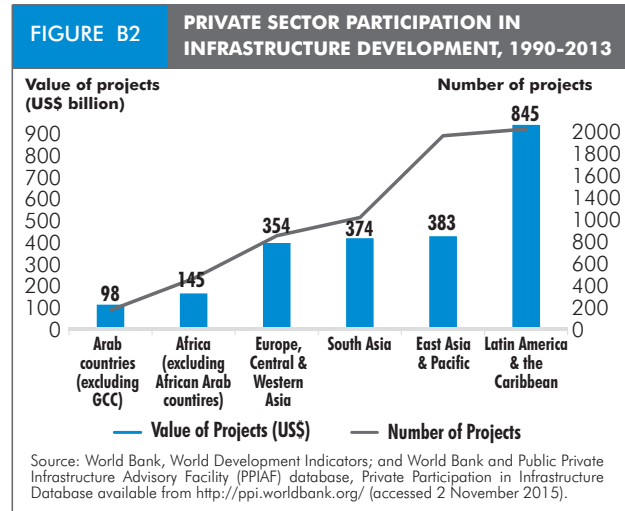
PARTNERSHIPS FOR THE DATA REVOLUTION

To realize the 2030 Agenda, policy makers are required to monitor the progress in implementing and using data as evidence for their policy setting. Currently, the statistical capacity in most Arab countries is inadequate and hence it will be challenging for many countries and regional organizations to determine baselines, set SDG targets and relevant indicators, as well as strengthen statistical capacity and review institutional frameworks⁹. Arab countries can benefit from the Global Partnership for Sustainable Development Data initiative launched in September 2015 to support countries achieve and measure progress in sustainable development⁹. In specific the initiative aims at improving the use of data, filling data gaps, expanding data literacy and capacity, increasing openness and mobilizing political will and resources with the support of over 70 governments, civil society groups, companies, international organizations and expert networks.

Arab countries can greatly benefit from the technical and financial support of development partners of this initiative to advance their statistical systems and meet international standards. In addition, the region may benefit from setting up a regional observatory on sustainable development¹⁰ to monitor sustainable development progress following the steps of the EU and the Northern Mediterranean region.

PUBLIC-PRIVATE PARTNERSHIPS (PPPs)

Public-private partnerships (PPPs) traditionally involve private-sector management and funding of government-



sponsored projects, allowing for risk sharing and the possibility of benefiting from the private sector's management skills, expertise, innovation and efficiency. Under a PPP structure, efficiency gains can arise through competitive pressure on procurement, operation and maintenance costs when undertaken by private operators. Arab countries have limited PPPs as shown in Figure b2.

Notes

1. ESCWA, Sustainable development financing gap in the Arab region (E/ESCWA/EDID/2015/IG.1/5).
2. ESCWA, Arab Sustainable Development Report (E/ESCWA/SDPD/2015/3).
3. Khaled Hussein and others, "Reinforcing the role of Arab development funds: the financing gap" (E/ESCWA/OES/2013/WP.6).
4. ESCWA, Arab Integration: A 21st Century Development Imperative (E/ESCWA/OES/2013/3).
5. World Development Indicators database, World Bank.
6. Original figure refers the Middle East and North Africa region. Source: The World Bank 2015. Migration and Development Brief No. 24. <http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1288990760745/MigrationandDevelopmentBrief24.pdf>.
7. ESCWA, Arab Sustainable Development Report (E/ESCWA/SDPD/ 2015/3).
8. ESCWA, Arab Sustainable Development Report (E/ESCWA/SDPD/ 2015/3).
9. See more at: <http://www.data4sdgs.org/historic-launch-press-release#sthash.2QHNFg59.dpuf>.
10. Monia Braham, "Regional integration and the post-2015 Development Agenda: towards a follow-up and review mechanism of sustainable development policies in the Mediterranean Arab countries", CIHEAM Watch Letter number 34 (September 2015).

PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENT: ASSESSMENT OF THE BURDEN OF DISEASE FROM ENVIRONMENTAL RISKS IN ARAB COUNTRIES

Mazen Malkawi and Basel Al-Yousfi

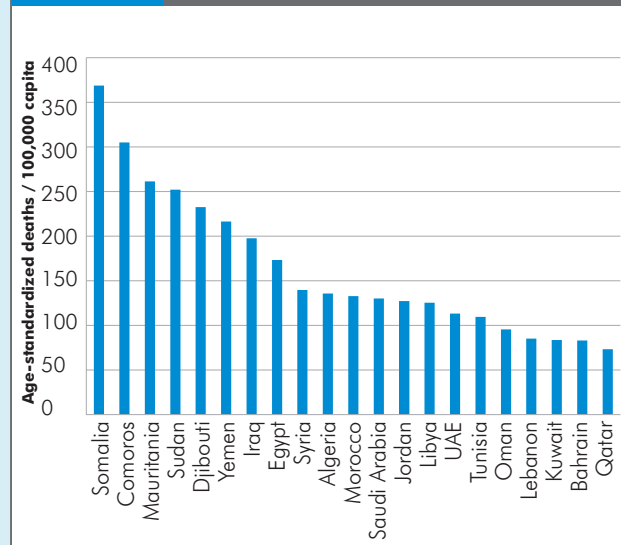
The realization of how many diseases and illnesses can be prevented by focusing on the management of environmental risks adds impetus to efforts to encourage preventive health measures through all available policies, strategies, interventions, technologies and knowledge. This is generally true to sustain development in most countries of the world, but is more significant in Arab countries where environmental risks are higher and rates of development slower.

Sustainable development offers significant “win-win” scenarios for health, climate and the environment, and provides benefits almost immediately. The Sustainable Development Goals (SDGs), with their underpinning holistic approach, offer tangible opportunities to make a lasting contribution to reducing the global disease burden attributable to environmental risk factors, and help “ensure healthy lives and well-being for all at all ages”. Armed with the evidence of what is achievable, and needed, health-care policy-makers and public health practitioners alike are encouraged in their efforts to promote sustainable development through healthy societies.

The World Health Organization (WHO) estimated in 2016 that environmental degradation is causing more than 420,000 premature deaths in the Arab region, representing 20 percent (95 percent CI: 13–34 percent) of all deaths. When accounting for death and disability, the fraction of the global burden of disease due to the environmental risks is about 19 percent (95 percent CI: 13–32 percent), or in other words Arabs are losing approximately 24 million disability-adjusted life years (DALYs) annually due to environmental degradation. Unfortunately, the toll is notably higher when it comes to children under five years: up to 26 percent (95 percent CI: 16–38 percent) of all recorded deaths. Arab countries differ greatly in terms of their socioeconomic, demographic, environmental, and health conditions; accordingly the toll of this burden varies across countries as shown in Figure B1.

The last decade has seen a shift away from infectious, parasitic and nutritional diseases to non-communicable

FIGURE B1 ANNUAL DEATHS ATTRIBUTABLE TO ENVIRONMENTAL DEGRADATION¹

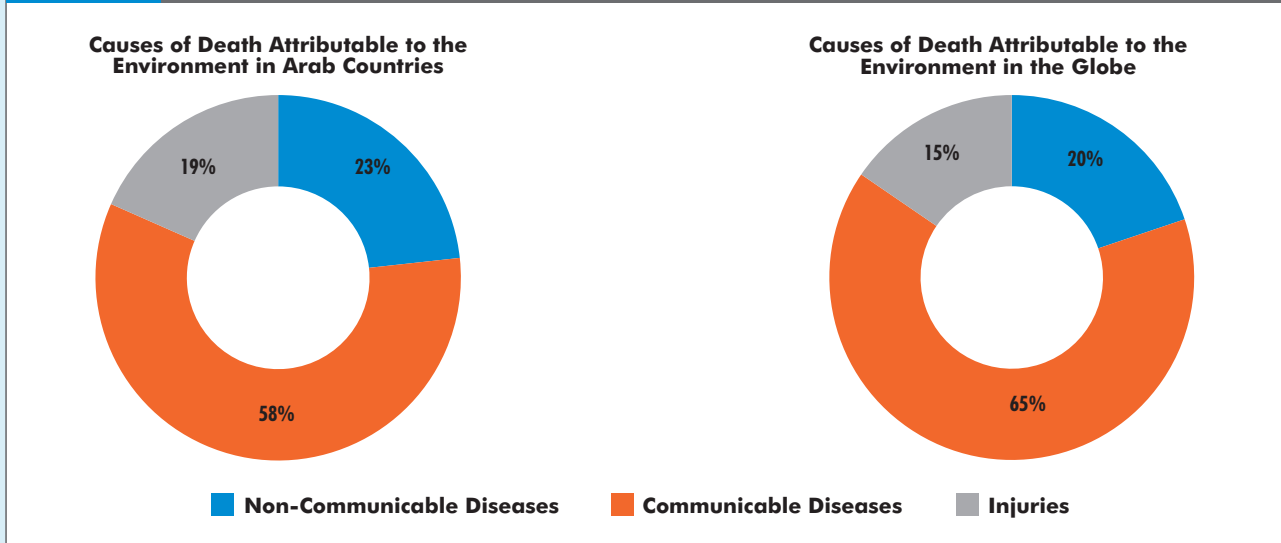


diseases (NCDs) and injuries, not only in terms of the environmental fraction but also in the total burden. This shift is mainly due to a global decline in infectious disease prevalence rates and a reduction in the environmental risks triggering infectious diseases outbreaks, i.e., a higher share of people with access to safe water and improved sanitation, and a lower share of households using solid fuels for cooking. In terms of the total disease burden, NCDs have increased globally and to a large extent in most of Arab countries (see Figure B2).

Similar to other parts of the world, the key diseases with the largest environmental fraction in Arab countries include: cardiovascular diseases, diarrheal diseases, lower respiratory infections, cancers, and unintentional injuries. Ambient and household air pollution, lack of access to water, sanitation and hygiene, exposure to wastes and harmful chemicals and road traffic accidents are the main environmental risk drivers of these disease groups.

Environmental exposures are one of the key determinants of health across the life course. The enormity of the environment-related burden of disease means that these exposures and related health risks cannot be

FIGURE B2 CAUSES OF DEATH ATTRIBUTABLE TO THE ENVIRONMENT IN ARAB COUNTRIES AND THE GLOBE



addressed effectively if they are addressed separately. It is essential to adopt and implement an integrated “ecological public health approach” which recognizes the complex interactions between biological, behavioral, environmental, social and developmental factors. It is clear that reducing the environmental burden of death and disease is entirely possible through cost-effective interventions. However, to be most effective and sustainable these measures need to be designed and implemented holistically.

Environmental protection is a sound platform for good public, community and individual health. Many measures can be taken immediately to reduce the disease burden attributable to environmental determinants. Examples include the promotion of safer household water storage and better hygiene measures, the use of cleaner fuels and safer energy, more judicious use and management of toxic substances at home and in the workplace, and occupational health and safeguarding measures. Accordingly, in cooperation with the health sector, actions taken by the energy, transport, municipality, agriculture and industry sectors are vital to address the environmental root causes of ill health. Clearly, actions do not come from the public health sector alone, but rather from all sectors impacting environmental determinants of health. Acting collectively for coordinated health, environment and development policies will strengthen and sustain improvements to human well-being and quality of life via multiple social and economic co-benefits.

By 2050, 68 percent (646 million) of the Arab populations will live in urban areas that are often characterized by heavy traffic, polluted air, poor housing, limited access to water and sanitation services and other prominent environmental health risks, including those pertinent to the workplace (in 2014, 51 percent of the population was economically active and in a number

FIGURE B3 FRACTION OF TOTAL BURDEN OF DISEASE IN DALYs

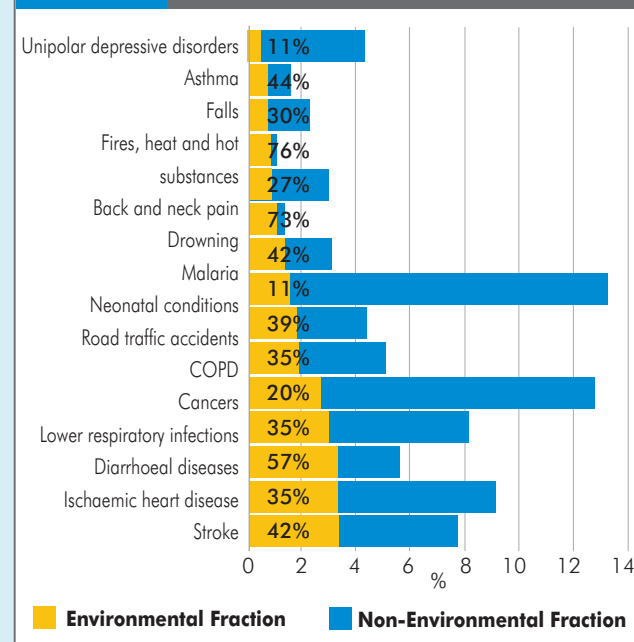


TABLE B1 ENVIRONMENTAL PRIORITIES AND INTERVENTIONS TO LOWER BURDEN OF DISEASE IN ARAB COUNTRIES

| Disease | Main Environmental Intervention Areas |
|--|---|
| Cardiovascular diseases | Household and ambient air pollution, second-hand tobacco smoke, exposure to lead, stressful working conditions, shift work. |
| Diarrheal Diseases | Water, sanitation and hygiene, agricultural practices, climate change. |
| Respiratory Infections | Household and ambient air pollution, second-hand tobacco smoke, housing improvements. |
| Chronic obstructive pulmonary disease | Household air pollution, ambient air pollution, exposure to dusts in the workplace. |
| Road Traffic Injuries | Design of roads, land-use planning; traffic intensification in development areas with big infrastructure projects. |

of countries workers were employed in the informal sector with dangerous, dirty and demeaning working conditions). Repositioning the health sector to work more intersectorally on effective preventive health policies is the way forward to address environmental causes of disease and injury, and to ultimately curtail the global burden of disease.

Finally, the direct and indirect impacts of emerging environmental risks, such as climate change and ecosystems and biodiversity deterioration, need to be tackled urgently in the region, as they are set to become the most challenging risks Arab generations will face in the upcoming decades. Considering the

high burden of modifiable environmental risk factors for communicable and noncommunicable diseases in the Arab region, and the availability of cost-effective environmental health interventions from prevention to mitigation to control, it is vital that a collaborative multidisciplinary approach is adopted, and that resources are made available to carry it out forward.

Note

1. Data extracted from "Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks", Geneva, WHO 2016.



Background Papers

- 112 HEALTH**
HEALTH: A UNIFYING REGIONAL SUSTAINABLE DEVELOPMENT GOAL FOR WELLBEING AND SURVIVAL IN THE ARAB WORLD
Iman Nuwaybid; Rima R. Habib; Suzanne El Khechen and Shelby Surdyk (AUB)
- 132 ZERO HUNGER**
CONTRIBUTING TO ZERO HUNGER IN ARAB COUNTRIES
Mahmoud El-Solh (ICARDA)

HEALTH: A UNIFYING REGIONAL SUSTAINABLE DEVELOPMENT GOAL FOR WELLBEING AND SURVIVAL IN THE ARAB WORLD

IMAN NUWAYHID; RIMA R. HABIB; SUZANNE EL KHECHEN AND SHELBY SURDYK



The 2030 Agenda for Sustainable Development was finalized during the United Nations Sustainable Development Summit in September 2015. The core component of the Agenda is the Sustainable Development Goals (SDGs), 17 cross-cutting goals which will guide global action and investment for sustainable development over the next 15 years.

Past strategies in Arab countries lacked the holistic and inclusive approach to development. The 2030 agenda and its enshrined goals, embracing the economic, social, and environmental perspectives of sustainable development provide a historic and promising opportunity for the well-being of the world's future generations and the planet. In this context, it is critically important for the Arab countries to reinstate a positive track of development to meet the aspirations of their current and future generations for decent living with dignity. However, to achieve sustainable development Arab countries need to address a series of challenges they face, including:

This paper focuses on Sustainable Development Goal 3 (SDG 3), which calls upon all countries to "ensure healthy lives and promote well-being for all at all ages". The targets set in SDG 3 reflect a considerable expansion on the Millennium Development Goals (MDG) health agenda. While the MDGs set benchmarks for maternal and child health, and several communicable diseases such as HIV/AIDS and malaria, SDG 3 more holistically calls attention to all communicable and non-communicable diseases (including mental health diseases), road traffic deaths and injuries, substance use, environmental hazards, in addition to maternal and child health. SDG 3 also calls for universal access to sexual and reproductive care and for universal health care to ensure equity. The new global standard proposes four 'means of implementation' targets related to tobacco control, research and development of vaccines and medicines, health finance and health workforce, and preparedness and response to national and global health risks.

Although health is explicitly linked to only one of 17 SDGs, achievement of the SDG 3 targets is strongly intertwined with the achievement of the other goals that address the social, environmental, and political determinants of health. In other words, progress toward each SDG directly or indirectly improves health and well-being and contributes to the achievement of SDG 3 targets.

However, is the Arab world ready to meet the SDG 3 targets? Past experience and current events present evidence that the challenges are many. For one, Arab countries showed mixed achievement on the six MDG health-related targets, with the most success witnessed in improving maternal and child health. These disparities are likely to continue under the new SDG agenda, and a lack of reliable data may make the monitoring progress difficult to achieve.

Conflict in the region also poses a considerable obstacle to progress on the SDGs. More than 10 of the 22 Arab states are either under occupation or experiencing war or conflict, tens of millions of people are refugees or internally displaced, and many citizens lack the basic rights of political participation, expression, or mobility. More so than any other region, Arab states are experiencing or are adjacent to states experiencing significant instability.

Coupled with the driving force of climate change, the ecosystems upholding human health in the Arab region appear very fragile. Twelve Arab countries suffer from severe water scarcity, and this number is expected to increase in the following decades. Likewise, desertification affects a number of Arab countries, which have large populations reliant on arable lands for their survival. Air pollution, both indoor and outdoor, are pressing environmental concerns for Arab metropolises. The rapid and tragic loss of those life-supporting ecological systems not only hinders the ability to make progress on sustainable development in the region, but also threatens the very survival of communities, territories and countries.

A paradigm of partnership that promotes resource and expertise sharing and solidarity must be drawn between Arab countries to achieve SDG 3 and other SDGs and overcome related and interconnected challenges. Four recommendations are proposed towards this goal:

1. Each Arab country should adopt different SDG 3 targets based on its historic performance, present context, and near-term projected realities. Information should be collected by gender, age, ethnicity, and nationality where applicable. National working groups, based upon performance on specific health indicators should be formed, as well as regional working groups in order to foster cooperation and cross-country support toward achieving mutual objectives.
2. Arab countries, especially low- and middle-income countries, should focus on improving public health systems to achieve SDG 3 targets. None of the SDG 3 health targets can be achieved without a credible health system and well-developed public health functions, which include monitoring and surveillance systems to gauge progress. These goals correspond with what the WHO Regional Office for the Eastern Mediterranean (WHO EMRO) has termed the public health functions for the region.
3. Health professionals should adopt a horizontal and comprehensive approach to health issues, rather than adopting a vertical, disease-specific approach. The clear link between SDG 3 and other SDGs requires that health professionals and policymakers develop cross-cutting strategies and inter-agency, inter-sector collaborations.
4. Health professionals should recognize the convergence of COP 21 and SDG 13 climate change goals in support of SDG 3. Achieving the targets of SDG 13 on climate action after all will facilitate work to address SDG 3 targets.

In conclusion, and in full recognition of past performance and current political and economic challenges, aiming to achieve the SDG 3 targets presents an opportunity to serve as a unifying goal for all Arab countries to collaborate on building resilient health systems, reducing deaths and injuries from multiple diseases and settings, and improving people's health and wellbeing, especially in less advantaged countries. The SDG 3 has potential to serve as a bridge for peace, partnership, and equality between Arab countries.

I. BACKGROUND AND INTRODUCTION

By the end of 2015, global leaders signed both the Paris Agreement on climate change and the Sustainable Development Goals (SDGs), which set aspirations to end poverty, protect the planet, and ensure prosperity for all (UN General Assembly, 2015). Developed through a consensus building process that was proctored by several United Nations agencies (Yamey et al, 2014), these agreements put forth ambitious development and sustainability agendas that will influence global and regional policies in the coming decades. Practitioners and policymakers in health-related fields should pay close attention to these agendas, as they will likely dictate the flow of resources and political capital from global to regional to local levels. The SDGs were preceded by the Millennium Development Goals (MDGs), which proposed development targets by 2015 (UN General Assembly, 2000), and likewise played an important role in mobilizing political and financial capital (Brende and Hoie, 2014).

The MDGs included six health-related targets, of which Arab countries showed mixed achievement (UN and LAS, 2013). Regionally, the most success was made in improving maternal and child health (Iqbal et al., 2014), with only modest gains in addressing communicable diseases (MDG monitor, 2015). Success with the MDGs was largely determined

by the resources and political stability within a country (The Arab NGO Network for Development, 2010): poorer and instable Arab states were unsuccessful in reaching their targets, middle-income countries had greater progress, while wealthy countries, particularly those in the Gulf, exceeded targets (UN and LAS, 2013). Complicating this narrative, there were great disparities within countries, especially between rural and urban populations, and poorer and wealthier areas (UN and LAS, 2013). Progress towards these health targets was also linked to other development goals, including poverty reduction, establishment of universal primary education, gender equity, and environmental sustainability.

The SDGs represent an expansion of the MDGs, but also a notable philosophical departure. While the MDGs focused on establishing infrastructure to support basic needs in poor countries, the SDGs project aspirational development goals for all countries, rich and poor (Kroll, 2015). There is certainly political value in rallying global solidarity around a set of development goals that are meaningful to all countries. But attempts at generalization are easily undermined by the specific exceptions. Many Arab countries in the region represent an exception, as more than ten Arab states are either under occupation or experiencing war or conflict, tens of millions of people are refugees or internally displaced, and many citizens lack basic rights of political participation, expression, or mobility (El-Zein et al., 2016). More so than in any other region, Arab states are experiencing or are adjacent to states experiencing significant instability. Four Arab states (Iraq, Syria, Libya, and Yemen) topped the list of “most high risk nations,” in the 2015 Fragile State Index (Messner et al, 2015), reflecting complex and worsening instability in the region, which will seriously affect development strategies. For example, developmental priorities are vastly different for Jordan and neighboring Syria: the former a relatively stable country albeit with a very large refugee population, and the latter still in the throes of a civil war with ongoing armed conflict, political instability, infrastructural damage, and massive population displacement. The vast resources, political, economic, and safety discrepancies between Arab states and the



ongoing uncertainty and instability that engulf the region pose a tremendous challenge and call for diverse, contextual, and interconnected approaches to advancing the 2030 Agenda for Sustainable Development.

This paper focuses on SDG 3 on ‘health and well-being’, but offers a review and analysis of the other SDGs and their potential impact on health systems and policies in the Arab region. Specifically, the SDGs will be contextualized within regional and inter-regional political, social, and economic developments. The paper will highlight how an ecosystem approach should be adopted in which the SDG 3 targets, in particular, are interconnected with other development goals set forth by the SDGs, as well as climate change mitigation efforts proposed by the Paris Agreement. A concluding section will rearticulate the call of all health professionals to adopt a public health approach in achieving the SDGs, as well as additional recommendations to facilitate the implementation of such an ambitious regional agenda.

II. SUSTAINABLE DEVELOPMENT GOAL 3 AND THE ARAB REGION

Sustainable Development Goal 3 (SDG 3) calls upon all countries to “ensure healthy lives and promote well-being for all at all ages”. The targets set in SDG 3 reflect a considerable expansion on the MDG health agenda. While the MDGs set benchmarks for maternal and child health, and several communicable diseases such as HIV/AIDS and malaria, SDG 3 more holistically calls attention to all communicable and non-communicable diseases (including mental health diseases), road traffic safety, substance use, environmental hazards, sexual and reproductive care, and health systems equity, in addition to maternal and child health. Table 1 lists the SDG 3 targets for health and wellbeing, as well as a sub-section on proposed ‘means of implementation’.

As stated above, Arab countries have disparate profiles of their population health, largely corresponding to contextual factors (e.g., conflict, political strife, economic inequality, resource scarcity). Mokdad and colleagues (2014) reported on these health differences in

a recent Lancet article using disability-adjusted life years (DALYs) to measure burden of disease. This research categorized Arab countries into high-income countries (HIC), middle-income countries (MIC), and low-income countries (LIC) based on economic indicators. Table 2 identifies the top five health concerns within each income category.

Table 2 highlights inter-nation differences in health outcomes and priorities. The HICs have controlled communicable diseases and are now challenged by road traffic injuries and non-communicable diseases including mental health. The MICs are in epidemiological transition, facing a double burden of disease, with high rates of non-communicable and communicable illnesses. As for the LICs, health priorities are still dominated by communicable diseases, in addition to high ratios of maternal and infant mortality. Table 3 further illustrates these health disparities among low-income countries (LICs), low middle-income countries (LMICs), upper middle-income countries (UMICs), and high-income countries (HICs) (as per July 2016 World Bank classification) in relation to each of the SDG 3 targets (World Health Statistics 2016; Global Health Observatory Statistics, 2016).

Table 3 presents critical findings:

- It further demonstrates the extent of inequality in a region that shares some common history, culture, and religious values.
- LICs are performing poorly and are far from meeting any of the proposed SDG 3 health targets. In contrast, the HICs have met and exceeded all the targets except for NCDs and road traffic injuries. LMICs and UMICs fall in between but also present a wide mix.
- Data is available but may be dated for many targets and is absent for some targets with no baseline figure to monitor.

It is also important to review these numbers with caution and adopt them only if the quality of data collection is assured. Further, these data represent national averages; health priorities within countries are multifaceted as sub-



regions or districts in the same country may present disparities by location (urban-rural), wealth, gender, and education (United Nations and League of Arab States, 2013).

III. THE NEED FOR A REGIONAL PERSPECTIVE AND AN ECOSYSTEM APPROACH

While national health profiles are an important frame of reference for Arab development goals, they represent an incomplete framework to addressing regional outcomes. In fact, many of the health and development challenges of Arab countries are intimately connected to the policies, actions, and developments in neighboring Arab countries, as with the abovementioned example of countries neighboring Syria – i.e., Jordan, Iraq and Lebanon. The language of the SDGs is embedded with assumptions that national development goals and challenges are predominantly confined to national borders (El-Zein et al., 2016). The reality for many Arab states, however, is that borders are permeable. The movement of Syrian migrants into Europe, which has set off streaks of xenophobia and ethnic-based violence, dwarfs in face of the magnitude of the problem and what has been the normative experience of

many Arab states. Yet whereas European states have the political wherewithal, infrastructure and resources to absorb new migrants, many Arab states struggle to sustain already fragile economic, political, and social infrastructures (Fargues, 2014).

Further complicating these already complex inter-country contexts are the realities of regional power politics, whereby policies of individual Arab states are heavily influenced by regional actors, mainly through military intervention and/or economic-influence. The SDGs lack substantive language on governance of such crucial issues as military and political intervention and the treatment and support of refugees (El-Zein et al., 2016). These issues are not the burden of individual nations. In fact, most recent refugee crises in the region are the work of multiple state actors, both in the Arab world and often beyond it. For example, the current Syrian refugee crisis was immediately preceded by the Iraqi refugee crisis (2006-2009), in which two million Iraqis were displaced to neighboring Arab states including Syria (Fargues, 2014), due to foreign invasion and occupation of Iraq, led by the US (Jabbour, 2014). Without a language that acknowledges interconnectedness, both as

an asset and a threat, discussions involving the SDGs will invariably dance around unspoken dynamics that dictate realities for many poor Arab states. Lacking provisions addressing these aforementioned issues creates a difficult policy context where real concerns are silenced in an effort to conform to a linguistically and conceptually limited framework.

Given the prevailing conditions of interconnectedness, interdependence, and dependence on crucial issues such as war and reconstruction, migration and refugees, economic investment, and political systems (Jabbour, 2014), any thoughtful approach to health in the Arab region must seek regional and inter-nation cooperation as its bedrock and adopt an ecosystem framework for analysis. After all, many Arab countries failed to achieve the health-related 2015 MDGs (UN and LAS, 2013), and there are strong indications that most of the region may also fail in achieving the SDG 3 health targets by 2030 if a new approach is not adopted (El-Zein et al., 2016; Jabbour, 2014; Rahim et al., 2014). This looming scenario reflects a current political crisis that may further develop into a future health crisis with global implications. The remainder of this section attempts at framing regional health realities through the nexus of health-environment-politics-economics.

It is almost cliché to note that human health and well-being are shaped by the environment. However, many Arab countries are experiencing both human and environmental crises simultaneously, and in many instances interrelatedly. Coupled with the driving force of climate change, the ecosystems upholding human health in the region appear very fragile (El-Zein et al., 2014). For example, the United Nations estimates that twelve Arab countries suffer from severe water shortages, and this number is expected to increase in the following decades (UNDP, 2013). Likewise, desertification affects a number of Arab countries, which have large populations reliant on arable land for their survival (Abahussain et al, 2002). Air pollution, both indoor and outdoor, are pressing environmental concerns for Arab metropolises, especially during the summer and increasingly as temperatures continue to rise (Habib et al., 2012). The

TABLE 1 TARGETS FOR SDG 3 ON HEALTH

| | |
|---|--|
| Target 3.1 | By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births |
| Target 3.2 | By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births |
| Target 3.3 | By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases |
| Target 3.4 | By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being |
| Target 3.5 | Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol |
| Target 3.6 | By 2020, halve the number of global deaths and injuries from road traffic accidents |
| Target 3.7 | By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes |
| Target 3.8 | Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all |
| Target 3.9 | By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination |
| Proposed 'means of implementation' targets | |
| Target 3.a | Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate |
| Target 3.b | Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all |
| Target 3.c | Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing states |
| Target 3.d | Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks |

TABLE 2

TOP FIVE CAUSES OF DISABILITY-ADJUSTED LIFE-YEARS (DALY) IN ARAB REGION BY NATIONAL INCOME* AND ASSOCIATED SDG 3 TARGETS

| | Low-income countries | Middle-income countries | High-income countries |
|---|--|--|-------------------------------------|
| 1 | Lower respiratory infections [SDG 3.3] | Ischemic heart disease [SDG 3.4] | Road injuries [SDG 3.6] |
| 2 | Diarrhea [SDG 3.3] | Lower respiratory infections [SDG 3.3] | Major depressive disorder [SDG 3.4] |
| 3 | Malaria [SDG 3.3] | Stroke [SDG 3.4] | Ischemic heart disease [SDG 3.4] |
| 4 | Preterm birth complications [SDG 3.1] | Major depressive disorder [SDG 3.4] | Low back pain [SDG 3.4] |
| 5 | Congenital anomalies [SDG 3.2] | Preterm birth complications [SDG 3.1] | Diabetes [SDG 3.4] |

* LIC: Comoros, Djibouti, Mauritania, Yemen, and Somalia. MIC: Algeria, Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, Palestine, Sudan, Syria, and Tunisia. HIC: Bahrain, Saudi Arabia, Kuwait, Oman, Qatar, and the United Arab Emirates.
Source: (Mokdad et al., 2014)

rapid and tragic loss of those life-supporting ecological systems not only hinders the ability to make progress on sustainable development in the region, but threatens the very survival of communities, territories and countries (El-Zein et al., 2014).

The ability of Arab countries to achieve health targets in light of environmental degradation are intertwined with and further undermined by war and conflict. First, ecosystem collapse relates to conflict in a negative feedback loop: scarcity of and conflict over resources leads to social tensions, social tensions lead to wars, wars destroy environmental ecosystems that further increase resource scarcity, leading to greater conflict and violence. Second, these conflicts injure and kill people, destroy health-supporting ecosystems (e.g., destruction of hospitals, exodus of health professionals, disruption of immunization and other preventive programs), and roll back earlier health achievements. Arab countries, nearly half of which have experienced foreign intervention, occupation, and conventional or civil wars in the last three decades (El-Zein et al., 2016), also suffer from the protracted nature of these conflicts, making them exceptionally

vulnerable to their environmental and health impacts (El-Zein et al., 2016).

Economic and political challenges also shape environmental realities. Many Arab states lack the resources or political will to impose strict regulations or implement effective policy solutions and practical mechanisms for environmental protection (Tolba and Saab, 2009). On one hand, wealthier Arab economies are dependent on the sale of natural resources, such as oil and natural gas, than any other region in the world (Gelvin, 2012), and some may be reluctant to take steps to safeguard the environment and advocate for alternative and more sustainable environmental strategies in the region or globally. On the other hand, poorer countries lack the human and economic resources and the political commitment to move in this direction. These economic inequalities and ineffective governmental systems in the region have also translated into weak health systems in many Arab countries (Jabbour, 2003), characterized by limited financial or human resources for meeting public health needs, and lack of surveillance and monitoring of health trends in order to track the true burden of disease or adapt health systems to changing environments.

The above analysis highlights the unique challenges to supporting life-sustaining ecosystems in the region. Perhaps more than in other regions, Arab governments are aware of the environmental crises at their doorsteps, but are unwilling or unable to do anything about it (Saab, 2012). The yearlong ongoing garbage crisis in Lebanon provides a perfect metaphor of this ineffectiveness. Facing mounting piles of trash on city streets and drainage channels, the opposing factions within the government fought over their own self-interests, while the Lebanese suffered the health, social, and economic consequences (Atallah, 2015). With workable solutions apparent to the entire nation, political actors failed to address the immediacy of the crisis and missed the opportunity of adopting a long-term and sustainable national solid waste management plan. Similarly, solutions for many of the environmental crises facing Arab states within and across their borders are known, by scientific communities and non-scientists alike,

but the challenge has always been the lack of political commitment and the reluctance to move these issues to the top of their political agenda (Waterbury, 2013).

IV. PATHWAYS TO ARAB SUCCESS

Meeting the SDG 3 targets appears a distant possibility given the present regional realities. As highlighted thus far in this section, population health problems are intimately produced and shaped by environmental, social, political, and economic developments. Thus, pathways beyond the current impasse require health professionals to think and act within and outside the health sphere. Although some of the health targets can be addressed within present health systems,

the majority of SDG 3 targets will only be achieved if health professionals adopt a holistic and comprehensive approach, and if health professionals and agencies partner with non-health entities to move forward on the SDG 3 and the full SDG 2030 agenda.

We propose the following principles towards this goal that will be expanded on in this section:

1. Think regionally, act locally
2. Prioritize the SDG 3 targets that focus on improving public health systems
3. Elucidate intersections between SDG 3 targets and other SDG targets



TABLE 3 PERFORMANCE ^{a,b} ON SDG 3 TARGETS BY NATIONAL INCOME CATEGORIES

| SDG 3 Targets | Proposed indicators | LIC ^c | LMIC ^d | UMIC ^e | HIC ^f |
|--|--|--------------------------------------|---|---|---|
| Target 3.1 By 2030, reduce the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births | MMR (per 100,000 live births), 2015 | 335 (Comoros); 732 (Somalia) | 33-68 (Egypt, Tunisia, Syria); 121-602 (Others) | 9-50; 140 (Algeria) | 6-17 |
| | Proportion of births attended by skilled health personnel (%), 2006-2014 | 9 (Somalia); 82 (Comoros) | 74-92; 20 (Sudan); 43 (Yemen); 65 (Mauritania) | 91-100 | 98-100 |
| Target 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality (NMR) to at least as low as 12 per 1,000 live births and under-5 mortality (U-5 MR) to at least as low as 25 per 1,000 live births | U-5 MR (per 1000 live births), 2015 | 73.5 (Comoros); 136.8 (Somalia) | 12.9-14 (Egypt, Syria, Tunisia); 27.6 (Morocco); 41.9-84.7 | 8.3-17.9; 25.5 (Algeria); 32 (Iraq) | 6.2-14.5 |
| | NMR (per 1000 live births), 2015 | 34 (Comoros); 39.7 (Somalia) | 7-8.2 (Syria, Tunisia) 12.8 (Egypt); 17.6-35.7 | 4.8-10.6; 15.5 (Algeria); 18.4 (Iraq) | 1.1-7.9 |
| Target 3.3 By 2030, end the epidemics of AIDS, tuberculosis (TB), malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases | New HIV infections among adults 15-49 years old (per 1000 uninfected population), 2014 | 0.5 (Somalia); no data (Comoros) | <0.1-0.4 | <0.1 (Algeria, Lebanon); the rest no data | 0.1 (Oman); the rest no data |
| | TB incidence (per 100,000), 2014 | 35 (Comoros); 274 (Somalia) | 15-33 (Egypt, Syria, Tunisia); 48-111; 619 (Djibouti) | 5.5-16 (Jordan, Lebanon); 40-78 | 1.6-29 |
| | Malaria incidence (per 1000 at risk), 2013 | 78.8 (Somalia); 170.6 (Comoros) | 0-37.7; no data (Egypt, Morocco, Tunisia) | 0- <0.1 (Algeria, Iraq); the rest no data | 0- <0.1 (Oman, KSA); the rest no data |
| | Infant receiving three doses of Hepatitis B Vaccine (%), 2014 | 42 (Somalia); 80 (Comoros) | 71-99 | 62-98 | 94-99 |
| Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being | Probability of dying from any of the four main NCDs between ages 30-70 (%), 2012 | 19.1 (Somalia); 23.5 (Comoros) | 15.8-24.5 | 12.4-23.7 | 11.8-18.9 |
| | Suicide mortality rate (per 100,000 population), 2012 | 8 (Somalia); 10.5 (Comoros) | 0.4-3.1; 10.7-11.5 (Djibouti, Sudan) | 0.9-1.8 | 0.3-3; 4.7-7.2 (Qatar, Bahrain) |
| Target 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol | Total alcohol per capita (>15 years of age) consumption, in liters of pure alcohol, projected estimates, 2015 | 0.2 (Comoros); 0.5 (Somalia) | 0.1-1.4 | 0-2.2 | 0.1-4.3 |
| Target 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents | Road traffic mortality rate (per 100,000 population), 2013 | 25.4 (Somalia); 28 (Comoros) | 12.8-24.7 | 20.2-26.3; 73.4 (Libya) | 8-27.4 |
| Target 3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes | Proportion of married or in-union women of reproductive age who have their need for family planning satisfied with modern methods (%), 2005-2015 | 27.8 (Comoros); no data (Somalia) | 23.8-80 | 29.6-77.2 | 19.1-68.9 (Oman, Qatar); the rest no data |

a- WHO (2016b). "World Health Statistics 2016: monitoring health for the SDGs, sustainable development goals." World Health Organization. http://www.who.int/gho/publications/world_health_statistics/2016/en/ [Accessed July 7, 2016]

b- Global Health Observatory Indicator Views, World Health Organization, 2016 <http://apps.who.int/gho/data/node.imr#ndx-P>. [Accessed on July 4, 2016].

c- LIC: Comoros, Somalia.

| SDG 3 Targets | Proposed indicators | LIC ^c | LMIC ^d | UMIC ^e | HIC ^f |
|---|---|---|---|--|--|
| | Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1000 women in that age group, 2005-2015 | 64 (Somalia); 70 (Comoros) | 20.6-87; 6.7 (Tunisia) | 6-26; 82 (Iraq) | 7.1-17.6; 34.2 (UAE) |
| Target 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all | Out-of-pocket expenditure as a percentage of total expenditure on health, 2013 ^b | 45.1 (Comoros); no data (Somalia) | 35.3-75.8 | 25.1-36.5 | 8.4-19.8 |
| | Relative inequality score for reproductive, maternal, newborn and child health intervention coverage in 83 countries, 2005-2013 | 34 (Somalia); 77 (Comoros); | 57-90 (Egypt, Mauritania, Syria, Yemen); the rest no data | 89-98 (Iraq-Jordan); the rest no data | No data |
| Target 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination | Mortality rate attributed to household and ambient air pollution (per 100,000 population), 2012 | 63.4 (Comoros); 116.8 (Somalia) | 28.8-64.5 | 21.7-33.2 | 7.5-28.1 |
| | Mortality rate attributed to exposure to unsafe water, sanitation and hygiene services (per 100,000 population), 2012 | 28.6 (Comoros); 98.8 (Somalia) | 0.8-13; 26.4-34.6 (Djibouti, Mauritania, Sudan) | 0.4-3.9 | <0.1-0.2 |
| | Mortality rate from unintentional poisoning (per 100,000 population), 2012 | 3.5 (Comoros); 10 (Somalia) | 0.5-5.6 | 0.7-1.4 | 0.4-0.8 |
| Target 3.a Strengthen the implementation of the WHO Framework Convention on Tobacco Control in all countries, as appropriate | Age-standardized prevalence of current tobacco use among persons aged 15 years and older (%), 2015 | Male 23.1/ Female 6 (Comoros); no data (Somalia) | Male 44-49.9/ Female 0.3-3.7 (Egypt, Mauritania, Morocco); the rest no data | Male 45.5-70.2/ Female 10.7-31 (Jordan, Lebanon); the rest no data | Male 21-48.8 Female 1-7.6 (Bahrain, KSA, Oman); the rest no data |
| Target 3.b Support the R&D of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all | No data | No data | No data | No data | No data |
| Target 3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing states. | Skilled health professionals density (per 10,000 population), 2005-2013 | 1.5 (Somalia); no data (Comoros) | 8-15.1; 33.2-63.5 (Egypt, Syria, Tunisia) | 31.5-87; 6.1 (Iraq) | 63.4-196.1; 32.9 (Bahrain) |
| Target 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks. | International Health Regulations (IHR) implementation: average of 13 core capacity scores, 2010-2015 | 6 (Somalia); 29 (Comoros) | 63-95; 29 (Mauritania); 46 (Djibouti, Yemen) | 64-97 | 86-99 |

d- LMIC: Djibouti, Egypt, Mauritania, Morocco, Sudan, Syria, Tunisia, Yemen (Data on Palestine is missing in the WHO Health Statistics Report 2016)

e- UMIC: Algeria, Iraq, Jordan, Lebanon, Libya

f- HIC: Bahrain, Saudi Arabia, Kuwait, Oman, Qatar, United Arab Emirates

4. Highlight convergence of COP 21 and SDG 13 climate change goals in support of SDG 3

A. Efforts Should Be Local, with a Strong Regional Underpinning

Arab cooperation is instrumental to the region's collective achievement of the goals and targets of the SDGs. Cooperation is imperative because of the regional nature of many Arab challenges. As touched on in earlier sections, geographical boundaries are porous in the Arab world, such that populations migrate across national borders frequently. Further, many of the pressing regional challenges affecting populations' health are not bound to national borders, including climate change, air pollution, environmental sustainability, food security, water scarcity, and economic prosperity. The need for cooperative development models was made clear through the Syrian refugee crisis, which has fostered connections between national governments and civil society across several Arab nations.

Health priorities differ by country or sub-region of the Arab world (Mandil, 2009). Hence, policy approaches cannot treat the Arab world as homogenous. Instead, each Arab country should adopt different SDG 3 targets based on its historic performance, present context, and near-term projected realities. Further, the data for some indicators may not be available in a number of countries. In these instances, alternative indicators should be identified. Further, data should be collected at a greater national depth, such that different districts and sub-regions within each country report information by gender, age, ethnicity, and nationality where applicable. Data on nationality is very important given the centrality of migration to Arab economic and political realities.

An approach that recognizes these differences might be to create national and regional working groups based around performance on specific health indicators. National working groups should be gender sensitive and include health and non-health professionals and governmental and non-governmental representatives, including civil society. Arab

countries should group in ways meant to foster cooperation and cross-country support toward achieving mutual objectives. For example, each group could be comprised of members from low-, middle-, and high-income countries from different disciplines and with different strengths, resources, and experiences. Countries within each group could trade their specific resources and strengths (i.e., infrastructure, personnel, or money) outside the dependency paradigm that currently prevails. Exchanges of this kind should be incentivized, perhaps through performance-based group rewards when specific SDG 3 targets are met.

Focusing on specificities within each Arab country should not undermine regional efforts and collaboration. Arab countries with human and/or financial resources should share experiences, build capacities, and invest resources with the less advantaged and poor countries. After all, the Arab world shares common threats; wars and conflicts in one country will impact neighboring countries and beyond, be it through the displacement of people or undermining regional political and economic stability. Arab countries are also endowed with different natural resources, be it water, oil, or fertile lands, which can be shared or exchanged. In other words, regional cooperation, facilitated by governments, UN agencies, international NGOs, and civil society, is essential to the success of national efforts to achieve the SDG 3 targets.

B. Prioritizing Some SDG 3 Targets Relating to Health Systems

None of the SDG 3 health targets can be achieved without a credible health system and well-developed public health functions, which include monitoring and surveillance systems to gauge progress and respond to national and global health risks. These goals correspond with what the WHO-EMRO has termed the public health functions (WHO, 2016a) for the region. In fact, the SDG 3 targets that focus on the functioning of health systems are integral to the achievement of other SDG 3 targets. Building reliable health information systems and a competent and comprehensive health workforce including in public health are critical elements of a functional health

system. Table 4 identifies the ways in which health-system related targets directly intersect with health outcome targets.

Arab counties have grappled with building sustainable and resilient health systems operated by a competent health workforce.

Further, public health advocates who have endeavored to instill a social justice agenda within these systems have achieved mixed results. In order to improve performance across all SDG 3 targets, health care professionals and others in civil society must continue advocacy around improving health systems, supporting



public health institutions, and promoting equitable health policies.

C. Efforts Should Encompass All Other 16 SDGs When Health Is Considered

SDG 3 is the only goal among the 17 SDGs that explicitly references health and well-being. However, from a public health perspective, all of the SDGs have direct or indirect links to health, and their achievement supports population health and well-being and/or facilitates the achievement of different SDG 3 targets. In other words, health and well-being is an ultimate goal of the SDG 2030 agenda.

- SDG 1 - Ending/reducing poverty will lead to a better distribution of wealth and resources and will address the conditions of the poorest systematically. In addition to reducing poverty levels, achievement of this goal will require fairer political and economic systems. Increased access to health services, education, and food will improve health and well-being.
- SDG 2 - Ending hunger and malnutrition will ensure better physical growth and cognitive development of children, healthier and low-risk pregnancies, and a reduction in communicable diseases. Almost 20 million children under 5 years of age suffer from stunting in the Eastern Mediterranean Region (EMR), mostly in LICs and LMICs (WHO, 2016b). This goal is also about good nutrition, reducing malnutrition as well as over-nutrition, thus reducing obesity, diabetes, cancers, and other NCDs. Many children under-5 in all Arab countries suffer either from wasting or overweight, with a higher prevalence of the former in LICs and LMICs (WHO, 2016b).
- SDG 4 - Access to primary, secondary, and tertiary education for all, including high quality technical and vocational education, will develop the professional fields needed to improve the health and economic systems in each country. Increased education enables individuals to become agents of change for their families and communities, while increasing health literacy and self-advocacy.
- SDG 5 - Gender equality and protecting the rights of women and girls ensures full access to health and social services, labor markets, and legal systems meant to prevent abuse and exploitation. This goal immediately connects to the SDG 3 targets on maternal health, reproductive and sexual health, non-communicable diseases and other health outcomes.
- SDG 6 - Water access and quality is directly linked with reduction of communicable diseases, including water-borne illnesses and hepatitis A.
- SDG 7 - Increased reliance on renewable energy will translate to less energy dependency, cheaper energy, and more environmentally friendly forms of energy production. For example, the proportion of the population with primary reliance on clean fuel is 9% in Somalia, 10% in Djibouti, and 23% in Sudan (WHO, 2016b). Less reliance on fossil fuels will lower levels of indoor and outdoor pollution and translate to less respiratory diseases and other NCDs.
- SDG 8 - Good jobs and economic growth are supportive to improved health systems, increased individual and community agency, and greater resources to address national health challenges. Ensuring that occupational health and labor rights are advocated in parallel with the achievement of this goal will ensure better physical and mental health for workers and their families.
- SDG 9 - Resilient infrastructure, inclusive industrialization, and innovation can lead to the development of low-cost health interventions that extend the reach of technology beyond wealthy communities to poorer and more marginal areas.
- SDG 10 - Reducing inequality within and among countries is key to all other SDGs. Reduction of inequality is a driving force behind equitable and balanced development that targets and favors the

| TABLE 4 INTERSECTION BETWEEN SDG 3 HEALTH SYSTEM-RELATED TARGETS AND HEALTH OUTCOME TARGETS. | | | | | | |
|---|------------------------------|---|---------------------------------|--|---------------------------|--------------------------------------|
| Health system-related SDG 3 targets | SDG 3 health outcome targets | | | | | |
| | 3.1 Maternal mortality | 3.2 Neonatal and under 5 mortality | 3.3 Communicable diseases | 3.4 Non- communicable diseases, including mental | 3.5 Substance abuse | 3.6 Road traffic casualties |
| Target 3.7 By 2030, ensure universal access to sexual and reproductive health-care services... | √ | √ | √ | √ | | |
| Target 3.8 Achieve universal health coverage... for all. | √ | √ | √ | √ | √ | √ |
| Target 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination | √ | √ | √ | √ | | |
| Target 3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate. | √ | √ | | √ | | |
| Target 3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines (Doha Declaration on the TRIPS Agreement and Public Health) | | √ | √ | √ | | |
| Target 3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing states | √ | √ | √ | √ | √ | √ |
| Target 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks | √ | √ | √ | √ | √ | √ |

poor and marginalized living in both urban and rural areas.

- SDG 11 - Safe and healthy cities and human settlements offer safer roads, green space, environment-friendly and open public space, and affordable housing, with priority to the elderly, children, and pedestrians. These resources are supportive

of community health and wellbeing and promote mental wellness and social cohesion. Using ambient air quality as an indicator, the annual mean PM2.5 concentration in urban centers in Arab countries exceeds the WHO air quality guideline of 10 µg/m³, ranging from 16.9 in Somalia to 131.6 in KSA (WHO, 2016b).

- SDG 12 - Responsible consumption will lead to less waste, ensuring a cleaner environment and increasing health-supportive resources for those most in need.
- SDG 13 - Climate change action has myriad health impacts, including greater resource conservation, community cooperation, and health system improvements. These and other aspects of climate change action will be more fully explored in the next section of this paper.
- SDG 14 and SDG 15 - Protection and sustainability of marine and terrestrial ecosystems are instrumental to maintaining human food supplies and impact living environments and access to basic life-sustaining resources, including water, soil, air, and greenery.
- SDG 16 - Building peaceful and inclusive societies and inclusive institutions is a basis for all SDGs. This goal is particularly important in the Arab world, which harbors many conflicts and hosts the highest number of displaced and refugees. Preventing and stopping wars reduces deaths and injuries, supports population health and wellbeing, and allows for the development and strengthening of health-supportive infrastructure and resources.
- SDG 17 - Global partnership between countries, organizations, and institutions, especially between those who have and those who do not, will close the growing gap between societies and provide support to under-resourced communities and countries in the region.

The clear links between SDG 3 and other SDGs requires that policymakers develop cross-cutting strategies and inter-agency, inter-sector collaborations. Ministries of health and international and local health entities must begin thinking and working beyond the health sector. Health professionals should partner with non-health entities (social, environmental, labor, agriculture, etc.) to achieve health, environmental and other development goals. This calls upon health professionals to adopt

a horizontal and comprehensive approach to health issues, rather than adopting a vertical, disease-specific approach.

D. Implementing COP 21 Agreement and Addressing Climate Change (SDG 13) Will Help in Achieving SDG 3

Due to fossil-fuel driven economic growth, our planet is now in the midst of an anthropogenic (human-caused) climate crisis (Hansen et al., 2008) which, if unaddressed, threatens the future survival of our species (UNFCCC, 2015). Already, climate change is having a significant and measurable impact on public health worldwide. According to the WHO, climate change was responsible for the loss of 5.5 million DALYs in the year 2000. The Global Humanitarian Forum (2009) concluded that climate change is responsible for the deaths of 300,000 people globally every year, and “seriously affects” an additional 325 million.

As severe as the impacts of climate change on public health are today, future impacts are predicted to be worse. In the fifth assessment of the IPCC (2014), it was reported, with “very high confidence”, that climate change will exacerbate health problems that already exist, in addition to introducing new problems, such as climate-change-driven displacement and migration. Recently, the joint Lancet-University College London Commission declared that “climate change is the biggest global health threat of the 21st century” (Costello et al., 2009). The report identified six pathways through which climate change (under conservative estimates) would impact human health and well-being. These are: changing patterns of disease and morbidity, under-nutrition and food insecurity, water scarcity and lack of sanitation, vulnerability of shelter and human settlements, extreme weather events, and climate-change-driven displacement and migration.

Each of these “pathways” are intimately linked to the 2030 Agenda targets of SDG 3. As heat-waves and other climate-related hazards cause an increase in many communicable and non-communicable diseases (Friel et al., 2011),

TABLE 5 LINKS BETWEEN CLIMATE CHANGE-RELATED IMPACTS AND SDG 3 TARGETS

| Climate change impacts | SDG Health Target | | | | | | | | | | | | |
|------------------------------------|------------------------|------------------------------------|---------------------------|-------------------------------|---------------------|-----------------------------|---|-------------------------------|-----------------------------|---------------------|--------------|----------------------------------|-----------------------------------|
| | 3.1 Maternal mortality | 3.2 Neonatal and under-5 mortality | 3.3 communicable diseases | 3.4 Non-communicable diseases | 3.5 Substance abuse | 3.6 Road traffic casualties | 3.7 Reproductive and sexual health services | 3.8 Universal health coverage | 3.9 Chemicals and pollution | 3.a Tobacco control | 3.b Vaccines | 3.c Health finance and workforce | 3.d Global health risk management |
| Changing patterns of disease | √ | | √ | | | | | | | √ | √ | √ | |
| Food insecurity | | | | | | | | | | √ | | √ | √ |
| Water scarcity/poor sanitation | | | | | √ | | | | | √ | √ | √ | √ |
| Threatened shelters | √ | √ | √ | √ | √ | √ | √ | | √ | √ | √ | √ | √ |
| Extreme events & natural disasters | √ | √ | √ | √ | √ | √ | √ | √ | | √ | √ | √ | √ |
| Population migration | √ | √ | √ | √ | | √ | √ | √ | √ | √ | √ | √ | √ |

achieving SDG 3 will become an increasingly difficult challenge, particularly in the Arab region, where extreme climate conditions are already common (Lelieveld et al., 2012). Table 5 presents the linkages between the above impacts of climate change and the different SDG 3 health targets.

Due to the intimate link between climate change and health, achieving the targets of SDG 13 on climate action converges with the work required to address SDG 3 targets. In other cases, there is synergy between action towards SDG 3 and SDG 13. Finally, achievement of some of the SDG 3 health targets will actually help in achieving climate change mitigation and adaptation. For example, improving access to family planning (SDG 3.7), will lead to reduced fertility rates and reduced rates of population growth, which according to the fifth Global Environmental Outlook report is

one of the primary drivers of climate change (Levy & Morel, 2012). In general, framing climate change as a public health issue may attract critically needed political attention and financial support for mitigation and adaptation (Lelieveld et al., 2012).

Specific climate change actions were suggested under SDG-13, which include the following:

- 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- 13.2: Integrate climate change measures into national policies, strategies and planning
- 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation,

TABLE 6 RELATIONSHIP BETWEEN CLIMATE CHANGE ACTIONS (SDG-13) AND SDG 3 TARGETS

| SDG 3 Targets | SDG 3 Targets | | | | | | | | | | | | |
|---|------------------------------|---|--------------------------------------|--|---------------------------|--------------------------------------|---|--|--------------------------------------|---------------------------|-----------------|--|--|
| | 3.1 Maternal mortality | 3.2 Neonatal and under-5 mortality | 3.3 Communi- cable diseases | 3.4 Non- communi- cable diseases | 3.5 Substance abuse | 3.6 Road traffic casualties | 3.7 Reproductive and sexual health services | 3.8 Universal health coverage | 3.9 Chemicals and pollution | 3.a Tobacco control | 3.b Vaccines | 3.c Health finance and workforce | 3.d Global health risk management |
| SDG-13 targets | | | | | | | | | | | | | |
| 13.1 Resilience and adaptation | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| 13.2 National integration | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 0 |
| 13.3 Raise awareness | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 0 |
| 13.a Financing (GCF) | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 0 |
| 13.b Raising capacity | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | 2 | 1 | 0 | 0 | 0 |

impact reduction and early warning

- 13.a: Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
- 13.b: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing states, including focusing on women, youth and local and marginalized communities

Table 6 draws connections between climate change action and specific SDG 3 targets. For each SDG

3 target, the table rates 0-3 the degree of impact that climate change measures will have on health outcomes. A “0” mark indicates that SDG 3 target achievement is not affected by the specific SDG 13 target. A “1” mark indicates that SDG 3 target achievement would be assisted by the specific SDG 13 target. A “2” mark indicates that SDG 3 target achievement would be a huge challenge without meeting the specific SDG 13 target. A “3” mark indicates that SDG 3 target achievement is not possible without the success of the specific SDG 13 target. In order to reframe climate change as a crisis of public health, the Paris Agreement must be understood and promoted as a fundamental document for achieving SDG 3 targets. Two months after the publication of the 2030 Agenda, the 21st Conference of Parties (COP21) of the UNFCCC met in Paris to negotiate an agreement to succeed the Kyoto Protocol, whose second commitment period expires in 2020. The negotiations that took place at COP21 were framed as a battle between developed and developing countries (Raman, 2016), where the majority of developing countries, including the

G77 bloc, negotiated for an agreement that is “non-mitigation centric” (Raman, 2016; Gupta, 2015), while developed countries wanted an agreement that focused on mitigation to reach the “temperature goal,” with developed and developing countries held to the same emissions reduction standards (Raman, 2016).

The outcome has been regarded by many as a victory for developing countries. This victory is partly reflected in Article 2, sub-paragraph 1 (and repeated in Article 4, sub-paragraph 1) of the Agreement which states that the global response to climate change must be implemented “in the context of sustainable development and efforts to eradicate poverty,” which elevated the importance of adaptation and finance (Raman, 2016). Specifically, COP21 presents an opportunity for the Arab world, especially that it holds all 196 countries responsible for emissions reductions, preserves the principle of “common but differentiated responsibilities,” and requires developed countries to provide “finance, technology and capacity-building support” to developing countries before 2020. This language offers Arab countries the ability to interpret COP21 in light of the SDGs and in a way that is supportive of regional and local realities.

V. CONCLUSION

The SDGs represent a considerable expansion and improvement over the MDGs. Specifically, the health items within SDG 3 include an expanded list of health outcome targets and a focused attention on health systems implementation and evaluation. Further, the broader agenda set within the SDGs agreement offers new opportunities to address health goals within the framing of broader social, economic, and political development strategies. While the intersections between SDG 3 targets and other SDGs targets are not explicitly drawn within UN documents, those connections should be readily apparent to policy makers and drawn upon as a conceptual and practical resource for health policy advocacy. Furthermore, national and regional policymakers in the Arab world should prioritize SDG 3 targets based on local and regional needs, capacities, and aspirations.

A focus on health systems, public health institutions, and equity should underpin efforts to mobilize SDG 3 in the service of change. Realizing

this change requires new types of actions. Past efforts were not enough to accomplish the MDG agenda, so any expectation that the same approaches would yield different results with the SDGs is misguided.

The challenges facing the Arab region are unique, especially considering a context of regional crises of war, migration, resource scarcity, and economic inequality. There are vast disparities between neighboring countries and regions, as well as areas within nations. Addressing these myriad challenges requires new approaches that capitalize on regional experience, expertise, and cooperation. Specifically, Arab states must welcome a paradigm of partnership that promotes the sharing of resources, skills and knowledge, and the political will to support change. Finding local solutions to pressing issues, including food insecurity, water scarcity, mass migration, and infrastructural development must draw upon the wealth of experience and resources that Arab countries possess.

The burgeoning climate change agenda presents an opportunity to mobilize these regional assets towards environmental protection, sustainable development, and health. Arab health professionals and policymakers must become versed in the languages of the COP 21 and SDGs agreements. These documents represent a shared foundation and language to approach upcoming local and regional challenges, while also an opportunity to reflect on the uniqueness of the Arab context and the need for a nuanced understanding of policies and practices in action.

References

- Abahussain, A. A., Abdu, A. S., Al-Zubari, W. K., El-Deen, N. A., & Abdul-Raheem, M. (2002). “Desertification in the Arab region: analysis of current status and trends”. *Journal of Arid Environments*, 51(4), 521-545.
- Atallah, S. (2015). “Garbage Crisis: Setting the Record Straight”
- <http://www.lcps-lebanon.org/featuredArticle.php?id=48> [Accessed June 30, 2016].

- Brende, B., & Høie, B. (2015). "Towards evidence-based, quantitative Sustainable Development Goals for 2030". *The Lancet*, 385(9964), 206-208.
- Costello, A., Abbas, M., Allen, A., Ball, S., Bell, S., Bellamy, R., Friel, S., Groce, N., Johnson, A., Kett, M., Lee, M., Levy, C., Maslin, M., McCoy, D., McGuire, B., Montgomery, H., Napier, D., Pagel, C., Patel, J., de Oliveira, J.A., Redclift, N., Rees, H., Rogger, D., Scott, J., Stephenson, J., Twigg, J., Wolff, J., Patterson, C. (2009). "Managing the health effects of climate change". *The Lancet*, 373(9676), 1693-1733.
- El-Zein, A., DeJong, J., Fargues, P., Salti, N., Hanieh, A., & Lackner, H. (2016). "Who's been left behind? Why sustainable development goals fail the Arab world". *The Lancet*, S0140-6736(15), 1312-4.
- El-Zein, A., Jabbour, S., Tekce, B., Zurayk, H., Nuwayhid, I., Khawaja, M., Tell, T., Al Moojji, Y., De-Jong, J., Yassin, N., Hogan, D. (2014). "Health and ecological sustainability in the Arab world: a matter of survival". *The Lancet*, 383(9915):458-76.
- Fargues, P. (2014). Europe must take on its share of the Syrian refugee burden, but how? European University Institute: Migration Policy Center, Italy.
- Friel, S., Bowen, K., Campbell-Lendrum, D., Frumkin, H., McMichael, A. J., & Rasanathan, K. (2011). "Climate change, noncommunicable diseases, and development: the relationships and common policy opportunities". *Annual review of public health*, 32(2011), 133-47.
- Gevlin, J.L. (2012). "The Arab uprisings: what everyone needs to know". Oxford University Press.
- Global Health Observatory Indicator Views, World Health Organization, 2016 <http://apps.who.int/gho/data/node.imr#ndx-P>. [Accessed on July 4, 2016].
- Global Humanitarian Forum. (2009). "The Anatomy of a Silent Crisis". Global Humanitarian Forum, Geneva.
- Gupta, J. (2015). "Paris Climate Summit: How the negotiating blocs work. China Dialogue"
<https://www.chinadialogue.net/article/show/single/en/8351-Paris-climate-summit-how-the-negotiating-blocs-work> [Accessed April 2016].
- Habib, R.R., Baris, E., & Rabie, T. (2012). "Human health and well-being are threatened by climate change" in *Adaptation to a changing climate in Arab countries: A Case for Adaptation, Governance, and Leadership in Building Climate Resilience*. (Dorte Verner) The World Bank, Washington DC.
- Hansen, J., Sato, M., Kharecha, P., Beerling, D., Berner, R., Masson-Delmotte, V., Pagani, M., Raymo, M., Royer, L., & Zachos, J. C. (2008). "Target atmospheric CO₂: Where should humanity aim?". arXiv preprint arXiv:0804.1126.
- Iqbal, F., & Kiendrebeogo, Y. (2014). "The Reduction of Child Mortality in the Middle East and North Africa: A Success Story". <http://ssrn.com/abstract=2491936> [Accessed June 30, 2016]
- Jabbour, S. (2003). "Health and development in the Arab world: which way forward?" *BMJ: British Medical Journal*, 326(7399): 1141-1143.
- Jabbour, S. (2014). "Health and contemporary change in the Arab world". *The Lancet*, 383(9915): 477-479.
- Kroll, Christian (2015). "Sustainable Development Goals: Are the rich countries ready?" Gütersloh: Bertelsmann Foundation, Germany
- Lelieveld, J., Hadjinicolaou, P., Kostopoulou, E., Chenoweth, J., El Maayar, M., Giannakopoulos, C., Hannides, C., Lange, M.A., Tanarhte, M., Tyrlis, E., & Xoplaki, E. (2012). "Climate change and impacts in the Eastern Mediterranean and the Middle East". *Climatic Change*, 114(3-4), 667-687.
- Levy, M., Morel, A. (2012). Chapter 1: Drivers. In *Global Environmental Outlook Five: Environment for the future we want*. United Nations Environmental Program. Valetta: Progress Press LTD.
- Mandil, A. (2009). "Commentary: Mosaic Arab world, health and development". *International Journal of Public Health*, 54: 361.
- MDG Monitor (2015). "Fact sheet on current MDG progress of Lebanon (Arab States)". <http://www.mdgmonitor.org/mdg-progress-lebanon-arab-states/> [Accessed June 29, 2016].
- Mokdad, A.H., Jaber, S., Aziz, M.I., AlBuhairan, F., AlGhathithi, A., AlHamad, N.M., Al-Hooti, S.N., Al-Jasari, A., AlMazroa, M.A., AlQasbi, A.M., Alsowaidi, S., Asad, M., Atkinson, C., Badawi, A., Bakfalouni, T., Barkia, A., Biryukov, S., El Bcheraoui, C., Daoud, F., Forouzanfar, M.H., Gonzalez-Medina, D., Hamadeh, R.R., Hsairi, M., Hussein, S.S., Karam, N., Khalifa, S.E., Khoja, T.A., Lami, F., Leach-Kemon, K., Memish, Z.A., Mokdad, A.A., Naghavi, M., Nasher, J., Qasem, M.B., Shuaib, M., Al Thani, A.A., Al Thani, M.H., Zamakhshary, M., Lopez, A.D., Murray, C.J. (2014). "The state of health in the Arab world, 1990-2010: an analysis of the burden of diseases, injuries, and risk factors". *The Lancet*, 383 (9914): 309-320.
- Rahim, H.F., Sibai, A., Khader, Y., Hwalla, N., Fadhil, I., Alsiyabi, H., Mataria A, Mendis S, Mokdad A.H., & Hussein, A. (2014). "Non-communicable diseases in the Arab world". *The Lancet*, 383(9914): 356-367.
- Raman, M. (2016). "The Climate

Change Battle in Paris: An Initial Analysis of the Paris COP21 and the Paris Agreement". The Economic and Political Weekly, Volume 51, Issue Number 2, 9 Jan 2016.

Saab, N. (2012). Arab Environment: Survival Options. Arab Forum for Environment and Development, Beirut.

The Arab NGO Network for Development (2010). Assessing the Millennium Development Goals Process in the Arab Region. The Arab NGO Network for Development, Beirut.

Tolba, M., & Saab, N. (2009). Arab environment: Climate change. Arab Forum for Environment and Development, Beirut.

UNDP. (2013). Water governance in the Arab Region: Managing scarcity and securing the future. New York: Regional Bureau for Arab States.

UNFCCC (2015). Adoption of the Paris Agreement. Resolution Adopted by the 21st Conference of Parties 12 December 2015. United Nations Framework Convention on Climate Change, Paris.

UN General Assembly (2000). United Nations Millennium Declaration. Resolution adopted by the General Assembly on 18 September 2000. United Nations.

UN and LAS (2013). The Arab Millennium Development Goals Report: Facing Challenges and Looking Beyond 2015. United Nations and League of Arab States, Beirut

UN General Assembly (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. United Nations.

Waterbury, J. (2013). The Political

Economy of Climate Change in the Arab Region. United Nations Development Program, New York.

WHO (2016a). "Assessment of essential public health functions in countries of the Eastern Mediterranean Region". World Health Organization.

<http://www.emro.who.int/about-who/public-health-functions/index.html> [Accessed July 1, 2016]

WHO (2016b). "World health statistics 2016: monitoring health for the SDGs, sustainable development goals." World Health Organization.

http://www.who.int/gho/publications/world_health_statistics/2016/en/ [Accessed July 5, 2016]

Yamey, G., Shretta, R., & Binka, F. N. (2014). "The 2030 sustainable development goal for health". BMJ, 349, g5295.

Dr. Iman Nuwayhid, Professor of occupational and environmental health and Dean of the Faculty of Health Sciences, Dr. Rima Habib, Professor of Environmental Health, Faculty of Health Sciences, Suzanne El Khechen, Instructor, and Shelby Surdyk, MS Candidate in Environmental Science at the American University of Beirut (AUB).

CONTRIBUTING TO ZERO HUNGER IN ARAB COUNTRIES

MAHMOUD EL-SOLH



The Near East and North Africa region, where most Arab countries are situated, is the only region currently experiencing an increase in the proportion of its population facing hunger (FAO 2015). This is not surprising since this region is the largest food deficit region globally and Arab countries, more so than other countries, are extremely vulnerable to food-price shocks, the impacts of which were significantly felt in 2008 during the global food crisis. It is also apparent that climate change implications, particularly consecutive drought since 2007, have contributed to the substantial reduction in agricultural production and increased food insecurity. The region is also experiencing high unemployment, particularly among the youth, as well as high migration from rural to urban areas and migration abroad. Some analysts have argued that these factors, along with others, have contributed to civil unrest, the rise of extremism and the current migration crisis in some of these countries.

There is great potential to bridge the gap between food consumption and food production. This has been demonstrated practically by using science and technology to enhance domestic food production through the intensification of agricultural production systems by increasing agricultural productivity and bridging the yield gaps on existing land. Projects have successfully increased cropping intensity, reduced food losses and waste along the production/supply value chain and supported the sustainable management of water resources through improved irrigation efficiency, water saving technologies and using marginal water – both brackish and treated waste water – to grow more food. It is evident that Arab countries can move effectively towards zero hunger by increasing their investment in efficient agriculture production such as climate smart agricultural practices, sustainable and efficient water use and integrated water and land management, conservation agriculture and zero or minimum tillage, integrated crop/livestock/rangelands production systems, diversification of crop production systems and crop rotations, integrated pest management (IPM), integrated plant nutrient systems, protected agriculture/hydroponics and urban and peri-urban agriculture. Arab countries differ in their availability of natural, human and financial resources and in their ability to enhance food security through domestic food production. To enhance food security and achieve zero hunger, the Arab world requires conducive policies to place agriculture as a top priority investment in both agricultural research and sustainable development, stronger inter-Arab collaboration at the regional and sub-regional levels, as well as enhanced regional and international cooperation and partnerships based on complementarities and comparative advantages.

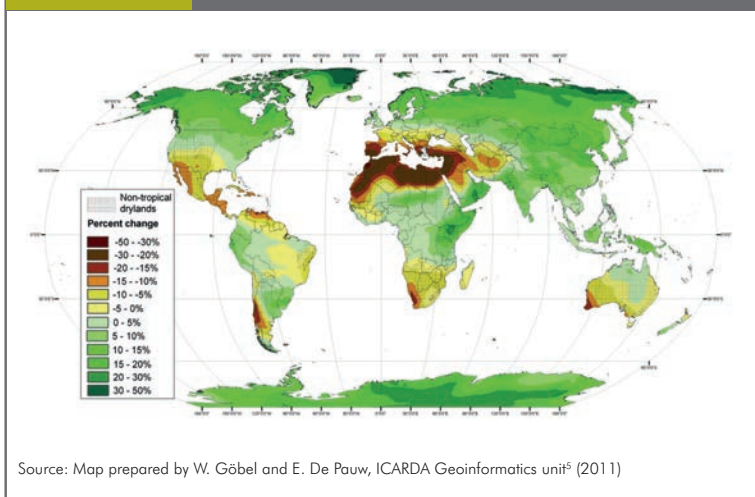
To meet the United Nations' Sustainable Development Goal to end hunger, achieve food security and improved nutrition and promote sustainable agriculture (SDG 2)¹, the Arab world requires considerable attention and the collective action of governments, donors, researchers, development actors and civil society. This is because, according to the FAO (2015)², the Near East and North Africa region, where most Arab countries are situated, is the only region currently experiencing an increase in hunger. The number of hungry people has doubled from 16.5 million between 1990 and 1992, to 33 million people between 2014 and 2016. The proportion of undernourished people has also increased from 6.6 to 7.5 percent during this same period and the number of children with stunted growth is high in countries like Egypt, Iraq, Sudan and Yemen. In the region as a whole, anemia affects one third of the population, particularly children, pregnant women and women of child bearing age. This disturbing trend is attributed to the rise of conflicts and instability and the consequent breakdown of public and private services in some Arab countries. While this region is by no means uniform with the countries of the Gulf Cooperation Council (GCC) and North Africa meeting the Millennium Development Goal of halving the prevalence of hunger in 2015, the demand for food in the region as a whole is rising rapidly as the populations grows, with the current demand for food made available mainly

through imports. Indeed, the Arab region is the largest net importer of cereals globally and its dependency on food imports is likely to increase substantially in the future.³ Estimates for 2030 indicate that the deficit in cereals will be double of what they are today.

The World Bank and others have highlighted the extent to which Arab countries, more so than other countries, are extremely vulnerable to food-price shocks, the impacts of which were significantly felt in 2008 during the global food crisis. Coupled with climate change effects, some analysts have argued that these factors, along with others, contributed to civil unrest, the rise of extremism and the current displacement of populations in some of these countries. Furthermore, natural resource degradation in the Arab countries is unprecedented with land degradation and water resource depletion affecting development processes and the capacity of ecosystems to provide their much needed services.

The fact that this same region also wastes and experiences food losses at rates higher than the global average also places formidable challenges to addressing food security and is placing additional and needless burdens on the Arab world's scarce water resources and import costs. These wastes and losses occur along the entire food value chain. For wheat, losses are estimated to be around 16 million tons, enough to feed 100 million people.

FIGURE 1

RELATIVE CHANGE IN MEAN ANNUAL PRECIPITATION BETWEEN 1980/1999 AND 2080/2099


The trend of increasing hunger in the Arab countries must be reversed, as should the losses and waste of food. To do so, Arab governments require policies conducive to achieving food security by strengthening safety nets, managing market volatility and enhancing domestic food production while sustainably using their natural resources. This paper focuses on one important element in this equation: enhancing domestic food production in the Arab world while conserving and sustainably using natural resources. The International Center for Agricultural Research in the Dry Areas (ICARDA)⁴ has – over a period of 40 years – amassed the knowledge and experience to show that achieving SDG 2 in Arab countries is possible through science and technology that tackles the major natural, technical and policy constraints

that stifle food production in the region. These constraints are summarized briefly below:

A. Natural Constraints and Demographic Pressure

Arab countries are geographically located in non-tropical dry areas with fragile agro-ecological environments characterized by scarce water resources and arable land, and increasingly degraded land, biodiversity and water quality. It is also a region where climate change effects are strongly felt, particularly in the form of more frequent droughts, higher temperatures, increasing levels of salinity due to salt water intrusion and shorter growing seasons, and biotic stresses including old and emerging diseases, insect pests and parasitic weeds. The most serious implication of climate change is the expected reduction of rainfall in the coming hundred years which will affect the capacity of rainfed and irrigated agricultural systems to produce food. Rainfall amounts are expected to decrease by 15 to 50 percent depending dependent on the area as shown in Figure 1, which presents the average change in mean annual precipitation amongst 18 global model scenarios for climate change for this region.

Compounding these issues is the high population growth rate in Arab countries – about 2.2 percent yearly – which is considerably higher than the world average of 1.2 percent in 2010–2015. As the population grows, along with increasing urbanization and changing consumption patterns, the demand for food will increase, placing considerable pressure on natural resources, especially water, as demand for water by different sectors, as well as on hard currency, to support food importation increases.

B. Technical Constraints

There is a lack of available technologies in the hands of farmers – particularly small farmers – to overcome the natural constraints outlined above to enhance agricultural productivity. Examples of such technologies include improved high yielding varieties of major staple crops and appropriate crop, water and land management practices. While several of these technologies are available thanks to agricultural research and extension which has been successful in addressing

some of these challenges, more investment is needed in both adaptive agricultural research and technology transfer to address new and emerging challenges and reach those farmers who are most in need of this technology.

C. Policy Constraints

A non-conducive policy environment is hindering investment in agricultural research and development. Only after the food crisis in 2008 did some countries put agriculture high enough on their investment agenda and though this has made a difference, more investment is needed to tackle the bottlenecks to improved agricultural productivity. There is currently insufficient investment in institutional capacity development, particularly for agricultural research institutions and national scientists, and there are insufficient effective extension and technology transfer institutions to provide the services needed by farmers. Other policy constraints include:

- Insufficient micro-credit opportunities for small farmers to help them access the inputs and technologies they need to grow more food;
- Fluctuation of market prices which places additional risks on small farmers;
- The lack of enabling policies to facilitate linking farmers to local and international markets.

D. Contributing to Zero Hunger in the Arab World

To achieve zero hunger in the Arab countries, increasing food production is one window of significant opportunity. Given that bringing new land into agricultural production is not an option for most countries (except Sudan) since the total area of arable land in all other countries is less than three million hectares, there are really only three approaches for increasing agricultural production to address the increasing levels of food insecurity and meet the projected increase in the demand for food. These are:

- Intensification of agricultural production systems by increasing yield or productivity on existing land (or bridging the yield gaps);

- Increasing cropping intensity (number of crops per season) on existing agricultural lands;
- Reducing food losses waste along the supply chain.

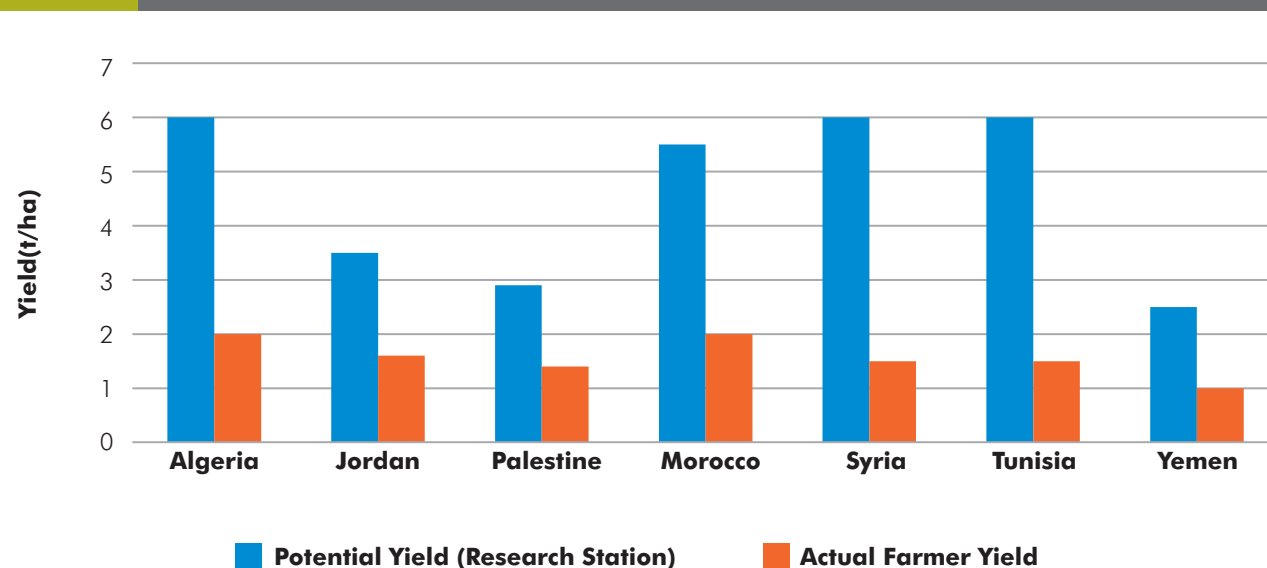
According to the Food and Agriculture Organization of the United Nations, (FAO), at the global level, 93 percent of the required increases in agricultural production are projected to come from agricultural intensification to increase yields or productivity vertically per unit of land and cropping intensity (i.e. more than one crop per year). Within the 93 percent, 72 percent comes from sustainable intensification of production systems and 21 percent comes from multiple cropping as a result of cultivation of more than one crop per year if environmental conditions allow, as is the case in Egypt's Nile Valley. Therefore, a good portion of this growth would need to be achieved by improving productivity through vertical increases in agricultural productivity and production rather than by horizontal expansion.

ICARDA has been conducting research for

development in the Arab world since 1977 to address food security by developing knowledge and technology to support the intensification of agricultural production systems by increasing yield or productivity on existing land (or bridging the yield gaps) and by increasing cropping intensity (number of crops per season) on existing agricultural lands.

We have learnt that the ecosystems in the Arab world are varied and diverse in terms of both biophysical elements and political and socio-economic issues. A sound understanding of the system's complexity and dynamics is critical in order to help rural communities in the Arab world achieve viable pathways to development and we are building on traditional programs for crops and livestock improvement to promote a holistic, multi-disciplinary 'systems' research approach which seeks to understand the interactions and trade-offs between the whole spectrum of elements – including the human and ecological – that constrain or improve agricultural productivity and identify the most appropriate research-in-development interventions which include, at the core, the sustainable use of natural resources and inputs.

FIGURE 2 YIELD GAP IN WHEAT IN VARIOUS ARAB COUNTRIES



Source: Enhancing Food Security in the Arab Countries, ICARDA project (2011 to present) supported by Arab Fund for Economic and Social Development (AFESD), the Kuwait Fund for Arab Economic Development (KFAED), Islamic Development Bank, the Bill & Melinda Gates Foundation (BMGF) and the OPEC Fund for International Development and implemented by ICARDA

TABLE 1

**WHEAT YIELD (T/HA) IN DEMONSTRATION FIELDS VERSUS FARMERS' FIELDS IN 8 ARAB COUNTRIES
(AVERAGE OF FOUR GROWING SEASONS 2010/2011 – 2013/2014)**

| Country | Egypt | Jordan | Morocco | Palestine | Sudan | Syria | Tunisia | Yemen | Overall mean | | | |
|-----------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| Production system | I | R | R | SI | R | I | R | SI | | | | |
| Improved practices | 8.28 | 2.24 | 2.85 | 6.00 | 2.02 | 3.62 | 1.90 | 5.11 | 3.20 | 5.75 | 4.03 | 4.09 |
| Farmers' practices | 6.65 | 1.75 | 2.53 | 4.83 | 1.74 | 2.17 | 1.63 | 4.53 | 2.60 | 4.46 | 2.58 | 3.22 |
| Average increase (%) | 25 | 28 | 13 | 24 | 16 | 67 | 17 | 13 | 23 | 29 | 56 | 28 |
| Maximum yield | 10.35 | 3.45 | 4.30 | 7.50 | 2.17 | 5.37 | 2.96 | 6.96 | 4.36 | 7.90 | 5.14 | 5.50 |
| Maximum increase (%) | 56 | 97 | 70 | 55 | 25 | 147 | 82 | 54 | 68 | 77 | 99 | 75 |

I: Irrigated; R: Rainfed; SI: Supplemental Irrigation

Source: Enhancing Food Security in the Arab Countries, ICARDA project (2011 to present) supported by Arab Fund for Economic and Social Development (AFESD), the Kuwait Fund for Arab Economic Development (KFAED), Islamic Development Bank, the Bill & Melinda Gates Foundation (BMGF) and the OPEC Fund for International Development and implemented by ICARDA

E. Bridging the Yield Gaps for Crop Production to Enhance Food Security

Agricultural productivity in most of the Arab countries is below the global average because of the technical and policy constraints discussed above. However, the potential for boosting agricultural productivity to enhance food security and improve the livelihoods of resource-poor farmers in Arab countries exists by bridging the yield gap between actual farmers' yield levels and potential yields under appropriate management and inputs with improved technologies. Figure 2 clearly demonstrates the yield gap between actual farmers' yields and the potential in wheat production in several Arab countries.

Efforts to bridge yield gaps can be exemplified by a project funded by the Arab Fund for Economic and Social Development (AFESD), the Kuwait Fund for Arab Economic Development (KFAED), the Islamic Development Bank, the Bill & Melinda Gates Foundation (BMGF) and the OPEC Fund for International Development. They have been implemented by ICARDA since 2011 involving Egypt, Morocco, Jordan, Sudan, Syria, Tunisia and Yemen and in a later phase Lebanon, Palestine, Algeria and Iraq. Results of this wide scale investment in science and technology have been extremely positive: farmers throughout the Arab world have registered substantial increases in wheat productivity using improved varieties resistant to drought, heat, and virulent pests and diseases such as UG 99 with average yield

increases ranging from 13 percent under rainfed conditions in Morocco to 67 percent under irrigation in Sudan, with an overall mean average increase of 28 percent across all countries. With respect to the maximum increase in wheat productivity, this ranged from 25 percent under rainfed conditions in Palestine and 147 percent under irrigation in Sudan with an overall average of 75 percent across all countries. Financial gains were also notable: with the increase in wheat supply in Egypt from 557,030 tons in the 2009-2010 season to 880,941 tons in 2013-2014 (a 58 percent increase), the annual value was estimated to be 52.2 million US dollars. The outcome of four years are presented in Table 1. The strength of the project rests in increasing wheat production not only by introducing improved varietal releases but also with improved soil, water and crop management packages to improve the sustainable use of resources and maximize yield gains.

The recommendation for Arab countries is to intensify agricultural production systems taking into consideration the sustainable use of available natural resources through the vertical increase in agricultural production per unit of inputs (e.g. land, water, fertilizer, seed, labor or cash) while limiting damage to the environment. Arab countries can thus increase their investment in conservation technologies for sustainable agricultural intensification to increase agricultural productivity and production through the following tested approaches:

- Good Agricultural Practices (GAP)
- Sustainable Water Use and Integrated Water and Land Management
- Conservation Agriculture/Zero or minimum tillage (ZT/CA)
- Integrated Crop/Livestock/Rangelands Production Systems
- Diversification of crop production systems and crop rotations
- Integrated Pest Management (IPM)
- Integrated Plant Nutrient System (IPNS)
- Organic Agriculture (OA)
- Protected agriculture/hydroponics
- Urban and Peri-Urban Agriculture

F. Improving Livestock Production for Food Security

Livestock production is a major contributor to food security in Arab countries. Except for Iraq, livestock production has grown from 3 to 5 percent in most Arab countries between 1990 and 2013 (Table 2). Per capita consumption of meat and milk are presented in Figure 3A and 3B. Kuwait is the highest annual per capita meat

consumer with about 78 kg/capita while Syria is the lowest per capita meat consumer with 18kg/capita annually.

In 2014, very few Arab countries were close to self-sufficiency in livestock production. Sudan was the only self-sufficient country in the Arab world although countries like Syria, Morocco, Algeria and Tunisia were self-sufficient up to 2000. The biggest growth in animal sources of food was the growth in poultry production, which more than doubled in 2013 compared to the average production over the 1995–2000 period; sheep, goat and cattle production grew by 21 percent while camel production grew by about 45 percent during the same period.

The biggest bottleneck to growth in livestock production is the limited sources of feed produced locally and the high cost of imported feed sources, particularly after the devaluation of local currencies in some countries. In the past, free grazing of rangelands in most Arab countries provided 75-80 percent of the feed sources. Today, the rangelands provide only 15 to 20 percent of feed. This is mainly due to excessive grazing and over-stocking of animals, which has led to the unsustainable use of rangelands.

ICARDA is using new approaches to improve livestock production in the Arab world through its work on small ruminants (sheep and goats).

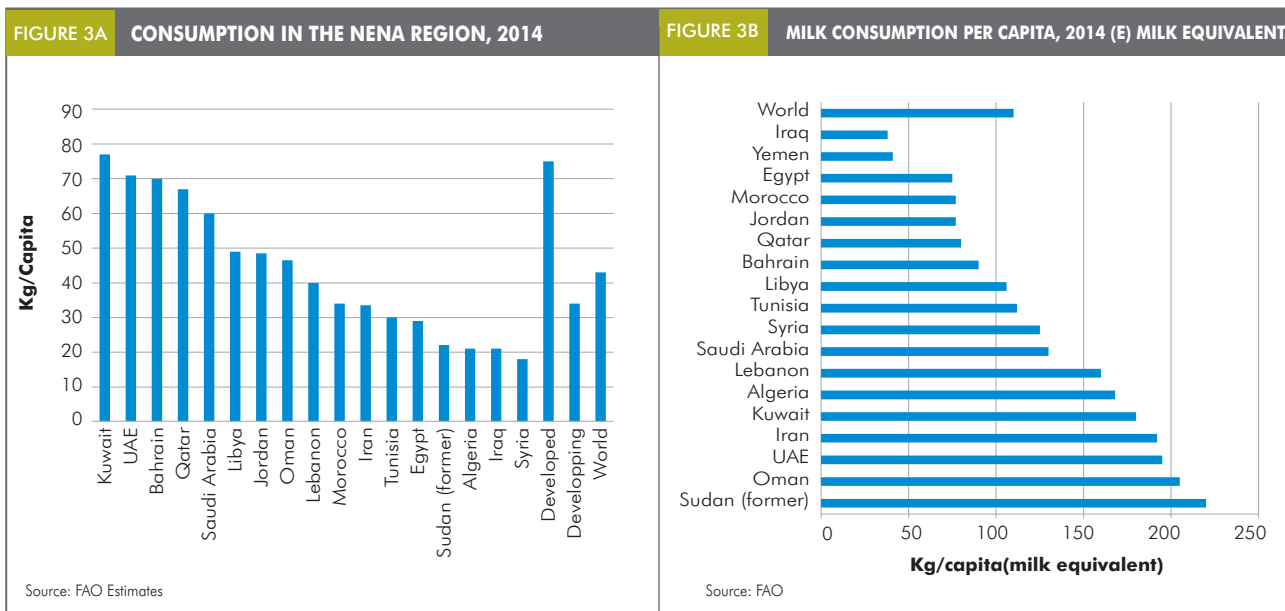


TABLE 2 LIVESTOCK AS SHARE OF GROSS VALUE OF AGRICULTURAL PRODUCTION IN SELECTED NENA COUNTRIES AND SECTOR GROWTH BETWEEN 1990 AND 2013

Gross Production Value (constant 2004 - 2006 million US\$)

| | 1990 | | | 2013 | | | Annual Growth Rate (%) | |
|----------------|------------------|----------------|-----------|------------------|----------------|-----------|------------------------|-----------|
| | Agriculture | Livestock | Share (%) | Agriculture | Livestock | Share (%) | Agriculture | Livestock |
| Algeria | 4795 | 2533 | 53 | 14681 | 5131 | 35 | 5 | 3 |
| Egypt | 8732 | 3073 | 35 | 18097 | 7703 | 43 | 3 | 4 |
| Iran | 10155 | 1999 | 20 | 21932 | 6021 | 27 | 3 | 5 |
| Iraq | 1758 | 113 | 6 | 2543 | 75 | 3 | 2 | -2 |
| Jordan | 429 | 157 | 37 | 1016 | 534 | 53 | 4 | 5 |
| Lebanon | 1121 | 195 | 17 | 1346 | 355 | 26 | 1 | 3 |
| Morocco | 6103 | 2352 | 39 | 11399 | 4597 | 40 | 3 | 3 |
| Palestine | NA | NA | NA | 825 | 352 | 43 | NA | NA |
| Qatar | 41 | 28 | 68 | 74 | 59 | | 3 | 3 |
| Saudi Arabia | 5157 | 1427 | 28 | 8884 | 3430 | 39 | 2 | 4 |
| Sudan (former) | 4733 | 2228 | 47 | 14056 | 5658 | 40 | 5 | 4 |
| Tunisia | 1768 | 261 | 15 | 2873 | 685 | 24 | 2 | 4 |
| Yemen | 1241 | 426 | 34 | 2873 | 1308 | 46 | 4 | 5 |
| World | 1,263,846 | 396,465 | 31 | 2,252,610 | 735,271 | 33 | 3 | 3 |

Source: FAOSTAT, 2015

Scientists are characterizing and conserving indigenous breeds of different types of livestock and are identifying those breeds that are more productive while exploring their adaptation to hot and arid environments. All these efforts involve the community, especially women, whose capacity is being built around what animals to keep or cull for low productivity. Efforts in Jordan and Iraq have improved the livestock-barley system through the development of improved livestock fertility and production through measures such as early weaning and simultaneous milking, the correct dosage and timing of parasite control, and sustainable feed blocks while developing and disseminating new barley varieties capable of tolerating prolonged drought and increasing water scarcity in Jordan and Iraq. ICARDA has found that community approaches for increased livestock productivity and the sustainable use of rangelands and water resources are best when managing common properties. Locally produced sources of feed can be maximized through the utilization of crop residues after treatment to make these more nutritious and palatable and it is possible to develop non-traditional sources of nutritious

feed such as byproducts, crop residues and spineless cactus, which is spreading widely in the marginal lands of Morocco and Tunisia.

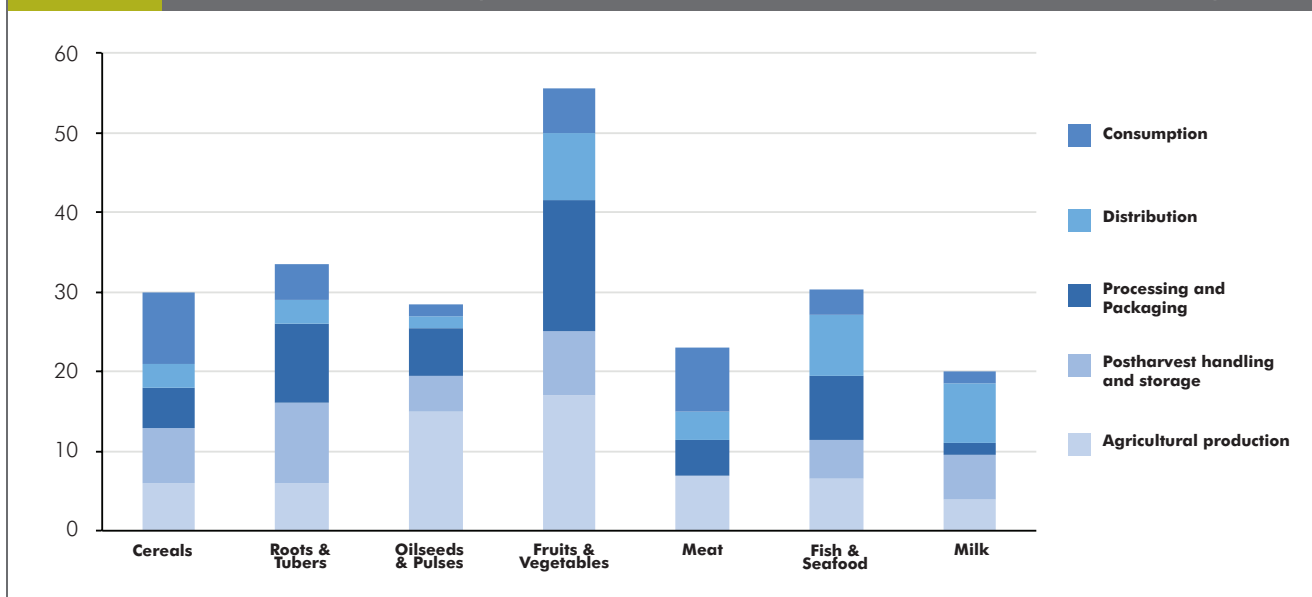
Additional research is needed to introduce more productive and adaptive exotic breeds to increase the animal sources of food and improve self-sufficiency in meat and milk. Well-targeted and improved veterinary services are also needed to ensure animal health and regular vaccination programs to control for transboundary animal diseases and ensure strict quarantine measures for introducing livestock/animals to the Arab countries. Developing integrated livestock value chains and enhancing partnerships among various stakeholders including livestock producers, particularly smallholders and processors, can help towards improving food security in Arab countries.

G. Improving Irrigation Efficiency and Introducing Water Saving Technologies to Grow More Food

Improving irrigation efficiency and introducing water saving technologies are two pressing

FIGURE 4

PERCENTAGES OF EDIBLE FL&W (BY WEIGHT) FOR EACH COMMODITY GROUP IN EACH STEP OF THE FSC FOR NORTH AFRICA, WEST AND CENTRAL ASIA. SOURCE: ADAPTED BY GUSTAVSSON ET AL, 2011



issues for farmers growing food in the Arab region. Flood irrigation is the traditional irrigation method (about 70 percent of the irrigated area uses flood irrigation), which is inefficient, costly and wasteful. Often, because they have no other choice, farmers use low quality water, which leads to salinization and waterlogging, sometimes degrading the land so much that no food can be grown any longer. Thus, farmers need an efficient, economic and sustainable irrigation management system to maximize their crop/water return.

Research is producing optimal irrigation regimes throughout the growing season to increase crop productivity per unit of water applied. Recent studies done by ICARDA in collaboration with national research systems in the Arab world resulted in developing innovative packages to manage water at the farm level to reduce water losses in agriculture. These packages focused on improving the timing of irrigation, controlling application amounts, and improved land preparation techniques that lead to more productive water use without additional costs to farmers.

One such example is the mechanized raised-bed/wide furrows technology, implemented to help wheat farmers improve their

productivity and water use efficiency. On-farm demonstrations conducted in the Sharkia Governorate in Egypt evaluated and fine-tuned improved wheat varieties and agronomic practices in field conditions. In these trials, the raised-bed (RB) planting technology improved wheat yields and saved on water. The package includes planting wheat on RBs with optimal widths, appropriate fertilization, and use of best high-yielding wheat cultivars. Since the introduction of this improved package, the area of RB sown wheat in Al-Sharkia Governorate has increased incrementally from 2,080 ha in the first season (2010-2011) to about 80,000 ha in 2014-2015. As a package, the technology has reduced irrigation water use by 25 percent; increased grain yield by an average of 30 percent; increased water use efficiency by 73 percent; reduced seed used for planting by 30-50 percent; and saved energy from reduced water pumping by 33 percent.

The project has revolutionized agronomic practices in the Delta. Its success has encouraged the wheat national campaign of the Egyptian Government to support the implementation of 1900 demonstration field sites throughout 22 governorates using the project-supported RB approach with a budget

of 8.7 million Egyptian pounds. As a result, more than 300,000 hectares of land in Egypt are now planted using this system.

However, much more is needed than saving water during irrigation. Research has shown huge potential for water saving technologies, especially for the treatment and safe reuse of wastewater, saline water, drainage water and greywater to save on fresh water, grow more food and recharge the aquifers. In Iraq, ICARDA led a project to develop a salinity management framework for regional decision makers to help improve farmers' irrigation efficiency to reduce deep percolation to shallow groundwater and subsequent re-salinization of the root zone. They also selected high producing wheat under saline soil conditions.

There is still much to do to improve irrigation efficiency and introduce water saving technologies to grow food in the Arab world through research, science, policies, pricing mechanisms and behavioral change, but there has also already been commendable progress in this domain. Indeed, given the scarcity of water in the Arab world and the pressing demand to increase food production, the Arab world ought to be the world's "Silicon Valley" for water research. Accordingly, public, private, regional, national and international investors are highly encouraged to invest in this area to sustain the region and help it through its development trajectory.

H. Dealing with Food Waste and Post-Harvest Losses to Enhance Food Security

The amount of food lost and wasted (FL&W) in the Arab world is higher than the global average. On a per capita basis, the estimated amount of food lost and wasted is 250 kg per capita annually. The resulting economic losses are huge in the Arab region considering the fact that it is the largest food deficit region as well as the largest food importer globally. Thus, FL&W has a very serious impact on food security. A lot of food that is put on the table for consumption is wasted both in restaurants and at home. It is estimated that the ready to eat food waste is about 35 percent.

Another important source of food losses are those resulting from harvesting and post-harvest activities. Food can become damaged, spoiled or lost while being harvested, handled, processed, packaged, stored, transported, distributed, marketed and consumed. Figure 4 indicates the percentage of food lost to these actions for some food commodities in North Africa and West and Central Asia. These losses impact the region's ability to reduce hunger, place significant and wasted burdens on the region's scarce natural resources, particularly water, and contribute to climate change through the creation of greenhouse emissions. The FAO estimates that the FL&W in the MENA region is equivalent to losing 42 km³ of water per year. Food losses also affect smallholder farmers who miss opportunities to generate more income through the losses they sustain during the production and post harvesting stages.

At the farm level, food can be lost through poor storage facilities, leaving crops vulnerable to rain and infestation by insects and rodents. Harvesting, threshing and cleaning crops using the wrong techniques and tools can also damage crops. Poor milking or milk processing, storing and transporting techniques also spoils food, making it unsafe for human consumption.

Food losses and waste are better dealt with using a supply chain approach, as losses occur along the supply chain for a given commodity. This should be addressed at the level of large business farms and small-scale farming as well. Science and technology could target both groups by improving farming systems and harvesting machinery, storage infrastructure including cold storage, improved and more hygienic drying and conserving/preserving techniques to improve food safety and extend the shelf-life of food.

Arab countries have collectively agreed to reduce food losses and waste by 50 percent in the next ten years. Efforts will focus on reducing waste and losses during the food growing process, as well as during processing and handling, packaging, transporting and marketing. This initiative can benefit from research and technology development as well

as extension services and finance mechanisms to help deliver the solutions to reduce losses where this is needed. It is critical for Arab countries to launch national campaigns to reduce food losses both at home and in restaurants. Some restaurants have already adopted a system to sort out good and safe unused food to make it available to charity institutions. Cutting on the food waste will enhance food security and reduce food imports.

I. Regional Cooperation Based on Comparative Advantages

The Arab countries differ in the natural, human and financial resources available to them, and thus they differ in their ability to enhance food security through domestic food production. Inter-Arab collaboration at the regional or sub-regional levels is therefore critical for the Arab world to enhance food security and move toward zero hunger. International and regional cooperation and partnerships in both agricultural research and sustainable development based on complementarities and comparative advantages can be further fostered to enhance food security and end hunger in the Arab countries. Collaboration at regional or sub-regional levels has proven to be an effective means to create and transfer technology, develop common solutions to common problems and foster a spirit for constructive competition and innovation. This will require an enabling policy environment for investing in agricultural research and development efforts to promote the sustainability of natural resources as priority areas and by placing the dividends that these produce directly in the hands of farmers.

As demonstrated in a few examples, using an integrated approach to increase food production while sustainably using the limited natural resources is possible. However, more effort is needed to transform agriculture into a strong engine for economic growth, not only to produce more food but also to create new and exciting employment opportunities for the Arab world's youth.

References

- FAO. 2015. Regional Overview of Food Insecurity - Near East and North Africa: Strengthening Regional Collaboration to Build Resilience for Food Security and Nutrition, Cairo, Egypt, FAO.
- El-Dahir. Mohamed. 2015. Food Security and Sustainable Agriculture in the Arab Region, Issue Brief for the Arab Sustainable Development Goal. Regional Coordination Mechanism, FAO, 2015. <http://css.escwa.org.lb/SDPD/3572/Goal2.pdf>

Notes

1. Food security means "all people, at all times, have physical, social and economic access to sufficient, safe, and nutritious food which meets their dietary needs and food preferences for an active and healthy life." At a national level, food security exists when all of its citizens are individually food secure. The dimensions of food security are 1) Food availability, related to domestic production to meet local demand for food; 2) Food access, market availability and affordability to people as food producers and/or consumers; 3) Stability, stable production least affected by abiotic (drought, heat, salinity, etc.) and biotic (diseases, insect pests and parasitic weeds) stresses and stability in pricing; 4) Utilization, food available with good nutritional value & ensured food safety.
2. <http://www.fao.org/documents/card/en/c/b715647e-a958-4b88-87fc-9d1c3364b161/>
3. <http://www.afedonline.org/Report2014/E/p12-43%20chp1eng.pdf>
4. <http://www.icarda.org/>
5. <http://drylandsystems.cgiar.org/content/global-drylands-and-climate-change-relative-change-mean-annual-precipitation-19801999>

Dr. Mahmoud El-Solh, former Director General, ICARDA. For further reading on the topic: AFED (2014). Arab Environment: Food Security. Annual Report of the Arab Forum for Environment and Development, 2014; Sadik, A., El-Solh, M. and Saab, N. (Eds.); Beirut, Lebanon. Technical Publications.

CONTRIBUTORS

In alphabetical order

HUSSEIN ABAZA

Chief of UNEP's Economics and Trade Branch in Geneva, before he retired in 2009. He developed various programmes on Environment and Economics, and has many publications on environmental and integrated assessment, the interface between trade and environment and others. Co-editor of AFED report on Green Economy, 2011.

DR. IBRAHIM ABDEL GELIL

Adjunct professor at the Arabian Gulf University (AGU) in Bahrain. He was the CEO of the Egyptian Environmental Affairs Agency (EEAA), and the chairman of the Egyptian Organization for Energy Planning (OEP). He authored and co-authored around 70 publications on energy and environment. Co-editor of AFED report on Sustainable Energy, 2013.

DR. MOHAMED EL-ASHRY

Senior Fellow at the UN Foundation and former Chairman of REN21. He previously served as CEO & Chairman of the Global Environment Facility (GEF), and Director of the Environment Department at the World Bank. A member of several high-level international commissions, and Deputy Chairman of AFED Board of Trustees.

DR. RIMA R. HABIB

Professor of occupational and environmental health and Chair of the Department of Environmental Health at the Faculty of Health Sciences at the American University of Beirut. She has lead research and made contributions in themes including: Health of displaced, refugee and migrant populations; Ecosystem approaches to human health in poor rural communities; and Work-related exposures and human health.

SUZANNE EL KHECHEN

Instructor at the Faculty of Health Sciences at the American University of Beirut (AUB). She holds a BS in Medical Laboratory Sciences from the Faculty of Public Health at the Lebanese University and an MPH from the Faculty of Health Sciences at AUB. She has engaged in a number of public health research-related projects since joining the Faculty of Health Sciences at AUB in 2002.

DR. IMAN NUWAYHID

Professor of occupational and environmental health and Dean of the Faculty of Health Sciences at the American University of Beirut. He is American Board

Certified in Occupational Medicine. He has led efforts in Lebanon and the Arab region to promote an Ecosystem Approach to Human Health, and his research focuses on the impact of environmental and work-related hazards on the health of children and working people.

NAJIB SAAB

Secretary General of the Arab Forum for Environment and Development (AFED) and Editor-in-Chief of Al-Bia Wal-Tanmia magazine. An architect by training, he is a 2003 recipient of the UNEP's Global 500 Award and the 2011 laureate of Sheikh Zayed International Prize for Environment. Editor of the series of AFED Annual Reports on the State of Arab Environment.

DR. ABDUL-KARIM SADIK

Senior Economic Adviser at Kuwait Fund for Arab Economic Development for over 25 years, including eight years as Executive Director for Kuwait at the International Fund for Agricultural Development (IFAD), and Adviser to the Executive Director at the World Bank. Co-editor of AFED report on Food Security, 2014.

DR. MAHMOUD EL-SOLH

Former Director General of ICARDA. He has over 30 years' experience in international agriculture research and development in developing countries, particularly in dry areas, with Ford Foundation, the American University of Beirut (AUB) and FAO. Dr. El-Solh holds a PhD in Genetics from the University of California, USA, and has more than 120 publications. His contribution to agricultural research and development has been recognized through several prestigious awards and honors.

SHELBY SURDYK

Candidate for an MS in Environmental Science (Concentration: Environmental Health) at the Faculty of Health Sciences at the American University of Beirut (AUB). Before moving to Lebanon, she completed a BS in Social-Ecological Studies at the University of Alaska, Fairbanks. She has engaged in a number of environmental health research projects since joining, as a graduate student, the Department of Environmental Health at AUB in 2016.

SUPERVISORY COMMITTEE**Members of AFED Board of Trustees**

Dr. Mohamed El-Asbry, Senior Fellow at the United Nations Foundation and former CEO and Chairman, Global Environment Facility – GEF.

Dr. Abdulrahman Al-Awadi, Executive Secretary of the Regional Organization for the Protection of Marine Environment (ROPME) and former Minister of Health in Kuwait.

Dr. Adnan Badran, Chairman of the Board of Trustees of the University of Jordan, Chancellor, Petra University and former Prime Minister of Jordan.

Najib Saab, Secretary General of the Arab Forum for Environment and Development (AFED) and Editor-in-Chief of Al-Bia Wal-Tanmia (Environment & Development) magazine.

ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| 10YFP | Ten Year Framework of Programmes on Sustainable Consumption and Production |
| AAAID | Arab Authority for Agricultural Investment and Development |
| ABSP | Agricultural Biotechnology Support Programme |
| AC | Air-Conditioning |
| AC | Alternating Current |
| ACSD | Arabic Centre for the Studies of Arid Zones and Drylands |
| ACU | Arab Custom Union |
| ADA | Arriyadh Development Authority (Riyadh) |
| ADCO | Abu Dhabi Company for Onshore Oil Operations |
| ADEREE | The National Agency for Energy Efficiency and the Development of Renewable Energy |
| ADFD | Abu Dhabi Fund for Development |
| ADR | Alternative Disputes Resolution |
| ADSG | Abu Dhabi Sustainability Group |
| ADWEA | Abu Dhabi Water & Electricity Authority |
| AED | United Arab Emirates Dirham |
| AEPC | African Environmental Protection Commission |
| AEPS | Arctic Environmental Protection Strategy |
| AEWA | African-Eurasian Waterbird Agreement |
| AFED | Arab Forum for Environment and Development |
| AFESD | Arab Fund for Economic and Social Development |
| AG | Associated Gas |
| AGDP | Agricultural Gross Domestic Product |
| AGERI | Agricultural Genetic Engineering Institute |
| AGP | Arab Gas Pipeline |
| AGU | Arabian Gulf University |
| AHD | Aswan High Dam |
| AHDR | Arab Human Development Report |
| AIA | Advance Informed Agreement |
| AIDS | Acquired Immunodeficiency Syndrome |
| AIECGC | Arab Investment and Export Credit Guarantee Corporation |
| AKTC | Aga Khan Trust for Culture |
| Al | Aluminum |
| ALBA | Aluminium Bahrain |
| ALECSO | Arab League Educational, Cultural, and Scientific Organization |
| ALMEE | Lebanese Association for Energy Saving & Environment |
| ALOA | Association for Lebanese Organic Agriculture |
| AMCEN | African Ministerial Conference on the Environment |
| AMF | Arab Monetary Fund |
| AMU | Arab Maghreb Union |
| ANME | National Agency for Energy Management |
| AoA | Agreement on Agriculture (WTO Uruguay Round) |
| AOAD | Arab Organization for Agricultural Development |
| AP | Advanced Passive reactor |
| AP | Additional Protocol |
| API | Arab Planning Institute |
| APR | Advanced Power Reactor |

| | |
|---------------------|--|
| APRUE | National Agency for the Promotion and Rationalization of Use of Energy |
| AREE | Aqaba Residence Energy Efficiency |
| ARWR | Actual Renewable Water Resources |
| ASABE | American Society of Agricultural and Biological Engineers |
| ASDRR | Arab Strategy for Disaster Risk Reduction |
| ASFSD | Arab Strategic Framework for Sustainable Development |
| ASR | Aquifer Storage and Recovery |
| AU | African Union |
| AUB | American University of Beirut |
| AUM | American University of Madaba (Jordan) |
| AVL | Automatic Vehicle Location |
| AWA | Arab Water Academy |
| AWC | Arab Water Council |
| AWCUA | Arab Water Countries Utilities Association |
| b/d | Barrels per Day |
| BADEA | Arab Bank for Economic Development in Africa |
| BAU | Business as Usual |
| Bbl | Oil Barrel |
| BCH | Biosafety Clearing House |
| Bcm | Billion cubic meters |
| BCWUA | Branch Canal Water User Association |
| BDB | Beyond Design Basis |
| BDL | Central Bank of Lebanon |
| BGR | German Geological Survey |
| BMP | Best Management Practices |
| BMZ | German Federal Ministry of Economic Cooperation and Development |
| BNEF | Bloomberg New Energy Finance |
| BOD | Biological Oxygen Demand |
| boe | Barrels of Oil Equivalent |
| BOO | Build-Own-Operate |
| BOOT | Build Own Operate Transfer |
| BOT | Build Operate Transfer |
| BP | British Petroleum |
| BREEAM | Building Research Establishment Environmental Assessment Method |
| BRO | Brackish Water Reverse Osmosis |
| BRS | ARZ Building Rating System |
| BU | Boston University |
| C&D | Construction and Demolition |
| C&I | Commercial and Industrial |
| CA | Conservation Agriculture |
| CAB | Centre for Agriculture and Biosciences |
| CAGR | Compound Annual Growth Rate |
| CAIP | Cairo Air Improvement Project |
| CAMP | Coastal Area Management Project |
| CAMRE | Council of Arab Ministers Responsible for the Environment |
| CAN | Competent National Authority |
| CAPEX | Capital Expenditures |
| CBC | Community-Based Conservation |
| CBD | Convention on Biological Diversity |
| CBO | Community-Based Organization |
| CBSE | Center for the Study of the Built Environment (Jordan) |
| CCA | Climate Change Adaptation |
| CCGT | Combined Cycle Gas Turbine |
| CCS | Carbon Capture and Sequestration |
| CCS | Carbon Capture and Storage |
| CCS CO ₂ | Capture and Storage |
| CCUS | Carbon Capture, Usage and Storage |
| CD | Compact Disk |
| CDM | Clean Development Mechanism |
| CDRs | Certified Emissions Reductions |

| | |
|---------------------|--|
| CEDARE | Centre for Environment and Development for the Arab Region and Europe |
| CEDRO | Country Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon |
| CEIT | Countries with Economies in Transition |
| CEO | Chief Executive Officer |
| CEP | Coefficient of Performance |
| CERES | Coalition for Environmentally Responsible Economics |
| CERs | Credits |
| CFA | Cooperative Framework Agreement |
| CFC | Chloro-Fluoro-Carbon |
| CFL | Compact Fluorescent Light |
| CFL | Compact Fluorescent Lamp |
| CG | Coordination Groups |
| CGE | Computable General Equilibrium |
| CGIAR | Consultative Group on International Agricultural Research |
| CH ₄ | Methane |
| CHN | Centre Hospitalier du Nord -Lebanon |
| CHP | Combined Heat and Power |
| CILSS | Permanent Interstate Committee for Drought Control in the Sahel |
| CIRAD | Agricultural Research for Development |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CIWM | Chartered Institution of Wastes Management |
| CIHEAM | International Centre for Advanced Mediterranean Agronomic Studies |
| CLO | Compost-Like-Output |
| CLRTAP | Convention on Long-Range Transboundary Air Pollution |
| CM | Carbon Management |
| CMI | Community Marketing, Inc. |
| CMS | Convention on the Conservation of Migratory Species of Wild Animals |
| CNA | Competent National Authority |
| CNCA | Public Agricultural Bank |
| CNG (CNS) | Compressed Natural Gas |
| CO | Carbon Monoxide |
| CO ₂ | Carbon Dioxide |
| CO _{2e/eq} | CO ₂ equivalent |
| COD | Chemical Oxygen Demand |
| COP | Conference of the Parties |
| CPB | Cartagena Protocol on Biosafety |
| CPC | Calcined Petroleum Coke |
| CRS | Center for Remote Sensing |
| CSA | City Strategic Agenda |
| CSD | UN Commission on Sustainable Development |
| CSEM | Centre Suisse d'Electronique et de Microtechnique |
| CSO | Civil society organizations |
| CSP | Concentrated Solar Power |
| CSR | Corporate Social Responsibility |
| CTAB | Technical Center of Organic Agriculture |
| cum | Cubic meters |
| CZIMP | Coastal Zone Integrated Management Plan |
| DAC | Development Assistance Committee |
| DALYs | Disability-Adjusted Life Years |
| DBFO | Design Build Finance Operate |
| DBO | Design-Build-Operate |
| DC | Direct current |
| DED | Dubai Economic Department |
| DEFRA | Department for Environment, Food and Rural Affairs (UK) |
| DEM | Digital Elevation Model |
| DESA | Department of Economic and Social Affairs |
| DEWA | Dubai Electricity and Water Authority |
| DFID | UK Department for International Development |
| DHW | Domestic Hot Water |

| | |
|-------|--|
| DII | DESERTEC Industrial Initiative |
| DMN | Moroccan National Meteorological Office |
| DNE | Daily News Egypt |
| DOE | United States Department of Energy |
| DRM | Disaster Risk Management |
| DRR | Disaster Risk Reduction |
| DSIRE | Database of State Incentives for Renewables & Efficiency |
| DTC | Dubai Transport Corporation |
| DTCM | Dubai Department for Tourism and Commerce Marketing |
| DTIE | UNEP Division of Technology, Industry, and Economics |
| DTO | Dublin Transportation Office |
| DUBAL | Dubai Aluminum Company Limited |
| E3G | Third Generation Environmentalism |
| EAD | Environment Agency Abu Dhabi |
| ECA | Economic Commission for Africa |
| ECAs | Energy Conversion Agreements |
| ECE | Economic Commission for Europe |
| ED | Electrodialysis |
| EDCO | Electricity Distribution Company |
| EDF | Environmental Defense Fund |
| EDL | Electricité du Liban |
| EDM | Al- BiaWal-Tanmia - Environment & Development magazine |
| EE | Energy Efficiency |
| EEAA | Egyptian Environmental Affairs Agency |
| EEHC | Egyptian Electricity Holding Company |
| EF | Ecological Footprint |
| EGBC | Egyptian Green Building Council |
| EGPC | Egyptian General Petroleum Corporation |
| EGS | Environmental Goods and Services |
| EIA | Energy Information Administration |
| EIA | Environmental Impact Assessment |
| EITI | Extractive Industries Transparency Initiative |
| EMA | Europe, the Middle East, and Africa |
| EMAL | Emirates Aluminium Company Limited |
| EMAS | Eco-Management and Audit Scheme |
| EMR | Eastern Mediterranean Region |
| EMRO | WHO Regional Office for the Eastern Mediterranean |
| EMS | Environmental Management System |
| ENEC | Emirates Nuclear Energy Corporation |
| ENPI | European Neighborhood and Partnership Instrument |
| ENSO | El Niño-Southern Oscillation |
| EOR | Enhanced Oil Recovery |
| EPA | US Environmental Protection Agency |
| EPC | Engineering Procurement and Construction |
| EPD | European Patent Office |
| EPDRB | Environmental Program for the Danube River Basin |
| EPI | Environment Performance Index |
| EPSA | Exploration and Production Sharing Agreement |
| ESAUN | Department of Economic and Social Affairs |
| ESBM | Ecosystem-Based Management |
| ESCO | Energy Service Companies |
| ESCOs | Energy Service Companies |
| ESCWA | United Nations Economic and Social Commission for Western Asia |
| ESDU | Environment and Sustainable Development Unit |
| ESI | Environment Sustainability Index |
| ESMAP | World Bank Energy Sector Management Assistance Program |
| ETM | Enhanced Thematic Mapper |
| EU | European Union |

| | |
|--------|--|
| EU ETS | European Union Emission Trading System |
| EVI | Environmental Vulnerability Index |
| EWRA | Egyptian Water Regulatory Agency |
| EWS | Emirates Wildlife Society |
| FACE | Free Air Carbon Enrichment |
| FANR | The Federal Authority for Nuclear Regulation (UAE) |
| FAO | Food and Agriculture Organization of the United Nations |
| FDI | Foreign Direct Investment |
| FEMIP | Facility for Euro-Mediterranean Investment and Partnership |
| FFEM | French Fund for Global Environment |
| FiBL | Research Institute of Organic Agriculture |
| FIFA | Fédération Internationale de Football Association |
| FIT | Feed-in-Tariff |
| FL&W | Food Lost and Wasted |
| FOEME | Friends of the Earth Middle East |
| FSP | Food Security Program |
| FSU | Former Soviet Union |
| F-T | Fischer-Tropsch process |
| FTIAB | Packaging and Newspaper Collection Service (Sweden) |
| G7 | Group of Seven: Canada, France, Germany, Italy, Japan, United Kingdom, United States |
| G8 | Group of Eight: Canada, France, Germany, Italy, Japan, Russian Federation, United Kingdom, United States |
| GAM | Greater Amman Municipality |
| GAP | Good Agricultural Practices |
| GAPs | Good Agricultural Practices |
| GAS | Guarani Aquifer System |
| GATT | General Agreement on Tariffs and Trade |
| GBC | Green Building Council |
| GBIF | Global Biodiversity Information Facility |
| GCC | Gulf Cooperation Council |
| GCM | General Circulation Model |
| GCOS | Global Climate Observing System |
| GDP | Gross Domestic Product |
| GE | General Electric |
| GECF | Gas Exporting Countries Forum |
| GEF | Global Environment Facility |
| GEMS | Global Environment Monitoring System |
| GEO | Global Environment Outlook |
| GERD | Gross Domestic Expenditure on Research and Development |
| GFEI | Global Fuel Economy Initiative |
| GFU | Global Facilitation Unit for Underutilized Species |
| Gha | Global hectare |
| GHGs | Greenhouse Gases |
| GIPB | Global Partnership Initiative for Plant Breeding Capacity Building |
| GIS | Geographical Information Systems |
| GIWA | Global International Waters Assessment |
| GJ | GigaJoule |
| GLASOD | Global Assessment of Soil Degradation |
| GLCA | Global Leadership for Climate Action |
| GM | Genetically Modified |
| GME | Gazoduc Maghreb Europe |
| GMEF | Global Ministerial Environment Forum |
| GMO | Genetically Modified Organism |
| GMP | Green Moroccan Plan |
| GNI | Gross National Income |
| GNP | Gross National Product |
| GPC | Green petroleum Coke |
| GPS | Global Positioning System |
| GPRS | Green Pyramid Rating System |
| GRI | Global Reporting Initiative |

| | |
|------------------|---|
| GRID | Global Resource Information Database |
| GSDP | General Secretariat for Development planning-Qatar |
| GSI IISD | Global Subsidies Initiative |
| GSLAS | General Secretariat of League of Arab States |
| GSR | Global Status Report |
| Gt | Gigaton |
| GTZ | German Technical Cooperation (Gesellschaft für Technische Zusamm) |
| GVC | Civil Volunteers' Group (Italy) |
| GW | Gigawatt |
| GW | Greywater |
| GW _e | Gigawatt electrical |
| GW _I | Global Water Intelligence |
| GWP | Global Warming Potential |
| GWP | Global Water Partnership |
| GW _{th} | Gigawatt-thermal |
| ha | Hectares |
| HACCP | Hazardous Analysis and Critical Control Points |
| HDI | Human Development Index |
| HFA | Hyogo Framework for Action |
| HFCs | Hydrofluorocarbons |
| HFO | Heavy Fuel Oil |
| HICs | High-Income Countries |
| HIV | Human Immunodeficiency Virus |
| HLW | High Level Waste |
| HNWI | High Net Worth Individuals |
| HVAC | Heating, Ventilation, and Air-Conditioning |
| I/M | Inspection and Maintenance |
| IAASTD | International Assessment of Agricultural Knowledge Science and Technology for Development |
| IAEA | International Atomic Energy Agency |
| IAS | Irrigation Advisory Service |
| IC | Irrigation Council |
| ICAM | Integrated Coastal Area Management |
| ICARDA | International Center for Agricultural Research in Dry Areas |
| ICBA | International Center for Biosaline Agriculture |
| ICC | International Chamber of Commerce |
| ICGEB | International Center for Genetic Engineering and Biotechnology |
| ICLDC | Imperial College London Diabetes Centre |
| ICM | Integrated Coastal Management |
| ICPDR | International Commission for the Protection of the Danube River |
| ICT | Information and Communication Technology |
| ICZM | Integrated Coastal Zone Management |
| IDA | International Desalination Association |
| IDB | Islamic Development Bank |
| IDECO | Irbid District Electricity Company |
| IDP | Internally Displaced Persons |
| IDRC | International Development Research Center |
| IDSC | Information and Decision Support Center |
| IEA | International Energy Agency |
| IEADSM | International Energy Agency Demand-side Management |
| IEEE | Institute of Electrical and Electronic Engineers |
| IFA | International Fertilizer Industry Association |
| IFAD | International Fund for Agricultural Development |
| IFC | International Finance Corporation |
| IFOAM | International Federation of Organic Agriculture Movements |
| IFPRI | International Food Policy Research Institute |
| IGCC | Integrated Gasifier Combined Cycle |
| IHP | International Hydrology Program |
| IIED | International Institute for Environment and Development |
| IIIEE | Lund University International Institute for Industrial Environmental Economics |

| | |
|---------|---|
| IIP | Integrated Irrigation Improvement Project |
| IIP | Irrigation Improvement Project |
| IISD | International Institute for Sustainable Development |
| ILO | International Labour Organization |
| ILW | Intermediate Level waste |
| IMC | Istituto Mediterraneo Di Certificazione |
| IMF | International Monetary Fund |
| IMO | International Maritime Organization |
| INDC | Intended Nationally Determined Contributions |
| InWEnt | Capacity Building International-Germany |
| IO | Input-Output |
| IOC | International Oil Companies |
| IPCC | Intergovernmental Panel on Climate Change |
| IPF | Intergovernmental Panel on Forests |
| IPM | Integrated Pest Management |
| IPNS | Integrated Plant Nutrient System |
| IPP | Independent Power Producer |
| IPR | Intellectual Property Rights |
| IPTRID | International Program for Technology and Research in Irrigation and Drainage |
| IRENA | International Renewable Energy Agency |
| IRESEN | Institut de Recherche en Energie Solaire et en Energies Nouvelles |
| IRR | Internal Rate Of Return |
| ISCC | Integrated Solar Combined Cycle |
| ISESCO | Islamic Educational, Scientific, and Cultural Organization |
| ISIC | UN International Standard Industrial Classification |
| ISO | International Organization for Standardization |
| ISWM | Integrated Solid Waste Management |
| ITC | Integrated Tourism Centers |
| ITC | International Trade Center |
| ITSAM | Integrated Transport System in the Arab Mashreq |
| IUCN | International Union for Conservation of Nature |
| IUCN | World Conservation Union (International Union for the Conservation of Nature and Natural Resources) |
| IWMI | International Water Management Institute |
| IWPP | Independent Water And Power Producer |
| IWRB | International Waterfowl and Wetlands Research Bureau |
| IWRM | Integrated Water Resources Management |
| JAEC | Jordan Atomic Energy Commission |
| JBAW | Jordan Business Alliance on Water |
| JCEDARE | Joint Committee on Environment and Development in the Arab Region |
| JD | Jordanian Dinar |
| JEPCO | Jordan Electric Power Company |
| JI | Joint Implementation |
| JMWI | Jordan Ministry for Water and Irrigation |
| JNRC | Jordan Nuclear Regulatory Commission |
| JVA | Jordan Valley Authority |
| KA-CARE | King Abdullah City for Atomic and Renewable Energy |
| KACST | King Abdulaziz City for Science and Technology |
| KAUST | King Abdullah University of Science and Technology |
| KEPCO | Korea Electric Power Corporation |
| KFAED | Kuwait Fund for Arab Economic Development |
| KFUPM | King Fahd University of Petroleum and Minerals |
| KfW | German Development Bank |
| KISR | Kuwait Institute for Scientific Research |
| KSA | Kingdom of Saudi Arabia |
| KW | Kilowatt |
| kWh | Kilowatt-hour |
| LADA | Land Degradation Assessment of Drylands |
| LAS | League of Arab States |
| LATA | Lebanese Appropriate Technology Association |

| | |
|------------|---|
| LAU | Lebanese American University |
| LBNL | Lawrence Berkeley National Laboratory |
| LCC | Life Cycle Costing |
| LCEC | Lebanese Center for Energy Conservation |
| LCOE | Levelized Costs of Electricity |
| LDCs | Least Developed Countries |
| LED | Light-Emitted Diode |
| LEED | Leadership in Environmental Design |
| LEMA | Suez Lyonnaise des Eaux, Montgomery Watson and Arabtech Jardaneh |
| LEU | Low-enriched Uranium |
| LGBC | Lebanon Green Building Council |
| LICs | Low-Income Countries |
| LLW | Low Level Waste |
| LMBAs | Land and Marine Based Activities |
| LMEs | Large Marine Ecosystems |
| LMG | Like Minded Group |
| LMICs | Low Middle-Income Countries |
| LMO | Living Modified Organism |
| LNG | Liquefied Natural Gas |
| LowCVP | Low Carbon Vehicle Partnership |
| LPG | Liquefied Petroleum Gas |
| LRA | Litani River Authority |
| LV | Low Voltage |
| MAAR | Syrian Ministry of Agriculture and Agrarian Reform |
| MAD | Moroccan Dirham |
| MALR | Ministry of Agriculture and Land Reclamation |
| MAP | UNEP Mediterranean Action Plan |
| MARPOL | International Convention for the Prevention of Pollution from Ships |
| MASEN | Moroccan Agency for Solar Electricity |
| mb/d | million barrels per day |
| MBT | Mechanical-biological treatment |
| MCM | Million Cubic Meters |
| MD | Membrane Distillation |
| MDGs | Millennium Development Goals |
| MEA | Multilateral Environmental Agreement |
| MECTAT | Middle East Centre for the Transfer of Appropriate Technology |
| MED | Multiple-Effect Distillation |
| MED WWR WG | Mediterranean Wastewater Reuse Working Group |
| MED-ENEC | Energy Efficiency in the Construction Sector in the Mediterranean |
| MEES | Middle East Economic Survey |
| MEMAC | Marine Emergency Mutual Aid Centre |
| MENA | Middle East and North Africa |
| MEPS | Minimum Energy Performance Standards |
| METAP | UNEP Mediterranean Environmental Technical Assistance Program |
| MEW | Lebanese Ministry of Energy and Water |
| MGD | Million Gallon per Day |
| MHT | Mechanical Heat Treatment |
| MICE | Meetings, Incentives, Conferences, And Events |
| MICs | Middle-Income Countries |
| MIGA | Multilateral Investment Guarantee Agency |
| MJ | Mega Joule |
| MIST | Masdar Institute of Science and Technology |
| MMBTU | One Million British Thermal Units |
| MMCP | Making the Most of Commodities Programme |
| MNA | Multinational Approaches |
| MoCCE | Ministry of Climate Change and Environment |
| MOQ | Maersk Oil Qatar |
| MOU | Memorandum of Understanding |
| MOX | Mixed-Oxide |

| | |
|-------------------|--|
| MPA | Marine Protected Area |
| MPAP | Multi-Stakeholder Policy Formulation and Action Planning |
| MSF | Multi-Stage Flash |
| MSF | Multi-Stakeholder Forum |
| MSP | Mediterranean Solar Plan |
| MSW | Municipal Solid Waste |
| Mt | Metric tons |
| MT | Million ton |
| Mt | Megatons |
| MtCO ₂ | Million tons of CO ₂ |
| Mtoe | Million tons of oil equivalent |
| MTPY | Metric Tons Per Year |
| MV | Medium Voltage |
| MW | Megawatt |
| MW _h | Megawatt-hour |
| MW _p | Megawatt-peak |
| MWRI | Ministry of Water Resources and Irrigation |
| MW _{th} | Megawatt-thermal |
| N ₂ O | Nitrous Oxide |
| NAMA | Nationally Appropriate Mitigation Actions |
| NARI | National Agricultural Research Institutes |
| NARES | National Agricultural Research and Extension Systems |
| NASA | National Aeronautics and Space Administration |
| NBC | National Biosafety Committee |
| NBDF | Nile Basin Discourse Forum |
| NBF | National Biosafety Framework |
| NBI | Nile Basin Initiative |
| NBM | Nile Basin Management |
| NC | National Communication |
| NDC | Nationally Determined Contributions |
| NCSR | Lebanese National Council of Scientific Research |
| ND | Neighborhood Development |
| NDW | Moroccan National Drought Watch |
| NEA | Nuclear Energy Agency |
| NEAP | National Environmental Action Plan |
| NEEAP | National Energy Efficiency Action Plan |
| NEEP | National Energy Efficiency Program |
| NEEREA | National Energy Efficiency and Renewable Energy Action (Lebanon) |
| NERC | National Energy Research Centre |
| NF | Nano-Filtration |
| NFC | Nile Forecast Center |
| NFP | National Focal Point |
| NGCCs | Natural-Gas-Fired Combined Cycles |
| NGO | Non-Governmental Organization |
| NGV | Natural Gas Vehicles |
| NGWA | Northern Governorates Water Authority (Jordan) |
| NIF | Neighborhood Investment Facility |
| NMC | Northern Mediterranean countries |
| NOAA | National Oceanic and Atmospheric Administration |
| NOC | National Oil Company |
| NOEC | Net Oil Exporting Countries |
| NOGA | National Oil and Gas Authority (Bahrain) |
| NOIC | Net Oil Importing Countries |
| NORDEN | Nordic Council of Ministers |
| NOx | Nitrogen Oxides |
| NPK | Nitrogen, Phosphates and Potash |
| NPP | Nuclear Power Plant |
| NPP | Net Primary Productivity |
| NPPA | Nuclear Power Plant Authority |

| | |
|--------|---|
| NPT | Non-Proliferation treaty of nuclear weapons |
| NRC | National Research Council |
| NREL | National Renewable Energy Laboratory |
| NRW | Non-Revenue Water |
| NSAS | Nubian Sandstone Aquifer System |
| NSR | North-South Railway project |
| NUS | Neglected and underutilized species |
| NWRC | National Water Research Center (Egypt) |
| NWSAS | North Western Sahara Aquifer System |
| OA | Organic Agriculture |
| O&M | Operation and Maintenance |
| OAPEC | Organization of Arab Petroleum Exporting Countries |
| OAU | Organization for African Unity |
| ODA | Official Development Assistance |
| ODS | Ozone-Depleting Substance |
| OECD | Organization for Economic Co-operation and Development |
| OFID | OPEC Fund for International Development |
| OIES | Oxford Institute for Energy Studies |
| OME | Observatoire Méditerranéen de l'Energie |
| OMW | Olive Mills Wastewater |
| ONA | Omnium Nord-Africain |
| ONE | National Electricity Office |
| ONEP | National Office of Potable Water |
| OPEC | Organization of Petroleum Exporting Countries |
| OPEX | Operational Expenditures |
| OSS | Sahara and Sahel Observatory (Observatoire du Sahara et du Sahel) |
| OWG | Open Working Group |
| PACD | Plan of Action to Combat Desertification |
| PARC | Pan Arab Research Centre |
| PC | Personal Computer |
| PCB | Polychlorinated Biphenyls |
| PCFPI | Per Capita Food Production Index |
| PCFV | Partnership for Clean Fuels and Vehicles |
| PEA | Palestinian Energy and Natural Resources Authority |
| PERG | Global Rural Electrification Program |
| PERSGA | Protection of the Environment of the Red Sea and Gulf of Aden |
| PFCs | Perfluorocarbons |
| PICs | Pacific Island Countries |
| PIM | Participatory Irrigation Management |
| PJ | Peta Joule |
| PM | Particulate Matter |
| PMU | Program Management Unit |
| PNA | Palestinian National Authority |
| PNEEI | Tunisian National Program of Irrigation Water Conservation |
| POPs | Persistent Organic Pollutants |
| PPA | Power Purchase Agreement |
| PPIAF | Public-Private Infrastructure Advisory Facility |
| PPM | Parts Per Million |
| PPM | Process and Production Methods |
| PPP | Public-Private Partnership |
| PPP | Purchasing Power Parity |
| PPP | Public-Private Partnership |
| PRM | Persons with Reduced Mobility |
| PRY | Potential Researcher Year |
| PTSs | Persistent Toxic Substances |
| PV | Photovoltaic |
| PWA | Palestinian Water Authority |
| QNFSP | Qatar National Food Security Programme |
| QP | Qatar Petroleum |

| | |
|---------|---|
| QSAS | Qatar Sustainable Assessment System |
| R&D | Research and Development |
| RA | Risk Assessment |
| RADEEMA | Régie autonome de distribution de l'eau et de l'électricité de Marrakech |
| RB | Raised Bed |
| RBO | River Basin Organization |
| RBP | Restrictive Business Practices |
| RCM | Regional Circulation Model |
| RCREEE | Regional Center for Renewable Energy and Energy Efficiency |
| RDF | Refuse Derived Fuel |
| RE | Renewable Energy |
| REC | Renewable Energy Credits |
| REMPEC | Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea |
| REN21 | Renewable Energy Policy Network for the 21st Century |
| Rep | Republic |
| RM | Risk Management |
| RO | Reverse Osmosis |
| ROPME | Regional Organization for the Protection of the Marine Environment of the sea area surrounded by Bahrain, I.R. Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates |
| RPS | Renewable Portfolio Standard |
| RSA | ROPME Sea Area |
| RSC | Royal Society of Chemistry (UK) |
| RSCN | Royal Society for the Conservation of Nature |
| RSGA | Red Sea and Gulf of Aden |
| RUAF | Resource Centers Network on Urban Agriculture and Food Security |
| S&T | Science and Technology |
| SAIC | Science Applications International Corporation |
| SAP | Strategic Action Program |
| SASO | Saudi Standards, Quality and Metrology Organization |
| SCP | Sustainable Consumption and Production |
| SCPI | Sustainable Crop Production Intensification |
| SCP/RAC | Regional Activity Centre for Sustainable Consumption and Production |
| SD | Sustainable Development |
| SDGs | Sustainable Development Goals |
| SEA | Strategic Environmental Assessment |
| SEEA | System of Environmental and Economic Accounting |
| SEEC | Saudi Energy Efficiency Cen |
| SEMC | Southern and Eastern Mediterranean Countries |
| SFD | Saudi Fund for Development |
| SHS | Solar Home System |
| SIR | Shuttle Imaging Radar |
| SIWI | Stockholm International Water Institute |
| SL | Syrian Pound |
| SLR | Sea Level Rise |
| SME | Small and Medium-Size Enterprises |
| SMS | Short Messaging Service |
| SoE | State of the Environment |
| SONEDE | Société Nationale d'Exploitation et de Distribution des Eaux |
| SOx | Sulfur Oxides |
| SPD | Sozialdemokratische Partei Deutschlands |
| SPM | Suspended Particulate Matter |
| SRES | Special Report on Emission Scenarios |
| SRTM | Shuttle Radar Topography Mission |
| SSA | Sub-Saharan Africa |
| SSR | Self-Sufficiency Ratio |
| STI | Science, Technology and Innovation |
| SWCC | Saline Water Conversion Corporation |
| SWH | Solar Water Heating |
| SWRO | Seawater Reverse Osmosis |

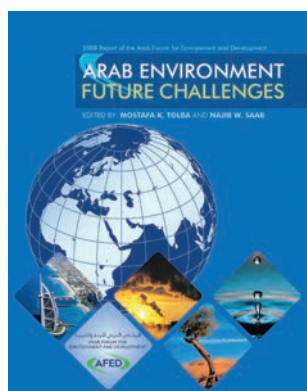
| | |
|---------------|---|
| T&D | Transmission and Distribution |
| TAC | Technical Advisory Committee |
| TAR | Third Assessment Report |
| Tcm | Trillion cubic meters |
| TDM | Transportation Demand Management |
| TDS | Total Dissolved Solids |
| TES | Thermal Energy Storage |
| TFP | Total Factor Productivity |
| TIES | The International Ecotourism Society |
| TII | Thermal Insulation Implementation |
| Toe | Tons of Oil Equivalent |
| TPES | Total Primary Energy Supply |
| TRAFFIC | Trade Records Analysis for Flora and Fauna in International Commerce |
| TRI | Toxics Release Inventory |
| TRIPs | Trade-Related Aspects of International Property Rights |
| TRMM | Tropical Rainfall Measuring Mission |
| tU | tones of Uranium |
| TWh | Terawatt-hour |
| UA | Urban Agriculture |
| UAE | United Arab Emirates |
| UCLA | University of California at Los Angeles |
| UCS | Union of Concerned Scientists |
| UF | Ultrafiltration |
| UfM | Union for the Mediterranean |
| UHCPV | Ultra-High Concentration Photovoltaic |
| UHI | Urban Heat Island |
| UIS | UNESCO Institute for Statistics |
| UK | United Kingdom |
| UMA | Union du Maghreb Arabe (Arab Maghreb Union) |
| UMICs | Upper Middle-Income Countries |
| UN | United Nations |
| UNCBD | United Nations Convention on Biological Diversity |
| UNCCD | United Nations Convention to Combat Desertification |
| UNCED | United Nations Conference on Environment and Development |
| UNCHS | United Nations Centre for Human Settlements (now UN-Habitat) |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNCOD | United Nations Conference on Desertification |
| UNCTAD | United Nations Conference on Trade and Development |
| UNDAF | United Nations Development Assistance Framework |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNESCO-ROSTAS | UNESCO Regional Office for Science and Technology for the Arab States |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNFPA | United Nations Population Fund |
| UNHCR | United Nations High Commission for Refugees |
| UNICE | United Nations Children's Fund |
| UNIDO | United Nations Industrial Development Organization |
| UNISDR | United Nations International Strategy for Disaster Reduction |
| UNWTO | United Nations World Tourism Organization |
| UPC | Abu Dhabi Urban Planning Council |
| UPI | United Press International |
| USA | United States of America |
| USAID | United States Agency for International Development |
| USCCSP | United States Climate Change Science Program |
| USEK | Université Saint-Esprit De Kaslik |
| USEPA | United States Environmental Protection Agency |
| USJ | Saint Joseph University |
| USPTO | United States Patent and Trademark Office |

| | |
|----------|--|
| UV | Ultraviolet (A and B) |
| VAT | Value-Added Tax |
| VC | Vapor Compression |
| VCM | Volatile Combustible Matter |
| VMT | Vehicle Miles Traveled |
| VOC | Volatile Organic Compound |
| VRS | Vapor Recovery System |
| WACC | Weighted Average Cost of Capital |
| WaDImena | Water Demand Initiative for the Middle East and North Africa |
| WAJ | Water Authority of Jordan |
| WALIR | Water Law and Indigenous Rights |
| WANA | West Asia and North Africa Region |
| WB | West Bank |
| WBCSD | World Business Council for Sustainable Development |
| WBG | World Bank Group |
| WBGU | German Advisory Council on Global Change |
| WCD | World Commission on Dams |
| WCED | World Commission on Environment and Development |
| WCMC | UNEP World Conservation Monitoring Center |
| WCP | World Climate Programme |
| WCS | World Conservation Strategy |
| WDM | Water Demand Management |
| WDPA | World Database on Protected Areas |
| WEEE | Waste of Electronic and Electrical Equipment |
| WEF | World Economic Forum |
| WEF | Water-Energy-Food |
| WEI | Water Exploitation Index |
| WETC | Wind Energy Technology Centre |
| WF | Water Footprint |
| WFN | Water Footprint Network |
| WFP | World Food Programme |
| WGP-AS | Water Governance Program in the Arab States |
| WHO | World Health Organization |
| WIPP | Waste Isolation Pilot Plant |
| WMO | World Meteorological Organization |
| WNA | World Nuclear Association |
| Wp | Watt-peak |
| WRI | World Resources Institute |
| WSSCC | Water Supply and Sanitation Collaborative Council |
| WSSD | World Summit on Sustainable Development |
| WTO | World Trade Organization |
| WTTC | World Travel and Tourism Council |
| WUA | Water User Association |
| WUE | WUE Water Use Efficiency |
| WWAP | World Water Assessment Program |
| WWC | World Water Council |
| WWF | World Wide Fund for Nature |
| WWF | World Water Forum |
| WWI | First World War |
| WWII | Second World War |
| YASAD | Yemenite Association for Sustainable Agriculture and Development |
| YR | Year |
| ZT/CA | Conservation Agriculture/Zero Tillage |

State of Arab Environment Series

AFED Annual Reports

www.afedonline.org
info@afedonline.org



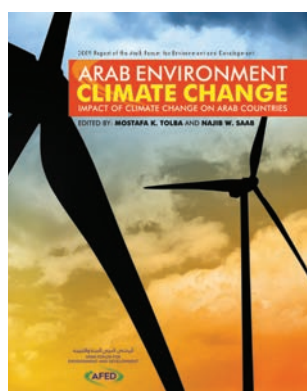
Arab Environment: Future Challenges

2008 Report of the Arab Forum for Environment and Development

For the first time, a comprehensive independent expert report on Arab environment is released for public debate.

Entitled *Arab Environment: Future Challenges*, this ground-breaking report has been commissioned by Arab Forum for Environment and Development (AFED), and written by some of the most prominent Arab experts, including authors, researchers and

reviewers. Beyond appraising the state of the environment, based on the most recent data, the policy-oriented report also evaluates the progress towards the realization of sustainable development targets, assesses current policies and examines Arab contribution to global environmental endeavors. Ultimately, the report proposes alternative policies and remedial action.

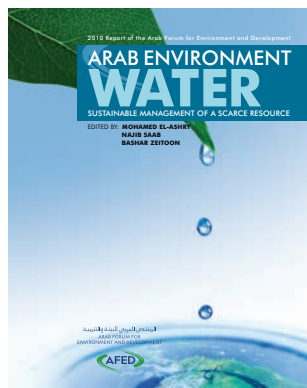


Arab Environment: Climate Change

2009 Report of the Arab Forum for Environment and Development

Impact of Climate Change on the Arab Countries is the second of a series of annual reports produced by the Arab Forum for Environment and Development (AFED). The report has been designed to provide information to governments, business, academia and the public about the impact of climate change on the Arab countries, and encourage concrete action to face the challenge. The report analyzes the Arab

response to the urgent need for adaptation measures, and uses the latest research findings to describe the vulnerabilities of natural and human systems in the Arab world to climate change and the impacts on different sectors. In an attempt to help shape adequate policies, the report discusses options for a post-Kyoto regime and outlines the state of international negotiations in this regard.



Arab Environment: Water

2010 Report of the Arab Forum for Environment and Development

Water: Sustainable Management of a Scarce Resource is the third of a series of annual reports produced by the Arab Forum for Environment and Development (AFED). It follows the publication of two reports, Arab Environment: Future Challenges in 2008 and Impact of Climate Change on Arab countries in 2009. The 2010 report is designed to contribute to the discourse on the sustainable management of water resources in the Arab world and provides critical understanding of

water in the region without being overly technical or academic in nature. The unifying theme is presenting reforms in policies and management to develop a sustainable water sector in Arab countries. Case studies, with stories of successes and failures, are highlighted to disseminate learning. This report contributes to the ongoing dialogue on the future of water and catalyzes institutional reforms, leading to determined action for sustainable water policies in Arab countries.



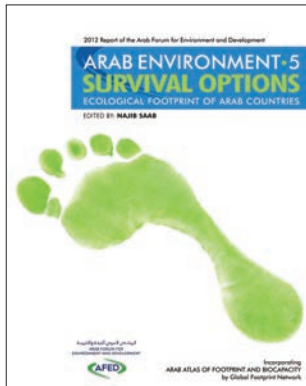
Arab Environment: Green Economy

2011 Report of the Arab Forum for Environment and Development

Green Economy: Sustainable Transition in a Changing Arab World is the fourth of a series of annual reports on the state of Arab environment, produced by the Arab Forum for Environment and Development (AFED). This report on options of green economy in Arab countries represents the first phase of the AFED green economy initiative. Over one hundred experts have contributed to the report, and discussed its drafts in a series of consultation meetings. The re-

port is intended to motivate and assist governments and businesses in making a transition to the green economy.

It articulates enabling public policies, business models, green investment opportunities, innovative approaches, and case studies, and addresses eight sectors: agriculture, water, energy, industry, cities and buildings, transportation, tourism, and waste management.

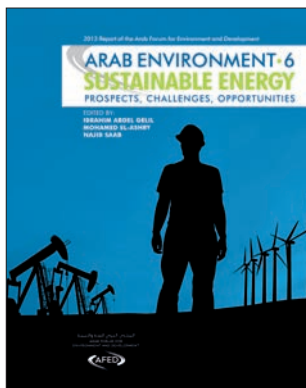


Arab Environment: Survival Options

2012 Report of the Arab Forum for Environment and Development

Survival Options - Ecological Footprint of Arab Countries is the fifth in the series of annual reports produced by the Arab Forum for Environment and Development (AFED) on the state of the Arab environment. It examines sustainability choices in Arab countries, based on a survey of people's demand of natural capital and available supply. The report discusses potential paths to sustainability based on ecological constraints. As a basis for the analysis, AFED has commissioned the Global Footprint Network, the world leader in this field, to produce an Arab Ecological Footprint and Biocapacity

Atlas using the most recent data available. The Atlas covers the 22 members of the League of Arab States, as region, sub-regions and individual countries. The analysis focuses on the challenges posed by the state of food security, water and energy, while considering main drivers such as population and patterns of production and consumption. Ultimately, it prescribes regional cooperation and sound management of resources as the main options for survival in a region characterized by stark variations in ecological footprint, natural resources and income.

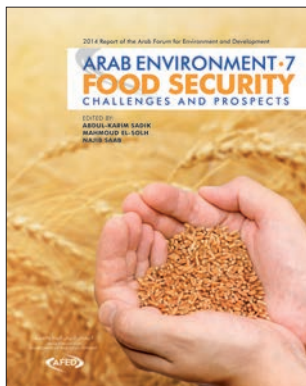


Arab Environment: Sustainable Energy

2013 Report of the Arab Forum for Environment and Development

Sustainable Energy is the sixth in the series of annual reports produced by the Arab Forum for Environment and Development (AFED) on the state of Arab environment. The report highlights the need for more efficient management of the energy sector, in view of enhancing its contribution to sustainable development in the Arab region. The AFED 2013 report aims at: presenting a situational analysis of the current state of energy in the Arab region, shedding light on major challenges, discussing different

policy options and, ultimately, recommending alternative courses of action to help facilitate the transition to a sustainable energy future. To achieve its goals, the AFED 2013 report addresses the following issues: oil and beyond, natural gas as a transition fuel to cleaner energy, renewable energy prospects, the nuclear option, energy efficiency, the energy-water-food nexus, mitigation options of climate change, resilience of the energy sector to climate risk, and the role of the private sector in financing sustainable energy.

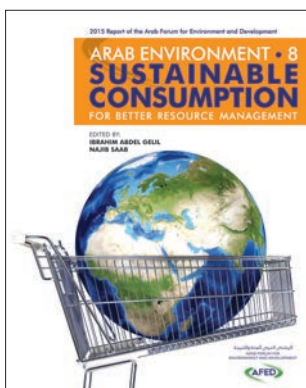


Arab Environment: Food Security

2014 Report of the Arab Forum for Environment and Development

Food Security is the seventh in the series of annual reports on the state of Arab environment, produced by the Arab Forum for Environment and Development (AFED). The report highlights the need for more efficient management of the agriculture and water sectors, in view of enhancing the prospects of food security. *Food security* is of great concern to Arab countries. They have been pursuing a target of higher food self-sufficiency rate, but achieving this goal remained beyond reach. While they have limited cultivable land and

scarce water resources, they did not use their agricultural endowments in an effective and efficient manner. Lack of appropriate agricultural policies and practices led to diminishing the bio-capacity of the resources to regenerate their services and threatened agricultural sustainability. AFED hopes that its report on Food Security will help Arab countries adopt the right policies and commit to long-term investments, allowing them to secure a sustainable supply of food to meet ever-growing needs.



Arab Environment: Sustainable Consumption

2015 Report of the Arab Forum for Environment and Development

Increasing production alone cannot solve the need of food for hungry people and water for thirsty people, nor will it provide power to dark villages. Equally, solely building more waste dumps and incinerators cannot solve the trash crisis. Inadequate consumption patterns are at the core of the problem, and any feasible solution requires a fundamental change in the way we consume resources and produce waste. Thus, the 2015 AFED Annual Report, *Sustainable Consumption for Better Resource Management*, discusses how changing consumption patterns can help preserve resources and protect the environment, ultimately leading

to sustainable development. While it is true that changing consumption patterns requires adequate policies based on expert studies, the support of consumers is a prerequisite for successful implementation. In view of tracking how people perceive consumption and to what extent they are ready for positive change, AFED carried out a wide-ranging public opinion survey, which drew over 31,000 participants from 22 countries. The survey, which has been incorporated in the report, found that the Arab public is ready to pay more for energy and water and to change their consumption patterns if this will help preserve resources and protect the environment.

ARAB ENVIRONMENT • 9 SUSTAINABLE DEVELOPMENT

2016 Report of the Arab Forum for Environment and Development



This AFED report on “Sustainable Development in a Changing Arab Climate” highlights the policy options available for the Arab countries to realize the Sustainable Development Goals by the 2030 target set by the United Nations, in light of the new political, economic, and social developments.

The report recommends an alternative approach, based on integrating sustainable development principles within the anticipated rebuilding efforts. It calls upon local, regional, and international aid organizations not to limit their efforts to providing safety and basic necessities to those affected, but rather to use the relief plans as a launch pad for promoting new approaches to development, rooted in a transition to green economy.

This report, on prospects and challenges along the path towards achieving the SDGs, builds on the previous eight reports on the state of Arab environment, produced by the Arab Forum for Environment and Development (AFED) since 2008. AFED annual reports have so far addressed major development issues in the Arab region, including Water, Food Security, Energy, Green Economy, Ecological Footprint, Sustainable Consumption, and Climate Change.

AFED annual reports have become main source of information and prime driver for policy reforms in Arab countries. The Energy-Water-Food Nexus proved specifically significant, especially with the growing impact of climate change. AFED reports have repeatedly emphasized the importance of promoting better efficiency and fair access to energy, water and food, and reducing waste, as there are tough limits to what Arab ecosystems can support.

Arab Forum for Environment and Development (AFED) is an international not-for-profit, non-governmental, membership-based organization headquartered in Beirut, Lebanon. Members include corporations, universities, research centers, media networks, and civil society alongside government entities as observers. Since 2007, AFED has been a public forum for influential eco-advocates. During eight years, it has become a major dynamic player in the global environmental arena.

The flagship contribution of AFED is an annual report written and edited by experts on the state of Arab environment, tracking developments and proposing policy measures. Other initiatives include a regional Corporate Environmental Responsibility (CER) program, capacity building, public awareness, and environmental education.

AFED enjoys Consultative Status with the United Nations Economic and Social Commission (ECOSOC), and has an observer member status with the United Nations Environment Program (UNEP), the League of Arab States (LAS), and many other regional and international organizations and conventions. As an Arab think tank, it has played a major role in international negotiations on environment and development, including advising governments and regional organizations on matters such as climate change, green economy and sustainable development.



www.afedonline.org

Arab Forum for Environment and Development

P.O.Box 113-5474
Beirut, Lebanon
Tel: (+961) 1 321 800
Fax: (+961) 1 321 900
e-mail: info@afedonline.org