CHAPTER 4

SOCIO-ECONOMIC CONTEXT IN THE ASSESSMENT SITES

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Main Messages

The three study areas are unique in characteristics in terms of nature, culture and richness of natural resources. Despite this fact, these areas are considered to be the most vulnerable among the areas of the region for their marginalisation. The inhabitants of such areas are still following inherited traditions in their daily life activities and dealing with challenging issues, depending on existing natural resources for their livelihoods as well as for income generation.

Arab countries have depended on their natural resources for economic development for centuries. Since the onset of industrialization, inhabitants of the Arab region have known the economic value of natural resources. This caused a change of perception from that of resources used for living and development to that of resources that could be used to achieve prosperity.

Economic growth became a target for most of the Arab region, which is simply an increase in the production and consumption of goods and services. If the current economic growth ratio is not well managed, neither environmental resources will be able to be used sustainably, nor can human welfare assurance be achieved.

Ecological Footprint can be used as a tool for assessment and better decision making. It also summarizes overall resource trends, and is a cost-effective policy tool for weighing policy options.

There are social and economic drivers which formulate the socio-economic context of each country in the Arab region. Existing social drivers in the areas negatively affect economic development in the region. These kinds of drivers are a result of lack of awareness, absence of up-to-date technologies, misunderstanding and mismanagement by inhabitants and governmental authorities regarding environmental, economic and social aspects.

Unemployment, economic sector framework, services and extreme events are drivers that formulate the patterns of the economic context in the Arab region and affect its development.

The various aspects that affect the socio-economic situation in the Arab region are according to location, culture, traditions, conflicts and political instability. One of the main common issues that affect the socio-economic context among all areas is water scarcity. Water scarcity affects the economic, social and health conditions of the inhabitants. It negatively affects the economic situation by reducing income generating opportunities, changes the communities' activity pattern and creates use and user conflicts. The demography of these areas is affected as a result of migration due to water scarcity.

4 SOCIO-ECONOMIC CONTEXT IN THE ASSESSMENT SITES

4.1 INTRODUCTION

Arab countries have always relied on their natural resources for their economic activities. The people of the Arab region have understood the economic value of natural resources from the dawn of industrialization, which caused a change in perception from that of resources used for living and development to that of resources that could be used to achieve prosperity. This perception emphasized the idea of "desires" instead of "needs" and thus gave precedence to economic growth over economic development, human welfare and the need to lessen poverty. This change in perception negatively altered people's approach towards the use of natural resources in a sustainable way. This unrestricted and unsustainable approach towards natural resources, rapid population growth and urbanization, together with lack of governmental implementation of sustainable development policies place natural resources, human well-being and economic development at risk.

The absence of integration of environmental issues in other sectors, creation of policies and implementation of suitable programmes, have led to environmental difficulties in many Arab countries, such as water scarcity, desertification, urbanization, marine life degradation, and waste management problems. Unsustainable environmental activities may have considerable effects on the economy, which depends on goods and services obtained from natural resources for its success. The link between socio-economic factors, human well-being, and the environment is evident in the Arab region.

Economic development and human well-being concentrate on improving the quality of life and not on the quantitative production of goods. Therefore, economic development becomes imperative for sustainable development as it aims to properly value the importance of nature and sustainable progress and to improve the standard of living of citizens. Economic growth is just an increase in the production and consumption of goods and services without making an allowance for social factors. Economic growth is shown by an increase in Gross Domestic Product (GDP). Economic growth is founded on the incorrect belief that the economy can keep growing while natural resources and services keep deteriorating and people keep getting poorer. The existing attitude towards environmental resources will greatly impact the environment as well as human well-being.

The Arab region is known for its vast geographic, demographic, and socio-economic diversity. It comprises many areas that are distinctive in terms of tradition, culture and natural resources. Within each country there are internal impacts on natural resources between urban and rural areas. These impacts are mainly in the overuse of highly populated urban areas to the natural resources of susceptible rural areas. The inhabitants of susceptible areas in the Arab region rely on available natural resources for their livelihoods and income generation. To understand the socio-economical context of the selected site, an overview on the socio-economic context of the Arab region should be taken into consideration. Accordingly, this chapter will discuss the drivers that formulate

the socio-economic context and environmental issues of the study areas in the light of the Arab region's social and economic drivers. It will also link the impacts of the Arab region's socio-economic drivers on the selected sites.

4.1.1 Arab Region Ecological Footprint

Great differences exist in the economic status of member countries of the Arab region, as it includes both oil-rich economies in the Gulf as well as countries that are resource-scarce in relation to population, such as Egypt, Morocco, and Yemen.

Several indicators reveal that many countries throughout the region continue to consume their natural resources at rates well beyond sustainable levels and well beyond the ability to regenerate. As a result, natural resources in most of these countries are grossly depleted.

An important indicator for the consumption and sustainability of natural resources is Ecological Footprint (EFP). Ecological Footprint provides an aggregate measure of the pressure human societies put on nature. It estimates people demand on the environment by measuring the amount of biologically productive land a population requires to produce the resources it consumes and the wastes it generates. Ecological Footprint could be a crucial tool for region situation as it allows analysts to summarize overall resource trends and is a cost-effective policy tool for weighing policy options. Accordingly, better decisions concerning a country's natural resources, demands, and priorities will be taken.

Reports have indicated that human pressure on Earth's capacity has significantly increased from 70 per cent in 1960 to 120 per cent of available biocapacity by 2000 (Wackernagel and Rees 1996; Wackernagel et al. 2002). Hence, a change in footprint over time is a genuine reflection of progress made towards sustainability.

Human consumption has grown over the past forty years, with global demand for biological capacity exceeding what the planet can supply by 25 per cent in 2003 (WWF 2008). As a result of overuse of natural stock it was stipulated that Earth would need 1.5 years to regenerate the renewable resources that humans have consumed. There is no doubt that overuse of planet natural stocks will cause undesirable repercussions that include financial difficulties, environmental degradation and threatened human future.

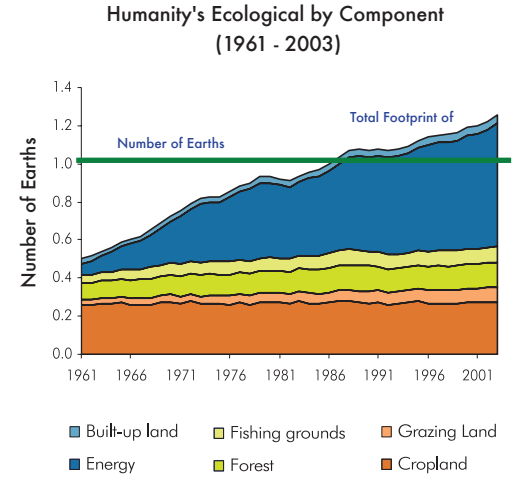

Figure 4.1 Humanity's Ecological Footprint
Source: UNEP, 2007

Box 4.1 Ecological Footprint (**EFP**)

The Ecological Footprint tracks human demand on ecosystems by adding together the equivalent areas of world average biologically productive land and water required to provide the renewable resources that people use, provide space for infrastructure, and absorb the CO2 waste that human activities produce. The Ecological Footprint tracks demand in the following categories: cropland, grazing land, forest land, fishing grounds, built-up land and carbon. The first five types of Footprint are defined in this report as Footprint of resource use.

The term 'Ecological Footprint', when not further qualified, refers to the Ecological Footprint of Consumption: the Footprint associated with the entire supply chain serving the consumption of a given population or region. The Ecological Footprint of Production, on the other hand, measures direct demand for biocapacity, regardless of whether the end products of this demand are consumed locally or are exported. Footprint of resource use in this report refers to Ecological Footprint exclusive of carbon footprint.

Biocapacity: Biocapacity measures the area of biologically productive land and water actually available to provide renewable natural resources and absorb CO2 waste.

Biocapacity deficit/surplus: Biocapacity deficit is when Ecological Footprint exceeds biocapacity; biocapacity surplus is when biocapacity exceeds Ecological Footprint.

Ecological overshoot: During the 1970s, humanity as a whole passed the point at which the annual Ecological Footprint matched the Earth's annual biocapacity - that is, the Earth's human population began consuming renewable resources faster than ecosystems can regenerate them and releasing more CO2 than ecosystems can absorb. This situation on a global level is called "ecological overshoot", and has continued since then.

Global hectare (gha): Both the Ecological Footprint (which represents demand for resources) and biocapacity (which represents the availability of resources) are expressed in units called global hectares (gha), with 1 gha representing the productive capacity of 1 hectare of land at world average productivity.

The Ecological Footprint of numerous Arab countries is above the global average - with two Arab countries among the top five per capita consumers of natural resources at a global level. In 2006, it was reported that the UAE had one of the highest per capita Footprints in the world, mounting to five times higher than the global per capita. Recently, the UAE launched a national initiative, Al Basama al Beeiya (Ecological Footprint) that involved multiple stakeholders and aimed to reduce the country's footprint. The initiative involved multiple stakeholders across the nation to work towards developing important guidelines for a more resource-conscious and resource-efficient government and society.

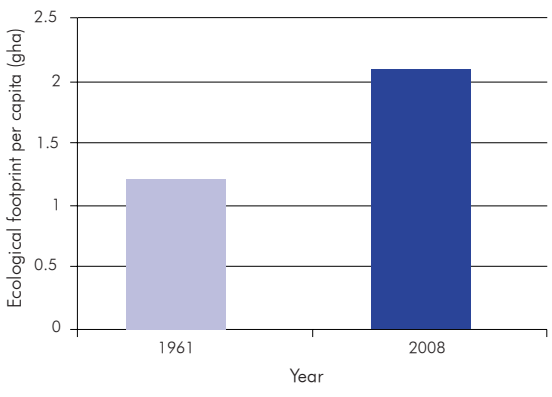

Figure 4.2 Ecological Footprint per Capita (gha) in 22 Arab Countries

Source: AFED, 2012

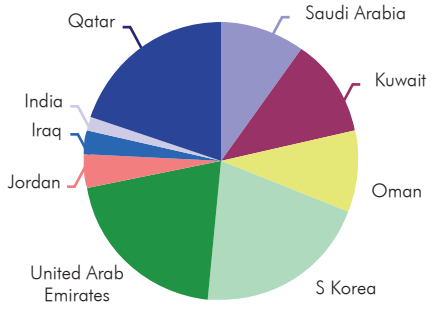

Figure 4.3 Ecological Footprint of Saudi Arabia in Comparison to some Selected Countries

Source: Tawfic, 2010

Footprints of individual Arab nations vary considerably, depending on the pressure people exert on their environment, as well as the magnitude of biocapacity for each of these countries. Prevailing patterns of consumption in these countries are major contributors that shape Footprint.

For example, The Ecological Footprint of Saudi Arabia is more than twice the average world Ecological Footprint, and also much higher than the global average biocapacity available per person (1.8 gha/per capita). However, Saudi Arabia has a favorable EFP in comparison to neighbouring Gulf countries, where the EFP of the United Arab Emirates and Qatar are 10.7, and 10.5, respectively (Tawfic 2010) (see Figure 4.3).

Ecological Footprint and Poverty

In any country ecological deficit, especially in cropland, is more likely to affect people with low level income than those with high level income. Wealthy people would be able to afford to buy imported foodstuff and other goods that low income group could not afford to purchase. It has been always the case that low income communities are more dependent on local biocapacity to meet their needs; consequently, they are more impacted with any ecosystem flaws. Developing countries like Egypt have less biocapacity per capita than they consume, especially in highly populated nations. With the growing trend of increasing food prices, Egypt may face some serious problems meeting its people needs.

Adjusting for its grazing land, forest and fishery yields, which are lower than corresponding global averages, and its cropland yield, which

is higher than the global average, Egypt has a biocapacity of 50.4 million global hectares (gha). This is less than its total Ecological Footprint of 163 million gha. Egypt has been operating with an ecological deficit prior to 1961. Cropland footprint is the highest of Egypt's Ecological Footprint, despite its apparent reduction in recent years. This shows the high demand and consumption level of agricultural and farming products. Moreover, considering the current information on cropland ecological footprint (0.63), and comparing it with cropland biocapacity (0.43) it is quite obvious that Egyptian crops alone cannot suffice feeding the country. This also applies to fish ground. However, comparing cropland footprint (the major constituent of Egypt's footprint) with cropland biocapacity and keeping in mind the high population growth rate, there is a need to appreciate Egypt's efforts to maintain a reasonable balance between cropland footprint and biocapacity.

Ecological Footprint deficit in Saudi Arabia would have various undesirable manifestations, but would not affect local Saudis much. In a high income country such as Saudi Arabia, most people can afford to buy imported food rather than totally depend on locally grown crops. Saudi cropland ecological footprint is the second fastest growing next to carbon footprint, with a growing alarming deficit.

Adjusting for its cropland and grazing, which are much higher than Asia average, forests and fishery, which are lower than Asia average, carbon footprint which is higher, and built up land, which is equal to Asia average, Saudi biocapacity is 19.76 million global hectares (gha). This is less than its Ecological Footprint of 125.97 million gha. Saudi Arabia has been running an ecological deficit since late 1970s. The high birth rate characterized in the early 1980s, coupled with increasing population of foreign workers are possible reasons for this deficit.

4.2 OVERVIEW OF THE SOCIO-ECONOMIC SITUATION

There are social and economic drivers which formulate the socio-economic context in the Arab region and case study areas. As for the area's unique nature and location; culture and traditions play an important role in the manner these areas manage their resources. However, through the analysis of the sub-global assessments of the study areas it was found that water scarcity is a dominant factor among the study areas that has a direct impact on the socio-economic situation. It negatively impacts the economic situation by limiting income generating opportunities, changes in the functioning pattern of communities and the creation of use and user conflicts.

4.2.1 Social Context of the Study Areas

The social context of the study areas is frequently linked to traditional and native knowledge. Traditional knowledge usually supports sustainable management of natural resources. This could be due to the centuries old appreciation of the environment and its natural resources. Prior to the advent of the holy religions inhabitants used to worship

natural resources as a symbol of life. For example, one of the most important questions resurrection after death during the Pharaoh's times: Did it pollute the Nile? Consequently, these beliefs allowed them to conserve what gave them life. They may have aspired to achieve a good standard of living rather than economic profit.

In the case study areas, natural resources were managed through customary rules. In the Arabian Peninsula where the environment is characterized by aridity and uncertainty, collaboration over communal resources became vital to safeguarding the livelihoods of its inhabitants. For example in Saudi Arabia, for more than fourteen hundred years, customary rules known as Al Hima involved sustainable use of natural resources by local tribes in remote and rural areas. The forests of Saudi Arabia were protected by Al Hima by which certain tribes had control over a certain part of the forest, and no one was allowed to access the forested areas without the consent of the local clan or tribal leaders.

In Tafilalet, Morocco, surface water and groundwater are the two sources of water used for domestic and agricultural uses. In the past, customary rules known as "water rights" safeguarded water resources. Traditional housing in these areas is of a simple design and mostly made out of materials from the local environment. However, in the present day there has been a rise in modern housing development techniques and designs. This has had negative impacts on the ecosystem of the area. In Tafilalet, there are urban areas where housing is known as "Ksours", inhabited by different ethnic groups living together in harmony. Rural areas consist of rural housing units and traditional Moroccan houses which are the main types of housing found in rural areas.

Inhabitants of the study areas usually live in tribal communities that are led by tribal sheikhs or heads that make all the important decisions concerning tribal matters. In contrast, present day decisions are now being taken over by local governance authoritarians and participation of the area's local inhabitants in development decisions is usually absent. In this context it is hard to achieve sustainable development when the needs, ideas and ambitions of local societies are not reflected in the the planning and execution of development projects.

4.2.2 Social Drivers

Existing social drivers in the Arab region negatively affect economic development. Lack of awareness, absence of up-to-date technologies, misunderstanding and mismanagement by both inhabitants and governmental authorities towards environmental, economic and social aspects have caused the emergence of these kinds of drivers.

4.2.2.1 Population Growth and Densities

Population growth and density in the region have an impact on numerous environmental and economic issues. Despite the steady decrease in fertility rates in the region (UNEP 2003), the current population growth rate,

projections show that the Arab population will reach 598.5 million by 2050 (6.5 per cent of the world population) (Gelil, I. A. 2011).

With the high population growth rates, expansion of new settlements will take place leading to rapid urbanization. Urbanization will negatively affect available natural resources. Accordingly, this will affect industries that are dependent on natural resources to fulfil people's needs as well as economic targets.

Population densities in the Arab region have different measures than population growth. Many of the Arab countries can face very high population growth rates with very low population densities as it measures population per unit area.

Population density creates localized pressures on natural resources and environmental damage. Pressures on natural resources will increase consumption of non-renewable resources, stress on rural lands, and fresh water. It increases the production of wastes and pollutants.

High population densities have been detected in the study areas especially in Tafilalet and ANP. In Tafilalet, the population of the watersheds area continues to grow at a significant pace. This population was only 484 298 in 1994, giving an average total annual increase rate, compared to the population of 1994, of 0.60% (1.998% in cities and -0.06% in the rural areas) (UNEP 2009). The average fertility rate in the watershed equals 3%.

Table 4.1 Land Area and Population Densities in Arab Countries

	Land Area (sq. km)	Population Density (People per sq. km of Land Areas)		
Country	2010	1990	2000	2010
Jordan	89 342	35	56	68
UAE	83 600	20	37	99
Bahrain	707	703	975	1 858
Tunisia	155 566	50	61	68
Algeria	2 381 741	10	13	15
Dijibouti	23 200	19	29	40
Saudi Arabia	2 000 000	--	10	12
Sudan	2 505 805	10	12	17
Syria	185 180	68	88	111
Somalia	637 657	10	15	17
Iraq	435 052	43	52	77
Oman	309 500	7	8	11
OPT	--	--	--	--
Qatar	11 427	34	50	149
Comoros	2 236	195	247	309
Kuwait	17 818	116	123	215
Lebanon	10 452	255	360	384
Libya	1 775 500	2	3	4
Egypt	1 009 450	53	64	78
Morocco	710 850	37	40	45
Mauritania	1 030 700	2	3	3
Yemen	555 000	21	33	42

Source: AMF, 2011

The oasis is under pressure to meet the requirements of several areas in Morocco, as well as the requirements of its own inhabitants. This is attributable to the increase in population density in the areas, as well as in the cities leading to increased food requirements. Need for food generates pressure on the agricultural system and necessitates expansion into less fertile lands or over-exploitation of existing agricultural lands. Productivity loss, less income and the risk to lose local crop varieties may oblige farmers to abandon the agricultural activity.

Abha governorate is part of Asir National Park (ANP) with a total population of 317 159 in a ratio of 70 per cent urban to 30 per cent rural. The population, throughout the Kingdom of Saudi Arabia including the ANP, is increasing at a rate of 2.5 per cent annually. In addition to the permanent population, ANP hosts 2 to 3 million visitors annually in the summer, in which the park has to fulfill their needs (UNEP 2010). Nevertheless, any increase in population, even temporarily, creates added demands for food, water, and housing and therefore builds added pressure on an already fragile and sensitive land. High population densities in ANP have led to land encroachment.

If the unplanned growing urbanization continues, an increase in air pollution will begin to negatively affect agriculture (producing poor soil composition) and could perhaps cause health complications for inhabitants.

If economic growth were to be equitably distributed, the actual improvement of living standards would be minimal, since economic growth rates were roughly equal to population growth rates. High population growth rates create demands on the market, speeding up the growth of goods production. With the growth of these economic activities, a high demand on natural resources will occur. This demand cannot be fulfilled with rapid urbanization that causes natural resource decline. This has caused many investors to search for natural resources in marginalized/rural areas that suffer lack

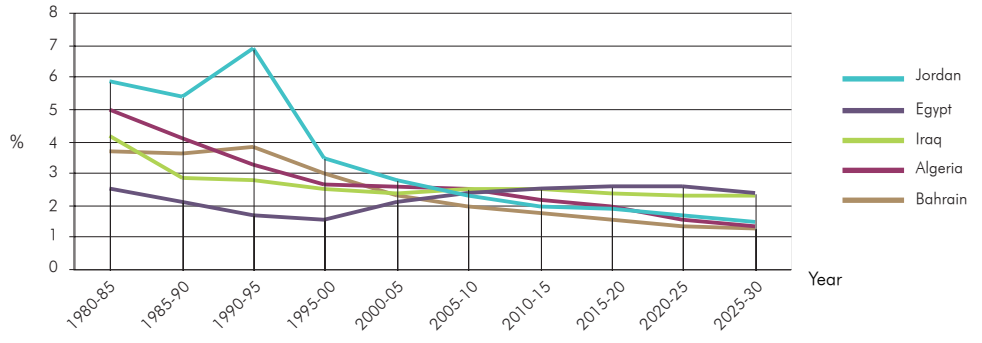

Figure 4.4 Growth Rate of Urban Population in some Arab Countries, 1980-2030
Source: UNEP, CEDARE and LAS 2010

of services and high poverty rates. This paradigm has been evolving without any focus on environmental management and environmental sustainability. The latter has increased rural-urban migration rates for better living, which has increased the vulnerability of the socio-economic situation in such areas.

Therefore, urban populations throughout the region continue to grow, and natural resources in marginalized/rural areas continue to be extracted and taken. There will be increased impoverishment in urban and rural communities, creating even greater concern for human well-being and environmental sustainability (UNEP, CEDARE and LAS 2010).

4.2.2.2 Poverty

According to the UNDP, poverty is identified as when opportunities and choices most basic to human survival and development are denied. Thus, a person is not free to lead a long, healthy, and creative life and is denied access to a decent standard of living, freedom, dignity, self-respect as well as the respect of others. From a human development perspective, poverty means more than the lack of what is necessary for material well-being. Poverty is also a product of inequality, in terms of income, wealth and natural resource distribution.

Poverty and environmental degradation and social services are very much interrelated, with the study area's poorest communities intimately dependent on natural resources for their livelihood and well-being. Solving the problem so that poor communities can benefit adequately from these resources in the long-term will require them to practice sustainable management of resources. However, poor inhabitants are rarely in a position of power concerning the management of, access to, or ownership and control of resources. Thus, they are more vulnerable to environmental change and economic fluctuations. Lack of services is also a contributor to the existing poverty in the study areas. It is argued that poverty in El Maghara is not restricted to the economic dimension but goes far beyond to include inaccessibility to schools, clean water, and social services (UNEP 2010). Thus, both urban and rural areas suffer from poverty in the Arab region. Rural areas are often impoverished due to marginalization and decentralization, which translates into a lack of access to services, such as proper education and healthcare, decent housing, water, power, and job opportunities. The urban poor are a mixture of immigrants, migrants, refugees and internally displaced persons who live in shantytowns with little or no access to the city's services.

4.2.2.3 Education

Illiteracy rates are directly linked to population growth, and play an important role in the lack of citizens' awareness of important environmental issues. Increased population rates have decreased educational opportunities and quality. With rapid population growth, and poor capacities of educational bodies, many Arab countries have failed to offer suitable educational

opportunities that fulfil ambitions or meet market needs. The quality of such services offered, particularly for low-income and poor families, are insufficient and inappropriate.

Achieving universal primary education is a goal of both the MDGs and the Arab Ministerial Declaration. With the exception of lesser-developed countries (LDCs), most Arab countries are likely to meet the goal of universal primary enrolment by 2015. The LDCs in the Arab region, however, are highly unlikely to meet this goal since nearly half of primary school age children were not enrolled in 2002. This sub-regional difference is exemplified by the fact that of the 7.5 million out-of-school children in the region, two-thirds live in LDCs (UNEP, CEDARE and LAS 2010).

Despite efforts undertaken by Arab countries to increase literacy rates, rural vulnerable areas have high illiteracy rates. This is due to lack of services, marginality and economic situations which have forced many families to have their children drop out of school in order to help increase income rather than sending them to distant schools. This indicates the extreme poverty rates in such areas.

Education in the case study areas varies and is greatly affected by several factors, including gender inequality, the economical situation, governmental plans and accessibility to educational services. In order to promote education, the government of Saudi Arabia has implemented a plan to support and advance education at the elementary, intermediate and high school levels as well as training institutes and universities in the ANP area, where illiteracy rates are high. This is a clear case of how availability of governmental plans and equitable funds helped develop education in the area.

The government of Saudi Arabia implemented this plan as a result of rural-to-urban migration by inhabitants in order to get an education and improve their livelihoods. Rural-to-urban migration has brought about the abandonment of numerous traditional occupations, such as agriculture, with sizeable areas of farms left fallow or rented to others. Inhabitants of the area have affirmed the government's significant efforts in continuing to improve educational facilities. An increase in the number of educational institutions and the number of teaching staff and students entering these institutions was detected.

The illiteracy rates in Tafilalet and El Maghara are significant. In Tafilalet, the lack of suitable governmental plans, marginality of the area and the economic situation have had a negative impact on the educational situation in the oasis. The illiteracy rate, calculated for persons aged 10 and over, is 41 per cent, and is quite significantly higher among women (55 per cent) than men (26 per cent) (UNEP 2009).

In El Maghara, there is inadequate governmental involvement when it comes to educational services. There are no local preparatory schools and students have to travel to distant schools, the nearest being almost 20 kilometres away, making it very difficult for parents to cover the cost of travel.

Table 4.2 Illiteracy Rate in the Arab Countries

	Illiteracy Rate (%)											
	Adults (People Ages 15 and Above)						Youths (People Ages 15 - 24)					
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
	1990			2008			1990			2008		
Jordan	10.0	27.9	18.5	3.7	10.8	7.2	2.1	4.7	3.3	1.0	0.9	1.0
UAE	28.8	29.4	29.0	9.7	11.3	10.2	18.3	11.4	15.3	1.7	3.9	2.6
Bahrain	13.2	25.4	17.9	8.3	10.6	9.2	3.8	5.0	4.4	0.2	0.3	0.3
Tunisia	28.4	53.5	40.9	13.6	30.4	19.4	7.2	24.8	15.9	1.9	4.2	3.2
Algeria	35.7	58.7	47.1	15.6	29.0	22.3	13.9	31.9	22.7	5.8	9.4	7.5
Dijibouti	33.2	60.3	47.0	20.1	38.6	29.7	17.8	35.8	26.8	9.0	15.1	12.1
Saudi Arabia	17.4	36.3	25.3	8.2	17.0	12.4	6.5	21.2	13.4	1.6	3.8	2.7
Sudan	40.0	68.5	54.2	21.0	40.4	30.7	24.4	46.0	35.0	11.4	18.3	14.8
Syria	18.2	52.5	35.2	9.3	23.4	16.2	7.8	33.1	20.1	4.4	7.5	5.9
Somalia	--	--	--	--	--	--	--	--	--	--	--	--
Iraq	48.7	80.3	64.3	14.0	30.8	22.4	43.6	75.1	59.0	15.5	19.8	17.6
Oman	32.7	61.7	45.3	10.0	19.1	13.3	4.6	24.6	14.4	2.4	2.4	2.4
OPT	--	--	--	2.8	8.9	5.8	--	--	--	0.7	1.0	0.8
Qatar	22.6	24.0	23.0	3.5	4.6	3.7	11.7	7.0	9.7	0.9	1.0	0.8
Comoros	--	--	--	20.3	31.3	25.8	--	--	--	14.2	15.3	14.7
Kuwait	20.7	27.4	23.3	5.0	7.7	6.0	12.1	12.8	12.5	1.6	1.5	1.6
Lebanon	11.7	26.9	19.7	5.6	10.2	7.9	4.5	11.4	7.9	1.6	0.9	1.3
Libya	17.2	48.9	31.9	5.1	18.7	11.6	1.1	17.3	9.0	0.1	0.3	0.2
Egypt	39.6	66.4	52.9	25.4	42.2	33.6	29.1	49.0	38.7	12.1	18.3	15.1
Morocco	47.3	75.1	61.3	28.1	50.8	39.7	32.0	58.0	44.7	15.2	31.6	23.4
Mauritania	53.7	76.1	65.2	35.9	50.5	43.2	44.5	63.9	54.2	29.5	36.6	33.0
Yemen	44.8	87.1	67.3	21.1	57.2	39.1	26.5	75.0	50.0	4.9	30.0	17.1

Source: AMF, 2011

Table 4.3 Number of Male and Female Educational Institutions and Students in ANP

	Rejal Al-Ma Governorate	Mahayel Governorate	Abha Governorate
University	None	None	King Khalid University
University Students	None	None	10 180
Number of Colleges	None	None	10
Male Schools			
Elementary	18	NA	72
Intermediate	17	NA	58
High School	09	NA	25
Training Schools/Technical Institutes	NA	NA	04 (2 293 students)
Female Schools			
Elementary	05	NA	43
Intermediate	09	NA	30
High School	05	NA	24
Training Schools/Technical Institutes	01	NA	02 (169 students)
Students (Male)			
Elementary	3 224	21 064	
Intermediate	1 942	5 386	9 234
High School	1 519	2 628	7 237
Students (Female)			
Elementary	NA	10 455	15 710
Intermediate	NA	4 166	6 728
High School	NA	3 151	6 009

Source: UNEP, 2010

In addition, it may also be dangerous to allow young children to travel such distances by themselves. The government does make available dormitories for students, but parents do not usually opt to allow their children to make use of these facilities.

The need to promote environmental awareness in both areas of study is limited to a few infrequent measures. Inhabitants have very little knowledge and awareness when it comes to natural phenomena, such as the hazards of sand encroachment on

infrastructure, agricultural lands, housing units and their effect on human health. This lack of education creates an obstacle to the fight against environmental issues. In addition, the remoteness of these areas makes it difficult to provide transport, communication and other services.

4.2.2.4 Gender Equity

In the study areas, women are more dependent on resources in their daily household activities than men are. However, most often they have less access to these resources which consequently affects their activities and the satisfaction of their family's needs. Most of the women in the Arab region cannot address these problems as they rarely have a chance to participate in the decision making process due to cultural aspects, especially women in rural areas. Therefore, "women's well-being is less easily attained, and their vulnerability to environmental stress and change is in many cases higher" (UNEP 2007).

Two clear indicators of gender inequality are education and employment, both of which demonstrate a gender gap throughout the region. Hence, women still suffer from gender inequality at various levels and in almost all sectors. Gender inequality significantly affects the ability of women - and society - to use resources sustainably and efficiently.

With regards to education, the region has witnessed the adoption of national policies promoting equal access to education for boys and girls in schools and higher education. Although progress has been evident, there remains a critical need for further promotion, particularly in certain sub-regions. According to the Gender Parity Index (GPI), school enrolment at the Arab region level, measured by the girls-to-boys school enrolment ratio has substantially increased at all levels of education from 1991 to 2005 (UNEP, CEDARE and LAS 2010). However, gender parity in enrolment at the primary and secondary levels has yet to be achieved, and large disparity between sub-regions and individual countries persist.

In the study areas where poverty rates are detected to be high, illiteracy rates are significantly high among males and females, but the percentage is higher in females. High percentage of illiteracy is due to economic and social reasons, as well as lack of educational facilities. The lack of adequate educational facilities, forces parents to send their children to distant schools. These inhabitants also have very low incomes which make it difficult for them to pay for their children to go to school, thus children drop out of school in order to work and support their families. The opportunity to be educated is usually given to boys more than girls for cultural and traditional reasons; girls usually stay at home to help their mothers in daily activities. For example in El Maghara, there is considerable disparity between the attendance for boys and girls, as well as a disparity between the percentage of those who attend primary school and secondary school. Twenty three per cent of boys

Table 4.4 Enrollments in Primary, Secondary and Higher Education

	Guide to Gender Equality in Education					
	Primary Education		Secondary Education		Higher Education	
	1990	2008	1990	2008	1990	2008
Jordan	1.01	1.01	1.04	1.04	...	1.11
U.A.E	0.97	0.99	1.14	1.03	3.00	2.05
Bahrain	1.00	0.98	1.03	1.04	1.40	2.45
Tunisia	0.89	0.98	0.79	1.08	0.70	1.49
Algeria	0.85	0.94	0.80	1.07	0.53	1.40
Djibouti	0.71	0.88	0.65	0.70	0.50	0.68
Saudi Arabia	0.90	0.96	0.87	0.85	0.93	1.65
Sudan	0.75	0.88	0.78	0.91	1.00	0.92
Syria	0.90	0.96	0.73	0.98	0.64	--
Somalia	0.52	0.55	0.53	0.46	--	--
Iraq	0.85	0.82	0.64	0.66	...	0.59
Oman	0.91	1.01	0.78	0.97	1.00	1.15
OPT	--	1.00	--	1.07	--	1.23
Qatar	0.94	0.99	1.10	1.46	2.87	6.10
Comoros	0.70	0.92	--	0.75	0.18	0.77
Kuwait	0.95	0.98	0.98	1.04	1.78	2.33
Lebanon	0.96	0.97	1.07	1.11	0.93	1.23
Libya	0.94	0.95	1.03	1.17	0.83	1.09
Egypt	0.85	0.95	0.81	0.92	0.55	0.88
Morocco	0.69	0.90	0.73	0.86	0.62	0.89
Mauritania	0.74	1.07	0.47	0.88	0.16	0.37
Yemen	0.40	0.80	0.21	0.48	0.29	0.42

Source: AMF, 2011

attend primary school and only 3 per cent attend high school. Four per cent of girls attend primary school, however almost all drop out of school at a very early age due to cultural restrictions. El Hassana precinct, where El Maghara is situated, has the second highest rate of students dropping out of school and the second highest illiteracy rate in Sinai. It was found that 56 per cent of men were illiterate, while 24 per cent can manage to read and write but have no certificate of completion of any stage of education. Only 20 per cent of men have a primary school certificate. Among women, 90 per cent were illiterate (UNEP 2010).

The lack of education in females is greatly affecting the environment, as females in the Arab region are more interactive with natural resources than men. This reflects the importance of education in females, as they are the ones that can teach environmental ethics, behaviour and practices to new generations.

Employment

In some countries of the Arab region women are more involved in the agricultural sector than men are, particularly in the Arab LDCs. In other countries where agriculture is not a significant contributor to GDP women usually don't work or are more involved in the services sector. Generally, female unemployment rates in the region in non-agricultural labour markets have been a consequence of a "combination of factors that include low educational, low conventional perceptions on the role of the different members of society, and employment regulations that implicitly create a bias against women" (UN 2007).

In 2005, Egypt showed that males made up 28 per cent of the labour force in agriculture, while females made up 39 per cent of the labour force in agriculture. In Morocco, male to female employment in agriculture, was 39 per cent to 57 per cent (FAO 2006). Women working in the agricultural sector either work for low pay or without pay especially if agriculture is a family business. In all cases they are not insured and have no societal protection.

In countries where agriculture is not a significant contributor to GDP, female employment is different. For example, GCC countries have very low rates of female employment due to the fact that the oil industry is not deemed suitable for women, whereas in the more diversified economies, where economies rely more heavily on the service sector, higher rates of female employment are observed (UN 2005). It is important to add that women have less access than men to microcredit facilities, thus rendering it even harder for women to earn their own source of income (CEDARE et al. 2001).

4.2.2.5 Health

The health situation in the Arab region differs according to the economic situation and the capacity and plans of countries to solve any health generating issues. Some health issues in Arab countries are linked to the quality and quantity maintenance of natural

resource based services for healthy living, such as quality of drinking water, sanitation services and leakages, quality and quantity of food availability for adequate nutritional levels, and needed water quantity for proper hygiene. Furthermore, it is linked to the quality and quantity of medical facilities, as these services should be equally distributed throughout the country and should be able to treat any emerging diseases. Poverty, low-levels of social services and lack of health protection affect the health of many inhabitants of the study areas.

The Arab region is facing the prospect of severe water scarcity unless rapid and effective measures are taken to address the problem. Water scarcity is a restraint to economic development, food production, and human health and well being. Shortage of water and the decline of its quality have had a varied impact on the health conditions of both humans and the ecosystem as a result of lack of hygiene, the spread of waterborne disease, loss of biodiversity and contamination of agricultural products.

In El Maghara, analysis of samples of drinking water collected from various wells and dikes confirmed the poor quality of this water. Mining and gravel extraction industries have affected the quality of water in the nearby wells to a serious extent. Investigations showed the presence of heavy metals and pathogenic micro-organisms in the commonly used wells in the region. One of the main sources of drinking water in the area is from flash floods, and this water has also been polluted by materials that litter the course of the flash floods. Additional health problems were mainly due to polluted water, lack of hygiene, water salinity, poor nutrition, and exposure to the sun. It was also found that anemia was the most common disease.

Water scarcity and drought have also impacted the health of the environment. In Tafilalet Bayoud disease had impacted the date-producing palms, particularly the noble variety of palms which are known for their commercial quality. Regions with relatively more water resources show a higher impact of the disease. According to the ORMVA/TF, 3 per cent of date-producing palms die out every year as a result of Bayoud, with more than two-thirds of the date palms heritage in Tafilalet lost in one century.

Tree health is also affected by insects that form shields and white encrustation that interfere with the process of photosynthesis and thus impede tree growth. All of the palm groves in the area are diseased. Olive trees affected by insects, particularly after the deteriorating effect of drought, are greatly damaged. Some diseases may also affect beehives, leading to deterioration in honey production. These diseases greatly decrease the yield in production and thus impact the health as well as the income of inhabitants.

Inadequate government monitoring and programmes for these areas, lack of proper medical services and facilities, as well as treatment for trees has greatly increased environmental and human health problems. In ANP, primary health care centers have been set up in cities as well as in villages and

are steadily increasing in number. The total number of health care centers in the Asir region has increased 18 per cent from 2001 to 2005, an increase from 213 to 251 health care centers (UNEP 2010).

4.2.3 Economic Context of the Study Areas

In the Arab region, economic development has historically been tied to domestic natural resources. One can even trace the rise and fall of certain civilizations in the region with sustainable - or unsustainable - environmental management. It is essential to recognize that economies are still defined by their GDP, which is the total market value of all final goods and services produced in a country in a given year. The Arab region's economy is supported by its environmental assists and services at 2.5 per cent to 4.8 per cent of GDP (UNEP, CEDARE and LAS 2010). The direct economic cost of environmental degradation in the region is enormous, and might affect the GDP and exceed the annual economic growth rate. This is due to ecosystem fragility, rapid population coupled with development policies that do not consider the capacity of the local environment, and the continued use of obsolete manufacturing techniques. In this way the economic development in Arab countries is totally affected by the degradation of natural resources that depend on it.

Human well-being is dependent upon ecosystems and ecosystem services in the case study areas. Extreme events and uncontrolled economic activities have had profound and irreversible effects on the use of indigenous natural resources and on the environment in general. Ecosystem services make up an essential part of the economy in the case study areas, thus deterioration of natural resources is linked to the poverty that can be found; particularly in El Maghara and Tafilalet. Inadequate governance and the extreme changes that have occurred in the nature of natural sources have led to the damage of features essential to the quality of life: water pollution, land degradation, floral and faunal species depletion, and the emergence of alien species causing considerable damage.

Use of natural resources to reach economic targets has increased their degradation. This has negatively impacted the needs of inhabitants, increasing the level of inequalities. Degradation of natural resources, such as soil erosion, use of ground water for commercial purposes, desertification, and wood cutting for trade, and overgrazing can be observed in the case study areas. This decreases local know-how by limiting available work opportunities in the agricultural and livestock-herding sectors, which is one of the reasons for urban migration.

Reliance on economic growth strategies and policies without taking into consideration social, cultural and environmental aspects has not been successful. This had led to the disparity between rich and the poor. Green economy and sustainable development are essential to improve the social, economic and environmental situation.

4.2.4 Economic Drivers

Unemployment, types of economic activities, and extreme events are drivers that formulate the patterns of economic context in the study areas. Therefore, it is crucial to understand the work patterns of these drivers in the region to better assess economic mechanisms and their nature.

4.2.4.1 Employment

High unemployment rates in the Arab Region make it difficult to maintain economic progress and alleviate poverty. Unemployment hinders economic growth and poverty alleviation (UN 2005). Unemployment in Arab countries impacts young people and women. In fact, Arab countries registered the highest unemployment rate in the world for young people between the ages of 15 to 24, which is estimated to be 48 per cent (AMF 2011).

In 2009, more than 20 per cent of the youth labor force in the region was unable to find a job, which constituted more than half of total unemployment, and impacted women more than men. There is a significant increase in unemployment, considering that the labour force increases 3.5 per cent per year due to the growth in population, creating an even greater number of unemployed youth. According to the Joint Arab Economic Report 2011, first-time job seekers entering the labour market made up about 70 per cent of total unemployment in Arab countries for which data is available. The high unemployment density either among young people or job seekers who have never worked, or university graduates who made up about one quarter of the total unemployed in Arab countries, is strongly linked to the inability of the labour market to absorb new entrants. Arab countries urgently need to boost growth that leads to job creation and to link education outputs with changing needs of the labour market, as well as supporting youth employment programmes.

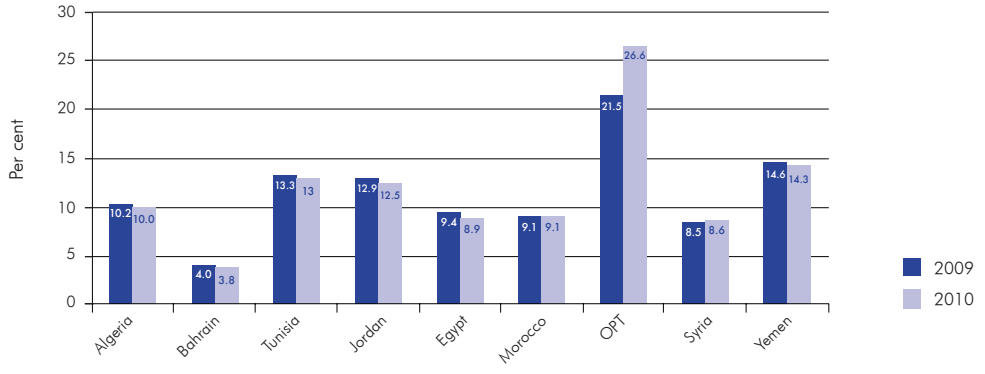

Figure 4.5 Unemployment Rates in Selected Arab Countries (2009-2010)
Source: AMF, 2011

Agriculture and grazing are traditional and recognized means of employment in the case study areas, but there are also less informal endeavours such as craftsmanship as well as illegal activities. Unemployment rates have risen as a result of the degradation of resources and the marginalization of such areas, greatly reducing employment prospects in agriculture and craftsmanship.

Generally, the region has the highest share of working poverty, where families work but find themselves still locked into poverty with employment deficits, small wages and wealth inequities. In the case study areas, earnings are usually low for activities for which payment is received. Moreover, degradation of natural resources increases income disparities and decreases employment rates and local know-how. For example, the excessive use of water will result in its shortage, and as a result income generating activities dependent on water will not be able to support the same number of people it once did.

Unemployment is one of the most adverse issues in the case study areas, with unemployment being higher for women than for men. Women are responsible for reproductive work, such as housework, care of children and the elderly as well as productive work, such as agriculture and farming, which is usually not paid.

It is essential to encourage and raise awareness to green economy, generate green employment opportunities and implement sustainable development plans and programmes.

4.2.4.2 Economic Sectors

Economic sectors in the Arab region are diverse. Most of the Arab region's GDP is increasingly dependent on the industrial sector, which is based on extraction of exhaustible natural resources. The extractive industries have steadily grown from constituting 63 per cent of the industrial sector in 1999 to 81 per cent in 2006. The unsustainable increase in

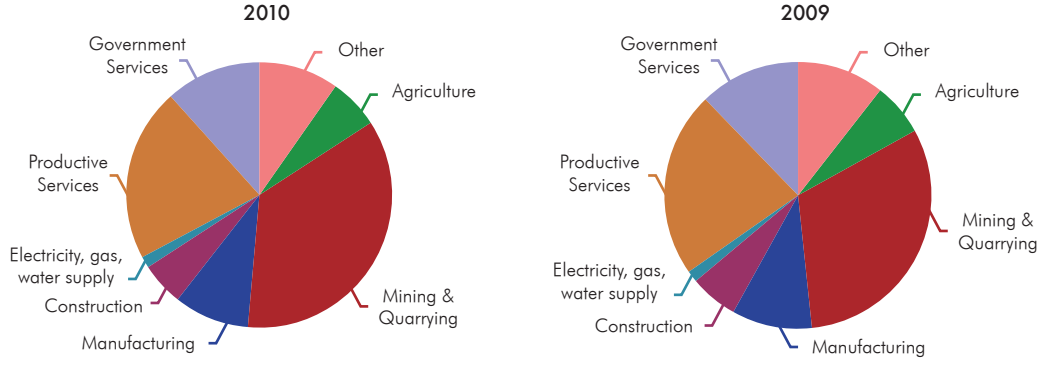

Figure 4.6 Structure of Arab Gross Domestic Product by Main Economic Activity

Source: AMF, 2011

the extractive industries will negatively affect the amount of non-renewable resources and will affect country GPD in the long-term.

Traditional and inherited economic activities are the most persistent in the case study areas. The economic sectors of these areas mainly depend on natural resources, as well as on their distinctive settings and cultures to promote tourism.

Extractive and Manufacture Industries

There is a dramatic rise in the percentage of contributions to GDP by the total of extractive and manufacture industries in most Arab countries. Extractive industries exceed manufacturing industries as a share of total industrial exports, especially in economies that focus on mining and quarrying as their main economic activities. More diversified economies in the region manufacturing industry exports are more significant than those for mining and quarrying. The mining and quarrying industries in Arab economies are not used in a sustainable manner to ensure reliability within this industry, for example, mining and quarrying - as with oil and natural gas - are dependent on non-renewable resources. Thus, it is important to both re-invest the monies earned from this sector into renewable resources, particularly human resources, and to ensure that this industry abides by environmental standards in the extraction of resources, and in the rehabilitation of lands.

Extractive industries in the region generate revenue and create job opportunities. However, despite these advantages resources are indiscriminately consumed, which may lead to decline and deterioration of these areas. In general, industrialization increases environmental degradation, increases the consumption and mismanagement of natural resources, such as land and water, and raises levels of air pollution. In addition, the proper management and treatment of industrial waste is still missing in much of the region (CEDARE et al. 2001).

Sustainable resource management is crucial to maintain the sustainability of the extractive industries. Short-term and long-term economic and environmental plans for the Arab region should be of a particular consideration, whether the flow of monies from sanction operations will be reinvested into the local and national economy, or whether they will be siphoned out to foreign corporations, increasing inequalities.

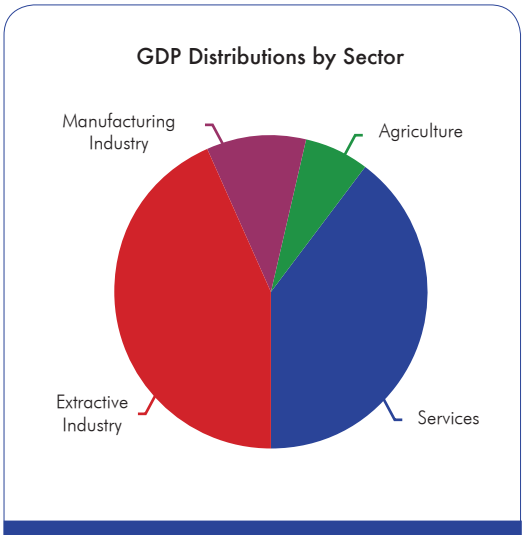

Figure 4.7 GDP Distributions by Sector in the Arab Region, 2006

Source: LAS 2007

Table 4.5 Percentage share of Extractive and Manufacturing Industries in GDP for Selected Arab Countries (2003 and 2006)

	Extractive Industries % of GDP		Manufacturing Industries % of GDP		Total Industry % of GDP	
	2003	2006	2003	2006	2003	2006
Jordan	2.7	2.6	14.0	17.6	16.7	20.2
UAE	32.0	37.1	13.6	12.1	45.6	49.2
Bahrain	25.2	26.5	10.9	12.3	36.1	38.8
Tunisia	3.6	5.4	18.2	16.9	21.7	22.3
Algeria	36.1	45.9	6.6	4.1	42.7	50.0
Djibouti	0.5	0.5	2.3	2.3	2.8	2.8
KSA	38.1	50.1	10.1	9.4	48.2	59.6
Sudan	8.0	11.5	5.6	7.5	13.5	19.0
Syria	19.5	26.3	4.3	10.2	23.7	36.5
Iraq	19.5	76.7	4.3	2.0	23.7	78.6
Oman	42.0	48.6	8.3	10.4	50.2	59.0
Qatar	57.6	61.9	6.9	7.3	64.4	69.2
Lebanon	-	-	9.1	9.1	9.1	9.1
Libya	57.5	71.9	4.2	2.2	61.7	74.1
Egypt	8.1	14.5	18.3	16.0	26.4	30.5
Morocco	1.6	1.7	18.2	15.8	19.8	17.5
Mauritania	11.0	34.3	7.8	3.3	18.9	37.6
Yemen	31.6	33.9	4.8	6.5	36.4	40.4
Total		**40.0**		**9.5**		**49.5**

Source: LAS, 2007

Existence and types of extractive and manufacturing industries in the study areas depend on dominant economic activities. Their impacts on the study areas vary according to the variation of extracted resource. For example, in Saudi Arabia extraction of gas for fuel is a part of the country's plan to decrease in wood cutting. This trend will continue to replace wood and charcoal because of its ease and availability,

according to the local inhabitants. This will have positive impacts on forest cover, biodiversity, and food availability for herding animals and humans. In contrast, over use and extraction of oil and gas in an unsustainable manner will lead to its decline as they are dependent on non-renewable resources and will affect the economical situation of small villages in the areas for its high prices.

El Maghara area is rich with mineral deposits. Rock diversity and coal seams had allowed many industrial and mining activities in the area; extractive industries had negatively impacted the area's ecosystem. Exploitation and development mining works were executed under government supervision for 20 years since the early 1980s. The low grade coal ore, coupled with the high cost of production and extraction processing and poor management, were main reasons for the big losses incurred that eventually ended up by closing the mine. The closing of the coal mine caused many Bedouin to lose their jobs. Industries, such as sand and gravel extraction, provide a few jobs for Bedouin, but the lack of jobs has forced many inhabitants to migrate to other parts of Egypt. This has resulted in increased loads and stress on city centers, infrastructure and has greatly affected the demographic distribution of the population.

In the light of the previous examples, extractive and manufacturing industries developments plans should be carried out through a sustainable and green economy perspective to ensure the stability of the socio-economic situation vulnerable societies and fragile ecosystems.

Agriculture

Agriculture is a primary rural activity and an important sector in most Arab economies as a contributor to gross domestic product (GDP). Contribution of agriculture to the economy and its role varies from one country to another according to the variations in arable land and water resources. It also plays an important role in providing food security, employment, and as a main source of income generation and livelihood for the majority of the rural population.

Agriculture in the Arab region is affected by many factors, including internal migration, unsustainable agricultural activities and climate change. Migration from rural to urban areas in Arab countries in search of adequate services and standard of living has increased, causing a decline in agricultural labour in the total workforce. Lack of diversification in rural economies, coupled with weak links between agriculture and related industrial activities, such as small scale food processing and agro-industries, have impeded expansion of employment opportunities that would support livelihood in rural areas.

Unsustainable agricultural activities might lead to degradation of quality and quantity of agricultural products. It considerably degrades land and water sources in the region, in which their availability is the

Table 4.6 Agricultural Gross Domestic Product and per Capita Agricultural Income in some of the Arab Countries (2000, 2005, 2009 & 2010)

	Agricultural Gross Domestic Product (US $ million)				Agricultural per Capita Income (US dollars)				Per cent of Agriculture in Total GDP			
Country	2000	2005	2009	2010	2000	2005	2009	2010	2000	2005	2009	2010
Jordan	171	347	648	791	35	63	108	129	2.0	2.8	2.6	2.7
Algeria	4 600	7 927	12 820	13 644	151	241	364	381	8.4	7.7	9.2	9.0
Saudi Arabia	9 326	10 208	11 045	11 204	458	438	414	406	4.9	3.2	2.9	2.6
Sudan	4 796	11 608	18 675	22 754	154	328	465	546	35.8	33.0	32.0	31.4
Syria	4 667	5 907	12 241	12 015	286	326	608	583	24.6	20.7	22.7	20.4
Iraq	1 206	3 438	5 219	7 294	50	123	163	218	5.8	9.5	5.4	6.0
Lebanon	1 077	1 148	1 707	1 963	286	295	428	489	6.2	5.3	4.9	5.0
Egypt	15 474	12 517	24 501	29 135	242	177	319	370	15.5	14.0	13.0	13.3
Morocco	4 908	7 847	13 081	12 641	172	260	415	396	13.3	13.2	14.4	13.4

Source: AMF, 2011

main asset for healthy and sustainable agriculture. Unsustainable practices increase desertification in the region. This includes inefficient irrigation practices, overgrazing, uncontrolled agriculture, logging for fuel, and the mismanagement of water resources. With regards to water for irrigation, irrigation methods and low cost of water are reasons behind the deterioration of water resource in the region. Several Arab countries still rely on traditional irrigation methods that typically cause considerable water loss and limited uniformity in water distribution. Water diverted and used for irrigation often causes environmental externalities and degrades natural resources. There are externalities due to over-extraction or contamination of common-pool resources such as lakes and underground sources (Malik 2008). The costs of these externalities are usually not taken into account while determining the cost of irrigation water.

In most countries of the Arab region, costs for irrigation water comprise only a fairly small percentage of operation and maintenance expenses. Arab countries have made subsidized water available to farmers through public financing (Malik 2008). This policy has resulted in highly subsidized irrigated agriculture, where low water prices have contributed to the extension of irrigated areas, increases in agricultural water demand, and the misallocation of the resource among users and uses. Low-

cost recovery and poor maintenance have caused infrastructure deterioration, and poor water distribution efficiency, and irrigation performance (Malik 2008). The rise in water use across all sectors has impacted water designated for agricultural uses.

Agriculture is highly exposed to climate change since it depends directly on climatic conditions, which might impact the quality and types of agricultural products. Land quality is affected and desertification may occur due to arid climate, land use change, and over extraction of water. Climate change negative impacts on water availability accompanied by increased water requirements and the existing water shortage in the region will greatly reduce agricultural development. This creates challenges to food security and job opportunities.

Agriculture plays a major role in the economy of the case study areas. The most important agricultural products are dates, olives, apples, cereals, and vegetables.

Table 4.7 Agricultural Employment in Selected Arab Countries

	Employment As a Percentage of Total Population		Employment (Annual Growth Rate) (%)	Employment by Agricultural Sector (%)	
Country	1995	2009	1995-2009	1995	2009
Jordan	28.1	45.0	5.9	13.0	8.8
UAE	55.6	65.7	6.3	6.2	5.2
Tunisia	25.1	35.4	3.6	26.5	16.2
Algeria	30.3	40.4	3.8	25.4	13.1
Saudi Arabia	34.9	33.9	4.0	6.3	4.1
Sudan	39.7	39.3	2.7	65.4	44.0
Syria	30.8	38.0	4.1	30.5	13.9
Oman	36.2	39.3	3.5	41.2	20.7
Lebanon	30.2	40.4	3.1	5.2	2.2
Libya	31.4	30.0	2.9	8.1	4.9
Egypt	29.1	33.0	1.3	33.4	26.5
Morocco	39.4	46.1	2.4	40.2	36.8
Yemen	29.9	34.0	3.7	55.3	36.8

Source: AMF, 2011

Inhabitants of the forested areas in Asir National Park depend on trade, farming and grazing for their livelihood. Terrace agriculture on mountains and slopes in the ANP area is customary. Inhabitants in the Asir region supplement their income through the processing, consumption and marketing of non-wood forest products. The main non-wood forest products include medicinal and aromatic plants, herbs and spices, gums, resins, tannins, mushrooms, honey, fruits and nuts. In addition, fodder is also considered a non-wood forest product as livestock depend on it.

The natural vegetal cover of ANP is presently in danger and vulnerable to degradation as a result of damaging climatic factors and anthropogenic causes. This danger is caused by indiscriminate cutting down of trees, exhaustive pasturing, fire, disease, tree senescence and weak natural regeneration. The deterioration of natural resources such as soil, water and wildlife will persist if suitable measures are not taken.

In Tafilalet, agriculture is the core of the oasis identity, represents 68% of the economic activity, constituting, thus, the backbone of the local economy. It is practiced by the majority of the rural population, although its output is low due to the unfavorable weather conditions and the limitedness of useful agricultural land. The gross income of the agricultural production is about 20 000 DH / house / year, 72% of which consists of dates, 10% of wheat, 7% of olive, 5% of barley, 4% of maize and 1% of alfalfa . Production costs represent 11% of the gross income.

It offers a vast number of agricultural products including fruit production (date producing palms, olive, apple and almond trees, etc.), cereals, fodder (alfalfa), market garden productions and the date palms production which constitute the most dominant speculation. The marketing of these products are the main source of income source for the farmers.

Agriculture is characterized by the limitation of space marked by the lack of expansion possibilities of agricultural activity outside the oases and the plots' division. The agricultural area of the oases is reduced to 0.86 ha per farmer with an average of 5 plots. This modification resulted in the reduction of the lucrative value of the Utilized Agriculture Area (UAA), generally followed by the progressive impoverishment of farmers.

The state of agricultural and rearing production is marked by the decline of the services they provide. The main causes are the 'Bayoud' disease, water scarcity (due to human actions and to the context of structural drought), demography, the intensification and expansion of agriculture, poverty and change in human behaviors. Olive trees are the second arboricultural species after date producing palms. However, olive industry in the region is characterized by low productivity and relatively low oil quality, if compared to the international standards. The causes, among others, are linked to the plants' advanced age, the non-mastery of the optimal period of olive harvesting, the traditional process of oil extraction, low olive recovering, etc.

The rapid population increase in the recent years and the precarious economic situation, generated a strong pressure on natural resources. This pressure affected agriculture through the excessive water pumping from groundwater. Wasting this already scarce resource is even more serious because it is often used to irrigate agricultural speculation with very low economic productivity, using traditional irrigation methods which significantly help wasting water resources.

This results in degradation of soil, dryness of palms and overexploitation of water resources, with consequent loss of agricultural productivity and agro-biodiversity. In addition to water scarcity, viruses, such as 'Bayoud' seriously threaten the future of the entire ecosystem oasis of Tafilalet.

Fishing

The fishing sector is one of the most important economic sectors in some countries of the Arab region, such as Morocco, Tunisia, Mauritania, and Oman. This sector offers considerable employment opportunities and income, as well as foreign earnings and revenue to these countries. However, these resources are decreasing due to coastal and marine degradation, overfishing, and increased ship traffic (UNEP 2003). As a result, many fishery resources continue to be degraded, and the effects of degradation are generally expanding, despite efforts to control them. The extinction of a species, particularly a keystone species, can ripple through a food web and affect a wide range of other organisms. Consequently, there is a great need to implement stronger and more effective fisheries management.

In the study areas, fishing represents one of the most important and vital economic activities. Most inhabitants along the small coastal towns and villages of Saudi Arabia are fishermen. It is a traditional means of livelihood and has been handed down from one generation to the next. In Asir province, there are six major boat harbours: *Al-Birk, Al-Qahmah, Omog, Al-Moajez, Al-Nohod, and Dhahban*. These harbours have a total of 565 small boats; 341 are used for fishing and the rest are used for entertainment (UNEP 2010).

A decrease in the number of fisheries has been observed in the Asir Region as a result of water pollution. Fish populations have been negatively impacted due to discharges from the Abha and Al-Birk wastewater treatment plants and septic tank flow down the wadi into the Red Sea. In addition, overfishing and coastal degradation have impacted the quantity and diversity of fishes in the sea, which has also occurred in Tafilalet. This decrease in the number of fisheries has had a direct effect on the livelihoods of many fishermen. Many young fishermen have been forced to abandon their fishing jobs in order to try to find other employment opportunities.

Tourism

Tourism is a potential venue to boost economics and improve the quality of life in the case study areas. These areas are known

for their history, culture, natural richness, forests and harbours. The numerous wadis and exotic terrains are most appealing assets that can support a flourishing safari business and tourism industry if properly vented. This richness and diversity also allows the development of nature-based tourism activities such as hiking or riding, sportive fishing, nature exploring (fauna, flora and landmarks are still intact and virgin). However, the development of Tafilalet and El Maghara is largely ignored by their respective governments. These areas are losing their unique heritage and history that should be preserved as a means to generate employment opportunities and improve the economic and social situation of the areas. In contrast, in Asir National Park the development plans for tourism in the area have had negative impacts on natural resources and led to land degradation. Sustainability concepts, such as eco-tourism, rural tourism and green cities, therefore need to be incorporated into development plans in order to create win-win solutions.

4.3 NATURAL DRIVERS

Predicted climate change and natural disasters will make it difficult to reduce poverty and greatly affect any socioeconomic gains, as these events result in loss, degradation and spread of disease, which affect both humans and the environment. Climate change and natural disaster events play a key role in the migration of populations. People are forced to leave their homes in search of food, work and a way out of poverty. There is concern that as a result of environmental degradation millions of people will be displaced, leading to the formation of informal settlements in urban areas, such as slums and shantytowns.

Natural Disasters

Recurrent natural disasters occur throughout the Arab region as a result of changing geologies and increasing climate variations. The region is likely to experience higher temperatures, sea level rise, changing rainfall patterns, drought, desertification and increased climate variability. The 2010 Environment Outlook Report for the Arab region states that more than 37 million Arab people were affected and more than 20 billion dollars were lost between 1980 and 2008 due to natural disasters (LAS 2010). There is clear evidence that disasters have persistent, long-term impacts on poverty trends and human development (LAS 2010).

The Arab Strategy for Risk Reduction 2020 emphasizes the geological hazards that areas of the Arab region frequently experience, including earthquakes, volcanoes, landslides, tsunamis, floods, extreme temperature events, drought, sand storms, wildfires and cyclones. For example, the 2003 earthquake in Algeria, the 2007 Cyclone Gunu in Oman, the 2008 floods in Hadramoot, Yemen and the 2009 floods in Morocco among others, serve as a few stark reminders of emerging risk and frequent disaster trends in the region (LAS 2010).

Natural disasters are a challenge that Arab countries must be prepared for, particularly Morocco, which is vulnerable to economic

threats resulting from various types of natural disasters. It is estimated that the most serious of these could cause damages of up to 30 per cent of GDP, and affect 30 per cent of the population.

Climate Change

As one of the most vulnerable regions in the world to predicted climate change impacts, the Arab region faces many challenges. Climate change exacerbates and threatens to overburden areas and regions that are already fragile as a result of inadequate agricultural production, water scarcity, high groundwater salinity, spread of infectious diseases, threatened food security and biodiversity loss.

Climate change has increased the frequency and intensity of extreme events that already take place in the region. Flash floods, drought, and sea level rise are all events in the region that could be exacerbated by climate change. The rise in sea level as a consequence of climate change is expected to affect many of the densely populated coastal zones in the region. A one metre rise in sea level would affect an estimated 3.2 per cent of the Arab region's population.

The increased occurrence of these events has increased the deterioration of natural resources. For example, in Morocco, sand encroachment has greatly affected human well-being. This phenomenon affects human health, as well as the social and economic situation. There is an increased occurrence of eye diseases caused by particles carried by the wind. The social situation is impacted by the damage to important infrastructure, such as irrigation canals, roads, housing, as well as loss of agricultural lands. Moreover, the natural vegetal cover is currently at risk of degradation in many areas due to unfavorable climatic conditions. Economic losses as a percentage of 1.49 GDP would also be proportionally worse in the region, compared to 1.30 per cent worldwide (UNEP, CEDARE and LAS 2010). Climate change impacts in the Arab region are extensive and wide ranging, affecting many aspects of people's everyday lives.

CONCLUSION

Major achievements towards sustainable development have been realized in the Arab region since the Stockholm Conference, especially in the areas of education, health and improved standards of living. However, Arab countries continue to face many problems such as poverty, illiteracy, rapid population growth and water scarcity. The idea of sustainable development has been implemented and many efforts have been made to attain sustainability at the national and regional levels. Nevertheless, these actions have not been successful in achieving the goals of the Brundtland Report. Only the GCC countries are expected to reach the MDGs by 2015, although it is highly doubtful that this achievement will include environmental sustainability.

Arab countries depend on their natural resources for economic development for centuries. Accordingly, in order to realize

sustainable development in the region, there is a need to promote and encourage the awareness that the environment is a source of services that can improve human well-being. Issues of health, education, gender equity, and poverty need to be re-evaluated and new strategies developed that will adopt a multisectorial approach to sustainable development. Land and water resources deterioration should be better monitored, reduced, and rehabilitated. More attention needs to be given to the protection of biodiversity and coastal and marine resources. In order to attain these objectives, certain vital steps should be taken, including: stabilizing population growth and urbanization; providing equal access to social services for all social groups; ensuring the decentralization of power, building infrastructure and public services; improving access to information, education, and telecommunications; reforming the environmental governance structures; and providing equal access to environmental services for all. In order to attain these objectives a paradigm shift that understands that economic health depends on sustainability of the environment is needed.

Economic growth became a target for most of the Arab region, which is simply an increase in the production and consumption of goods and services. With the current economic growth ratio, if not well managed, environmental resources can neither be used sustainably, nor can human welfare assurance be achieved. Accordingly, governments are urged to integrate environmental issues into every sector through the adoption of sustainable development policies and programmes. Governments need to concentrate on equity at the local level by recognizing the different problems and needs of both urban and rural societies, and by increasing levels of public participation in sustainable development action plans.

Involving civil society, NGOs and the private sector would generate considerable results. Decreasing the development gap between rural and urban areas would limit rates of urbanization and its related problems of environmental degradation (CEDARE and others 2001). Sustainable development plans should also focus on decreasing the disparities at the regional, national and local levels by achieving "equity in health and resource distribution, and [respecting] the rights of citizens regardless of social, [political] or religious beliefs" (CEDARE and others 2001).

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